

**IMPLEMENTATION OF POLICIES
AND STRATEGIES FOR AGRICULTURAL
INFORMATION ACCESS AND USE
IN TANZANIA**

by

Angela Mashauri Chailla

BA (Ed.), University of Dar es Salaam, Tanzania, 1972

Post-graduate Diploma (LIS)

Aberystwyth College of Librarianship, Wales (U.K.) 1977

MA (LIS), Loughborough, University of Technology

(U.K.)1989.

**Submitted in fulfilment of the academic requirements for the degree of
Doctor of Philosophy in Information Studies, School of Human and Social
Studies, Pietermaritzburg, University of Natal. South Africa.**

2001

DEDICATION

This work is dedicated in memory of my mother Anna Mashauri Mushi who passed away on 27th August 1998, at the time I reported to the University of Natal to begin this study. May God grant her eternal peace.

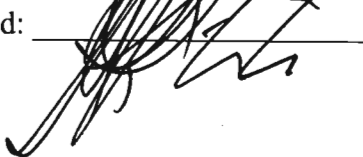
DECLARATION

I hereby declare that the content of this thesis unless specifically indicated to the contrary in the text, is my original work. It has not been submitted to any other university for a similar or any other degree.

Angela Mashauri Chailla

Signed: 

Major Supervisor: Professor Andrew M. Kaniki

Signed: 

ACKNOWLEDGEMENTS

I would like to extend my sincere thanks and appreciation for the successful completion of this study to:

- My employer, the Sokoine University of Agriculture (SUA), Tanzania, for giving me the opportunity to undertake this study
- The Belgium Government for its financial support through SUA-VLIR Programme
- SUA-VLIR Programme Co-ordinators
- SUA's Directorate of Research and Postgraduate Studies for its positive contribution towards this work
- My children, Kalimunda, Chisola, Chazyia and Chullu for their understanding, patience and tolerance of the pain caused by my long absence from home
- My colleagues at SNAL for their moral support.

My profound sense of appreciation goes to my major supervisor Professor Andrew M. Kaniki, PRO- Vice Chancellor (Academic) for his objective criticisms, suggestions, academic patience, and encouragement throughout the period of this study. I extend special thanks to the entire staff of the Information Studies Programme for their contribution to this work in different, positive ways.

My very sincere gratitude to the Postgraduate Manager Mrs Darlene Holtz, for her cheerful and welcoming smile and who, despite her heavy workload, always found time to pass on messages to me from my family and to contact me whenever my family needed me to communicate urgently.

Also my special thanks to all my family friends, for their continuous support and parental role they played to my children, at the time they needed me most.

My sincere thanks to Mrs Jenny Abrams for the valuable technical computer skills she imparted to me.

Last but not least, I extend my thanks to all those who helped me in this work. Absence of their mention does not imply that their assistance has not been appreciated.

ABSTRACT

Agriculture is an important enterprise in Africa and indeed in Tanzania where it is one of the major economic sectors, embracing all its population. Agriculture contributes about 60% to the Gross Domestic Product, generates about 75% of the total export earnings and employs 84% of the Tanzanian active labour force.

Information plays a critical role in agricultural development in most countries. However, one of the most serious reasons adduced for the low agricultural production in Africa is the limited access to adequate information support to all stakeholders in agricultural production. This affects all sectors of research, extension and training. Inadequate access to and use of agricultural information by research scientists undermines the potential to fulfil their information needs. They often lack access to current, relevant and timely information. This results in duplication of research efforts. Lack of access to scientific literature in the agricultural field in Tanzania has been attributed to the ineffectiveness of the various information providers in the country, among which the key ones are agricultural libraries and documentation centres.

Studies by agricultural information specialists and international organizations have established that agricultural libraries and documentation centres in Less Developed Countries have not excelled in providing agricultural information to users. This has been attributed to several reasons. The major one being the non-implementation of policies, strategies and recommendations advanced by scholars, international organizations and consultants for more availability, accessibility and use of agricultural libraries' services and facilities.

The main objectives of this study were to establish the extent to which Tanzania has implemented the key policies, strategies and recommendations for enhancing accessibility and use of agricultural libraries and documentation centres' services and facilities. Some of the key policies and strategies recommended by scholars include; increasing the libraries' capacity in human, financial and material resources. Such policies and strategies include, among many others: library staff development,

cooperation and networking among agricultural libraries and documentation centres at national regional and international levels and formulation of national information policies to give guidance to agricultural information acquisition, organization, management and provision. They also include formulation of Information and Communication Technologies' policies for standardization in operating systems and data formats.

Two main data collection instruments were used in the study namely; a self administered questionnaire and an interview schedule. The instruments were supplemented by on site observations of the libraries' operational activities. The sample size comprised 34 agricultural libraries and documentation centres located in all seven agricultural zones and 18 interviewees from the Ministry of agriculture, agricultural institutions and research stations. The Statistical Product and Service Solution (SPSS) for Windows version 9.0 was used to analyze the quantitative and qualitative data.

The problems facing agricultural libraries and documentation centres in Less Developed Countries today are many and varied, and differ from one country to another. In Tanzania, the study findings established that these problems can be classified into six major categories: lack of adequate resources/materials; inadequate number of qualified personnel at managerial, professional and technical levels; lack of cooperation and coordination among existing libraries and documentation centres; limited financial resources; lack of explicit and operational training programmes for library personnel and lack of a national information policy *per se*. Tanzania has a number of sectoral policies in place, related to information, technology and research. These "little sectoral policies" are fragmented and need a policy framework to provide the missing coordination.

The study established that the number of skilled information staff in the national agricultural library system was small. Libraries and documentation centres in many agricultural institutions and research stations were poorly equipped and lacked professional trained staff. Furthermore, operational budgets were limited and hence lack of current and relevant library materials including subscriptions to scientific

journals. Contacts of agricultural information personnel with regional and international circuits on development were found limited.

The study findings also revealed that the agricultural library information system in Tanzania was lacking in efficiency and effectiveness in meeting the diversified information needs of agriculturalists, particularly the research scientists. To this effect, where information was abundantly available, it was often inaccessible due to lack of technical know-how in documentation, organization and management for awareness of its availability to users.

The study assumed that the global Information and Communication Technologies (ICTs) and current technological developments in the publishing industry could facilitate effective agricultural information organization and management, including repackaging of information for extension personnel and farmers, and resource sharing via electronic networking. However, the poor economic growth of Tanzania, as in other Less Developed Countries, has posed limitations to the full utilization of ICTs through lack of resources, policy guidelines and frameworks for the implementation of such policies.

The study concluded that there has not been an effective and efficient implementation of policies, strategies and recommendations for access and use of agricultural information in Tanzania due to a number of problems, the main ones being: lack of awareness of the policies and strategies among the libraries, parent organizations and policy makers and lack of capacity of the libraries and documentation centres to implement the policies, strategies and recommendations. The study recommended that agricultural libraries and documentation centres in Tanzania be given priority in budget allocation for acquisition of basic equipment, such as photocopiers and micro-computers and for training library personnel at all levels. The more affluent libraries, such as the Sokoine National Agricultural Library and the Division of Research and Development library of the Ministry of agriculture, should audit their resources to determine the best ways to assist the documentation centres in remote research stations to organize and adequately present the required information to users. Agricultural libraries' managers and information specialists should become more assertive,

focused, and committed in finding out about the policies and recommendations and eventually working out the requirements for their implementation and monitoring.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	(i)
ABSTRACT	(iii)
LIST OF TABLES	(xvi)
LIST OF FIGURES	(xvii)
LIST OF MAPS	(xvii)
LIST OF ABBREVIATIONS AND ACRONYMS	(xviii)
CHAPTER 1: INTRODUCTION TO THE STUDY	1
1.1 Introduction	1
1.2 Rationale for the Study	5
1.3 Background to the Problem	12
1.4 Problem Statement	17
1.5 Purpose of the Study	19
1.6 Objectives of the Study	20
1.7 Research Questions	21
1.8 Assumptions	21
1.9 Definition of Key Concepts	22
1.10 Scope and Limitations of the Study	27
1.11 Summary	27
CHAPTER 2: REVIEW OF RELATED LITERATURE	
2.1 Introduction	29
2.1.1 General background to information availability and access	29
2.2 Tanzanian Historical Background	34

2.2.1	The geographical location and population	34
2.2.2	Trends in economic development	34
2.2.3	Communication and Transport	37
2.2.4	Agricultural sector and information services in Tanzania	38
2.2.4.1	Agricultural sector in Tanzania	38
2.2.4.2	Agricultural research zones	39
2.2.4.3	Agricultural research activities and extension services	42
2.2.4.4	Current laws and policies relating to agricultural research and information in Tanzania	43
2.2.5	Documentation and dissemination of agricultural information in Tanzania	46
2.3	The Role of Policy in Facilitating Information Availability, Access and Use for Agricultural Development	49
2.3.1	The concept of policy	51
2.3.2	Need for an information policy (NIP)	55
2.3.3	The need for a national agricultural information policy in Less Developed Countries.	59
2.4	The Role of Information in Agricultural Development in Less Developed Countries	61
2.4.1	Information concept	61
2.4.1.1	Information availability	62
2.4.1.2	The development concept	63
2.4.1.3	Information for development	68
2.4.2	Availability, access and use of agricultural information in Less Developed Countries.	70
2.4.2.1	Access to information	70
2.4.2.2	Factors affecting accessibility to and use of information	77
2.4.3	Agricultural information needs	78
2.4.3.1	Agricultural user groups and their information needs	81

2.4.3.2	Information needs for farmers	83
2.4.3.3	Information needs for extension personnel	83
2.4.3.4	Information need for researchers	84
2.4.3.5	Information needs for policy makers	85
2.4.3.6	Information needs for trainers and trainees	88
2.4.4	Problems hindering accessibility to and use of agricultural library information systems in Less Developed Countries	89
2.4.4.1	Improvement of access to agricultural information	90
2.4.4.2	Library cooperation	91
2.4.4.3	Lack of management skills of non-conventional (grey) literature	92
2.4.4.4	Lack of marketing techniques	94
2.4.4.5	Lack of trained information specialists	94
2.4.4.6	Lack of appropriate accommodation for agricultural libraries and documentation centres.	96
2.4.4.7	Lack of effective national information policies	96
2.4.4.8	Lack of user needs assessment.	97
2.5	Suggested Policies and Strategies for Agricultural Information Access and Use	98
2.6	Summary	103

CHAPTER 3: RESEARCH METHODOLOGY AND DATA COLLECTION

3.1	Introduction	105
3.2	Research Design	106
3.2.1	Data collection instruments	108
3.2.1.1	The questionnaire	109

3.2.1.2	Design of the questionnaire	109
3.2.1.3	The interview schedule	112
3.2.1.4	The observation methodology	113
3.2.1.5	The documentary sources	114
3.3	Pre-testing of Research Instruments	115
3.3.1	The research questionnaire	115
3.4	Study Population	116
3.5	Administration of Research Instruments	117
3.5.1	The self administered questionnaire	117
3.5.2	The interview schedule	118
3.5.3	The observations	118
3.6	Data Analysis	118
3.6.1	Analysis of data from the questionnaire	119
3.6.2	Analysis of data from interviews	120
3.6.3	Analysis of data from observations	121
3.7	Summary	122

CHAPTER 4: PRESENTATION OF RESEARCH FINDINGS AND DATA ANALYSIS

4.1	Introduction	123
4.2	Demographic Data on the Libraries and Documentation Centres	126
4.2.1	Parent ministries and institutions	127
4.2.2	Zonal locations and subject specialization of libraries and documentation centres	129
4.2.3	Library users, services and activities	131
4.2.4	Main services and activities of the libraries and documentation	

	centres	134
4.3	Human Resources	136
4.3.1	Library staff	136
4.3.2	Qualifications of heads of libraries	138
4.3.3	Staff development and Continuing Education	139
4.3.4	Training priorities for library staff	141
4.3.4.1	Training in management of research reports	143
4.3.4.2	Training in management of agricultural information services ..	143
4.3.4.3	Training in basic computing	144
4.3.4.4	Training in electronic publishing	144
4.3.4.5	Training in communication technology	144
4.3.5	Curriculum in agricultural information handling	145
4.3.6	Basic and continuing education programmes for library staff ..	145
4.4	Financial Resources	148
4.4.1	Participation of libraries in budget preparations	148
4.4.2	Library budgets	148
4.4.3	Donor supplement to libraries' budgets	150
4.4.4	Activities and/or services for which the library budget is used ..	150
4.5	Collection Size of the Libraries and Documentation Centres ..	152
4.6	Library Cooperation	154
4.6.1	Cooperative activities among libraries	155
4.6.2	Cooperation of libraries with SNAL	156
4.6.3	Problems encountered in cooperation	158
4.7	Publicising of Agricultural Library Services and Activities	160
4.7.1	Activities and services for promotion of awareness of libraries and documentation centres	160
4.7.2	Factors hindering publicity of library services	161
4.8	Policies and Strategies for Improving Agricultural Library Services	163

4.8.1	List of policies and strategies for improvement of agricultural library services	163
4.8.2	Awareness of the policies, strategies and recommendations ...	165
4.9	Institutional Policies for Libraries' Operational Activities	166
4.9.1	Institutional strategic plans and development of agricultural libraries and documentation centres	167
4.10	Major Problems of Agricultural Libraries and Documentation Centres.	169
4.11	General On site Observations	170
4.12	Summary	171

CHAPTER 5: INTERPRETATION AND DISCUSSION OF STUDY FINDINGS

5.1	Introduction	174
5.2	Findings in Response to Research Questions	177
5.2.1	Key policies, strategies, recommendations and suggestions which have been advanced to improve access and use of agricultural library services and the extent to which the strategies, recommendations and suggestions have been translated into policies or legislation in Tanzania	177
5.2.1.1	Training of agricultural library staff	177
5.2.1.2	Training in specialized programmes	179
5.2.1.3	Continuing Education for library staff	181
5.2.1.4	Budget allocations to libraries and documentation centres	183
5.2.1.5	Formulation of ICT policies	185
5.2.1.6	Resource sharing and networking	186
5.2.1.7	Marketing of library services	188
5.2.1.8	Formulation of national information policy/policies	190

5.3	The Extent to Which Strategies, Recommendations and Suggestions Have Been Translated into Policies or Legislation in Tanzania	191
5.3.1	The National Science and Technology Policy.	192
5.3.2	The Tanzanian Commission for Science and Technology (COSTECH)	193
5.3.3	The Ministry for Science, Technology and Higher Education (MSTHE)	194
5.3.4	The Sokoine National Agricultural Library (SNAL)	195
5.4	The Extent to Which Tanzania Has Implemented the Policies, Strategies and Recommendations Advanced to Improve Access to and Use of Agricultural library services	196
5.4.1	Status of the library staff	197
5.4.2	Libraries' staff development.	198
5.4.3	Financial resources.	201
5.4.4	Resource sharing.	205
5.5	The Capacity of the Agricultural Library system in Tanzania to Implement the Policies and Strategies	209
5.5.1	Human capacity	210
5.5.2	Financial capacity	211
5.6	Effects of Lack of Implementation of the Recommended Policies and Strategies on Agricultural Library Services.	212
5.7	Factors Which Have Hindered Implementation of Policies and Strategies	213
5.7.1	Awareness of the policies and strategies	214
5.7.2	Libraries' budgets	215
5.7.3	Human resource	215
5.7.4	Resource sharing and networking	215
5.7.5	Professional status	216
5.8	Summary	217

CHAPTER 6: SUMMARY OF STUDY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1	Introduction	220
6.2	Summary of the Study Findings	220
6.2.1	Formulation of NIPs.	221
6.2.2	Trained library personnel.	223
6.2.3	Publicity of library services	224
6.2.4	Allocation of adequate financial resources	224
6.2.5	Formulation of ICTs policies	225
6.3	Summary Findings to Research Questions Number Two	226
6.4	Summary Findings to Research Questions Number Three	227
6.5.	Summary Finding to Research Question Number Four	228
6.5.1	Lack of trained personnel	229
6.5.2	Financial constraints	229
6.5.3	Poor cooperation among libraries and documentation centres . .	230
6.5.4	Lack of effective legislation	230
6.5.5	Lack of bibliographic control of technical reports	231
6.6	Summary Findings to Research Question Number Five	232
6.7	Conclusions About the Study.	232
6.8	Researcher's Recommendations	235
6.9	Suggestions for Further Studies and Areas of Research	239
REFERENCES		240

APPENDIX A: LETTERS OF INTRODUCTION 263

- A1: Letter from programme co-ordinator
- A2: Letter from Director, Sokoine National Agricultural Library
- A3: Letter from researcher

APPENDIX B: RESEARCH INSTRUMENTS 264

- B1: Survey Questionnaire
- B2: Interview Schedule
- B3: Observation Schedule

APPENDIX C: ADDRESSES OF LIBRARIES 265

- C1: Addresses of libraries and documentation centres involved in the study
- C2: A list of interviewees

APPENDIX D: MAP OF TANZANIA 266

- D1: Map of Tanzania/main and sub-research stations

APPENDIX E: ONE OF THE SECTORAL POLICIES 267

- E1: Sokoine National Agricultural Library Act

LIST OF TABLES

Table 1.1:	Africa: Microeconomic indicators: 1990-1998	6
Table 2.1:	Agricultural research zones, institutions and centres, and research programmes	40
Table 2.2:	Zonal prioritization of research programmes	41
Table 2.3:	Policy process	53
Table 2.4:	Agricultural information needs of various users	82
Table 4.1:	Distribution of zonal locations and field specializations of libraries and documentation centres	130
Table 4.2:	Ranking of user groups of agricultural libraries and documentation centres	132
Table 4.3:	Ranking of main services and activities provided by agricultural libraries and documentation centres	135
Table 4.4:	Status of library staff	137
Table 4.5:	Level of education and professional qualifications of heads of libraries and documentation centres	139
Table 4.6:	Reasons for lack of training programmes for library staff	140
Table 4.7:	Ranking of training areas for agricultural library staff	142
Table 4.8:	Continuing education programmes: workshops, seminars and conferences attended and their status 1995-1999	146
Table 4.9:	Collection size of libraries and documentation centres 1995-1999	153
Table 4.10:	Cooperative activities among agricultural libraries and documentation centres	156
Table 4.11:	Problems encountered in cooperation among agricultural libraries	159
Table 4.12:	Reasons for lack of publicity about library services	162
Table 4.13:	Policies, strategies and recommendations for improvement of agricultural libraries and services	164
Table 4.14:	Activities in the institutional strategic plan for library capacity building	168

LIST OF FIGURES

Figure 4.1:	Libraries' and documentation centres' parent ministries or institutions	128
Figure 4.2	Library budget allocation for services and activities for financial years 1995/96 - 1998/99	151
Figure 4.3	Problems of agricultural libraries and documentation centres	169

LIST OF MAPS

Map 1:	Tanzanian map showing boundaries, main and sub-research stations	266
--------	--	-----

LIST OF ABBREVIATIONS AND ACRONYMS

AAAS	American Association for Advancement of Sciences
ACP	African, Caribbean and Pacific [Countries]
AGRIS	International Information Systems for Agricultural Science and Technology
ASMP	Agricultural Sector Management Project
BoT	Bank of Tanzania
CD	Compact Disk
CE	Continuing Education
CD ROM	Compact Disk With Read Only Memory
COSTECH	Commission for Science and Technology [Tanzania]
CTA	Centre Technique de Cooperation Agricole et Rural [Technical Centre for Agricultural and Rural Cooperation]
DRC	Democratic Republic of Congo
DRD	Division of Research and Development [MoA, Tanzania]
ERPs	Economic Recovery Programmes
ESAF	Enhanced Structural Adjustment Facility
FAO	Food Agricultural Organization [United Nations]

GDP	Gross Domestic Product
GNP	Gross National Product
IAALD	International Association of Agricultural Information Specialists (Formerly the International Association of Agricultural Librarians and Documentalists)
ICTs	Information and Communication Technologies
IDRC	International Development Research Centre - [Canada]
IFAD	International Fund for Agricultural Development [Washington]
IFLA	International Federation of Library Associations and Institutions
IM	Information Management
IMF	International Monetary Fund
ISNAR	International Services for National Agricultural Research
IT	Information Technology
LANs	Local Area Networks
LCCs	Local Communication Committees [Tanzania]
LIS	Library and Information Studies
LITIs	Livestock Training Institutes [Tanzania]
MoAC	Ministry of Agriculture and Co-operatives [Tanzania]

MALDC	Ministry of Agriculture, Livestock Development and Co- operatives [Tanzania]
MATIs	Ministry of Agriculture Training Institutes [Tanzania]
MSTHE	Ministry of Science, Technology and Higher Education [Tanzania]
NARS	National Agricultural Research System
NGOs	Non Government Organizations
NIP	National Information Policy
NU	Natal University
PADIS	Pan-African Development Information System
SAAINET	Southern African Agricultural Information Network
SACCAR	Southern African Centre for Cooperation in Agricultural Research
SADC	Southern African Development Community
SAPs	Structural Adjustment Programmes
SNAL	Sokoine National Agricultural Library [Tanzania]
SPSS	Statistical Product and Service Solutions [Formerly, The Statistical Product for Social Sciences]
SUA	Sokoine University of Agriculture [Tanzania]
TAFORI	Tanzania Forestry Research Institutes [Tanzania]

TLA	Tanzania Library Association
TPRI	Tropical Pesticide Research Institute [Tanzania]
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Social and Culture Organization
USAID	United States Agency for International Development
USIS	United States Information Services
WB	World Bank
WHO	World Health Organization [United Nations]
ZILOs	Zonal Information Liaison Officers [Tanzania]

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter conceptualizes the subject for the research in its context within the agricultural information sector in Tanzania, beginning with the introduction which leads to the rationale of the study and the background information to the problem at hand. The discussion identifies the problem which is the implementation of policies and strategies for access and use of agricultural information services in Tanzania. Research objectives and questions to guide the study are identified and definitions of key concepts used in the study are given. The scope and limitations of the study are presented. In addition, the population of the study is briefly presented.

Agriculture constitutes a vital component of the economies of most of the Less Developed Countries. It provides employment to the majority of the population and provides food needs of the African continent (FAO 1990). Agriculture has been acknowledged as one of the most important sectors in the Southern African Development Community (SADC) which includes Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Republic of South Africa, Swaziland, Tanzania, Zambia and Zimbabwe (Namponya,1995:40). The SADC region has a population of 140 million (Ndunguru 1997:171) among which 70% is dependent on agriculture for subsistence as well as employment and income. In order to meet the demands for food and raise the standards of living of the people in the region, the SADC has its priority in increasing productivity in its agricultural sector and sustainable utilization of natural resources.

Similarly, the agricultural sector is a key sector in Tanzania's national economy and is the basis of the socio-economic development of the country. It contributes over 60%

of the country's Gross Domestic Product (GDP). In addition, the sector generates about 75% of the export earnings and employs about 85% of the active population in Tanzania (MoA 1996, Katani 1997:40 and United Republic of Tanzania 1999:4). The contribution of the agricultural sector to the economy is not limited to the total GDP. There are also increased linkages between the agricultural sector and other sectors. For example, it makes significant contributions to the agro-processing industry, agro-manufacturing industry and a substantial proportion of trade. Transport and financial sector functions are largely a function of the volume of agricultural production. Furthermore, foreign exchange earning capacity of the agricultural sector is very important to the economy. A major portion of the foreign exchange used for the importation of industrial inputs, capital goods and consumer goods is generated by the agricultural sector. However, the performance of the agricultural sector in Tanzania is still poor for both cash and food crops (United Republic of Tanzania 1999). In essence the potential of the agricultural sector to contribute to the Tanzanian economy has not been fully realized.

Consequently, Tanzania has increasingly become a net food importer and recipient of food aid. The under-performance in cash crops production and productivity has engendered the government's ability to accumulate adequate foreign exchange earnings required to meet its national and international obligations and to embark on industrialization. As a result, Tanzania is one of the heavily indebted countries which still relies on foreign donors to support its socio-economic reforms.

As observed twenty years ago (Adams 1982:103), traditional agriculture still dominates most of the Third World economy today. The traditional subsistence sector in Tanzania is characterized by small subsistence farmers growing mostly staple crops such as maize, bananas, rice, wheat and cassava. For national progress to occur, improvement in agricultural production is essential in order to attain food security, agricultural exports and industrial inputs for sustainable social and economic growth.

Tanzania has enormous agricultural potential in terms of land resource and range of climatic conditions. However, a combination of constraints conspire to prevent this

potential from being realized. The usual list of constraints include: hostile climate which leads to crop failure, soil degradation, lack of fertilizers and pesticides, lack of adequate infrastructure, lack of affordable agricultural equipment and credit facilities to farmers. The impact of most of these constraints is often aggravated by a serious lack of technical agricultural information (Olsen 1989:119).

Studies in agricultural information like those by Aina (1986), Lupanga (1986), Wambura (1988), Kaniki (1989), Ojiambo (1989) and Dulle (1997) have made similar observations and conclusions. They have emphasized the importance of agricultural information in the improvement of agricultural production. In this context, agricultural information has been defined as “*all published and unpublished knowledge on all aspects of agriculture*” (Aina 1990). Users of agricultural information include among many others: policy makers, research scientists, trainers, trainees, farmers, extension officers, traders and the donor community. Aina (1990) classified agricultural information required by user groups into four major categories, namely:

- Technical information, which is generated from research carried out in agricultural universities, institutions and research centres. In Africa and indeed in Tanzania, most agricultural information is continually being generated through research. The information generated can only contribute to the development of the agricultural sector if interpreted and disseminated to farmers who are the end consumers and implementors of technical agricultural innovations.
- Commercial information which is often for farmers who are producers of export crops. This information assists farmers in their decisions on the increase and decrease of their production depending on the market price and the cost of inputs. This information is very useful to policy makers and planners in Tanzania, because as pointed out earlier, agriculture accounts for about 60% of Gross Domestic Product and over 75% of export earnings.
- Social-cultural information, which is based on traditional agricultural practices. This includes traditional information on agricultural practices, local culture, background information on farming communities and labor availability. Social cultural information is important to policy makers, planners, extension

personnel and researchers because any policy framework, including policies on land, cooperatives and others supposed to be complementary to and supportive of agricultural sector modernization, should take into account the culture of the local people and their farming practices. In Tanzania for instance, land use planning is expected to be undertaken in participatory manner, involving beneficiaries, that is, the local people and the government.

Involvement of the local community at the village level binds the members of the community to actions which they themselves have determined as necessary. This is important because it avoids land disputes and serves as a guide to information delivery packages relating to agriculture and agricultural related fields like livestock, wildlife, forestry, fisheries and environmental conservation.

- Legal information, which encompasses all legislation that affects agriculture such as land tenure, production, distribution and sales of agricultural products. The information is often needed by extension staff, policy makers and farmers.

According to Banda (2000:19), the agricultural information required by policy makers in Tanzania can further be categorized into three major categories, namely:

- . Basic agricultural information
- . Demographic information for production and consumption
- . Natural resources information.

The basic agricultural information includes information on production aspects, such as volume of outputs, acreage yields, cost production and sizes of holdings. The information would also include prices and market information such as import and export prices, grades of inputs and outputs, transport facilities and interest rates and the level of agricultural taxation.

Demographic information for production and consumption information includes population growth, place of residence both in rural and urban areas and agricultural labor force by gender and age.

Information required on natural resources is likely to include, among other aspects, land use information, water resources, general quality of the environment and information on natural hazards like floods and droughts.

However, Banda (2000) further considers that the type of information required would depend on the nature of the problem being dealt with at the particular time.

1.2 Rationale of the Study

The current interest in sustainable agriculture stems from the fact that despite significant technological breakthroughs in agriculture typified by the “Green Revolution” in the 1970s, the agriculture sector in Less Developed Countries is still in a very precarious state. Agriculture has not been able to support the economies of these countries. As a result and as Niang (1996:12) argues in the case of African, Caribbean and Pacific (ACP) countries, these countries are characterized by low economies, high population growth rates, rural poverty and low standard of living. Other common features are open economies in which foreign trade accounts for about one quarter of Gross National Product (GNP) and heavy dependence on one or a few export commodities. As a whole, economic growth in Africa in 1998 was estimated at 3.2 percent compared to 3.4 percent in 1996 (African Development Bank 1999:1). Table 1.1 shows microeconomic indicators 1990-1998.

Table 1.1 Africa: Microeconomic Indicators: 1990-1998.

Indicators	Years				
	1990	1995	1996	1997	1998
1. Real GDP growth rate	2.5	2.9	5.5	3.4	3.2
2. Real per capita GDP growth rate	0.3	0.2	2.7	0.7	0.6
3. Inflation (%)	17.6	33.0	25.1	13.7	12.0
4. Investment ration (% of GDP)	22.0	20.0	18.9	18.7	20.0
5. Fiscal balance (% of GDP)	-4.3	-3.0	-2.5	-1.8	-2.7
6. Growth of money supply (%)	20.1	22.6	18.4	15.8	12.4
7. Export growth, volume (%)	4.8	9.2	8.1	4.4	-0.7
8. Import growth, volume (%)	4.8	7.3	3.2	7.9	4.8
9. Terms of trade (%)	5.0	-0.6	2.5	1.5	-5.7
10. Trade balance (\$ billion)	7.1	-4.6	4.4	2.2	-11.4
11. Current account (\$ billion)	-8.9	-13.5	-4.4	-4.2	-19.0
12. Current account (% of GDP)	-1.9	-2.7	-0.8	-0.8	-3.4
13. Debt service (% of exports)	21.9	23.0	22.2	18.8	22.5

Source: ADB Statistics Division and IMF In: African Development Report 1999:1

It has been partly due to the poor economic growth and inability to balance national budgets in the Third World countries that the World Bank (WB) and the International Monetary Fund (IMF) have granted loans and in return advanced the Structural Adjustment Programmes (SAPs). Nelson and Singh (1994:167) have pointed out that in order for a country to receive support from the WB and the IMF, a restructuring of its economy is almost a pre-condition. The standard IMF recipe for economic restructuring requires borrowing countries to, among other things, devalue their currency, remove price controls, reduce budget deficit, privatize public corporations like parastatals and promote exports (Ballais 1993:19). The IMF has not gone without criticisms for its policies. It has been mostly criticized for supplying the same recipe to every borrowing country regardless of its circumstances. The former President of Zambia, Dr. Kenneth Kaunda was quoted as once having said:

The IMF does not care whether you are suffering from chronic malaria, bilharzia or broken legs. They will give you quinine. (Mlambo 1993:58)

Tanzania like other developing countries and in spite of its attempts not to get “entangled” in the hush economic policies, had to succumb to IMF and the WB conditionalities in 1985 and has done the following among other reforms aimed at increasing the economic growth:

- Devaluated the currency.
- Introduced an open market economy.
- Reduced its expenditure on social services such as: education, health services, national social security funding and subsidies on agriculture.
- Restructured and downsized the civil services.
- Privatized parastatal organizations.

The effects of reforms on agricultural development in Tanzania have been visible in that costs of inputs necessary for agricultural production have increased as a result of currency devaluations. In addition, the withdrawal of agricultural subsidies has imposed a considerable squeeze on farmers in terms of financial capacity leading to low morale and low investments in agricultural sector. However, the SAPs have had very little, if any, positive impact on farmers. Most important and to the knowledge of the researcher, there has been no significant change because the primary economic activity which is subsistence agriculture still persists. Walters (1997) sums up the situation by pointing out that:

In 1985 before structural adjustment, villagers spent most of their time growing maize and beans for subsistence economy. The same was true in 1995. In fact the same was true in 1940, 1950, 1960 and 1970 as well.

(Walters 1997:80)

Thus the challenge today is for agriculturalists, that is: researchers, trainers, trainees, extension workers and information specialists to move away from traditional agriculture to a more sustainable agricultural growth and national development. Kapange (1996) emphasized this point further when he argued that:

Sustainable agricultural growth and rural development can make a powerful contribution to three critical goals:

- *Global and national food security*

- *Rural income growth and poverty alleviation*
 - *Sustainable natural resource management*
- (Kapange 1996:7)

The role of agricultural information for the achievement of these goals is apparent. The availability, accessibility and use of agricultural information and its incorporation into national development plans are seen more and more as determinants to sustainable agricultural development. Communication to actualize the implementation of agricultural technical innovations to consumers is crucial. At this juncture the efficiency and effectiveness of information providers like agricultural extension services, mass media, libraries and documentation centres are vital for dissemination of agricultural information to all user groups.

Various studies have identified different information providers which agriculturalists use to meet their information needs. The term 'information provider' includes as Kaniki (1992:85) defined: "... all types of communication channels and sources, include persons, publications, agencies, organizations or group of institutions which an individual uses or may use to resolve an information need."

Ojiambo (1989) and Kaniki (1989) in their studies in Kenya and Zambia respectively identified the following as some of information providers used by agricultural user groups: radio, field demonstrations, personal experience, friends, relatives or neighbors, journals, newspapers, agricultural shows, co-workers or workmates, agricultural libraries, documentation centres, meetings or conferences, agro-business sales personnel, village meetings and opinion leaders. These information providers are similar to those found in Tanzania as identified by Lupanga (1986), Mattee (1988) and Wambura (1988) which serve the agricultural community, that is; research scientists, trainers, trainees, extension personnel, information specialists, policy makers, planners, agro-based industries and farmers.

One of the major issues that has been identified in several studies and which inhibits information access and use of agricultural libraries and documentation centres is the ineffectiveness of these information providers. This is due to several problems, among which are:

- Lack of national information policies to streamline and allocate responsibilities to key role players and stakeholders in information sector.
- Lack of an adequate or effective framework for developing the agricultural information system which highlights again the importance of an information policy.
- Non-recognition and little value given to library information services as evidenced by their exclusion from national development plans.
- Limited capacity for provision of adequate space for renovation services and incorporation of new Information and Communication Technologies (ICTs).
- Lack of support to agricultural information services by stakeholders in terms of necessary inputs like funds and other resources.
- Lack of qualified personnel for efficient and effective functioning of library information services at technical, operational and managerial levels.
- Low salaries for technical and professional personnel as compared to other sectors.
- Lack of commitment and innovativeness among agricultural information specialists.
- Lack of strong professional associations with the capacity to initiate and participate in formulating national development plans and strategies for library and information services.
- Poor image and low status of the library and information profession, brought about largely by low salaries, lack of recognition and lack of training opportunities.

Previous studies by Adimorah (1984), Aina (1989), Alemna (1995), Alemie (1997) Kularatne (1997) and Mukangara (2001) to mention but a few, identified all the above mentioned problems, and made recommendations as to how some of the problems can be addressed. However, most if not all of these recommendations have not been implemented. The researcher argues and it can be assumed from the studies that if the policies, strategies, recommendations and suggestions for improving libraries and documentation centres were implemented by Tanzania, this would significantly contribute to agricultural development. Therefore, this study intended to identify and consolidate key strategies, recommendations and suggestions advanced by scholars,

international consultants and other bodies on the improvement of access to and use of library agricultural information services in Tanzania. It also aimed at assessing the extent to which they have been translated into policies and policy instruments (legislation) for implementation. The study further aimed at assessing the capacity of the agricultural libraries and documentation centres to implement the policies and strategies and the impact of implementation (where this has been done) and/or lack of implementation where there has been none. Lastly, the study intended to identify factors which have hindered implementation of the policies, strategies recommendations and suggestions in Tanzania.

Like information needs which vary with user, time, purpose, location and alternatives available, the use or non-use of an information provider varies from person to person depending on the level of awareness, perceived usefulness and the frequency of use of the given type of information provider. Use of an information provider partly depends upon the experience of the person in the use of the given type of information provider and the skills required to use it. Furthermore, use of an information provider depends upon the attitude of the information provider personnel. As Poole (1985:44) puts it, lack of initiative by librarians themselves in the use of multimedia formats, and in participating fully in the instructional information communication technologies (ICTs) jeopardizes their positions and services within the community, organizations and institutions they serve. He concludes that, "Library services and instructional technology have an affinity. Both involve a system for delivering information to points of need" (Poole 1997:45). However, to single out agricultural libraries and documentation centres as being the best in meeting information needs of agriculturalists is refuting the evidence provided by empirical studies by Aina (1986), Lupanga (1986), Kaniki (1989) and Ojiambo (1989) which concluded that different information providers are best suited for meeting different types of information user needs and uses. Researchers for instance cannot carry out a quality research with only information from colleagues. Researchers will use a combination of two or more information providers to get the most recent information for her research subject. Extension personnel, being a link between the researcher and the farmer, are likely to use researchers, colleagues and agricultural library services as their source of information. Policy makers and planners are likely to use researchers, extension

personnel and the agro-business sales personnel as their source of information in their agricultural report writings, planning and forecasting.

This study focused on agricultural libraries and research and documentation centres as one of the key agricultural information providers because their role in agricultural information acquisition and dissemination has been acknowledged in many scholarly writings such as those by Kaniki (1989), Ojiambo (1989), Van Niekerk (1992), Aina (1995), Namponya (1995), Niang (1996), to mention but a few. In addition, libraries and documentation centres have the potential to acquire, process and provide information to all different agricultural groups and persons involved in agriculture. Agriculture being an interdisciplinary field, it is often assumed that the agricultural information specialists should have the resources, skills and capacity to organize data and extract data from different sources and in different formats to suit a particular client's requirements. As observed:

The agricultural libraries/documentation centres are expected to collect all relevant agricultural literature and make it available to all the user populations, that is, researchers/scientists, extension officers, educators and students, planners and decision makers and even farmers through various methods such as current awareness services, selective dissemination of information, compilation of bibliographies, translation services, reference services, referral services and repackaging.

(Aina 1995:82)

Secondly, this study was important because there has not been a systematic study on the assessment of agricultural library services in Tanzania despite the existence of a few, sporadic and outdated studies based not on objective and empirical research but on philosophical discussions such as those by Munn (1976), Samaha (1978), Mchombu (1985), Gessesse and Mbwana (1986), and Gera and Mbwana (1988).

In addition, the library philosophy today is changing from traditional passive role of being a storage place for books and other printed materials only, to a more active place where information is available in different formats for different kinds and levels of users. A place and system for providing different information activities such as training in the use of multimedia formats, exchanging of information, and customer-oriented information search are taking place. This calls for a more assertive

agricultural information system with multi- skilled and multi- talented information personnel to provide and facilitate customer- oriented services. In a nutshell, it requires information professionals with background training in agriculture and in information management and information technology (IM &IT).

This study was important because the economic development potential of Tanzania is dependent upon its agricultural and natural resource base. The policy makers in the agricultural sector and indeed the government should recognize that effective utilization of both requires continuous investment in research and technical innovations, and also in the information delivery channels among which are the libraries and documentation centres. This is considered critical by academics like Samaha (1985), Namponya and Niang (1990) and Ndunguru (1997). The capacity of the agricultural delivery channels should be strengthened in order to meet information needs of research scientists, extension officers, farmers, policy makers and other potential users.

1.3 Background to the Problem

In order to meet an information need, irrespective of the method used to identify it, one must have access to information sources. Allen and Gerstberger (1967) in their study of the criteria for selection of an information source argued that: “Accessibility is the single most important determinant of the overall extent to which an information channel and information itself is used.”

Subsequent studies by agricultural information specialists agree that accessibility to any type of information source is very important. However, they highlight the problems of accessibility to agricultural information sources encountered by users as well as information specialists. Agricultural information poses unique access problems due to the nature of the field itself (Kaniki 1993). Problems of definition in agriculture have been summarized as follows:-

Besides the classical definition of agriculture such as soil biology, soil chemistry, soil physics, agronomy, horticulture, forestry, breeding and genetics, animal nutrition, plant pathology, agricultural economics, agricultural engineering,

agro-meteorology, soil fertility, veterinary science, food technology, fisheries, landscaping, recreation and environment management etc. agriculture also draws from such basic natural sciences like botany, zoology, chemistry, mathematics, physics, geology, meteorology and also from statistics and economics.

(Adimorah 1977:89)

Another unique characteristic of agriculture is its universality. There is no country in the world which does not depend on other countries' agricultural techniques and products (Lancaster and Beecher 1981). For instance, an extension services model which works well in India may be adopted elsewhere successfully with or without modifications. Effective research must build on past, local and international efforts; it must recognize the work that has been done elsewhere and must include the adaptation of methods and technologies. A third characteristic of agriculture most common in developing countries is the governments' active participation in the agricultural sector. This has often led to formulation of protective policies with respect to access to agricultural reports. Many times, governments become overzealous and classify many agricultural related reports which then makes them inaccessible to the public. Some commentators like Oruma (1984:91-94) have supported the governments' protectionist restrictions on agricultural practices and policies with the argument that most of the Less Developed Countries' major objective is to ensure that human nutrition and the nations' economy is to a large extent independent of foreign supplies. Oruma (1984:93) states that: "Some protectionist measures as governmental supervision and financial subsidies for agricultural research make agriculture unique in comparison with most other fields of study".

Some, however, such as Alemna (1998:69-72) condemn governments' protective measures and the whole concept of confidentiality. Alemna (1998:71) sums up the feeling of many information specialists by his statement that: "A casual visit to some ministries will indicate how projects and consultancy reports which have taken a lot of time to undertake with public funds are lying in drawers, sometimes in a place where one cannot dream of finding such valuable documents."

The complex nature of the agricultural field affects information access and use in several ways as well. Key among these include the fact that:

- Information generated in the sector is widely scattered.
- Grey literature especially agricultural research and consultancy reports are difficult to access due to poor documentation and are produced in very limited copies.
- Literature produced in languages other than English and “Kiswahili” in the case of Tanzania presents problems of language barriers to most users.
- Level of treatment of the diverse literature becomes a problem especially to information specialists.

There are also other factors which affect accessibility to and use of agricultural information besides the nature of the field itself. These have been dealt with in several scholarly writings and studies. In a nutshell, the factors have been described as those which are related to bibliographic, physical and intellectual accessibility (Kaniki 1993). To have access and use of agricultural information, the potential user must be aware of the existence of potentially useful information sources. In addition, knowledge of their location is essential. Bibliographic sources such as guides, directories, databases and trained information specialists can enhance accessibility to agricultural information. However, an information specialist who will facilitate such access has to understand the current environment which is increasingly being influenced by technological innovations, and in which she/he will have to compete with other information providers such as the Internet. Thomas (1999) recommends that: “It is essential for each library and its information specialists to first understand its customers through market research. Insight into what your customer really expects is the first step in planning and preparation for the way forward.”

In the 1980s, agricultural information in Africa, assessment of user needs and problems of accessibility were major topics for discussion among scholars including those by Aina (1986), Lupanga (1986), Kaniki (1989), and Ojiambo, (1989). Kaniki (1989) in his study of agricultural information needs in Zambia found out that agricultural libraries did not meet the needs of the majority of agricultural information users effectively. In fact, satisfaction with Zambian agricultural libraries among the three user groups investigated, that is, researchers, extension personnel and farmers, was very low. Ojiambo (1989), in his investigation of communication of agricultural

information among research scientists, extension personnel and farmers in Kenya found out that libraries and documentation centres were not regarded highly by researchers, extension personnel and farmers in Kenya. His analysis revealed that 78.9% of the researchers reported that they had never used university or college library services as a source or channel of information, or used it one to two times a year. Three percent used public libraries once a week, 26% reported to have used agricultural libraries and documentation centres once a week or more than once a week, while 37.7% reported to have used them less than once a month. The study by Lupanga (1986) dealt with the area of livestock and found out that there was a weak linkage within the agricultural information system in Tanzania, that is, the research-extension-farming linkage. The poor research-extension-farming linkage is up-to date, being cited as the major factor that inhibits the flow of information generated by researchers to farmers and other users (Nickel 1997) and the United Republic of Tanzania (1999).

From these studies done over ten years ago, one can infer that the status of agricultural libraries and documentation centres ranked low among agricultural information providers. Most agricultural libraries in all three cases had the following shortcomings. They lacked, among other things, adequate library facilities, qualified information personnel, proper documentation and awareness programmes of the potential resources that they had to offer to agriculturalists. The situation today has not changed much. Many agricultural information specialists and users will concur with Niang (1996) in his argument that decision makers and user communities perceive information and documentation activities as secondary services and the attention they ought to get from them is limited. This results not only in non-use of the agricultural services but also in low status of the information specialists, and leads to marginalization of agricultural library services as a major input in agricultural production. The problems facing agricultural libraries and research and documentation centres in the Third World are many and varied, and they differ from one country to another. In Tanzania, for example, the problems are not only material, human resources or lack of coordination among the libraries, but also a general lack of governmental support for agricultural libraries and information services as a whole. The situation is reflected explicitly by the lack of current scientific materials for researchers in agricultural libraries and documentation centres, and particularly so at the Tanzania National Agricultural

Library. Kinabo (1997) points out in his discussion on the role of “Universities in Agricultural Research and Development” that:

The shortage of current scientific journals in the library of SUA is another serious problem that hampers SUA's research efforts. Although the library has been elevated to a National Reference Library for the Agricultural Information Sector by the Act of Parliament since 1991 (Sokoine National Agricultural Library) no investment has been made to improve its services and enable it to play its role effectively and efficiently.

(Kinabo 1997:141)

To this end, a number of strategies, recommendations and suggestions have been put forward as measures for improving access to and use of agricultural libraries and documentation centres. The problem, however, has been lack of implementation and translation of these recommendations into policies and policy instruments such as legislation, from which a firm set of strategies to provide a course of action can be drawn.

Such recommendations include among others: the need for adequate financial resources, training opportunities for information specialists, adequate salaries and attractive incentive packages for library professionals and technicians, effective management of agricultural libraries and documentation centres by professionals with background training in agriculture and IM & IT, formulation of national information policies and cooperation among libraries for maximum utilization of resources. Cooperation between libraries has been a subject of discussion for many years. Attempts have been made to encourage them to have joint acquisition, storage and dissemination of their resources. Shibanda (1995) re-emphasized the importance of resource sharing which lies in resource integration via information networking for wider awareness and faster access to agricultural information for optimum utilization of the information resources. One would assume this to be possible with the modern ICTs advantages which are shaping our society and economy to-day. Alemie (1998) argues and rightly so that:

An information-friendly environment today should be characterized by coherent telecommunications reform and

information policies and individual privacy, open and well-regulated information and communication markets; education policies that favor a skilled labor force, an effective regulatory and standard setting institutions. Such environment supports availability, diversity and low cost of information services and products...

(Alemie, 1998:182)

1.4 Problem Statement

In spite of the fact that most of the problems about agricultural libraries and documentation centres in African countries and to a lesser extent in Tanzanian have been identified and potentially useful strategies, recommendations and suggestions advanced, few, if any, of these recommendations have been implemented. Failure to implement recommendations intended to alleviate the problem of information access and use means that the agricultural libraries and documentation centres will continue to make very little impact on agricultural information access and use, and consequently contribute very little to agricultural development.

Agricultural libraries and documentation centres as key information providers in Tanzania are supposed to be used by agriculturalists. As Parker (1969) alludes:

To answer the problem encountered in the daily routine, to gain awareness of the field all over the world, to review the results of other investigations previously made on the subject being studied, to find information about current trends of investigation, the possibility of future development and to browse in related fields as well as new fields different from their own.

(Parker 1969:140)

However, it has been alleged that agricultural library information services in Tanzania are not adequately managed due to a number of related factors, particularly lack of qualified personnel in agricultural information handling, inadequate institutional and financial resources, lack of basic equipment needed to provide adequate agricultural information services such as computers and their software, lack of the Internet connectivity, fax machines and photocopiers, the unclear and undefined status of library staff working in agricultural information services and lack of appropriate, attractive and inviting accommodation for agricultural information documentation

centres. Another critical problem arises from poor bibliographic control of agricultural research information generated by agricultural projects.

Agricultural research projects are the major generators of agricultural information in Tanzania but agricultural information generated each year seldom reach the users (Bourne 1974, Van den Ban 1990, ISNAR 1991, MALDC 1991, Chailla and Matovelo 1999). There is a fundamental problem within the documentation and dissemination of agricultural research results in most countries. Many studies, such as those by Van Niekerk (1985), Lupanga (1986) and Kaniki (1989), observed that the problem arises from the nature of the materials. These are non-conventional materials or grey literature which are seldom actively marketed. They include not only research reports, but also materials such as theses and dissertations, reports, reprints, conference procedures, trade literature and in-house publications. Access to these sources is therefore difficult. This is probably the reason they are also referred to as "fugitive" materials. However, the information content of grey literature is very important because it is current and the information may not be available elsewhere. The major problem associated with grey literature is bibliographic control, lack of promotion, its format in small print runs, its exemption from legal deposit regulations and the absence of a formalized and well known system of channeling research results and information nationwide.

These unpublished materials are probably the most underutilized in agricultural libraries today because of:

- Lack of access arising from poor bibliographic control which leads to difficulties of knowing where to get a report even if it is known to exist.
- Lack of awareness among agricultural researchers of the value of such information.
- Lack of information policy which classifies confidential and non-confidential materials.
- Lack of an adequate number of trained information professionals capable of handling agricultural information.

To this end again, several studies in agricultural information have been done to alleviate these problems. The scholarly experts have made suggestions and recommendations which could alleviate the situation. The problem has been failure to implement these recommendations and suggestions. Some of the recommendations which have been advanced include the following:

- Information specialists and documentalists should conduct user awareness programmes from time to time. These could be in the form of workshops, seminars, tutorials or production of current awareness material through their local area networks (assuming that these exist).
- Agricultural libraries and documentation centres should conduct bibliographic instruction sessions for agricultural researchers, extension workers and other potential users.
- Information professionals should market the services so as to create awareness. This is important bearing in mind that use or non-use of one particular information provider is very much dependent on the awareness of what it has to offer and satisfaction of needs derived from it.
- Agricultural Information specialists should lead the way to better bibliographic control of unpublished materials by advising the ministries concerned on how to keep track of all research and consultancy projects on progress, completed or abandoned. These could be put on a database at the ministries' headquarters, at the agricultural zonal offices, in training and research institutions, and most importantly, at the National Agricultural Library.
- There should be a frequent assessment of user information needs by the information specialists.
- Strengthening of institutional capacity for implementation of the policies, strategies and recommendations should be considered a priority. The apparent failure to implement most, if not all, of these recommendations has been largely attributed to weak institutional capacity.

1.5 Purpose of the Study

The purpose of this study was to determine the extent to which key policies, strategies, recommendations and suggestions advanced by scholars, international consultants and

other bodies to enhance agricultural information accessibility and use have been implemented in Tanzania.

The study aimed at assessing the extent to which the strategies, recommendations and suggestions have been translated into policies and legislation and the impact of their implementation on the agricultural information system by carrying out an assessment of agricultural libraries and research and documentation centres in Tanzania.

1.6 Objectives of the Study

- 1) To identify, consolidate and generate “a list” of key policies, strategies, recommendations and suggestions made by various scholars, international consultants and other bodies aimed at improving accessibility to and use of agricultural information in general, and specifically to improve use of agricultural library services in Tanzania.
- 2) To establish the extent to which Tanzania has implemented the strategies, recommendations and suggestions identified in 1. above.
- 3) To assess the capacity of the agricultural libraries and documentation centres in Tanzania to implement the strategies, recommendations and suggestions for agricultural information access and use.
- 4) To assess the impact of implementation where 3. above has been done and or lack of implementation where there has been none.
- 5) To identify factors which have hindered the implementation of the strategies and recommendations in Tanzania.
- 6) To make suggestions on how to improve the mechanisms involved in implementing the strategies and recommendations for improvement of agricultural libraries and documentation centres in Tanzania.

1.7 Research Questions

- 1) What key policies, strategies, recommendations and suggestions have been advanced to improve access to and use of agricultural library services and have the strategies, recommendations and suggestions been translated into policies or legislation in Tanzania?
- 2) How far has Tanzania implemented the policies, strategies, recommendations and suggestions in 1. above?.
- 3) What is the capacity of the agricultural library system in Tanzania to implement the strategies, recommendations and suggestions identified in 1.?.
- 4) In which ways has the implementation or lack of implementation of the policies, strategies, recommendations and suggestions affected agricultural libraries and documentation centres in Tanzania?
- 5) What factors have hindered the implementation of the strategies and recommendations in Tanzania?

1.8 Assumptions

It is assumed that implementation of policies, strategies and other recommendations for improvement of access and use of agricultural library services in Tanzania would lead to improvement of agricultural library services and the National Agricultural Research Systems (NARS). In this respect, the information dissemination system would consider the extension services as part of the knowledge system in such a way that the extension services interface with the technology generation and research activities, the library and documentation services and finally the user/farmer system. Secondly, implementation of recommendations would lead to active participation of Tanzania agricultural libraries in regional collaboration programmes for agricultural development such as SAANET which is under the umbrella of SACCAR. The network would facilitate the exchange of data and information between national

agricultural information systems for Agricultural Science and Technology (AGRIS) and other related international networks. Also, an effective agricultural library service would contribute positively and significantly to the agricultural sector in Tanzania by enhancing agricultural information flow to all users.

1.9 Definition of Key Concepts

Access

Refers to availability to a user of items in store (Keenan 1996:16). In the context of this study, the items in the store are the agricultural information materials. The printed and non-printed, electronic and non-electronic, audio visual aids materials and all other materials on agriculture and agricultural related fields. The materials must be available at any given time to a user.

Agricultural information

For the purpose of this study, agricultural information relates to ideas, facts and data useful in solving problems in the agricultural sector or answering queries pertaining to agriculture. Such facts and data can be from research projects or on agriculture in-puts, fertilizers, farming practices, extension services and so on.

Agricultural development

According to Idachaba (1997:3-26), agricultural development is the growth of overall production and productivity in the agricultural sector. It is an increase in agricultural production in terms of the output of crops, livestock, forestry, fishery and so on, where farmers are the major beneficiaries of the benefits accrued from agriculture such as:

- mechanization of key farming operations
- net income increase for the farming majority
- alleviation of poverty and the general uplift of the quality of life of those engaged in agriculture
- gainful employment opportunities of the rural poor
- new technologies

However, Gilbert Rist (1997), a Swiss scholar of development gives a much wider and broader definition of the concept of development. He defines it as:-

A set of practices, sometimes appearing to conflict with one another, which require - for the reproduction of society - the general transformation and destruction of the natural environment and of social relations. Its aim is to increase the production of commodities (goods and services) geared, by way of exchange, to effective demand.

(Rist 1997:13)

Agriculturalist

A person whose daily activities involve agricultural research, extension work and training in agriculture and farming.

Current awareness services

Services that alert the user and the potential user to new information likely to be of interest to them (Keenan 1996).

Extension officer/worker

A person whose work involves instructing, demonstrating or seeking information on latest innovations in agricultural technology to facilitate their adoption and use by farmers. He is a link between the researcher and the farmer.

Information

Ideas, facts, imaginative works of the mind and data of value, potentially useful in decision making, question answering and problem solving which can be retrieved and made available in different formats when required (Kaniki 1995:14).

According to Mlaki (1999:2) information is some meaningful message transmitted from source to users. In this process, information may be stored in information products and systems organized for the purpose of providing a memory in numerical form, textual form, sound and image. It may also be communicated through interpersonal channels. The 'source' may be documentary materials, institutions or people. Information may also be defined by its role, as is the case with decision making; or by its coverage, as is the case with scientific and technical information; by level as popularized information; by its channel, as is the case with computerized systems and finally, information may also be defined by its accessibility, be it classified or public information.

Information technology (IT)

According to Willcocks (1996:6), information technology refers to computer hardware and software and communication technologies. Burton (1992:1) considered IT as a convergence of computers and telecommunications in handling information within applications such as management and administration, government and education. However, as Burton (1992) observed, IT covers a very wide area from the introduction of television and the telephone to high technology such as the use of computers.

However, the Pan-African Development Information System (PADIS) defines IT as: “The machinery and equipment, as well as manuals, programmes, and software for producing and disseminating data electronically. Each of these technologies and their inherent operational procedures and programmes serves the production, acquisition, storage, retrieval and dissemination of information”. (PADIS, 1994:1)

For the purpose of this study, IT will be taken to refer to computer networks and communication technologies in agricultural information. The study will adopt the PADIS’ definition.

Information infrastructure

A complex set of institutions and ideologies that include libraries, books, periodicals, book stores, databases, computers, telecommunications and other elements essential to the generation and dissemination of information (Harris 1990).

Information management

There are many definitions for information management, but a few will be mentioned for the purpose of clarity in this study. “Information management encompasses record management activities associated with the effective maintenance of paper-based filing systems” (Rowley 1996:2). This definition is, however, misleading as it seems as though information management has to be applied to achieve a paper-based filing system only whereas it is needed for electronic filing as well.

A more useful definition is by Boon (1990:320) who suggests that information management used in a personal context, means promotion of individual's effectiveness by enhancing the capabilities of the individual or groups of individuals to cope with the demands of their internal and external environments in dynamic as well as stable conditions.

Information provider

All types of communication channels and sources including persons, publications, agencies, organizations or group of institutions which an individual uses or may use to resolve information needs (Kaniki 1992).

Information policy

The Oxford advanced learners dictionary defines the concept of 'information policy' as:

"A plan of action, statement of ideas, etc., proposed or adopted by government or political party, or business as principle for the people to live by" (Oxford Advanced Learners Dictionary, 1989:954) On the other hand, Montviloff (1990:7) considers information policy as a set of principles and strategies which guide a course of action for the achievement of a given goal.

Information resource(s)

According to Marchand and Horton (1986:7) as quoted in Mukangara (2000:18), information resources are the following:

1. *Individuals having information-related skills.*
2. *Information technology hardware and software.*
3. *Information facilities such as libraries, computer centres and information centres.*
4. *Information handling and processing supplies.*

Information resources could also be the information holdings available within the organization, such as libraries or documentation centres as is the case in this study.

Information specialist

One who is primarily concerned with the user of information and secondly, with the logistics of acquiring, sharing and retrieving materials for informing individuals (Aina 1993:197).

Policy

Is a set of principles and strategies which guide a course of action for the achievement of a given goal. It will enumerate the means by which the goal(s) will be pursued, assign responsibilities for its implementation and stipulate rules or guidelines that the various actors and players will follow (UNESCO 1990).

Ranson (1995:440) defines policies as: “Statements which are typically expressed both in utterance and textual form. They have a formal purpose for organizations and governments. Policies are oriented to change and action, provide public intent of transforming practice according to ideal values”. Both definitions are applicable to this study.

Policy-making / formulation

According to De Greene (1993:7), policy making or formulation consists of a general set of concepts, assumptions, frame-of-references, mental models and activities directed towards some perceived problem area. Emery (in De Greene 1993:175) states that policy formulation must reflect the complexity and uncertainty of the environment within which choices are being made.

National information policy

Strategy developed for the co-ordination and development of library and information services in a country.

Strategy

Defined ways or plans of action for carrying out tasks for the achievement of specific goals. An organization can have short-term or long-term plans depending on the tasks that have to be accomplished within a given period of months or years.

1.10 Scope and limitations of the study

The study population can be defined as a set or objects that have at least one characteristic in common (Busha and Harter 1980: 57). The research population in this study was defined as “all agricultural and agricultural related libraries and documentation centres” with a book and document collection as a common characteristic. The agricultural libraries and documentation centres in Tanzania are often, if not always, located near or within agricultural research stations or training institutes. In most cases, it is not possible to study an entire population, but in this study, the major and notable libraries and documentation centres were not more than 37. These formed the study population. In addition, when studies involve a small number of people, all of them can be included in the study (De Vaus 1986:52, Anderson 1987:148, WHO 1990: 11-12).

Secondly, the study confined itself to government-owned libraries and documentation centres. The study population excluded foreign owned libraries such as those of FAO, USIS, UNDP and those of NGOs. Zanzibar was unfortunately not represented in the study because of political reasons. The researcher felt uncomfortable to go to Zanzibar. This would have possibly been a wastage of time because of the political campaigns which were going on. Access to reliable data and interviewees would have been difficult if not impossible.

In addition, the libraries and documentation units are geographically widely scattered within Tanzania’s seven agricultural zones: Eastern, Northern, Central, Western, Lake, Southern and Southern Highland Zones. The Southern zone had only one functional agricultural documentation centre, and due to financial reasons, it was not physically visited. The study therefore excluded the Southern zone from interviews and observation methodologies for data collection.

1.11 Summary

A sound agricultural library information system should be able to acquire, process, reprocess and disseminate a wide range of information to users, so that researchers,

extension workers, farmers, policy makers and planners can make sound decisions that would further sustain agriculture and national development.

The role of agricultural information in sustainable agriculture in Less Developed Countries has been seen more and more as a determinant factor for agricultural development. Agricultural libraries and documentation centres as key information delivery systems should be able to deliver information to users efficiently and effectively. However, agricultural library services in most developing countries including Tanzania have been seen by scholars in agricultural information to be inefficient and ineffective in information delivery. This is due to many constraints, the most notable one being lack of implementation of policies, strategies, and recommendations made by scholars for the improvement of services.

Tanzania needs to implement key policies and recommendations so as to strengthen the existing information infrastructure. As Thapisa (1997) argues, policy should state clearly the recognition that information is essential in-put for an effective National Agricultural Research Systems (NARS) and as such, contributes in a positive way to agricultural development. The review of literature related to the study in Chapter Two will discuss, among other issues, the role of information in agricultural development and the need for a NIP to facilitate access to and use of agricultural libraries' information services, resources and facilities.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 Introduction

The review of literature examines issues raised by related studies on the availability, accessibility and use of agricultural information for the enhancement of agricultural development in Less Developed Countries and indeed in Tanzania. Among other things, issues that are presented here are the different categories of agriculturalists and their diverse information needs, the appropriate information systems and delivery formats for different needs and users. The literature review also highlights the problems identified by researchers in information science which hinder availability, access and use of agricultural information by agriculturalists and other potential users. Policies, strategies, recommendations and suggestions proposed by scholars and consultants in agricultural information science for dealing with these problems are discussed. The review of related literature further more looks at the role of national information policies in facilitating availability, access and use of agricultural information and specifically the agricultural library information services. Finally, the findings from several studies pertaining to problems of access and use of agricultural information are discussed with reference to Tanzania, and these have formed the basis for the key issues investigated in this study.

2.1.1 General background to information availability and access

The Technical Centre for Agricultural and Rural Cooperation (CTA) states that the emphasis today should be on the consolidation of the supply of information, its availability and access to all African, Caribbean and Pacific (ACP) countries (CTA,1995:108). The CTA argues that information should be available to all rural agricultural communities in Less Developed Countries also referred to in this study

as Third World countries or developing countries. Such information should also be accessible to all categories of users such as donor agents, consultants, researchers, trainers, extension officers, policy makers and planners. The CTA (1995) noted that there are several constraints in the availability and accessibility of information in the ACP countries. The key constraints are the near absence of national and/or regional policies concerning information for agricultural development or an explicit framework for action with specifically defined responsibilities to ensure free flow of agricultural information to all users and to rural communities. The rationale for the focus on agricultural policies in Africa as well as in other ACP countries is the persistent failure of the agricultural sectors in these countries in spite of over 100 years of organized agricultural research (CTA 2000:3).

Policies which are conceived as a statement of intent, action or inaction of the public authority against the need to achieve a predetermined purpose have not been effectively implemented, monitored and evaluated in most Less Developed Countries. Lack of effective implementation of agricultural policies in these countries has contributed negatively to the development of the agricultural sector. The role of policies in facilitating availability, access and use of agricultural information for development of the agricultural sector is discussed in section 2.3 of this thesis.

As we reflect back on the latter part of the 20th century, it is an undeniable fact that most Third World countries have achieved substantial improvements in the resources and infrastructure essential for the generation and management of their information at national, regional and international levels for acceleration of development in agricultural sector. However, in spite of the improvement in resources and infrastructure the agricultural resources and facilities are not fully utilized due to multiple problems. Several studies, including Oruma (1984: 91-94), Kaniki (1989), Ojiambo (1989), Umbima (1993), Aina (1995), Alemna (1995), Shibanda (1995), Niang (1996) and Thapisa (1997), have identified problems facing agricultural libraries and documentation centres in developing countries. They have expressed the general opinion that agricultural libraries and documentation centres, though potentially key information providers in the agricultural sector, do not get the attention, recognition

and priority from governments they ought to get. Consequently, they are under-resourced to the extent that they are, in most cases, ineffective in rendering relevant, current and timely services to the users to meet their diverse needs.

Studies supported by empirical data have strongly supported the latter. In Kenya for instance, Ojiambo (1989) found that the five very useful information providers in the agricultural sector in order of ranking were: field demonstrations, extension personnel, agricultural shows, progressive and agricultural training. In the study of Zambian researchers and extension agents, Kaniki (1989) found that the top five information providers were: personal experiences, books, co-workers, government officers and meetings or conferences. The survey method was used in both cases. Self-administered questionnaires were used to collect data from agricultural researchers and extension agents. Structured interviews for farmers and unstructured interviews and discussions with key persons at the Ministry of Agriculture and research stations were also used as data collection instruments. In both cases, the critical incident approach was used to assess needs. Some of the data was drawn from the users' opinion. Information specialists in both cases were not interviewed. This was one of the limitations of the two researchers' studies of the agricultural information providers in Kenya and Zambia respectively.

The study of information specialists *per se* as one of the key information providers could have shed some light as to why the agricultural library information system was not being used. The non-use of the libraries could have been attributed to lack of awareness of the services amongst the researchers and extension agents and /or the users' lack of information retrieval skills. The findings from information specialists would have been potentially useful in the researchers' recommendations. Possible issues that would have been looked at would have been the improvement of the library information system for better provision of services to research scientists and extension personnel. Secondly, the collection of data on the extensionists' and researchers' information needs and problems they meet could have been one of the methods of identifying and predicting their needs. Thirdly, the possibility of publicizing library services in order to create the awareness, desire and knowledge among the researchers

and extension agents to seek the information contained in the libraries and documentation centres could have been explored.

The studies by Kaniki (1989) and Ojiambo (1989) were carried out over ten years ago. Despite the time factor, the situation of the use and the non-use of agricultural libraries seem to have changed very little. From several studies conducted on the issue of availability, accessibility and use of agricultural libraries' information services, a wide range of strategies, recommendations and suggestions have been proposed for the improvement of efficiency and effectiveness of the libraries and documentation centres. However, the consensus among information scientists and agricultural consultants is that governments must make the agricultural information sector one of its priorities and include agricultural libraries and documentation centres in national development plans. A precondition, though, seems to be that this can best be achieved through national information policies (NIPs). For instance, Gessesse (1992: 4-9) acknowledges that problems facing information centres in the agricultural sector in the developing countries are many and varied and can be classified into three categories, namely: material problems (resources); human problems (library personnel)); and lack of cooperation and coordination among existing resource centres.

The problem arises from the general lack of government support for agricultural libraries and information services. National Information Policies must be established and implemented to advance harmonized information services and to promote co-ordination and co-operation at national, regional and international levels.

(Gessesse 1992:7)

Thapisa (1997), in his discussion of the agricultural information situation in the Southern African Development Community (SADC) and problems facing the libraries and documentation services, recommends that:

An established agricultural information policy for SADC countries is needed, one that must be a statement of intent which seeks to integrate an information network of personnel (policy makers, information specialists, researchers, extension officers, etc), hard and software, data and practices aimed at supporting efficient and effective agricultural decision making. It should recognize that information is an essential input for an effective National

*Agricultural Research Systems (NARS) and, as such,
contributes in a positive way to agricultural development.*
(Thapisa 1997:6)

All these issues are important in understanding the state of agricultural information access and use. They are important in presenting a conceptual framework for a study on the implementation of policies and strategies for agricultural information access and use in Tanzania. Therefore, the literature review focuses on three critical issues:

1. Tanzanian historical background

The researcher was of the view that, in order to fully appreciate the need for NIPs or implementation of policies and strategies for improvement of access and use of agricultural libraries and documentation centres, and to view the whole study in perspective, it was necessary to review, though briefly, Tanzania's development from various points of view.

2. The role of NIPs in facilitating information availability, access and use

Scholars in agricultural information and consultants have strongly recommended the formulation of NIPs in developing countries as one of the precondition strategies for improving access, availability and use of information and laying down a strong information infrastructure. Therefore, discussing this issue in detail is important to the study.

3. The role of information in agricultural development in Less Developed Countries

'Information' and 'development' concepts have been discussed. Availability of information for development is not enough to bring about changes. The argument, therefore, is that for information to meet its objectives of bringing about changes and development in the agricultural sector, it must be accessible. Factors hindering accessibility to agricultural library information services are also discussed, and key strategies, recommendations and suggestions by scholars and consultants in agricultural information presented. These formed the basis for analysis in the extent to which the strategies and recommendations have been implemented in Tanzania.

2.2 Tanzanian Historical Background

This section presents a brief historical, social, economic and agricultural background of Tanzania, as it relates to agriculture and the agricultural information services.

2.2.1 The geographical location and population

The United Republic of Tanzania (URT), or simply Tanzania, covers a total area of 942,000 square kilometres. Tanzania includes mainland Tanganyika and a number of offshore islands, Mafia, Zanzibar and Pemba. Lying on the east coast of Africa, Tanzania shares borders with Kenya and Uganda in the north, Rwanda, Burundi and the Democratic Republic of Congo (DRC) in the west, Zambia, Malawi and Mozambique on the south and the Indian ocean on the east. Tanzania is estimated to have a population of 30 million growing at the rate of 2.8% per annum (United Republic of Tanzania 1999:81). However no official population census has been undertaken in Tanzania since August 1988. The Tanzanian population is widely scattered throughout the country, which has, as observed by Morgan (1976) “... made the construction of a rational transport system difficult and costly”. This has affected the agricultural information delivery systems among which are libraries and documentation centres. Library cooperation such as library inter-lending activities have been affected by the poor communication infrastructure. An important aspect of the geographical location which impacts on agricultural development and therefore agricultural information is that of agricultural zones, and subsequently the research stations. These are discussed under section 2.2.4 and other sections thereafter.

2.2.2 Trends in economic development

Tanzania is among the poorest countries in the world whose economy is heavily dependent on agriculture. Agricultural activities in Tanzania comprise of those related to food and cash crops, livestock, fishing and forestry production. Agriculture contributes about 60% of the GDP. It generates about 60% of total export earnings and employs 84% of the Tanzanian labor force. The small hold farmers with an average

holding of 1.0 hectare are the main producers, contributing over 90% of the food crops and 70% of the export crops (United Republic of Tanzania 1999).

Tanzania has been experiencing economic decline in all its sectors since the 1980s to date. This has been attributed mainly to poor performance in all sectors of her economy and also to some of the aftershocks of the 1973 and 1979 oil crises, the rise in international loan interest rates, the rising debt levels, instability in export proceeds, the rising unemployment and inflation. These were also experienced by most Less Developed Countries. Between 1980 and 1989, it was estimated that the Gross National Product (GNP) of Tanzania per capita declined in real terms at an average rate of 1.6% per year, although an average increase of 0.1% was sustained during the period of 1987-1989 (Bank of Tanzania 1990).

Following the economic crisis of the early 1980s, the Tanzanian Government launched a series of macro-economic policy reforms aimed at revamping economic growth and improving the living standards of its people through improved incomes and access to basic social services such as health, water and education. These strategies included an anti-inflation stance, trade liberalization, promotion of the private sector investment, disengagement of the public sector from commercial enterprises, and tax reforms.

Parallel to these reforms, the government implemented a chain of short term and long term plans and programmes, namely, the National Economic Survival Programme (NESP), the Enhanced Structural Adjustment Facility (ESAF), the Rolling Plan and Forward Budget (RPFB) and the Structural Adjustment Programme (SAP). Each of these plans had its own objective, but unfortunately, each had priority-setting from one plan to another without a clear term vision. As the Special Advisory Committee on Agricultural Development in Tanzania comments:

Despite successes recorded in the implementation of this cocktail of reform measures, such as reduction of inflation rates, increased revenue collection etc. the growth of the economy has not been impressive as expected. The GDP growth rate ranged between 3-4% during the 1995-98 period, much below the planned target growth rate of 5-6%. On the other hand, the real growth rate of the agricultural sector dropped from 5.8% in 1995 to 1.2% in 1998

subjecting the majority of Tanzania to abject poverty, the most affected being the rural poor.
(United Republic of Tanzania:1999:8).

One of the economic reforms strategies, the SAP, was meant to support major changes in policies and institutions of some of the Less Developed Countries including Tanzania. These changes were designed, among many other things, to help reduce the developing countries' current budget deficits to more manageable proportions. Some academics like Walters (1997) have warned the Less Developed Countries, or the so called Third World countries that the SAP is not and should not be regarded as a development strategy because, as commented by the Southern African Economist:

Once a country begins to implement adjustment, it gets trapped into it and finds it near impossible to get out. In general, there is a tendency for economic and social conditions to worsen as the country implements the various phases of adjustment.
(Southern African Economist 1999:3)

The Tanzania Government has been implementing SAP reforms since 1986. These have included, among other reforms: liberalization of trade and investment, institutional reforms such as reducing the size of the government, privatization of public parastatals and reforming the government revenue collection and budgeting systems. A number of studies carried out in recent years reveal that there have been improvements in the macro-economic aggregates indicating economic stability and growth and increase in government revenue collections. Unfortunately, the evidenced economic growth and macro-economic stability have not adequately benefitted the poor rural and urban communities. The economic gains and increase in government revenue collections have not alleviated socio-economic problems of the majority of the people. The negative impact of SAP on the agricultural sector is evidenced by the following:

- the trade liberalization has disrupted the government-led marketing system of agricultural produce, replacing it with private institutions. In other words, the opening up of agricultural sector for private investment in production and marketing has made farmers free to sell their food and export crops to co-operatives or private traders. As a result of competition, prices of food crops

have increased and artificial food shortages in the domestic market have been experienced due to “cross border trade”.

- The total development budget allocation to agricultural sector has decreased from Tanzanian Shillings (Tsh.) 12.239 billion in 1993/94 to 3.4 billion in 1996/97 (Katani, 1997: 42). This as Katani (1997) observes, represents a decline of the total budget from 11% in 1993/94 to 2% in 1996/97. This has been due to government withdrawal from direct agricultural productive activities. The effect of the meagre resource allocation to the agricultural sector constrains development of public services such as extension services to farmers and library information services which are critical to the development of agricultural sector.
- Equally, the financial sector reforms have left the small hold farmer without credit facilities to purchase the agricultural inputs. Government-supported agricultural credit ceased in the early 1990s and the present lack of access to commercial credit by small and medium scale farmers has left the rural sector without financial support for their agricultural activities.

Consequently Banda (2000) reports:

Today, many economic policies are formulated in the framework of broadened economic reform policies, taking into account, as much as possible, the role and interests of the stakeholders including those of the donors and international institutions which are assisting the government in the modernization of the economy. Conditionalities of the donors, the World Bank and the IMF are key determinants of both agricultural and economic policies. Divergence from these conditionalities is instantly translated into outbacks of financial resources and technical assistance without which the economic modernization is either stalled or stopped altogether.

(Banda 2000:16)

2.2.3 Communication and transport

The large size of the country with its widely dispersed population requires movement of goods over large distances in order for the economy to function effectively. The

transport network of Tanzania consists of about 3,600 kilometres of railroads, 50,000 kilometres of roads, two international airports and about 30 domestic airfields. Road transport accounts for approximately 60% of the total internal traffic. The agricultural sector depends on railroads and roads which have for many years been a major setback to farmers. Upgrading and continuous maintenance of the rural, regional and trunk roads which provide essential access to major agricultural zones and regions is essential in agricultural production. Unfortunately, there has been little maintenance, hence the poor physical infrastructure with inaccessible roads during rainy seasons, which has contributed significantly to food insecurity in the country. A region like Rukwa whose surplus maize could feed the whole of the Dar es Salaam urban region for a year, cannot find domestic markets because of high costs of transportation. Therefore, Rukwa region's markets are in the neighboring countries, like Zambia and the Democratic Republic of Congo (DRC). Improving the rural roads network will go a long way to integrate small farmers into the economy and decrease the transport cost of inputs, outputs and consumer goods. Both farmers and consumers will benefit. On the part of farmers, production costs will decrease, while on the part of consumers, retail prices will fall due to low transport costs. The food security status in the country will most likely improve. Ashanti (1999), one of the gold mining companies in Tanzania had one sentence to describe Tanzania communication and transport systems: "the gold mining prospects in Tanzania are excellent but the lack of infrastructure kills you."

2.2.4 Agricultural sector and information services in Tanzania

In this subsection, the literature gives an overview of the structure of the agricultural sector in Tanzania, and the country's agricultural research zones. The current status of research and extension services in Tanzania is also discussed, including current laws and policies relating to agricultural research and information.

2.2.4.1 Agricultural sector in Tanzania

The agricultural sector is potentially the foundation of the Tanzanian economy, supporting employment, food production and exports. According to Ngirwa (1997:

29) the national sample survey of agriculture of 1994/95 estimated that there are 3.87 million small-scale agricultural holdings in the rural areas of mainland Tanzania where the size of area cultivated averages 0.86 hectares. Some 90% of all farmers cultivate less than 2.0 hectares. Due to its central nature to the economy, agriculture development will continue to be a key sector in Tanzania's national growth because of two basic reasons. It alleviates poverty in rural areas and is a source of food for the nation.

According to the agricultural and livestock policy of the United Republic of Tanzania (1997), the challenges facing agriculture in Tanzania today are the following, among many others:

- Assuring basic food security and improving national standards of nutrition by increasing the output, quality and availability of food commodities.
- Improving the standard of living in rural areas.
- Increasing foreign exchange earnings by encouraging the production of cash crops.
- Developing and introducing new technologies to the farmers.
- Providing support services to the agricultural sector which cannot be provided efficiently by the private sector.
- Promoting the access of women to land, education and information.

It can therefore be argued that the development of the agricultural sector in Tanzania should be the top priority of the government in order to meet the challenges.

2.2.4.2 Agricultural research zones

The Division of Research and Development (DRD) in the MoAC has the national mandate to plan and execute public sector research and dissemination of the research findings to users. The DRD operates a network of research institutes, centre and research substations that cover the main areas of crop and livestock research in the country. Tanzania has seven zonal research and training centres (ZRTCs) located in the seven agro-ecological zones, namely Eastern, Western, Northern, Central, Lake, Southern and Southern Highlands. National and Zonal agricultural research advisory

bodies have been established to ensure that research programme priorities, direction and output, conform to national policies. Each zone has a Zonal Agricultural Research Advisory Committee (ZAC) and a Zonal Information Liaison Officer (ZILO) to assist the DRD in its functions of monitoring agricultural research projects and dissemination of research findings.

Table 2.1 and 2.2 show the zones, institutes and/or centres and zonal prioritization of research programmes

Table 2.1 Agricultural Research Zones, Institutes and Centres, and Research Programmes

Zone	Institute/Centre	Programmes
Lake	Ukiriguru Maruku	Cotton, Roots and Tubers Banana and Coffee
Southern Highlands	Uyole Kifyulilo	Diary Pyrethrum, Potatoes, Agricultural Engineering Tea
Northern	Selian Lyamungu Tengeru	Wheat, Barley, Phaseolus Beans Coffee Horticulture
Eastern	Llonga Ifakara Kibaha Mlingano Tsetse and Trypanosomiasis Research Institute, Tanga Livestock Research Centre, Tanga	Maize, Grain Legumes, Sunflowers, Sorghum, Millet and Crop Protection Rice Sugarcane Soil and Water Mat.. Sisal Animal Heath and Disease Beef/Dairy Cattle, Small Ruminants
Southern	Naliendele	Cashew Nuts, Oil Seeds, Roots and Tubers
Central	Mpwapwa Kongwa Makutupora Hombolo	Beef and Dairy Cattle Small Ruminants, Pastures and Forage Viticulture Sorghum and Millet
Western	Tumbi	Tobacco, Agroforestry
National	DRT Headquarters, Temeke Animal Disease Research Institute (ADRI), Temeke	FSR/Agricultural Economics Animal Health and Disease
Others	SUA TPRI	Post Harvest Technology, Non- Ruminant Meat Production (Poultry, Piggery)

Source: MoAC (1997:53)

Table 2.2 Zonal Prioritization of Research Programmes

Source: MoAC (1997:55)

Category	Research Programmes / Commodities		
	First priority	Second Priority	Third Priority
Central Zone (Dodoma and Singida regions)	Dairy cattle, beef cattle, sorghum and millets, feed reso., grain legumes, maize, cotton agrof., soil and water mgt., FSR/econ, animal health/mgt	Viticulture, oil seeds, small ruminants, roots and tubers, tobacco, rice, crop prot., animal traction, post-harvest technology.	Hortic., dates, non-ruminants (poultry and pigs etc.)
Eastern Zone (Morogoro, Tanga, Coast and Dar es Salaam regions)	Maize, rice, dairy cattle, beef cattle, grain, legumes, coconuts, sistal, sugarcane, agrof., crop prot., animal health, soil and water mgt., FSR/econ	Cotton, coffee, roots and tubers, fruits, sunflower, sorghum and millets, bananas, small ruminants, cashew, tea, phaseolus beans, pastures and forages, spices, agric. engin.	Groundnuts, sesame, sheep, pigs, non-traditional fruits/vegetables, agroclimatology post-harvest techn.
Lake Zone (Mwanza, Shinyanga, Kagera and Mara regions)	Cotton, coffee, rice, maize, cassava, sweet potatoes, banana, pasture and for., beef cattle, phaseolus beans, sorghum and millet, crop prot., agrof., soil and water mgt., FSR/agric. econ., post-harvest technology.	Tea, fruit trees, goat sheep, pigeon pea, groundnuts, animal traction, and animal health	Sugarcane, tobacco, round potatoes, sunflower, vanilla bambaranuts, yams, agr. engineering, climatology
Northern Zone (Arusha and Kilimanjaro regions)	Coffee, maize, wheat, hort., dairy cattle, barley, phaseolus beans, crop prof., soil and water mgt., agrof., FSR.	Bananas, beef cattle, oil seeds, roots and tubers, pastures and forages, biotechnology, post-harvest technology., agr. climatology	Sugarcane, rice, flowers, poultry, small ruminants, sorghum and millet, grain legumes, pigs, animal prot., agric. engineering, range mgt.
South Highlands Zone (Mbeya, Ruvuma, Iringa and Rukwa regions)	Coffee, maize, rice, tea, beans horticulture, dairy and beef cattle, crop prot., agro-forestry, soil and water mgt., organic farming, post-harvest system	Cotton, oil seeds, wheat, small ruminants, bananas, round potatoes, pyrethrum, non-ruminants, animal traction, agricultural economics/FSR, animal diseases, range mgt.	Cocoa, pasture, sorghum and millet, tobacco, cassava, barley, sweet potatoes, soyabeans, grain legumes, agroclimatology, biotechnology
Southern Zone (Mtwara and Lindi regions)	Cashew, sesame, cassava, groundnuts, goat, coconut, FSR/socio-economics, crop protection, crop processing, soil and water mgt.	Maize, poultry, fruits, sorghum, vegetables, soyabeans, beef cattle, pasture and forages, rice, pigeon peas, dairy cattle, agroforestry, animal health, land use planning, agroclimatology, mechanization, animal traction	Sisal, sweet potatoes, sheep, cowpea, bambara nuts, green gram, pigs, castor, rabbits, bullalo peans (upupu)
Western Zone (Tabora and Kigoma regions)	Rice, tobacco, sweet potatoes, beef cattle, dairy cattle, maize, cassava, plant prot., animal health, agro-forestry, soil and water mgt.	Cotton, poultry, small ruminants, sorghum and millet, horticulture, grain legume, phaseolus beans, farming systems, post-harvest techn., agricultural engineering, pasture/forages/range mgt	Coffee, pigs, rabbits, coconuts, agricultural climatology and agricultural economics

2.2.4.3 Agricultural research activities and extension services

As shown in Table 2.1 and 2.2 respectively, various institutions are involved in agricultural research activities in Tanzania, and zonal prioritization of research programmes has been clearly indicated. The main objective of each research station or zone is to contribute positively to solving the agricultural problems in the country. These agricultural institutions constitute the National Agricultural Research System (NARS) in Tanzania, with the DRD of the MoA as the lead organization. The others include:

1. *The Tropical Pesticides Research Institute (TPRI), a parastatal body under the MOA.*
2. *The universities, especially the Sokoine University of Agriculture (SUA), and to a lesser extent, the University of Dar es Salaam.*
3. *Some private and public sector bodies which carry out research work in relation to specific crops such as tea, barley and wattle.*
4. *Non-government organizations (NGOs) and cooperative unions whose research activities are usually related to commodities of interest to them.*

(Shao 1997:51)

Unfortunately, there has been poor inter-institutional linkage and the researchers particularly those in remote research stations within the seven agricultural zones are kept less informed of new developments in their field of study. There is no formal policy on cooperation or linkage between the specialized research institutions. The flow of information among the specialized research stations and zones can be facilitated by the information communication technologies (ICTs) such as computer networks, fax machines, functional telephones and satellite technology. Tanzania should have a science and technology infrastructure in place to facilitate agricultural information flow among the research zones and stations. This implies the existence of policy and institutional arrangements, material resources, manpower and other relevant inputs for enhancing the identification, choice, development and acquisition, application and maintenance of the technologies. However, it has been reported that:

Various nationally co-ordinated research programmes have co-ordinating committees together with interdisciplinary research teams established in the zones. The coordinating

committees hold annual meetings at which research results are scrutinized and proposal for future research projects approved. Interested parties are invited to participate in these meetings. (the emphasis on the last sentence is by the researcher)
(Shao 1997:51)

Agricultural knowledge and skills for both crops and livestock improvements in Tanzania are delivered to farmers through agricultural extension services. Agricultural extension services in the country are provided by the government through the MoA. Several studies and consultancies done on the improvement of the agricultural sector in Tanzania have found that the agricultural extension system is characterized by poor staff morale and poor work skills (United Republic of Tanzania 1999:76). Training for agricultural extension staff has virtually come to a standstill as there is no intake of pre-service students. As observed by many scholars, agricultural development in Third World countries can only be realized by effective information delivery systems which have adequate training and motivated staff.

2.2.4.4 Current laws and policies relating to agricultural research and information in Tanzania

The Sokoine University of Agriculture (SUA) was established by the Tanzania Government through Act No. 6 of 1984. Some of the functions given to the university and which are spelt out in the Act No. 6; 1984 include, among others:

- *Provision of facilities for university education in the field of or connected with agricultural services.*
- *Assistance in the preservation, transmission, dissemination and enhancement of knowledge in the fields of agriculture, fisheries, forestry, veterinary and allied complimentary sciences.*
- *Preparation of students to work with the workers and peasants of Tanzania for the purpose of the development and strengthening of the national economy.*
- *Initiation and conducting of basic and applied research with training and agricultural extension services.*
- *Provision of adult and continuing education alongside the teaching of regularly enrolled students designed to secure the development and dissemination of various*

applied sciences and technology required for enhancement of rural economy and solutions of the economic and social problems of rural areas of the United Republic.

- *Development and maintenance of a reference library and provision of library services in agricultural sciences and related disciplines for the benefit of the university community and the people of Tanzania in general.*

(United Republic of Tanzania:1984).

In 1985, the Ministry of Planning and Economic Affairs of Tanzania, established the National Science and Technology Policy for Tanzania. The policy was revised in 1996.

Some of the objectives of the National Science and Technology Policy (1996) are:

- *To promote science and technology as tools for economic development of human, physical and social well-being, and for the protection of national sovereignty.*
- *To stimulate the generation of scientific and technological knowledge which is to be applied in socio-economic development.*
- *To inculcate a science and technology culture in the Tanzanian society.*
- *To establish and/or strengthen national science and technology institutions through provision of adequate facilities.*
- *To establish appropriate legal framework for the development and transfer of technology.*
- *To provide attractive terms and conditions of service including adequate research facilities and a conducive research environment in order to motivate and retain scientists and technologists making them give their best services in the country.* (United Republic of Tanzania 1996).

In 1986, Tanzania, in recognition of the importance of the technical information, established the Tanzania Commission for Science and Technology (COSTECH) (Tanzania, 1986). The COSTECH, which is currently under the Ministry of Science, Technology and Higher Education (MSTHE), has been given the following mandate:

- *To act as the principal advisory research and technology development.*
- *To assist in the formulation of national policies on the development of scientific and technology (S&T) in the country.*

- *To monitor and coordinate all scientific research and technology development activities in the country.*
- *To disseminate scientific and technological information.*
- *To support research and development activities (R&D) by mobilizing funds from internal and external sources.*
- *To advise government on the priorities in scientific research.*
- *To facilitate regional and international cooperation in scientific research and technology development.*
- *To popularize science and technology at all levels. (COSTECH 1986:1).*

In 1990, Tanzania, in its endeavor to incorporate technology in all its sectors, established another ministry of education, the Ministry for Science, Technology and Higher Education (MSTHE). The Ministry has been given several responsibilities, among which are:

- 1) *To control and co-ordinate the science and technology sector within the ministry and in all institutes dealing with development of science and technology.*
- 2) *To provide consultancy services.*
- 3) *To establish, plan, control and co-ordinate all functions pertaining to the development of science and technology. (Sekimang'a 1992:48)*

In 1991, Tanzania which has often tried to give its agricultural sector a national priority, designated the Sokoine University of Agriculture's library as the Tanzania National Agricultural Library (Tanzania 1991).The Sokoine National Agricultural Library (SNAL) was given the overall mandate to coordinate, organize, store and disseminate agricultural information in the country.

These are only some of the several sectoral information initiatives which have been initiated by Tanzania. However, their effectiveness and efficiency in carrying out the responsibilities given to them by legislation is questionable. For example, SNAL was given, among many others, the responsibility of co-ordinating agricultural libraries and documentation centres in the country for effective information delivery. This was and is a positive step towards the formulation of a national agricultural information

policy. The question is, how effective has SNAL been in carrying out its responsibilities? Does SNAL have the institutional capacity to carry out its mandated responsibilities? In essence the problem in developing countries appears to be not lack of information policies *per se*, but rather lack of capacity for implementation, monitoring and evaluation. Monitoring and evaluation (M&E) are key aspects of policy implementation, monitoring and assessing the effectiveness of both the policy instruments and strategies and for their adjustment (Banda, 2000:17).

2.2.5 Documentation and dissemination of agricultural information in Tanzania

An ideal agricultural information system should be able to provide a wide range of information for users, that is, researchers, trainers, trainees, extension officers, consultants, donor community, farmers, policy makers and information specialists. From the information supplied, policy makers and planners are expected to make sound decisions that would further sustain agriculture and rural development in a country. Information obtained from agricultural information services like libraries and documentation centres would include up-to-date statistical information, development production trends at regional, national and local levels, feedback on the impact of policy measures and comparative information on the results of national policies in other countries. Gera and Mbwana (1988) noted that the collection, processing and dissemination of this kind of information suitable for planners and policy makers has not been done satisfactorily. Bourne (1974) also reported that only a few of the many reports published in Tanzania are covered by any organized collection and indexing efforts. Ten years following Bourne's observation, Mchombu (1985) noted the same shortcoming and further observed that it is sometimes easier to obtain reports on research or consultancy conducted in Tanzania overseas, than in Tanzania. Although Mchombu's claims were not based on empirical study, this researcher is of the view that this was the case because of the researcher's own knowledge and experience as an information specialist at the Tanzania National Agricultural Library.

Similarly, Banda (2000:21) argues that in many instances it is not the absence of information or lack of policy that hinders the policy processes from being successful in Tanzania. Rather it is poor communication of available information that lacks organized collection and indexing systems. There is, in most cases, a multiplicity of data and information from research and other activities which has not been put to any meaningful use. Therefore it is generally difficult to obtain information about ACP countries (Tanzania inclusive) from the countries themselves, while such information is available readily from developed countries and international organizations involved in the collection of data for the reports.

Availability, accessibility and use of agricultural research information is vital to ensure that agricultural technical innovations leading to improved agricultural production are implemented. Some of the challenges which have affected both agricultural research and dissemination of agricultural findings have been inadequate funding, lack of effective extension services, poor inter-institutional linkage and lack of government support for agricultural libraries and documentation units. Some of these have been discussed in the first chapter of this thesis, and others will be discussed in detail in the subsequent sections.

Some of the remarks made by Samaha (1978) on the question of information dissemination by extension personnel, researchers and agricultural libraries and documentation units in Tanzania are worth noting to see if the situation has improved today. Samaha (1978) observed that:

- *Repackaging of information to farmers by extension units in the ministry has not been effective.*
- *The release of information on research carried out locally is delayed by one or two years. All research results are not reported in detail due to lack of publication media.*
- *The present research reports lack adequate indexes for retrieval of the contained information.*
- *There is a serious weakness in the dissemination of information either due to financial constraints or the lack of appropriate dissemination methods.*

- *Research and development officers are receiving little of the scientific and technical information needed for their activities. Their institutions lack appropriate library and documentation facilities and no mechanism is available as yet in the country to meet their needs. (Samaha 1978:29)*

The situation has not changed much today as evidenced by a study conducted by Chailla and Matovelo (1999: 99-106) to examine the activities of agricultural researchers in generation, documentation and dissemination of their research findings. The study revealed that 83% of information generated by researchers is documented in institutional reports as annual proceedings or progress reports, and the rest as journal articles, newsletters, pamphlets and leaflets. Progress reports and annual proceedings about agricultural activities account for the largest format of documentation, but these by their very nature as technical reports or grey literature have the most restricted circulation and are not easily accessible.

The survey method used in the above study cannot be said to have achieved conclusive results on accessibility or lack of accessibility to agricultural research information. The sampling of research institutes was somewhat skewed and interviews with six research institutions among more than 25 was not an adequate representative sample from which generalized conclusions could be drawn. Moreover, research findings by research scientists are presented technically. Therefore, there was also a need for these researchers to discuss problems of organization and management of technical reports mostly referred to as grey literature. Nevertheless, the general poor state of documentation of research reports for easy access by users poses serious limitation to accessibility and consequently use of agricultural information resources as evident from the findings of the study.

It can be deduced from the literature reviewed in this subsection, 2.2, that the economy of Tanzania and the welfare of its people are dependent on agriculture. The development of the agricultural sector, however, is constrained by many factors, the major one being the meager financial resources allocated to the agricultural sector for operational activities such as research and information delivery systems. The

information delivery systems include extension services, libraries and documentation centres. In spite of the reforms in the agricultural sector in Tanzania which have led to privatization of major agricultural activities in the country, the basic information infrastructure is already in existence.

The government has established institutions and bodies with legal mandate to oversee the dissemination of science and technology required for development of the economy. A national agricultural library has been established and has been strategically placed under the only university of agriculture in the country (SUA) to co-ordinate other agricultural libraries and documentation centres in the country and to acquire, process and disseminate agricultural information in the country. Likewise, some of the functions of the National Science and Technology Policy are to promote science and technology as tools of economic development and to establish an appropriate legal framework for development and transfer of technology in Tanzania. The COSTECH has to advise the government on the priorities of scientific research and to disseminate scientific and technological information. The MSTHE, on the other hand, is supposed to control and co-ordinate science and technology and to provide consultancy services on scientific information, management and dissemination.

However, the problems are lack of awareness of the role of these bodies and institutions, lack of their specific and defined role in the agricultural sector, the overlapping of their functions, and above all, lack of monitoring and evaluating their effectiveness and efficiency in carrying out their functions.

2.3 The Role of Policy in Facilitating Information Availability, Access and Use for Agricultural Development

In this section of the literature review, it is argued that there is a need for NIPs in developing countries to enhance overall development of agricultural information. Information, like any other capital input into the agricultural sector such as land and credit facilities, needs to be planned, implemented, monitored and evaluated. There is

a need for policy on agricultural information acquisition, processing, repackaging, sharing and dissemination. In addition, such policy should serve and safeguard all actors and stakeholders in the information sector, from decision makers and planners to farmers. Such policy ensures good information management and information use. Furthermore, as Mukangara (2001) has recommended, information resources need to be effectively managed in the ministries in Tanzania for availability and use by policy makers and planners.

To this end, national information policies, strategies and recommendations for the improvement of agricultural information services in developing countries have been made by scholars and consultants in agricultural information science. The argument is, the Third World or developing countries cannot afford the luxury of making uncoordinated efforts in the agricultural information sector due to their limited economic and human resources. Development of rural sectors in most of these countries poses a challenge to agricultural information availability, access and use for development. The focus of agricultural development should be on the increase of agricultural production, thereby increasing incomes and living standards of rural communities. In other words, agricultural development must result in the alleviation of poverty and changes in quality of life of those engaged in agriculture.

Information is today viewed as a strategic resource by individuals, institutions and corporations. Economic development is dependent on information and an information literate population. Global economy, that is, the multinational companies and the world economic system, seek the most current information to make the most timely and cost effective decisions to bring about development.

The critical role of agricultural information in decision making in most of the Less Developed Countries has not yet been realized. In these countries, the majority of the population live in rural areas and are dependent on farming. Deliberate policies in information transfer to this majority of the population are essential for their livelihood and increase of the farm produce and their income. Policy makers and planners should have access to relevant current and timely information pertaining to implementation of

agricultural technical innovations so as to be able to plan the allocation of resources accordingly.

This section also discusses different aspects of policies and the need for NIPs in African countries for availability, access and use of information in all sectors of development.

2.3.1 The concept of policy

Policy has been defined as:

Any systematic reasoning meant to help policy makers reach a decision; it typically follows the general outline of rational action; identifying the goal, forecasting the consequences of options to reach it, then choosing the one that does so most efficiently and effectively.

(Mead 1983:45)

Weingarten (1989:35) and Unesco (1990) define a policy as: “a set of principles and strategies which guard a course of action for the achievement of a given goal.”

From these definitions, one can conclude that a policy is needed where a problem in a certain situation has been identified and a need to solve that problem has been clearly defined. Policy is expected to focus on how to solve the problem, the steps to take to do so efficiently and effectively with the minimum negative consequences as possible. In this regard, Pillay (1999:239) identifies two basic features of a policy: 1) “that policy is developed to influence or to shape behavior, and 2) that policies are the result or outcome of some need.”

Policies may be developed at the organization or institutional level (micro-policy) or at the national, regional or international level (macro-policies). Policies are embodied in the so called policy instruments such as constitution, parliamentary acts, laws, regulations and treaties. The policy instruments can also be professional instruments, that is, codes of conduct and professional ethics or cultural instruments like customs,

beliefs and social values. In many cases government policies are often legislated so that there are legal frameworks to facilitate their implementation.

According to Levin (1997), a policy possesses the following attributes:

- *Policy denotes belongingness: a policy belongs to someone or somebody. For example, it would be stated that it is the “government’s policy”, “departmental policy”, “party policy”*
- *Policy also denotes commitment. A policy carries commitment on the part of those to whom the policy belongs*
- *Policy may also denote that it has or is claimed to have a certain status, possibly conferred upon it by a prior event of some kind, such as cabinet decision or public announcement or by being acted on, even though no agreement to that effect had been reached*
- *A policy also possesses the attribute of “specificity”. A policy must have at least some degree of specificity for it to be distinguishable from other policies.*

(Levin 1997:19

Policies, however, can be very simple, affecting only individuals who have made them, or very elaborate and influential, affecting groups of professionals, society at large or a government and its people. The structural adjustment policies of the IMF and WB, for instance, which were adopted in Tanzania in 1985, have not only shaped the behavior of the Tanzanian government, but also the lives of all Tanzanians. Therefore, in addition to the various definitions given by scholars, a policy aims at restoring order to a chaotic situation, and by so doing its impact on those concerned can either be negative or positive.

In addition, a policy is a process characterized by phases or stages leading to activities critical to effective policy implementations and impact in agricultural sectors of the Third World countries. Table 2.3 outlines the stages and the inputs in each stage.

Table 2.3**Policy process**

Phase 1: Policy identification and problem recognition	Requirements: <ul style="list-style-type: none"> ● initial recognition of an agricultural problem which requires policy response or action ● problem definition and verification ● problem diagnosis in terms of causes, characteristics and consequences ● prioritization of identified problems ● sources of information for clarity of the problem ● policy experimentation/trial
Phase 2: Policy formulation and design	Requirements: <ul style="list-style-type: none"> ● clarification of objectives ● underlying assumptions ● choice of instruments and strategies ● programmes and activities involved ● institutional arrangements ● technical capacity within the ministries of agriculture and other government agencies for policy design and formulation ● quality and quantity of partners involved ● quality of mechanisms for sensitizing the policy makers in government on identified problem areas requiring policy response
Phase 3: Policy appraisal or verification	Requirements: <ul style="list-style-type: none"> ● review of objectives, assumptions and instruments ● review of available resources ● analysis of any risk involved or which might be involved ● review of the effects of programmes and activities
Phase 4: Policy adoption and implementation	Requirements: <ul style="list-style-type: none"> ● consultative forums among the stakeholders in the policy process ● re-definition of the problem ● validation of the procedures for implementation ● provisions for complementarities ● analysis of unexpected problems
Phase 5: Policy evaluation and policy impact assessment	Requirements: <ul style="list-style-type: none"> ● looking back at definite points in time to determine the success of implementation ● it should be an on-going process undertaken after a certain period of time ● measurements of inputs and outputs ● identification of positive and negative impacts ● conclusions on the degree to which the policy has achieved its goal

As observed by researchers, consultants and the CTA (2000), the available infrastructure for executing the policy process is of limited capacity in a number of ways, among which are:

- poor linkages among the various agents in the policy process

- lack of clearly defined communication and information strategies and policies
- chronic shortage of resources both human and financial
- apparent lack of appreciation of the role and potential of information and communication in formulating agricultural policy
- limited stakeholder involvement in terms of lack of institutional mechanism for stakeholder involvement

Most of the Less Developed Countries' policies, which have been mere statements on paper, which have not been implemented or partially or ineffectively implemented, have been attributed to the limitation in the policy processes in Table 2.3.

For instance, the enactment of the *Promotion of Access to Information Act* in South Africa has been described as “a massive break through for human rights and accountability to the public” (New Bills Promote Transparency 2000:1). There are, however, many factors which must necessarily be in place in order for this assessment to become an accurate reflection of the significance of the Act. The preamble to the Act gives recognition to the fact that the system of government in South Africa before 27 April 1994 resulted in, among other things, “a secretive and unresponsive culture in public and private bodies which often led to an abuse of power and human rights violation”. The *Promotion of Access to Information Act* thus essentially gives effect to the constitutional right of access to any information held by the state that is required in order to exercise or protect other rights enshrined in the constitution.

In summary, the purpose of this Act is to:

Foster democracy by ensuring public access to government records and information; improve public access to government records and information; ensure official compliance with statutory time limits and maximize the usefulness of official records and information collected, maintained, used, retained and disseminated by the state.

(Access to Information Act: 2000)

As said earlier, there are many factors which must be in place in order to facilitate the use of the Promotion of Access to Information Act (2000) and to make it an accurate reflection on the significance of the Act itself. Significantly, the Promotion of Access to Information Act appears to give ordinary citizens the right to make the government, on all levels of power, accountable. The implementation of all stated goals, however, will largely depend on what resources are allocated for this purpose (Dempsey 1996:3, Roberts 1999:2, New Bills Promote Transparency, 2000:2).

Ultimately, the effectiveness of an access law depends on a professional public service that is prepared to comply with the law, even while it tests the limits of the law in daily practice (Dempsey 1996:11). Access laws will not be used if elements of civil society are incapable of acting on the information obtained through access requests. Individuals and businesses will request information about the administrative activities of government only if remedies are available for cases in which officials have acted inappropriately. In short, the access law is unlikely to be used effectively unless other steps are taken to build capacity within civil society and increase its influence over the policy-making and administrative process of government. Furthermore, implementation of the law also implies the need to have trained information officers and a mechanism in place to implement and make sure that the law is followed. In short, the implication of all these means substantial allocation of financial resources by the South African government to implement, monitor and evaluate the Information Access Policy from time to time anything short of which will make the policy a mere statement on paper or ineffectively implemented.

2.3.2 Need for an information policy (NIP)

Weingarten (1989:35) defined information policy as: “the set of all public laws, regulations and policies that encourage or regulate the creation, use, storage and communication of information.” Similarly Boon (1992:90) defined it as: “a set of guidelines for creating national infrastructure for information access, provision and use.” Two schools of thought have evolved over the years on whether or not there is

a need of having a NIP (Middleton 1997: 9-25). One school has advocated the absence of a policy while the other has stressed continuously, on the need for a NIP.

Those arguing against having a national policy on information are claiming that there are already many sectoral policies in most Less Developed Countries and institutional legislation that covers aspects of information. In Tanzania, for instance, it can be assumed that the Science and Technology Policy has certain sections which already reflect on information (United Republic of Tanzania 1996). The same is also the case with legislation establishing SNAL (United Republic of Tanzania, 1991), COSTECH (United Republic of Tanzania 1986) and Tanzanian Library Services Board (United Republic of Tanzania 1975). Those in favor of formulation of NIP argue that, although in many countries there exist constitutional acts, policies and legislation of various kinds relating in varying degree to the provision of information, the relationship which exists between issues concerning information availability and communication, information technology, information management, information confidentiality and the right to access and use of information, call for the formulation of an overall comprehensive approach to the problem in the form of NIP. Furthermore, since the context of information is so wide, it is appropriate to guide and streamline such complex and dynamic phenomenon by NIP which will define and allocate responsibilities to all concerned.

Mukangara (2001:160) in her study of information resources management for policy formulation in Tanzania found that information policy *per se* did not exist in Tanzania - "neither is there a clear structure for existing information related policies functions to be coordinated". In view of Mukangara's findings, the need for NIP to give guidance to information activities in terms of regulatory policies required for coordination, networking, resource sharing, standardization, creation and maintenance of databases should be a priority on the agenda of information specialists in Tanzania and indeed in all Less Developed Countries.

Due to the very dynamic aspects of information, it can be argued that information policy formulation is crucial in developing countries like Tanzania, where the needs are

great and the infrastructure support for information exchange and coordination of the various policies and legislation are faulty. There is a tendency to work in an unsystematic way on all of the aspects of information at once, without resources to achieve any of them effectively and efficiently. Resources are often wasted and the result is disappointing. Without NIP, little progress will be made, not only on the availability, access and use of agricultural information, but also in the overall development process of the agricultural sector.

The International Development Research Centre (IDRC) of Canada (1989) advanced six arguments for the indispensability of an information policy, which is crucial in preparing conditions for the sustainability of information systems. The same reasons could be equally relevant in preparing for the formulation of a national information policy and specifically a national agricultural information policy in Tanzania. The IDRC emphasizes that:

- *It is the practice of the many governments in the Third World countries to allocate resources on the basis of principles and directions laid down by policies. Policies are therefore tantamount to declaration by government of their intent to take development action.*
- *There is a need to have policies which establish governance over information activities, in particular regulatory policies are required for co-ordination, networking, resource sharing, data standardization, creation and maintenance of information centres, databases, etc.*
- *Policies improve the chance of locating accountability, defining institutional responsibilities and spearheading change.*
- *An information policy can energize and open up the information sector by laying down guidelines of operations.*
- *Without policies, governments cannot hope to stimulate an integrated approach to information provision or motivate co-ordination among the existing agencies.*
- *There is need to control and co-ordinate donor support and this can be done only if government shows willingness to create supportive conditions for the development of the information sector.*

(IDRC 1989:54)

From the foregoing one can argue that a strong NIP in Tanzania will lay down a criterion for resource allocation to all agricultural information providers including extension services and libraries and documentation units.

Studies by Mchombu and Miti (1992) and Zulu (1994) have also highlighted the importance of a national information policy. Mchombu and Miti (1992: 141) argue that an information policy improves the chance of obtaining resources by forcing the government to make an information sector one of its priorities and to recognize its importance in national development. Similarly, Zulu (1994) further argues that it is important to have an explicit information policy at national level. It is also very important to have clear policies at lower levels such as institutional levels.

These studies, although based on philosophical discussions, see NIP as critical to the development of an information sector in Third World countries. These countries' economies are dependent on the agricultural sector. Therefore, having an explicit national agricultural information policy could speed up the development of the agricultural sector and the improvement of the quality of lives for the majority of rural people.

Policies, however, must be operationalized. They have to be effectively implemented and monitored. As pointed out earlier in this chapter, M&E is a key component of assessing the effectiveness, the impact and, if necessary, the need to change some policy activities. The problem in many developing countries has been lack of capacity for M&E of the policies. In South Africa for instance, the Promotion of Access to Information Act (Republic of South Africa: 2000), which has already been mentioned, is one of many policies very relevant and useful to society. Lack of implementation capacity has, however, made them ineffective. Another example is the situation in the MoA of Tanzania. It has been conceded that there is no specific unit that carries out the overall policy M&E. Banda (2000:18) observed that the extension services and the planning and policy divisions had M&E units and a policy co-ordinating committee. However, none of them had the capacity of tracking down all activities contained in the policies of the agricultural sector.

2.3.3 The need for a national agricultural information policy in Less Developed Countries.

Scholars and consultants in agricultural information in Third World countries are of the opinion that a major constraint in the development of agricultural sector is lack of NIPs. They are of the opinion that NIPs would ensure availability, access and use of agricultural information for increase in agricultural productivity.

Niang (1996) in his discussion of challenges of agricultural information sector in Africa, Caribbean and Pacific (ACP) countries, pointed out that:

The key constraint is the near absence of national and/or regional policies concerning information for agricultural development or an explicit framework for action with specifically defined responsibilities.

(Niang 1996:13)

Scholars like Houten (1984:11), Alemie (1997:15), Thapisa (1997:3) have emphasized the need for NIPs in Third World countries. However, Alemie (1997), in support of Niang's observation, reiterates that Africa's present situation is characterized by:

- *Insufficient development of the national information sector in most countries and absence of formal and informal information policies*
- *Lack of adequate or ineffective framework for developing the information sector*
- *Non-recognition and little value given to library and information systems and services as evidenced by their exclusion from national plans.*

(Alemie 1997:15)

From studies done in Tanzania one can infer that a NIP is needed to give direction of operation to the information sector. Sekimang'a (1992) in her study of possibilities of formulation of a national policy on information systems and services in Tanzania, argues that:

Any comprehensive information policy must cover libraries, archives, documentation centres and statistical agencies. Others are those institutions relating to media, including radio and television, telecommunications, publishing and

cartography. To accomplish such wide coverage, a comprehensive information policy is required.
(Sekimang'a 1992:9)

Mambo (1998) in his study of computer library network in Tanzania has further argued that:

In order to encourage the application and use of information management in libraries and other government sectors, information infrastructure must first be developed. This involves, among other things, a sound information policy which will guide information acquisition and use.
(Mambo 1998:93)

Diso (1994) has summarized and presented an important condition for information to be effective in development by recommending that:

For information to play an effective role in development, its dissemination has to be organized, and governed by coherent and comprehensive policies. The absence of such policies in Nigeria, result in a chaotic information environment.
(Diso 1994:143)

Mwinyimbegu (1989:20) was of the opinion that the formulation of NIP was very unlikely in Tanzania. This, he argued, was evidenced by the inadequate budget allocated to libraries which indicated that the importance of information was far removed from priorities of policy makers, planners and the government in general. However, policy makers have to realize that, in order to make information resources and services more responsive to the economic, social and political needs, information must be carefully planned and managed.

In summary, a NIP is required to ensure the harmonious implementation and operation of information resources, services and systems like timely access and use of relevant information to meet diversified needs of users in the agricultural sector and in other sectors as well. The NIP will also ensure coordination and compatibility of the overall national information system. In Tanzania, the NIP will better the complementarity and compatibility between the various legislations concerning the provision of scientific information. Last but not least, the NIP in developing countries will create

responsiveness to the implications of new information development (this is critical in the agricultural sector) and more effective participation in regional and international information systems and networks.

2.4 The Role of Information in Agricultural Development in Less Developed Countries

This section of the review discusses the conceptual issues of “information” and “development” and their role of information in the agricultural sector of the Third World countries. Consequently, agricultural information needs are reviewed and accessibility and use of information to meet users needs are explored. Similarly, factors which negatively affect access to and use of agricultural library information services are discussed. Strategies, recommendations and suggestions by scholars and consultants in agricultural information science are presented.

2.4.1 Information concept

Information can be defined as some meaningful message transmitted from source to users for the purpose of imparting new knowledge to the users. In this process, information may be made available to users in any multimedia format because information may be organized and stored in information products and systems for the purpose of providing knowledge in numerical form, textual form, sound or image.

Kaniki (1995:14) defines “information” as: “Ideas, facts, imaginative work of the mind and data of value potentially useful in decision making, question answering, problem solving etc.” Decision making today necessitates data and information of all kinds such as social, financial, scientific and technical as well as cultural from national sources and also external sources.

Some scholars such as Faibisoff and Elly (1978) and Debons (1986) cited in Kaniki (1989:68) have defined “information” as: “Stimulus that reduces uncertainty and

whose absence makes a person aware of a need.” From their point of view, information besides solving an existing problem reduces the state of anxiety and uncertainty.

Information has further been defined simply as:

Something learnt, facts that are gathered or a measure of the content of a message. It can be argued whether it is a product, commodity, resource or process... It is closely associated with knowledge in that, once information has been assimilated, correlated and understood, it becomes knowledge.

(Keenan 1996:36)

Definitions of “information” given above and those given by other scholars like Alemna (1998:69-72) indicate one basic objective of information which is to help in solving problems and increase the level of knowledge within an individual or group of individuals. Therefore, agricultural information implies information which is or should be used by agriculturalists to increase their knowledge which they will use to improve agricultural productivity.

However, for information to be of any use, it must be relevant to the users’ needs and delivery to them must be timely to enable them solve their problems, make decisions, answer questions, and so on. In a nutshell, for information to meet its principal objective of solving a problem and increasing knowledge level, thus contributing to development, it must be available and accessible.

2.4.1.1 Information availability

Lack of availability of source documents has been identified as one of major constraints for agriculturalists, especially research scientists in developing countries (CTA 1996). The situation is attributed to several factors, among which are shortage of foreign currency to purchase primary literature, lack of adequate funds for subscriptions to scientific journals, poor cooperation among libraries and documentation units, lack of awareness of the available literature due to poor management of agricultural information and lack of trained personnel in agricultural information handling. Most

crucial of all is the generally low priority given to information-related activities and information provision in terms of budget allocation. The CTA reports that the overall size of the agricultural sector's budget in some of the eastern and southern African countries:

reveals the priority given to farming in Government thinking. The agricultural sector programmes in Kenya and Mozambique have relatively modest budgets: \$US 120 million per year (\$US4 per person) in Kenya, and \$US 40 million (\$US 2 per person) in Mozambique.
(CTA 1999:25)

The meagre sums allocated for agricultural activities mean that agricultural programmes such as agricultural delivery systems are likely to have only a limited direct impact on poverty alleviation. In some cases, agricultural information literature may be available, but resources for disseminating to users may be deficient. Given the Tanzanian situation, some research stations are located in remote areas, hence it becomes very difficult without adequate financial resources or otherwise to keep the research scientists up-to-date by making available to them the latest developments in their specialized areas of research. The information communication technologies discussed under section 2.4.2.1 and 2.4.3.4 could effectively bridge the information gap between the agriculture research zones.

2.4.1.2 The development concept

In development issues, one of the tasks is the definition of "development" as a concept, and secondly, a definition within the context that it is being used. In this study, development was used in relation and as applied to the agricultural sector of the Third World countries which includes Tanzania.

However, in attempting to define development, one soon establishes that there is a lack of consensus regarding the concept of "development". Therefore, it is unrealistic to expect any authoritative definition. Instead many writers such as Bernstein (1993), Woods (1993), Chilcote (1992), Rist (1999) and Castells (1999) point out various approaches to the definition of the concept.

According to Bernstein (1993:51), development denotes the achievement of economic and social progress by transforming conditions of underdevelopment, that is: low productivity, stagnation and poverty in countries usually designated as “poor”, “underdeveloped”, “less developed” or “developing”. Bernstein (1993) is also of the opinion that economic growth is a necessary if not sufficient condition of social progress, found in the satisfaction of availability of such basic needs as adequate nutrition, health and shelter to which can be added further conditions for a full human existence such as universal access to education, civil freedom and political participation.

However, according to Chilcote (1992), there is no generally accepted clear conception of the term “development”. Instead, there are many theoretical perspectives on what development entails. Chilcote (1992) believes that despite this pessimism, a conceptualization of the concept is possible. He lists the following definitions for development:

Webster's Third International Dictionary defines development as 'a gradual unfolding' and 'a gradual advance or growth through progressive change'. Mittelman refers to development as 'increasing capacity to make rational use of natural and human resources for social ends'. Baran reminds us that, historically, development means a 'far reaching transformation of a society's economic, social and political structure, of the dominant organization of production, distribution and consumption' and that it 'has never been a smooth harmonious process unfolding placidly over time and space.

(Chilcote 1992:616-617)

Rist (1999:8-9) also lists three definitions of development from other sources. One of the definitions he includes is from the Report of the South South Commission, under the chairmanship of the late and former Tanzanian president, Julius Nyerere, which Rist (1999) argues was supposed to sum up the aspirations of “developing” countries. It defined development as a “process which enables human beings to realize their potential, build self-confidence, and lead lives of dignity and fulfilment. It is a process

which frees people from the fear of want and exploitation”. The other definition that Rist (1999) includes is from the Human Development Report of 1991, published by the United Nations Development Programme, which states:

The basic objective of human development is to enlarge the range of people's choices to make development more democratic and participatory. These choices should include access to income and employment opportunities, education, and health and a clean and safe physical environment. Each should also have the opportunity to participate fully in community decisions and to enjoy human economic and political freedoms.

(United Nations Development Programme 1991:236)

Rist (1999) unlike Chilcote (1992) questions the validity of all these definitions. He makes the most important assertion that the most important question is whether these really are definitions. Rist bases his doubts on the notion that “development has gradually been drained of content, so that it is now a mere residue used to justify the process of globalization”. He explains the complexity of the concept of development and its inherent contradictions, in his final chapter in The history of development (Rist 1997:238-248). However, his scepticism about development does not preclude the recognition that it is up to each society to invent its own way of living a “good life” and this in no way justifies a situation in which some continue to “develop” while others have to make do with “happy poverty” on the grounds that it corresponds to their particular culture.

In the researcher's opinion, development as a concept within the context of agricultural development can no longer take the narrow goal of economic growth as its primary objective. If human needs and the quality of people's lives, are seen and approached as real goals of change, this will establish a new paradigm in the agricultural sector. It is in this respect that Woods (1993:3) argued that the mere increase of the country's GNP should not be an indicator for development. It is the development of the people, and of groups, communities and institutions that is the primary purpose of development.

Therefore, the approach which advocates the social priorities of development is an important one. This approach allows both the social and the physical objectives of development to be addressed equally. This view is supported by Menou (1993:22) who suggests that the capacity for the development is enhanced through the simultaneous cultivation of material and non-material resources. Development requires strengthening the infrastructure for cultivating physical resources such as land, and intellectual or creative resources that build human capital.

Singer (1964: 55) argued that within people, this capacity constitutes skills, education, investiveness and innovation, research and the creation of new knowledge. He considers this capacity as “the unique contribution of the human being to the production of wealth and well-being.” Meier (1984: 86) stressed further that people are the central agents of change and that development efforts should be focused on the human factor as a human capital.

When considered from the agricultural development point of view, the arguments of Singer (1964: 55), Meier (1984: 86), Woods (1993) and Menou (1993) are valid in the sense that agricultural development is for the people. Its critical role is to increase the output of both food and cash crops so as to increase the incomes, living standards and quality of the farmers' lives. Within this context agricultural development has further been defined by Idachaba (1997:3-26) as the growth of overall production and productivity in the agricultural sector. It is an increase in the agricultural production in terms of the outputs of crops, livestock, forestry, fishery and so on, where farmers are the major beneficiaries of the benefits accrued from agriculture such as: mechanization of key farming operations, net income increase for the farming majority, alleviation of poverty and the general upliftment of the quality of life of those engaged in agriculture, employment opportunities of the rural poor and new technologies. For instance, research has the historic mission of generating knowledge that leads to the generation of new technologies required for higher productivity per unit of land. Adequately adopted, the new technologies should lead to an increase in agricultural production, more income to farmers and alleviation of poverty. This is a contribution of the human being to the production of wealth and well-being. Tollini

(1995:72) argues that increases in agricultural production which leave the majority of farmers in abject poverty do not constitute agricultural development. Agricultural development, he argues, must result in the well being of those engaged in agriculture.

In general, the real critical issue of development in Third World countries is poverty. Poverty in these countries means vulnerability for the majority of people who lack the most basic necessities such as food, shelter, health care, employment, literacy promotion, access to information and agricultural sustainability. To achieve the basic human needs has been described by Kisil (1997:118) as “the process of development, a process that should be supported throughout the years for sustainability of development”.

However, the implications of the development process in developing countries which are already poverty ridden is the availability of a range of supports which include, among many other aspects:

- More public investment in physical and social infrastructure to address the basic needs in health, education, agriculture, housing and transport.
- Policies that are supportive and responsive to different needs and interests of the society. Such policies should enable individuals, communities and organizations to play an active role in identifying their problems and propose ways to deal with them.
- Adaption and adoption of appropriate technologies suitable to the existing circumstances and to solving problems. The technologies should be accessible to individuals as well as to organizations and institutions.
- Effective institutions and organizations operating at various levels for enhancement of capacities in infrastructure development, public services maintenance and use of technologies.

Nevertheless, it should be mentioned with much concern that, from mid 1980s, it has been extremely difficult for most of the developing countries to pursue a development path different from the path dictated by the World Bank and the International Monetary Fund. In addition, the development process implies major investments in all sectors

of the economy of the already poor developing countries in terms of physical and fiscal facilities.

In summary, it is evident that defining development is a difficult task given the many approaches and views to the concept. It suffices to emphasize that development concept as used in the context of agricultural sectors of the Third World countries means a process towards agricultural sustainability in those countries. Therefore, as a process it implies that mechanisms exist that reflect the improvement of quality of life for all people including those who are not directly engaged in agriculture. It also means availability, access and use of the innovative agricultural technologies by end users, that is, farmers, for improvement of agricultural production. Also, it means availability, access and use of agricultural information by user groups and other potential users as a basic need for agricultural production.

2.4.1.3 Information for development

The CTA defines information for development simply:

- *as a knowledge tool*
- *as a tool to assist decision making*
- *as a communication process, creating links between different actors.*

(CTA 1995:107)

It is conceded that information plays an important role in agricultural and rural development and as such, it is a knowledge tool for the rural community to enhance its agricultural production. However, information has not achieved successful agricultural development in most Less Developed Countries, and rural poverty still prevails. For information to increase knowledge of better farming for maximum farm yields, it must be available, relevant and accessible for use at the right time. Reasons for non-availability of relevant access and use of information to rural people and other agriculturalists have been discussed. Suffice it to say that successful agricultural development requires a well organized, adequately funded, and functional integrated information system.

Similarly, information as a tool to assist decision making can do so efficiently and effectively in Tanzania, if regional research studies provide needed knowledge to guide policy makers in taking corrective steps to narrow regional inequalities. This is essential in a country like Tanzania which has more than 20 regions and seven agricultural zones, to minimize regional inequalities and imbalances in the development process. Information is also an important input in reaching sound decisions by all users. Research must go beyond increases in agricultural production to the profitability of farming and show policy and decision makers the sensitivity of farm incomes and profits to changes in farm input costs and farm product prices.

Likewise, information for development, especially agricultural development, should be able to establish sustainable communication and linkages between main actors in the sector. For agricultural research to meet the users needs, it ought to facilitate beneficiaries, that is, farmers, to have influence in the process of technology development and transfer. No single institution can handle a whole range of problems affecting the resource-limited farmers. All institutions involved in information generation and dissemination should communicate and link so that they may jointly address the problems of the farmers.

Therefore, research-extension linkage is crucial to ensure that new technologies have an impact on farmers. Research-farmer linkage is also important, especially in Tanzania for ensuring farmers' participation in research, through farmer research groups. It is also important to ensure participation of farmers in practical field days organized in research institutes and on-farm, and representation of farmers in zonal executive committees and National Agricultural Research Committees. In this way, information is creating a communication link between the researchers, extensionists and the farmers. Thus, the generated information by researchers will have a positive impact on farmers due to their participation in the process of generating the information.

For Less Developed Countries like Tanzania, the majority of whose economies depend on agriculture, agricultural information is vital for the increase of agricultural

productivity. However, for the information to be available and accessible at the right time, information services must be given high priority in the national programmes. Modern agricultural research information systems need to be in place, to keep research and training, decision making, agricultural production and other related activities functional. Modern equipment and facilities, including information, human expertise and financial resources, must be made available to enhance provision of appropriate, timely and quality information services to agriculturalists.

2.4.2 Availability, access and use of agricultural information in Less Developed Countries

Access to information is a fundamental issue in information for development. As discussed under section 2.4.1 in this chapter, availability, accessibility and use of agricultural information and their incorporation into development strategies are seen more and more as determinants of the success of agricultural development for sustainability of both agriculture and information structure.

2.4.2.1 Access to information

Information can be available, but not accessible to users. As observed by Ogbourne and Ison (1996:21), a persistent obstacle to agricultural development in Less Developed Countries is the limited access they have to global sources of scientific and technical information. Except for the well supported libraries, most have little or no foreign exchange for purchasing journals and books and have in most cases to depend on donations or exchange arrangements, which are not adequate to satisfy user needs. Many developing countries also lack the information technology that would enable them to access and manage information resources efficiently through networks and co-operative ventures such as joint acquisition of scientific literature to avoid duplications in acquisition.

Similarly, Bellamy (1988:46) observed that access to source documents is one of the major constraints for agricultural research scientists in developing countries. She argued that missions to African countries by Commonwealth Agricultural Bureau International (CABI) staff revealed from discussions with researchers and library personnel that the situation is attributed to many factors, among which are:

- Shortage of foreign exchange to purchase primary literature
- Poor communication/liaison with and between libraries
- Scattered and un-coordinated research facilities
- Lack of awareness of and ability to use information services and resources
- Poor telecommunications precluding access to on-line hosts
- The generally low priority given to information services related activities and information provision in terms of budgets.

All the shortcomings in agricultural sectors of African countries have led to a shortage of food in the continent. It has been observed that although Africa is primarily an agricultural dependent continent, with majority of its population engaged in agricultural production, many African countries have to import food items. The food items are imported from countries with negligible labor forces such as Canada, Australia and the United States of America. The success of these countries in their food production has been linked to relevant and use of technological innovations. African countries, however, are facing an acute shortage of food and a major identified factor for this is the lack of access to, and use of appropriate agricultural information by users, that is: research scientists, policy makers, planners, extension personnel and farmers. In addition, the traditional practice of the agricultural libraries and documentation centres of regarding the researchers as the only user group of information has been another limiting factor to accessibility to information. Aina observes that:

In recent times, attention has been focused on the provision of agricultural information exclusively to researchers as is the case in most libraries in Africa. The provision of agricultural information to extension officers and farmers by agricultural libraries is neglected and this hinders accessibility to information and increased agricultural production. (Aina 1991:47)

From the aforesaid, it is apparent that areas of information needs of extension workers and farmers have to be identified, so that the training of information specialists can be adapted to supply timely and relevant information that will meet those needs. Agricultural extension officers are a link between farmers and researchers, on the one hand and between farmers and policy makers, on the other hand. Therefore, availability and accessibility to agricultural information is critical to extension personnel.

Mchombu (1996:75) also observed that in most of rural Africa, there is an acute shortage of relevant and timely information to support the efforts of the community and individuals to bring about development. In some cases, the rural communities are not even aware of their needs unless the information has a direct link with their activities such as agriculture.

Also, rural communities and extension officers lack access to relevant information due to low support of government to extension systems and programmes for communicating the information to grassroots levels. The situation is made even more critical because the majority of agricultural producers are illiterate and are operating at subsistence level.

Availability and access to relevant and current agricultural information for all agriculturalists is important in the development of the agricultural sector. Alemna (1995:81), for instance, found that in most developing countries the lack of access to current information is identified by researchers as one of the major constraints and a major cause of the lack of motivation and inability to keep up with developments and emerging trends in the field. Worst of all, funds and time were wasted through duplication and replication of work already done elsewhere. Similarly, Aina (1995:1) argues that, besides information being one of the resources required for the improvement of agricultural production, it is a resource that must be acquired and used in order to make an informed decision. He further argues that those who possess appropriate and timely information will make more rational decisions than those without.

However, access to information in general is a multidimensional concept which connotes social, economic and political powers relating between various social groups both at national and international levels. Cilliers (1994:18) also quoted in Kiondo (1998) perceived access to information as related to:

Availability of an information infrastructure which includes communication channels, delivery systems and access points, need for acquisition, processing and use of information.

Infrastructure when associated with information has been understood by many people in the information sector to be confined to the narrow area of telecommunication.

According to the National Information Infrastructure Advisory Committee of the United States of America (1995), information infrastructure includes the collection of private and public networks that exist today and will emerge tomorrow. It is technologies such as satellite which deliver content to homes, business and other public and private institutions. A national information infrastructure will also encompass information delivery channels, be they computers, telephones, radio, and so on. Finally, a national information infrastructure includes the people who will provide, manage, generate and use the information. It is therefore important to regard availability and access to information as dependent entities on many other factors.

In this respect, it has been argued by Kaniki (1992) that availability of information is not adequate to ensure its access and use. Having knowledge about the existence of information and resources is often not enough to solve any information needs if a user cannot “physically” have the resources or information required. To facilitate the physical access to information, users of information such as agricultural information users should be able to define their needs, the type of information required to satisfy their needs, how to search for the information and finally how to use it. The users should be “information literate”, which Cilliers (1994:18) defines as: “Knowledge of the required information, knowledge of where to obtain it, skills to acquire it, knowledge of the way to acquire it.”

Gorman (1983), Rosenberg (1986), Mchombu (1993) and Karelse (1994) have advised that access to information should be linked to the socio-economic and political environments of user groups. This will determine specific information needs to users in specific communities. In addition, Kularatne (1997) observed that there are some sectors in society which are better informed than others, which are more equipped with information retrieval skills and which can identify their needs and therefore the information they seek. This disparity is more visible in the Third World countries, and more so in Tanzania, where the majority of the population lives in rural areas amidst poverty, illiteracy, ignorance and unhealthy conditions. Yet the productive activities of the rural communities which evolve around agriculture constitute the backbone of the national economies of the Third World countries. This situation has, however, not gone undetected. It was declared by information specialists at the regional conference called to examine the state of information provision to rural communities that:

Access to information services is a basic human right. Governments should ensure that this right applied to all citizens especially to rural communities ... (The Gaborone Declaration 1994:143).

Although the need for equal access to information has been emphasized, there is general lack of concrete organization, coordination, implementation and, most important of all, lack of comprehensive policy/policies to back up such emphasis. In view of the situation in the Sub-Sahara Africa (SSA) region, it has been argued that:

Access to reliable resources of accurate, value-free and relevant information, although widely recognized, yet lacks organization and implementation programmes in most countries of the region.

(Pakkiri 1992:1)

At the international level, issues which relate to access to information deal more with the balance of power between the rich North and the poor South. It is argued that there is a wide information gap and therefore, inaccessibility of information between the “developed” world and the “developing countries”. Many indicators, such as literacy rate, population growth and technology, demonstrate this fact. Rada (1994) argues that:

In the information and knowledge domain, the gap is shifting from one of simple access to one of absorption,

interpretation and validation... The technical developments, like printing are democratizing access to information and knowledge. This is not occurring at the speed required in developing countries and yet the infrastructure and absorption capacity is lagging even further behind. The gap will never close. (Rada 1994:15)

However, Mbeki (1996), views the current information revolution and the “information gap” positively and as a challenge to Less Developed Countries when he states that:

the world is in the midst of a new and highly potent revolution which will forever change the way we live, work, play, organise our societies and ultimately how we define ourselves. Unlike previous technological revolutions which were focused on energy and matter, this fundamental change involves our understanding of time, space, distance and knowledge. Information technology is a universal technology - the scope and flexibility of its implications are only limited by the ingenuity of the human mind.

(Mbeki 1996:10)

The “information revolution” referred to is, in its real sense, the Information Communication Technologies (ICTs) which have presented new opportunities and posed challenges to developing countries and to information professionals in general. These countries have to develop very different mentalities and attitudes in order to adapt to the emerging and changing technologies, such as electronic editing, computer networking, computerized publishing and internet facilities.

To researchers, the advantage of ICTs is the possibility to access and disseminate scientific information and share research results more quickly, on a larger scale and in a more interactive way. Researchers are no longer limited by fewer subscriptions to scientific journals and newsletters. Electronic or digital journals are accessible on the internet. In addition, many of these journals have back issues which are available by File Transfer Protocol (FTP).

To an information specialist, the observation is that:

Librarians - whether school, university, public or specialized are certainly destined to play an evenr greater role in the

dissemination of knowledge and experience. Computerized and interconnected, they will be able to pull their resources together and provide to their clients, access to immense store of information. Moreover, they are ideally placed to serve as public gateways to information highways, providing as they do, both access and guidance and training to users They will also become increasingly involved in electronic information provision as their clientele in government, research and the general public develops ever more sophisticated needs.

(Kisil 1997:123)

In other words, information specialists should change their ways, methods and strategies of information provision. They should aim at giving value added information, that is giving the user not only what he/she requires but also that which will be of benefit to him and beyond that which he/herself as an information seeker and user can find. This calls for studies in user information needs as frequently as possible in order for the information specialists to be able to predict and update users needs.

The ICTs offer immense opportunities to all societies and individuals and offer cheaper ways of accessing and disseminating information. The agricultural zones and agricultural research stations in Tanzania are information isolated. Nevertheless, a well planned and managed ICT infrastructure can bridge the distance between them and enable them to communicate and share research findings, hold conferences and deliberate on future projects. A computer network, electronic databases, telematics, tele-conferencing, alongside television, radio and a functional telephone system, have greater potential to link the zones and remote research stations.

However, progress, management and use of the ICTs in developing countries depend on constant and heavy investment in the technologies, which include equipment, technical manpower and maintenance. In Tanzania, the adoption, management, use and sustainability of ICTs depends further on telecommunications policy reforms:

Information technology policies at any level, at national or institutional levels, influence all aspects that would be necessary in creating conditions for the sustainability of an information system and its related technology.

(Katundu 1998:39)

The central issue is that there has been a lack of implementation of telecommunications policy reforms in developing countries which has imposed limitations on access and use of information.

2.4.2.2 Factors affecting accessibility to and use of information

Strategies and recommendations for easy access to information in general, and to agricultural information in particular, have been proposed by scholars and international consultants but there is a general lack of implementation. Policies for efficient implementation of the strategies and recommendations pertaining to access and use of information are lacking. Third World countries are yet to formulate and, most importantly, implement NIPs which will give agricultural information systems a defined role in all sectors of the economy so as to be able to identify and meet diversified needs of agricultural information users, by overcoming factors which affect accessibility to information and therefore use of such information.

In his review of issues related to community information, Bunch (1987:4) identifies three factors affecting accessibility to information. These can broadly be described as:

- Lack of publicity
- Lack of awareness among users of the information which is likely to help them
- Inappropriate communication channels, or in other words, presentation of information to users in formats which they cannot understand
- Location and mobility of the users. This is mostly applicable to rural communities and researchers in Tanzania and elsewhere, who are in remote research stations. Given communication infrastructure which is not very efficient in developing countries, this user group will be affected by their location and mobility to access information

Similarly, effective use of information services by potential users is most limited by lack of awareness on the part of potential users of their need for information (Faire-Wessels 1989, Kempson 1992, Kaniki 1995). To the majority of people, especially

the agricultural community in the rural sector, the concept of information need, unless it is directly linked to their specific farming activity, is too abstract for them to comprehend (Aina 1991, and Mchombu 1993).

2.4.3 Agricultural information needs

As defined earlier, information can be thought of as a stimulus that reduces uncertainty, and whose absence makes a person aware of a need. In other words, when a user realizes a knowledge gap and decides to fulfil it, he looks for information which will fill his knowledge gap and reduce his anxiety.

However in most cases, it becomes difficult for individuals to define their information needs. It has been conceded that it is difficult to identify or predict information needs of any particular user group. This can partly be attributed to factors such as those stated by Kebede (2000) that:

- *Information needs are dynamic... therefore a study of information needs of users at a given point in time through most of the existing methods of information needs studies might not give a complete picture of information needs.*
- *Users find it difficult to understand and express them fully and as such relying on users as a sole source of data to learn about their information needs may be inappropriate.*
- *It is practically difficult to carry out information needs studies as frequently and extensively as may be required to have a comprehensive picture of these. Due to this, it is important to find out ways of learning information needs of users.*

(Kebede 2000:158)

To this end, several studies have been conducted on the information-seeking behaviour of particular groups in an attempt to identify and predict their information needs (Kaniki, 1992:84). The information needs and the information-seeking behaviour of users have been of interest to information specialists because, as Mchombu (1993) argues, these are the foundation upon which meaningful and effective information services could be based. Furthermore, information needs are a reflection of problems,

decision making situations and question answering circumstances which in effect may relate to the activities and process of development so much that if and when such information needs are met, the development is enhanced.

Several empirical studies such as those by Aina (1986), Lupanga (1986), Kaniki (1989), Ojiambo (1989), Mchombu (1993), Aina (1995), Kaniki (1995) Dulle (1997) and Kiondo (1998) were designed to assess, among other factors, the information needs of communities or special groups of information users.

In analyzing information needs, the researchers used both quantitative and qualitative methodologies. The most common methodologies used were the survey methodologies in which both structured and unstructured interviews and questionnaires were used. The advantage of these methodologies is their option of including the “critical incident approach” to information needs assessment.

Mchombu (1993) and Kaniki (1995) used the “critical incident approach”. The critical incident approach attempts to identify instances at which problems are identified or experienced by users and finds out information to meet needs for their daily activities. It is also based on the assumption that new information, knowledge or skills are useful in solving problems identified by users. The critical incident approach is further based on the assumption that the information users can accurately remember the incident and explain fully the time, the problem, the information needed to solve the problem and the relevance of the information to the particular problem. According to Flanagan (1954) and Ford (1997), the critical incident study in the library context requires users to describe the ways in which particular information problems are solved. The difficulty with this approach, as one can imagine, is the difficulty on the part of research respondents to recall critical incidences accurately.

Other researchers like Price (1992) and Sturges and Chimseu (1996) have used qualitative methodologies in the assessment of information needs of users. According to Sturges and Chimseu (1996:139), “qualitative research has the ability to be more open to the unexpected than strictly quantitative methods.” The qualitative

methodology has the advantage of finding out the quality of information users need or the users themselves can explain the activities in which they need information, and the researcher can identify the quality of information needed for the particular activity.

In the agricultural sector, researchers who often conduct research in rural areas use action-oriented and participant observation methodologies to analyze the information needs of the users and their information seeking patterns. Bulmer (1993:10-11) states that, in assessing the information needs of users such as agricultural information needs, the appropriateness of the methodology to be employed should not only be based on the nature, scope and objectives of the study, but also on its reliability and validity. An analysis of trends in agricultural information needs assessment have tended to employ qualitative methodologies.

Some information experts such as Du Plooy (1988), Horton (1983) as reported in Du Plooy (1988) and Kaniki (1995) have used Manslow's social class theory of needs to explain levels of information needs. In this respect, Du Plooy (1988:4) identifies five levels of information needs that is, coping/survival information, helping information, enlightening information and edifying information.

The theory assumes that the lowest level of needs must be satisfied before the demands on the next level are made. The agricultural information community in rural sectors needs information at the first level, that is: survival information for the increase of food crops. These people have been characterized as information poor in the sense that their access to information is limited.

From the observations above, researchers like Rosenberg (1986), Mchombu (1993) and Made (1994) have concluded that information needs relate to the characteristics of the community and that these needs reflect the users' socio-economic, cultural and political environment.

Kempson (1990) and Kaniki (1995) emphasize the need to constantly monitor the information needs of users, for the needs are not static. Therefore, information needs

assessment should be a continuous process so as to make information services relevant to the users. According to Kaniki (1995:9), information services which are not based on users' actual needs are obviously limited in terms of satisfying users' needs.

Agriculture libraries and documentation centres are key information providers in the agricultural sectors in the Third World countries, and "have always been considered important in meeting information needs of agriculturalists" (Kaniki 1989:86). However, due to difficulties in studying information needs, it is also difficult to determine the efficiency and effectiveness of agricultural libraries and documentation centres in rendering services to meet the needs of agriculturalists. Therefore, there is an urgent need to carry out agricultural information needs studies so as to establish conditions under which libraries and documentation centres can best satisfy the information needs of various agricultural information users. The pre-requisite for this is the identification of the user groups.

2.4.3.1 Agricultural user groups and their information needs

Africa is primarily an agricultural dependent continent with 64.3% of its population of 231,411,000 people engaged in farming (Aina 1991). Identification of agricultural information users in the agricultural sector will enable the information specialist to carry out user needs assessment studies so as to be able to provide relevant, appropriate and up-to-date information.

Table 2.4 summarizes agricultural user groups, their information needs and sources.

Table 2.4 Agricultural information needs of various users

User population	Information needs	Sources
Policy makers/administrators (government and private industry)	Production levels; use of resources, market outlook; state and national outlook; (perishable information)	Analyses prepared by a support staff; press clippings; management information systems; unconventional literature
Research scientists; agricultural librarians and information providers; all segments of agriculture	Research past, present, and future; rapid access to the latest findings	Scientific serial literature; conference proceedings; informal communication with colleagues; traditional library services; online search services
Diagnostic, analytical and industrial scientist; economists	Immediate access to details on new standards, techniques and procedures; patents and product details; trade information, market intelligence and outlook statements	Scientific literature, manuals, reference texts, technical reports, brief technical notes, trade journals and product specifications; online search services; unconventional literature
Specialist advisors (State Cooperative Extension Specialist)	Similar to needs of researcher; new developments and who is conducting relevant work in their specialist area	Wide range of scientific technical, and industrial sources; current research information systems, directories and specialist news-letters; subject-oriented current awareness; industry or subject reviews; outlook information; production monitoring statistical reports; direct reports from colleagues; state-of-the-art reports
General advisors: Country Cooperative Extension personnel, home economists, journalists	Practical information; factual information; current practices and happenings throughout the agricultural sector; need for up-to-date information	Personal contact with specialist advisors and other colleagues; review articles, trade publications, product specifications and materials produced by other advisors, facts sheets; potential heavy user of computerized information systems; Extension Service publication; press releases; exhibitors; project reports
Educators and students (all levels, formal and informal)	Current practices and issues; computer literacy and experience in accessing databases	Reviews; current serial literature and conference proceedings; text-books (diminishing in value due to lack of currency), Extension Service publications; computer searches
Agricultural services industries: banks, feed and fertilizer suppliers, agricultural associations, produce brokers, chemical companies, exporters, accountants, economists, and other farm consultants, agri-business and service groups	Market trends, production estimates and prospects for agricultural industries, research results, new practices and government policy; rapid access to new information is critical; data analysis and interpretation	Government agencies; information utilities providing perishable information (ie. statistics, economic indicators, and socio-logical data)
Consumers: farmers/ranchers and rural residents; general public	Integrated technical and economic information for making decisions on production, marketing and consumption; information to help them manage their lives successfully, cope with everyday problems and realize opportunities	Colleagues, friends, community leaders, other farmers, service agents, extension, rural and popular press; direct use of computerized and electronic services; videotex; libraries; radio and television presentations; demonstrations; exhibitions

Source: Frank (1987)

2.4.3.2 Information needs of farmers

The information needs of farmers are identified to be in areas of the supply of fertilizers, pests and disease control, planting materials, credit and loans. The emphasis on information needs of farmers is on “why” “who” “where” and “how” to obtain information (Aina 1985 and 1991:30). However, most farmers in African rural sectors are illiterate yet it is essential that they get information and also participate in field demonstrations. Extension work has been based, until now, on the distribution of technical packages of information. In analyzing how farmers adopt and adapt technical innovations, it has been noted that this approach is not the most appropriate. It is necessary to work much more closely with the farmers and within the framework of the farmers’ actual situation (Kapange 1996:8). It is further argued that, for farmers to adopt information, it is more appropriate to provide a range of information on technical options with descriptions of which conditions are more suitable, from which the farmer can draw.

Farmers get their information from various agricultural information providers besides extension personnel. They get information from their colleagues, village leaders and from local community meetings. It is possible for agricultural libraries to supply agricultural information to farmers. Information specialists can identify a literate member of the community and designate her or him the information gatekeeper. Other farmers will receive information from him or her on a regular basis. Information specialists have therefore to acquire multimedia skills to be able to perform, among other activities, repackaging information for farmers. Increase in agricultural productivity is highly dependent on technology transfer to farmers.

2.4.3.3. Information needs for extension personnel

Agricultural extension officers occupy a strategic position in the agricultural production cycle. Their link between the farmers and the research scientists is critical and so is their link between farmers and policy makers. Constant supply of appropriate information especially from the agricultural research programmes, will enhance the

quality of information provided to farmers, researchers, policy maker and planners. Extension personnel have to be informed on every aspect of agricultural production statistics or problems for a feedback to researchers and policy makers. Several studies have established that the information providers extension personnel use most are: colleagues, researchers, committees, farmers, libraries and documentation centres.

The problem affecting extension services in Third World countries is the inadequate number of extension officers, the inadequate ratio of agricultural extension officers and farmers and the inadequate supply of information. In the case of Tanzania, the national extension system has not identified other information providers and adequately involved them in extension work or co-ordinated their activities in order to share experiences and improve extension performance.

2.4.3.4 Information needs for researchers

Research of relevance to agricultural development goes beyond agricultural research, normally defined as including macroeconomic policy research, basic scientific research, space research and meteorology, and information research leading to new information technology (Idachaba, 1997:8). Idachaba (1997) argues that the role of agricultural research in agricultural development should be able to:

- Enhance production. Tanzania with a favorable land-man ratio in some regions can exploit existing potential land through research that increases productivity per man, that is, extensive agriculture.
- Enhance income of those engaged in agriculture. Research is not deemed to have contributed meaningfully to agricultural production if the income of the majority of small scale farmers has not increased.
- Alleviate poverty. Research in agricultural development must result in the alleviation and general upliftment of the quality of life of those engaged in agriculture.
- Maintain production. Production enhancement will have limited impact if there are significant production losses on account of disease and pests.

Research scientists therefore need information in order to carry out quality research to achieve the desired development in the agricultural sector.

It is evident that research on agriculture and related subjects is crucial for development. Such research ensures that there is an abundant, nutritious and safe food supply and, secondly, it ensures that agriculture is a successful economic enterprise and that environmentally sound practices are used in agriculture and processing of agricultural products. Information is therefore essential to researchers for developing ideas, conducting research, communicating results and making those results useful to end users.

Information is particularly valuable as researchers begin to work in unfamiliar subject areas. Researchers sometimes change their subject according to the research priorities of their institutions or donor communities, and information is essential in this process.

Timely information to researchers can also prevent duplication of efforts in agricultural research. Agricultural libraries and documentation centres' role is to make the information available and accessible for use to researchers. Having the information in the libraries and documentation centres greatly increases access to it. Informing the researchers the existence of the information makes it not only accessible but useful. Since information is a resource to be exploited, and if the organizations/institutions make use of the information, the research conducted within the country would be better, more innovative, more useful and would be adopted more quickly and more widely.

2.4.3.5 Information needs for policy makers

Information is a vital resource which a decision maker, policy maker or manager needs in order to understand issues, make plans, select strategies and set objectives to solve problems. Information is also important to policy makers to organize and co-ordinate the implementation of plans, to control and monitor results and to make decisions accordingly.

Management in every sector of the economy in every country is generally faced with the challenges of allocating resources, selecting strategies for the delivery of services and evaluating various programmes and services. To perform these tasks, information is necessary.

However, in Less Developed Countries, information critical in the decision making process is generally in short supply and is often unreliable. A shortage of data means that policy makers have much less information than they need and that what they have is often of questionable reliability.

In Tanzania, for instance, agricultural statistics are important in decision making in the agricultural sector. Inaccurate agricultural statistics may, among other things, lead to inappropriate taxation of the sector, misguide income transfer between agriculture and other sectors, create false hope or anxiety about the food security situation and export earning possibilities, and may also lead to misallocation of resources within the sector (Banda, 2000:20).

According to the same author, inaccuracy, inadequacy and inconsistency of statistics are some of the weaknesses that require one to regard with caution any aspect of the agricultural sector in Tanzania. Lack of access to reliable information to policy makers in Tanzania has been attributed to three major factors. One is the weak co-ordination among various units in the Ministry of Agriculture. Secondly, is the lack of financial resources and equipment for information collection processing and presentation to decision makers and third, is the lack of institutional capacity for monitoring and evaluating policies. The institution given the responsibility of monitoring and evaluating policies must have the capacity to set up an information system in which relevant data and information are collected, analyzed and compiled into timely reports for evaluation of the policies, their implementation strategy and their direction.

It is within the same context that Turner and Hulme (1997:32) argue that developing countries have less reliable knowledge for decision making due to lack of technical analytical capacities than are available in developed countries. In developed countries

the state institutions collect, process and analyze enormous quantities of information on the grounds that policy decisions can only be made within expert knowledge and specialized information. Although expert knowledge and analytical capacity do not necessarily mean or guarantee more successful policy decisions and outcomes, they have the potential to be of considerable assistance.

Similarly, Aina (1999:97) argues that information has been identified as a major factor responsible for the low agricultural productivity in Africa because “a decision is always made in the absence of timely and relevant information, which often results in a disastrous decision”. Aiyepoku (1982:203), in his study of information utilization by policy makers in Nigeria, found that a majority of policy makers did not use adequate, relevant and up-to-date information in making decisions. A study of agricultural policy makers in Ghana (Sam 1998:113) revealed that a majority of the policy makers depended on their past job experiences in making new decisions. It is therefore evident that in most developing countries decisions and planning are made without current and relevant information.

Information specialists like Kawasaki (1996:219), Yumba (1997:163) and Aina (1999: 96) are of the opinion that the internet may be the answer to the provision of relevant and timely information to policy makers in Africa. In Africa, agricultural institutions in many countries have connectivity to the internet which offers access to all kinds and sorts of information, in all kinds of formats. The pre-condition for the access and use of information available on the internet, however, is the skills and knowledge to access the information.

To this end, it has been recommended that information specialists should be trained on how to access the relevant web sites on the internet for the appropriate information and how to download and repackage information obtained from the internet so as to be able to present current and relevant information to policy makers. Secondly, the information specialists should take up the role of training policy makers on how to surf the internet by organizing seminars and workshops for policy makers to acquire these skills.

The implication of access to the Internet is the added financial burden to developing countries like Tanzania. As reported:

Given the fact that many agricultural information providers find it difficult to maintain a modest collection that is optimum and up-to-date, it becomes almost a dream to expect decision makers and information specialists to have access to Internet.

(Aina 1999:99)

2.4.3.6 Information needs for trainers and trainees

In agricultural research and training institutions in most of the Third World countries, for example, Tanzanian trainers are the researchers as well. Trainers impart new knowledge to trainees who will either be agriculturalists in the MoAC or work with NGO or agro-business companies. Trainers and trainees need access to relevant and current information.

The aforesaid can therefore be summed up by re-emphasizing the critical role of information in increased agricultural production. Effective generation, improved accessibility and use of the information will have a positive impact on the agricultural sector and on those who are engaged in agricultural activities. There are major agricultural information user groups which must be catered for in terms of provision of appropriate information by the different agricultural information providers.

Understanding the nature of the agricultural information needs is crucial for the information specialists to streamline their services and make them efficient and effective. Awareness of information needs of agricultural information users and potential users is important for effective organization, repackaging and dissemination of information to all users. Such awareness can be achieved by carrying out user needs assessment.

2.4.4 Problems hindering accessibility to and use of agricultural library information services in Less Developed Countries.

Several studies in agricultural information have generally revealed that the agricultural library and information systems in most Less Developed Countries are deficient in many areas. Consequently, they have not been able to rate highly in information provision to agriculturalists. Agricultural library and information system in developing countries like Tanzania, is comprised of agricultural libraries and documentation centres usually located within the research stations or centres.

The United Nations Conference on Environment and Development (UNCED) became significant to information specialists because of the attention it focused on the world stage to “information as fuel to sustainable development” (UNCED chapter 40, agenda 21, 1992). This reminded information specialists, international organizations and consultants in information science what they already know, that is, planning for sustainable development in whatever sector should be based on timely, reliable and usable information.

However, it was encouraging for UNCED to note the importance and the major constraints of agricultural information services in the Third World countries by acknowledging:

- *The importance of information to sound decision making*
- *The weak capacity of the developing countries to collect, transform and disseminate information*
- *Their need for trained information specialists, and for information technology, and*
- *The shortage of financial resources in the Third World for purchasing information products and services from abroad*

(Ogbourne and Ison 1996:18)

From the UNCED observations, the CTA, ISNAR, CABI and information specialists deliberated on the issues raised by UNCED and agreed that in developing countries there was a need to:

- Improve access to information generally at national and regional level
- Establish cooperation among agricultural libraries
- Identify training needs required for information professionals and users
- Give priorities to information management of agricultural research information
- Develop and implement information policies and plans in line with national agricultural strategies
- Carry out needs assessment and work out modalities on how to conduct the research on needs assessment of users

The above needs are some of the major hindering factors to accessibility and use of the agricultural information services. When examined individually, as in 2.4.4.1 to 2.4.4.8, it will be seen that there have been strategies and suggestions recommended by scholars and consultants in the field on how to solve them or alleviate the situation.

2.4.4.1 Improvement of access to agricultural information

The inter-disciplinary nature of agriculture has made it difficult to acquire, process and disseminate information to users. The diverse nature of the agricultural field was noted by Lancaster and Beecher (1981:198). This has consequently presented a problem to agriculturalists including information specialists. Definition of “agriculture” has become so complex that one finds it difficult to adhere to one specific definition.

Agriculture is perhaps the most interdisciplinary of all the spheres of human activity. This brings with it some special problems in the provision of effective library information services. Relevant literature is scattered through many different sources, making it difficult to identify and obtain.
(Lancaster and Beecher 1981:198)

The Southern African centre for Co-operation in Agricultural Research (SACCAR) recognized early that access to reliable information is very important in the

coordination of agricultural information and agricultural research. As observed by then:

Knowledge of and access to the results of research carried out in the past years in the region is patchy and inadequate. Poor briefing leads to poor planning, duplication of work and waste of the findings of past research. There needs to be a comprehensive round up of data on the present and past research in the region. To compile such a dossier for the SADC region is a role of SACCAR.

(Kyomo 1986:29)

To enhance access to agricultural information in the region and foster cooperation, SACCAR recommended the establishment of Southern African Agricultural Information Network (SAAINET). It was recommended that the SAAINET would be based on national agricultural information focal points designated in each country by the directors of agricultural research for each country. The focal points would acquire literature pertaining to their own countries and specializations and provide services first to their own national scientists and second to regional scientists through linkages with the other members of the network. This was one of the strategies to make agricultural research information accessible and to overcome the problem of the wide definition of agriculture.

2.4.4.2 Library cooperation

Woolston (1983:38) observed that the vast range of literature makes it impossible for one library to collect and store all that could be relevant in the field. He recommended library co-operation as a strategy in the solution of the problem. Library cooperation implies working together towards a common goal which, in the case of agricultural libraries, would be the provision of better services to users, which entails availability, access and use of the resource and sources. One of the definitions of library cooperation is:

Library cooperation is an activity in which two or more libraries, for the purpose of meeting jointly, determine library goals, voluntarily obligate themselves to share under principles of equity such services, material, financial resources and facilities as they may jointly agree to share

and which activity is governed jointly by the libraries party to the activity.

(McClarren 1981:7)

Literature on library cooperation in developing countries and specifically in Tanzania has pointed out a number of obstacles to the implementation of this particular recommendation. Newa (1979:63) mentioned the lack of union catalogues in Tanzania and East Africa as being a problem in cooperation. Ndegwa (1977:170) pointed to the lack of printed catalogues of library holdings, distance between various documentation units, poor communication and restriction of certain type of materials from circulation. The cost involved in effecting resource sharing has also been a hindrance to co-operation. Nawe (1984:376) is of the opinion that economic, political, human, professional, social and cultural factors are a stumbling block to library co-operation in Third World countries. Younis (1986:307) and Kiondo (1994:12) pointed to the lack of policy on national information systems as a major barrier to library co-operation activities.

The situation is not only peculiar to Tanzania. Otike (1989:44) suggests that, formulation of a national information policy in Kenya could improve library co-operation. He specifically states that: "the lack of national information policy in most developing countries has been responsible for the development of chaotic information system."

2.4.4.3 Lack of management skills of non-conventional (grey) literature

Van Niekerk (1985:50) defined grey literature as: "Literature not issued through the conventional commercial publication channels and which is therefore in most cases difficult to access such as reports, thesis, conference proceedings, official documents, etc." This presents a problem in agricultural information access. In agriculture and related fields like environment and rural development, a lot of grey literature is produced by research and consultancy reports. As pointed out by Kaniki (1992), agricultural research and the information generated from such research are important stimuli for accelerating agricultural production and development in a country. There

is a direct relationship between agricultural research, the utilization of such research and agricultural development. The agreement among many scholars such as Haider (1978), Adimorah (1984), and Samaha (1985) is that quality research in agricultural development demands the provision of better agricultural information to meet the information needs of both practical agriculturalists (farmers and extension personnel) and researchers. They all argue that the strength of a research system is dependent upon its capacity to create, organize and use information. Hence the statement that: "The vitality of research and development in agriculture is partly but heavily dependent upon the information services provide"(Kaniki 1989).

However, research reports are one type of unpublished reports which are underutilized by researchers and other potential users due to several reasons some of which are:

- Lack of access both intellectual and physical
- Poor bibliographic control
- Lack of awareness of such materials and their value
- Lack of information policy which clearly defines the type of unpublished material which is confidential and that which is not because confidentiality affects access to some research and consultancy reports

It has also been argued that another hindrance to the use of unpublished reports is the inadequate and poorly trained information professionals. Due to the inherent problems in unpublished reports, Aina (1991) and Kaniki (1992:87) have recommended specifically trained agricultural information professionals capable of handling the problems associated with the collection, organization, storage and use of such reports.

The problem of control of grey literature or unpublished reports led to other recommendations and the implementation of two programmes by the International Federation of Library Associations and Institutions (IFLA), namely, Universal Bibliographic Control (UBC) and Universal Availability of Publications (UAP).

It has been difficult to implement these programmes in most of the Less Developed Countries and in Tanzania in particular. Inadequate financial resources, that is, the

operational budgets allocated to libraries and documentation centres, cannot facilitate the sharing of information within the country and outside the country due to lack of equipment such as photocopier machines, fax machines and, most importantly, due to lack of computerized union catalogs.

2.4.4.4 Lack of marketing techniques

Agricultural information specialists should be proactive in publicizing their services. The traditional role in information specialists of being custodians of information has changed into that of marketing the services to users. Users and potential users must be made aware of what the libraries have to offer and of the current literature in the field. This will enhance access and use of the information in the agricultural libraries and documentation units. As Thomas (1999) argues:

As information specialists, we must reposition the customer as the centre of the information universe where the full range of service options is available for the client to select that which will meet his information needs. This means that we should be striving for a service model that is customer-centred, customizable, provides multi-model access, multi-model delivery channels and a range of client skills: the end results should captivate our customer and frustrate our competitors.

(Thomas, G. 1999 <<http://www.sabinet.co.za>)

2.4.4.5 Lack of trained information specialists

The absence of specialized training in the handling of agricultural information has been found lacking, not only in the North African region (Fassi-Fihri (1995:35) but also in Africa as a whole. Aina (1995:8) states that:

There is yet no school in Africa where agricultural information specialists can be trained, and as the majority of the people staffing agricultural libraries and documentation centres lack sufficient agriculture or related science subject background, this has consequently affected their performance.

It has been recommended that agricultural libraries should try as much as possible to recruit graduates with degrees in agriculture and allied subjects to be trained further for efficient and effective provision of agricultural information to users and potential users (Aina 1989). Thus, the efficient and effective delivery of an agricultural information system depends on the training and development of appropriate human resources. The training should include basic computing skills, information retrieval, searching skills, technical editing and publication, information marketing, user needs assessment, information repackaging and others deemed necessary in agricultural information handling and dissemination (Thapisa (1997:4). However, the implication of this means the need for more funds to attract and retain highly skilled staff.

As argued by Lavagnino *et al.*(1998:13), Librarians and information scientists today live in a rapidly changing world in which information specialists have gone from being service professionals within a predominantly manufacturing economy to being the very cornerstone of economic development. Within this change in the nature and role of information work, the understanding of what it is to do that work, to be an information specialist, has also changed. Giving an example of Graduate Schools of Library Science in the United States, the choice of new courses in the schools' curriculum is systems analysis and management as key areas for building the skills to plan for and manage the rapid changes in the library and information science profession (Lavagnino *et al.* 1998:13).

Similarly, Aina (1993) in his survey of curricula of library and information training schools in Africa to ascertain the proportion of courses relevant to what he (Aina 1993) refers to as emerging market, namely, that of non-traditional librarianship, found that until the 1980s the library schools were essentially concerned with traditional librarianship. From the 1980s, the “need to reflect the changes in the emerging market started making an impact on library schools.” The Department of Library studies, University of Ibadan, Nigeria, in 1986 broadened its name to the Department of Library, Archival and Information Studies. The Department of Library Studies of the University of Botswana followed suit in 1989 changing its name to the Department of Library and Information Studies. In Tanzania there is a school of Librarianship,

Archive and Documentation Studies. The School of information Studies for Africa (SISA) at the University of Addis Ababa was established in 1990. The products of these schools are expected to function effectively in meeting the challenges posed by the rapidly changing technology in the information sector.

The methodology used in gathering the data on the current trends in school curricula in Africa was derived from prospectuses of the schools. The methodology was supplemented by visits, interviews and observations. The shortcoming of the methodologies was the exclusion of schools offering ordinary diplomas and certificates. Such schools are many and there is a need to revisit their curriculum. In this survey, only schools having bachelor or postgraduate programmes were studied.

However, the results showed that a substantial proportion of the institutions in Africa have incorporated courses that are appropriate to the changing information environment in their curriculum such as information technology, information repackaging, information marketing, information management and systems analysis and design.

2.4.4.6 Lack of appropriate accommodation for agricultural libraries and documentation centres

There is a need to establish within the respective ministries/institutions proper and ideal premises for a well equipped library with adequate reading, storage and recreation spaces. An allowance for extra room for later renovations and incorporation for new technologies should be made.

2.4.4.7 Lack of effective national information policies

Most problems pertaining to agricultural library services and indeed to library information services as a whole in the Third World countries have been attributed to lack of/or implementation of effective national information policies. To this end, scholars in agricultural information have recommended that every country should have

a national information policy with a firm set of strategies to provide a course of action towards operationalizing the services economically, scientifically, efficiently and effectively. The strategies will be the means by which it will enable the sector to integrate the internet and other information providers into the existing services in a systematic and manageable way.

This is one of the reasons why national information policies are necessary: they will provide strategic objectives and plans of action to achieve the objectives, one of them being to assist the agricultural libraries and documentation centres to follow a clear and coherent course of action in planning the information services to users, and stay committed to that course of action. One could borrow the example of the South African policy of *Promotion of Access to Information* discussed in section 2.3.3. The *Promotion of Access to Information Act* (Republic of South Africa, 2000) reflects on how countries can legislate access to information although effectiveness of such legal instruments and their implementation is another issue.

2.4.4.8 Lack of users needs assessment

It has been conceded by some agricultural international organizations like the CTA, ISNAR and CABI that one of the most serious constraints to the development of efficient agricultural information systems is poor understanding of user needs. Scientists, managers and policy makers often have difficulty specifying exactly what information they require and therefore their access to information is at times limited.

They have recommended for user needs assessment to be carried out frequently. Information needs are most often not static. In addition, information systems design and user needs should be taken into consideration. However, as Kebede (2000:158) states, it is difficult to carry out user needs assessment as frequently and as extensively as may be required to overcome the problems associated with information needs and their changing patterns. In the agricultural sector, user needs assessment is important to determine the information required by different user groups and the format in which the information should be delivered. Again, this needs financial input.

2.5 Suggested Policies and Strategies for Agricultural Information Access and Use

Recommendations of policies and strategies for agricultural information availability, access and use were based on the assumption that there were problems in accessing and using the information. Therefore, the following policies and recommendations were identified and consolidated from the review of literature.

- (i) The studies done in agricultural information which have been reviewed indicate that there is a paucity of skilled human manpower in the agricultural library profession both at professional and technical levels.

The recommendations to this are:

- The relevant ministries, institutions and organizations should recruit staff with degrees in agriculture and allied subjects, to be trained further in agricultural information handling for efficient and effective provision of agricultural information to users and potential users.
- Less Developed Countries should introduce in the School of Library and Information Studies' curricula some aspects of agricultural information management such as database construction, scientific editing, information repackaging for extension officers, farmers and policy makers.

- (ii) Related to the above, Aina (1999:98) reports that there are only a few agricultural information specialists because there is no institution on the continent responsible for the training of agricultural information specialists.

- The recommendation is for African countries to designate one of the Schools of Library and Information Studies, as a training centre for agricultural information specialists and technicians.

This implies that the ministries, institutions and organizations work out strategies on how to retain the trained staff, especially the technicians. Since the liberation of trade in Tanzania, for instance, private sectors have come out

strongly with a capacity to employ and motivate the already trained staff from government institutions.

(iii) Agricultural libraries and documentation centres in Less Developed Countries are poorly funded, hence the inefficiency and ineffectiveness in rendering services due to lack of physical and fiscal facilities. As information is a capital input in agriculture just like land and credit facilities, the recommendation to alleviate the situation has been that:

- Developing countries should accord agricultural library information systems the priority they deserve by including agricultural libraries and documentation centres in their national plans. Agricultural libraries and documentation centres should be allocated adequate budget for purchasing equipment, materials, staff training, attending and organizing workshops and seminars and for operational costs like carrying out cooperative activities.
- Libraries being dependent entities on ministries/organizations/institutions for their resources, it is recommended that they mobilize the support of all stakeholders, particularly the parent organizations' management.
- Libraries should sensitize policy makers and management to the value and role of information by ensuring that managements' information needs are timely met. They should prove their worthiness by being proactive.

This implies more financial commitment and investment in agricultural libraries as a key information provider by the government. It also implies that the ministries, institutions and organizations, include libraries, in budget estimates, discussions and appraisal and be committed in funding the libraries' activities and functions. It also implies having trained personnel as a library managers who can prioritize the libraries's activities that need funding and who can manage effectively with meagre resources.

- (iv) Information exchange is a strong element of voluntary collaboration which distinguishes it from networking conducted among commercial enterprises. In Third World countries, library cooperation facilitates information exchange. However, as discussed in the literature review, library cooperation is lacking in most of the Third World countries, including Tanzania. To this end, it has been recommended that:

- To maximize use of the meagre information resources in agricultural libraries and documentation centres, library cooperation must be instituted, strengthened and nurtured for information availability, access and use.

This implies commitment on the part of collaborating libraries regardless of their resources, and also on the part of information specialists. Above all, it implies institutional policies, guidelines or regulations to govern the cooperative activities by respective ministries, institutions and organizations.

- (v) The economies of the Less Developed Countries are dependent upon agricultural sector. One of the imperatives of agricultural development efforts is information transfer. The concept of technology transfer in agriculture is characterized by a good information infrastructure. Such infrastructure is lacking in developing countries.

The recommendation for this has been:

- Formulation and implementation of National Information Policies which would, among other things, provide strategies, short and long term plans in agricultural information flow, and allocate responsibilities and accountability.

This implies commitment on the part of policy makers to go through the policy process, awareness of the policy makers on the fragmentation of information and their willingness to discuss the NIP process with information specialists and other stakeholders in the agricultural information sector. Most importantly, it implies that the Less Developed Countries like Tanzania should build up an institutional capacity to formulate, implement, monitor and evaluate the NIPs. Lack of implementation of the already existing information policies

in Third World countries has been attributed to lack of commitment on the part of government and lack of capacity for effective implementation, monitoring and evaluation of the policies periodically in order to determine their impact. Lastly, it implies a strong government support.

(vi) The channel of information flow between policy makers and information providers in the agricultural sector is of great importance in decision making. Timely provision of relevant and up-to-date information to policy makers in the agricultural sector is critical in rational decision making. Provision of current and timely information to policy makers in the Third World countries as said earlier, leaves a lot to be desired. Researchers in information science, international organizations such as IDRC (1989) and CTA (2000) have recommended that:

- Information specialists make use of ICTs in information search in order to present the policy makers with relevant information in different formats to choose from.
- Information specialists be trained in how to search for information in different websites on the Internet, and how to download and repackage the relevant information for users.
- Information specialists should train the policy makers in how to use the ICTs such as computer networks, databases and the internet. Seminars and workshops on ICTs' use for policy makers will create awareness of the potentials of ICTs in accessing current information for decision making.
- Libraries formulate ICT policies which could facilitate effective strategic planning and development of information technology (IT) infrastructure, lack of which has been alleged to be a major hindrance to development of information technology in Less Developed Countries.

However, this implies, among other factors, an investment in IT infrastructure in terms of equipment, manpower and sustainability. To the majority of Third World countries,

it means a financial burden on the already poor countries with other priorities in health care, sanitation, literacy promotion and development of rural sectors in general.

(vii) Agricultural information is mostly generated by research scientists and consultants in the agricultural sectors of the developing countries. However, availability, access and use of the research findings and information contained in the consultancy reports has been limited by poor bibliographic control which leads to lack of awareness of such materials and their value. It has been recommended that:

- Agricultural libraries and documentation centres should train some of the library staff in collection, organization, indexing and dissemination of the reports, usually referred to as grey literature.
- Institutional, national and regional databases for agricultural research projects be created and managed for accessibility to agriculturalists and donor community.

This implies availability of trained staff, commitment and support of parent institutions/organizations/ministries, in terms of financial resources, for regional agricultural information networks.

Related to above, any regional collaboration in agricultural information access implies standardization of hardware and software in the region such as in SADC member countries, and also equal subscriptions to the project for sustainability. In a nutshell, it implies equal partnership.

(viii) Lack of awareness of agricultural library services has been attributed to the lack of publicity of the services to users and potential users. The recommendations are:

- Information specialists should publicize the information to users. They should give the users value-added information which they can appreciate.
- Marketing of library services should include current awareness services to users.

- In order to compete successfully with the other information providers in the agricultural sector, information specialists should carry out user information needs studies so as to be able to identify users specific needs.

This implies availability of trained library staff in multimedia skills, which also implies investment in development of human resources in agricultural library information system by ministries/institutions/organizations. It further implies extra financial resources for user needs assessment.

2.6 Summary

Third World countries' economies depend mostly on agriculture, but the impact of the sector in real terms is low. Information is an essential input in the agricultural sector in order to increase productivity and sustainability. The need for information by agriculturalists such as researchers, policy makers, farmers and extension officers has been established by empirical studies which have also established the users' information seeking patterns. Availability of information is not, however, adequate to bring about changes, but accessibility and use of the information is a critical element in agricultural productivity. Accessibility to information is dependent, among many other factors, upon the knowledge and skills of users to be able to identify, retrieve and use the information to enhance their knowledge in their daily activities, and on the qualifications and expertise of information specialists to deliver the information in the desired formats.

Agricultural libraries and documentation centres as one of agricultural information providers are expected to make information available to all agricultural information users in the desired formats. However, it is argued that the libraries and documentation centres rarely get the attention, recognition and priority in many Less Developed Countries' national development plans, hence their inability to render satisfactory services. This is evidenced by many factors, among which are inadequate budget allocation, lack of adequate trained agricultural information specialists and low status accorded to information specialists compared to their counterparts in other sectors.

Consequently, the agricultural library information infrastructure in most developing countries is weak and agricultural libraries and documentation centres have not been given a defined role in the agricultural sector.

Recommendations from scholars and international consultants to alleviate the situation include, among many others, a formulation and implementation of NIPs. However, there has been a general lack of implementation of the recommendations. A national information policy will be a statement of intent on the part of governments which will integrate an information network of personnel, standardization of hard and software, and data practices aimed at supporting efficiency and effectiveness in the information sector. It will provide guidelines for agricultural libraries and research and documentation centres for coordination of their activities for better use of their limited resources.

CHAPTER 3

RESEARCH METHODOLOGY AND DATA COLLECTION

3.1 Introduction

The main purpose of this study was to determine the extent to which agricultural libraries and documentation centres in Tanzania have implemented policies, strategies and recommendations made by scholars and international consultants to improve their services. The study aimed at finding out the capacity of libraries and documentation centres in Tanzania to implement the policies and strategies.

Furthermore, the study intended to find out the factors which have hindered the implementation of policies, strategies and recommendations for improvement of agricultural library services in Tanzania, and the extent to which implementation or lack of implementation of policies, strategies and recommendations have affected the libraries and documentation centres. It was assumed that by studying these issues, factors which have hindered implementation would be identified and further recommendations would be made on how to solve the problems pertaining to implementation of policies, recommendations and strategies for improvement of agricultural library information system in Tanzania.

This study was considered significant because there has not been an empirical study on agricultural library information system in Tanzania. The other important issue is the fact that policies, strategies, and recommendations have in the past been advanced for improvement of agricultural libraries in Less Developed Countries like Tanzania but few, if any, have been implemented. The specific objectives of the study were therefore:

- To identify, consolidate and generate "a list" of key policies, strategies, recommendations and suggestions made by various scholars, consultants and other bodies aimed at improving accessibility to, and use of, agricultural information in general, and specifically to improve use of agricultural library services in Tanzania.
- To establish the extent to which Tanzania has implemented the policies, strategies and recommendations identified above.
- To assess the capacity of agricultural libraries and documentation centres in Tanzania to implement the strategies and recommendations for agricultural information availability, access and use.
- To assess the impact of implementation of the policies and strategies or lack of implementation where there has been none.
- To identify factors which have hindered the implementation of the strategies and recommendations in Tanzania.
- To make suggestions on how to improve the mechanisms involved in implementing the policies, strategies and recommendations for improvement of agricultural libraries and documentation centres in Tanzania.

3.2 Research design

According to Selltitz *et al*; (1976:90) a research design involves:

The arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose as economically as possible. A research design should provide a plan that specifies how the research is going to be executed in such a way that it answers the research questions .

Kothari (1991:41) argues that a research design which yields maximum information and provides an opportunity for considering many different aspects of a problem is considered the most appropriate and efficient design in respect of many research problems. Such a research design involves consideration of the following factors:

- the means of obtaining information,
- the skills of the researcher and his assistants,
- the objectives or the problem to be studied, and
- the availability of time and money for the research work.

Powell (1992:54) re-emphasises the points raised by Kothari (1991:41) when he states that, "In the process of considering the selection of a research methodology, the researcher must keep in mind the sources of a desired information, the type and nature of the data to be collected and objectives of the study".

In addition, Durrheim (1999:29) simply defines a research design as a "strategic framework for action that serves as a bridge between research questions and the execution or implementation of the research".

From definitions of a "research design" given by the authors mentioned above, the research purpose, objectives and research questions in this study determined the type of the research design, which would achieve the desired results.

Due to the nature of the purpose and objectives of the study the survey method was considered the most appropriate for the study. Busha and Harter (1980:62) concur that survey research is capable of collecting background information and hard-to-find data and the researcher therefore would not have the opportunity to influence the respondents' answers. On the other hand, Sproull (1995:30) recommended the survey technique as being appropriate especially when attitudes, ideas, comments and public opinion on an existing problem or issue are being studied. The survey method is also viewed as the best means of gathering information that describes the nature of the extent of a specific set of data ranging from physical counts and frequencies to attitudes and opinions (Moser and Kalton (1971), Marcus *et.al.* (1982), and Smit (1995). This

study in many ways dealt with counting physical items and finding out attitudes and opinions of policy makers on the agricultural library information system.

Therefore the survey method was found appropriate by the researcher. It enabled her collect data from all agricultural libraries and documentation centres which are geographically scattered in Tanzania and are under different organizations and institutions. Furthermore, the survey method was appropriate to the researcher for finding out the attitudes, opinions and views of decision and policy makers on agricultural library information systems in Tanzania. The selection of the decision and policy makers for the interview was based on one basic criteria, that is, their strategic managerial positions for initiating policy, its formulation and implementation within the agricultural sector. In accordance to the research design which has been discussed above, a variety of research instruments for data collection was used. These are discussed below.

3.2.1 Data collection instruments

A self administered questionnaire was chosen as the main data collection instrument. This was supplemented by on site observations of the actual status of the agricultural libraries and documentation centres in Tanzania. In addition, interviews with policy and decision makers in the agricultural sector were considered important to clarify issues on the status of agricultural libraries, documentation centres and the value attached to them by the government as one of the agricultural information delivery systems. The interviews were also intended to find out from the policy makers, the possibilities of formulating a NIP which would incorporate the agricultural information sector.

Use of documentary sources was also found crucial hence the review of related literature on the problem prior to the administration of the research instruments. The study used more than one survey method, which Ford (1977:58) and Goldhor (1972:79) conveniently divided as data collection methods, namely, questionnaire, observations and available records or documentary sources. The study used what has been referred to as "triangulation method" (Leedy, 1980) where more than one survey method is used.

3.2.1.1 The questionnaire

The self-administered questionnaire was chosen as the main data collection instrument due to its many advantages for this kind of study. Compared to other types of instruments, a questionnaire allows wide geographical contact. This was to the advantage of the researcher who had to cover a wide area of the country within a period of seven months. As indicated in Chapter 2, Tanzania is a big country with a total of 942,000 square kilometres (United Republic of Tanzania 1999) and is divided into seven agricultural zones namely: Northern, Eastern, Central, Western, Lake, Southern Highland and Southern Zone. As described in 3.4 in this chapter, that is, the section dealing with study population, the researcher considered it necessary to cover the whole Tanzanian Mainland. Consequently, the questionnaire provides an opportunity for collecting large amounts of data and information in a relatively short period (Powell 1991:90). Another advantage of the questionnaire is that it gives respondents a feeling of anonymity which encourages openness and minimises interview bias. In addition, respondents are not influenced by the researcher. Moreover, self-administered questionnaires appear identical to all respondents although, of course, interpretation among respondents may differ. The choice of a questionnaire in this study was also influenced by the type of personnel who would complete it. The questionnaire was to be filled in by a literate population, some holding managerial positions. The researcher's assumption was that the questionnaire would be understood by the target group and all sections would be filled in with correct information, to meet the purpose and objectives of the study.

3.2.1.2 Design of the questionnaire

There are two types of questionnaire formats: structured and unstructured formats. The study used a combination of both although De Vaus (1986:154) is of the opinion that the unstructured questionnaire allows respondents to answer freely. However, Line (1982) maintains that a combination of both structured and unstructured questions has an advantage in increasing the reliability of the responses. He alludes that:

The use of structured and unstructured questions in combination, is well established as a method of obtaining

data, and is believed to increase the reliability of the responses.

(Line 1982:62-63)

Nevertheless, structured and unstructured questionnaires have their own disadvantages and advantages. Unstructured questionnaires are likely to be less reliable, yield a low response rate, sometimes questions are misunderstood, and responses given by respondents are final and cannot be verified. Moreover, unstructured questionnaires are time-consuming in data analysis. Structured questionnaires are not free from errors either. Structured questionnaires may not be exhaustive and, worse of all, the respondents may choose the answer which suits them. In this study, the decision of the choice of a highly structured questionnaire outweighed that of an unstructured questionnaire. The researcher's confidence was based on the pilot study (or pre-testing of the questionnaire) before administering it to validate it and increase its reliability.

However, the researcher adopted the triangulation method mentioned in 3.2.1. to supplement the questionnaire which was based on the research questions, namely:

- What key policies, strategies, recommendations and suggestions have been advanced in order to improve access and use of agricultural library services?
- How far has Tanzania implemented the policies, strategies, recommendations and suggestions identified above?
- What is the capacity of the agricultural library system in Tanzania to implement the policies, strategies and recommendation?.
- In which ways has the implementation or lack of implementation of the policies, strategies and recommendations affected agricultural libraries and documentation centres in Tanzania?.
- What factors have hindered the implementation of the policies, strategies and recommendations in Tanzania?

The questionnaire (Appendix B1) was structured according to the following order:

Part I of the questionnaire

(Items 1-22)

This section collected factual data about libraries, their capacity in terms of manpower and financial resources, staff qualifications, libraries' training programmes, the priority training areas for the staff and the need to include agricultural information- handling in the curricula of schools of Library and Information Studies in Tanzania.

Part II of the questionnaire

(Items 25-34)

This section aimed at gathering data to deal with the extent to which libraries have implemented one of the oldest recommendations: that is, resource sharing and cooperation, the cooperation of agricultural libraries and documentation centres with the National Agricultural Library, the problems encountered in cooperation and the type of materials received from agricultural organizations such as the CTA.

Part III of the questionnaire

(Items 35-42)

This section was intended to provide detailed information on the libraries' and documentation centres' implementation of two recommendations, that of knowing the user needs, and that of giving the user not only the relevant information she needs but also that of which she is not aware but which is of value to her. Secondly, the section was meant to find out the extent to which the libraries and documentation centres publicise their services to users (current awareness services) and their knowledge of the users and their diversified needs. In addition, the section was aimed at finding out the main activities of agricultural libraries and documentation centres rendered to users and their accessibility to the internet facilities.

Part IV of the questionnaire

(Items 43-58)

The section intended to find out the infrastructure of the libraries and documentation units, their awareness of any policy, strategies or suggestions recommended for the

improvement of the services, their participation in decision making at institutional level, problems prominent to agricultural libraries and documentation centres and how they can be addressed.

The questionnaire targeted the heads or deputy heads of the libraries or documentation centres for completion. This is because, as Kidder *et.al.* (1986:22) observed, a self-administered questionnaire is a valuable data collection instrument especially from a population that is literate and reasonably able to deal with items contained in the questionnaire. In this study, the heads/ deputy heads/chief librarians/directors/officers of agricultural libraries and documentation centres in Tanzania were considered literate and sufficiently "professional" to fill in the questionnaire. Furthermore, the choice of the heads of the libraries and documentation centres as respondents to the questionnaire was important in this study because, in policy process, the targeted respondents are supposedly initiators of agricultural information policy. They hold responsible management positions which enable them to identify the problems which such a policy could alleviate in agricultural information flow and use in the sector.

3.2.1.3 The interview schedule

Face-to-face interviews with policy and decision makers in the Tanzanian agricultural sector were adopted to get their views, opinions and suggestions on the entire perspective of the functioning of agricultural library system and the possibilities of having a national information policy in place to strengthen the agricultural information infrastructure. An interview schedule (Appendix B2) was used to guide the interview.

According to Van Vuuren and Maree (1999:269), face-to-face interviews have more advantages than disadvantages. In-depth information can be derived from semi-structured interviews by probing. Respondents/interviewees can ask for clarification in case of ambiguous questions. Interviews normally have a high response rate. However, the major disadvantage as experienced in this study is the time element on the part of the interviewees. The interview schedule in this study comprised of five general issues:

One: The policy makers' opinion on the allegations concerning the ineffectiveness of agricultural libraries and documentation centres in Less Developed Countries and indeed in Tanzania, as one of the key providers of agricultural information.

Two: The awareness of the policy and decision makers of the potentials of the agricultural libraries' and documentation centres' resources in the development of agricultural sector in the country.

Three: Solutions to the problems (if they agreed that there are problems) affecting the effectiveness and the efficiency of the agricultural library systems in Tanzania.

Four: Possibilities of instituting/formulating a NIP in Tanzania to give direction to libraries, agricultural documentation centres and other information providers in dissemination of agricultural information for enhancement and sustainability of development in the agricultural sector.

Five: How the agricultural libraries and documentation centres have featured in the MoA's strategic plan for 1999-2004.

Six: The importance of agricultural libraries and documentation units in repackaging and disseminating agricultural information in Tanzania.

3.2.1.4 The observation methodology

This was adopted in the data collection to compliment the self-administered questionnaire. There are many options within this type of data collection (Creswell 1994:150). The option taken by the researcher was that of a "complete observer" that is, observing without participating. To guide the collection of observable data the researcher used a checklist (Appendix B3). This was useful in exploring topics which were not covered by the questionnaire and which could have been uncomfortable for questionnaire respondents to discuss, such as the actual library collection, the user statistics, the qualifications of the head/administrator of the library or the documentation centre, and the overall appearance of the library or documentation centre and the availability of other essential facilities.

3.2.1.5 The documentary sources

The documentary sources in this study included mainly the review of related literature on agricultural libraries and documentation centres in the Third World countries. The literature reviewed the research done from the late 1980's on agricultural information in Africa some which are doctoral and masters degrees like those by Aina (1986), Lupanga (1986), Wambura (1988), Kaniki (1989), Ojiambo (1989) and Dulle (1997).

Proceedings of workshops and seminars on agricultural information held by local, regional and international organizations on agriculture research and agricultural information organization and dissemination proved to be resourceful in identifying key strategies, recommendations and suggestions for improvement of access and use of agricultural library services. Opinions of several authors who have argued for the formulation and implementation of NIP as a solution to the fragmented agricultural information in the Third World Countries were studied. Consequently, the literature review explored the role of information policy in facilitating access and use of agricultural information and how it could be applicable to Tanzania. Such a policy would, among other things, be a guide for agricultural information acquisition, processing, sharing, storing, repackaging and dissemination in all economic sectors.

The documentary sources also included the MoAC reports and policies, consultancy reports in the agricultural sector and other institutional reports such as the Science and Technology Policy of Tanzania, the Tanzania Educational Policy and the Sokoine University of Agriculture publications.

In addition, the literature attempted to explain how information relates to development, reflecting on Stolper's book, "Planning without facts" (Stolper 1966), which made the dramatic allegation that the development of Nigeria was being done blindfolded. What the author actually meant was that the "planners had little notion to what they were actually doing. The grandiose plans were formulated on the basis of an extremely fragile and often threadbare information base".

Regardless of the time factor of the arguments put forward by Stolper (1966) more than thirty years ago, the relationship between development and information has rarely been given serious discussion. Nevertheless, as Sturges and Neill (1990:42) report: "The information is an important ingredient in decision making and planning and one that, until fairly soon, has been neglected in the discussions". Whereas information is regarded as the most important commodity for decision making and planning in advanced capitalist nations, in developing countries' environment, availability, access, and use of timely and relevant information for decision making leaves much to be desired. Neuman and Franzen (1994:64) and Turner and Hulmer (1997:31) cite poor information infrastructure as being the most distinguishing characteristic of developing countries, and therefore the major stumbling block to accessibility to information for planning and decision making. For instance Neuman and Franzen (1994) observed that:

Poor communication facilities are general bottleneck for access and dissemination of information in many parts of Africa. Telephone connections, postal services as well as the availability of a regular electricity supply for computers are common features.
(Neuman and Franzen 1994:64)

The disadvantages of the documentary sources as observed by Bailey (1979:269), are that they tend to be incomplete, inconsistent and often not relevant to the context of the study. Therefore the documentary sources were not adequate on their own in providing answers to all research questions posed in the study.

3.3 Pre-testing the Research Instruments

Research instruments, like questionnaires, require testing. This is done to make sure that they are valid, reliable and, most of all clear. The researcher conducted a trial run of the questionnaire on colleagues to see if it was valid and free of errors.

3.3.1 The research questionnaire

The draft of the research questionnaire was developed with consultation with the major supervisor. The questionnaire was highly structured and in order to eliminate errors in

the questionnaire design, the questionnaire was tested on the following personnel; three members of teaching staff at the Information Studies Programme, School of Human and Social Studies- University of Natal, two masters degree students at the same department and the subject librarian at the University of Natal Pietermaritzburg campus library. This was done in December 1999, and their comments were valuable input in the reworking of the questionnaire. The initial questionnaire was 26 pages and the researcher was advised to bind it before mailing it to the target group so as to ensure that some of the pages did not come loose. According to Belian (1982:90) and Line (1982:47) a "trial run" or a pilot study in any research is important because it can show up the shortcomings and undetected errors. The pilot study was conducted on a small group of ten professional and para-professional staff at Sokoine National Agricultural Library, Tanzania, in January 2000.

The survey research was done between the months of February and August 2000. The survey was carried out concurrently with the interviews. Some of the policy and decision makers including those at the Ministry of Agriculture and Co-operatives and Heads of Research Institutions were available for interview at the same time. This saved the researcher's time .

3.4. Study population

A study population can be defined as a set or objects that have at least one characteristic in common (Busha and Harter (1980:57). The population of this study consisted of all agricultural libraries and research and documentation centres in Tanzania which had a book and document collection as a common characteristic.

Scholars in research methodology such as Glazier and Powell (1992) concede that the size of sample should be neither excessively large nor too small. An optimal sample is one, which fulfils the requirements of efficiency, representativeness, reliability and flexibility. The agricultural libraries and documentation centres in Tanzania, which were functional, numbered 37 (SNAL (1997). When studies involve small number of people, all of them can be included in the study. WHO (1990:11-12), De Vaus (1986:52) and Anderson (1987:148) refer to the collection of data from all elements of

population as a census. Therefore, for this study, all agricultural libraries and documentation centres that were functional were included (Map 1)

3.5 Administration of Research Instruments

Research instruments, like questionnaires, require testing. This is done to make sure that they are valid and reliable and, most of all, clear. The researcher conducted a pilot study on professional and para-professional colleagues so as to validate the questionnaire.

3.5.1 The self-administered questionnaire

The list and addresses of agricultural libraries and documentation centres were obtained from MAC and SNAL.(Appendix C1) The researcher had introductory letters from both the Director, Department of Information Studies, University of Natal and from the SNAL Director, Sokoine University of Agriculture, Morogoro Tanzania (Appendices A1 and A2). In addition, the researcher wrote a covering letter to the respondents of the questionnaire (Appendix A3). The researcher had two research assistants to cover Central, Lake and Eastern Zones. The assistants were given a two-day seminar on the administration of the questionnaires, observations and interviews. A minimum of 22 days was spent collecting data in each of the following zones: Eastern, Northern and Western Zones. A minimum of 15 days was spent in questionnaire administration, interviews and observations in Central, Lake and Southern Highland Zones. The Southern Zone was not visited because there is only one notable documentation unit. It was considered cost-effective to post the questionnaire and the interview schedule by Express Mail Services (EMS). The postage was done in mid-May 2000, and both the questionnaire and the interview schedule were mailed back to the researcher within one month from date of posted. Therefore, observations were not done in the Southern Zone. The respondents had adequate time to complete the questionnaire either during office hours or in their own time as overtime. A total number of 37 questionnaires were administered and the response rate was 84%. Two libraries did not respond despite several follow-ups with letters and telephone calls. One documentation centre had closed down.

3.5.2 The interview schedule

The criteria for the selection of the policy and decision makers in the agricultural sector were based on the strategic managerial position of the interviewees. The following officers were interviewed: six heads of research and training institutions, six library officers/directors/librarians and six high ranking officers at the MoAC. An interview schedule (Appendix B2) was used.

The appointment for the interviews were made one week prior to the interview but in most cases the interview time and date were not adhered to. Some interviewees requested the questions earmarked for discussion before the interview and some requested anonymity. The maximum time allocated for interviews was 40 minutes, but in most cases the discussions went on for more than one hour.

3.5.3 The observations

This method was adopted to complement the questionnaire. Some documentation centres were managed by untrained personnel in the LIS field. In this case, the head of the research station would have found it proper to give the questionnaire to one of the researchers to complete. The questionnaire was to be completed by the intended respondent, that is, the officer in charge of the library or documentation centre. Other things observed were: the location of the library or the documentation centre within the research station, directional posters, user statistics, library collection, number of library staff, organization of the collection and size of the library building and space for library staff, collection and users. Notes were discreetly taken on each of the point on the checklist (Appendix B3).

3.6 Data Analysis

The study used a survey method for data collection. A highly structured questionnaire was administered to 37 agricultural libraries and documentation centres. The response rate subjected to analysis were 34 questionnaires, an equivalent of 84% of all responses. An interview protocol was used for information gathering from heads of

libraries, agricultural institutions and policy makers from MoA in Tanzania. In addition, observations were carried out to supplement the deficiencies that were anticipated to arise from the self-administered questionnaires, such as not being exhaustive, and respondents choosing the answer that suited them.

The process of data analysis as Tesch (1990), quoted in Cresswell (1994:153) states: “is eclectic. There is no right way of doing it. Metaphors and analogies are as appropriate as open-ended questions”. The most important issue is that data analysis requires the researcher to be comfortable with developing categories and making comparisons and contrasts. It also requires the researcher to be open to possibilities and see contrary or alternative explanations for the findings. Furthermore:

The data generated by qualitative methods are voluminous. I have found no way of preparing students for the sheer massive volumes of information with which they will find themselves confronted when data collection has ended. Sitting down to make sense out of pages of interviews and whole files of field notes can be overwhelming.
(Patton 1980:297)

This situation manifested itself in this study, especially in the interviews, because the agricultural sector is wide and has captured the interest of many people, to the extent that it becomes difficult to narrow one’s discussion to one issue only. However, as already pointed out, the advantage of face-to-face interviews gives the researcher opportunities to probe, clarify the question and steer the discussion on the right path.

3.6.1 Analysis of data from the questionnaire

The data collected by the self-administered questionnaire was analyzed by using both qualitative and quantitative methods of data analysis. The Statistical Product and Service Solution (SPSS) formerly known as Statistical Package for Social Sciences (SPSS) for Windows version 9.0, was used to analyze quantitative and qualitative data.

The first step that was taken during quantitative analysis was the preparation of the variables to present them in a form suitable for addressing the research questions. Preparation of variables involved coding which was done numerically and which were

related to the survey instrument. Measures of central tendencies and dispersion were employed to explore the data for distribution of responses. Each question on the questionnaire was subjected to statistical analysis to provide a range of distribution of replies, the existence of concentration of central tendency in those replies and the shape of distribution or the extent to which replies were clustered around a central point. Most of the analysis was descriptive analysis.

According to Gay (1981:283), measures of central tendency give the researcher a convenient way of describing a set of data with a single number which represents the average score attained by a group of subjects. The three most used measures of central tendency in this study were the mode, the medium and the mean. All these were used in this study for nominal data, ordinal data and ratio.

3.6.2 Analysis of data from interviews

The interview protocol in this study included a heading, instruction to the interviewee's comments, the key questions, space for the researcher to record the interviewee's comments and also space in which the researcher recorded reflective notes. Meaningful data had to be extracted from the interviews for analysis. In this study, content analysis was applicable to such data.

According to Powell (1992:49), content analysis is the systematic, objective and quantitative analysis of the occurrences of words, phrases concepts and the like, so as to be able to analyse the expressed content, that is, the inferences from the communication. The author (Powell 1992:49) further suggests that the researcher should identify the unit of analysis so as to be able to identify, define and decide on a unit as word, sentence, paragraph or theme.

Content analysis also involves the creation or identification of mutually exclusive categories. By using the unit of analysis, the coding and tabulation of data could be made for subsequent analysis. Therefore, the most important aspect of content analysis is the categorization, that is, the way data can be arranged into categories which should

be able to provide descriptive information relevant to the problem addressed by the study.

Content analysis was considered appropriate for the responses from the interviewees. Content analysis of the responses was based on the following themes with the same properties, that is:

- Level of awareness of policy makers on the potential of agricultural libraries and documentation centres in providing agricultural information to agriculturalists.
- Prioritization of agricultural libraries and documentation centres in Tanzanian national plans.
- Problems pertaining to agricultural/research institutions' libraries.
- Formulation of NIP as a solution to the uncoordinated agricultural information dissemination in Tanzania.
- Importance of agricultural libraries and documentation centres in agricultural information acquisition, processing and repackaging in the sector.
- Suggestions for improvement of agricultural libraries and documentation centres in Tanzania.

As Holsti (1969:259) stated, the theme approach is the most useful unit analysis as it can be easily identified in the texts, especially in a text with uncomplicated sentences and paragraphs. In this study, the categorized data from the themes was analyzed and presented in the form of descriptive statistics.

3.6.3 Analysis of data from observations

The data gathered by this method was categorized for content analysis. Content analysis from observations was related both to the problem under investigation and to the

research questions. Content analysis of the observations was based on the following themes: external appearance of the library building, the space and the users' sitting capacity within the library, posters and other directional signs, user statistics and guide to library use. The use of different statistical treatments in the analysis of data responses was employed as shown in Chapter 4.

3.7 Summary

The chapter discussed the methodology used in data collection. The survey research method involved a self-administered questionnaire, which was supplemented by observations and interviews. The choice of the research instruments was determined by the nature of the problem under investigation, research objectives and research questions formulated to guide the study. The questionnaire was highly structured, which entailed a lot of editing and a trial run to eradicate unforeseen errors. The interview schedule was comprised mostly of unstructured questions. The time-frame for the research was seven months, that is, February to 24th August 2000.

Data collected was analyzed by using both qualitative and quantitative methods of data analysis. The statistical Product and Service Solution (SPSS+ 9.0) was used to analyze the data from the self-administered questionnaire, while content analysis was used for analysing data from interviews and observations. Research findings are presented in Chapter 4.

CHAPTER 4

PRESENTATION OF RESEARCH FINDINGS AND DATA ANALYSIS

4.1 Introduction

The main purpose of this chapter is to present the analysis of data obtained from the survey. The chapter not only presents the results from analysis of raw data, but also brings together related questions and items. This has been done in order to facilitate the analysis and organization of data into meaningful formats and identify relationships among the variables. Discussion and implications of findings are presented in Chapter Five.

The Statistical Product and Service Solutions (SPSS version 9.0 for windows) was used to facilitate the analysis of the data obtained from the respondents of the self-administered questionnaire. Content analysis method was used in the analysis of data obtained from the interviews and observations. In situations where some questions required explanations, brief discussions of the respondents' answers and explanations have been given so as to make the analysis relevant to the study and to minimize the number of tables, graphs and charts.

The main aim of this study, as already stated in earlier Chapters, was to identify key policies, strategies and recommendations made by scholars, consultants and other bodies aimed at improving accessibility to and use of agricultural information in general and specifically that of agricultural libraries and documentation centres. Secondly, the study aimed at establishing the extent to which Tanzania has implemented the strategies and recommendations, and to assess the capacity of the agricultural libraries and documentation centres to do so.

In line with the aforementioned objectives, a survey of 37 agricultural libraries and documentation centres was conducted to collect the data necessary to find answers to the following specific research questions:

- What key policies, strategies, recommendations and suggestions have been advanced to improve access and use of agricultural library services and have the strategies, recommendations and suggestions been translated into policies or legislation in Tanzania?
- How far has Tanzania implemented the policies, strategies and recommendations mentioned above?
- What is the capacity of the agricultural library system in Tanzania to implement the identified policies, strategies and recommendations?
- In which ways has the implementation or lack of implementation of the policies, strategies, recommendations and suggestions affected agricultural libraries and documentation centres in Tanzania?
- What factors have hindered the implementation of the strategies and recommendations in Tanzania?

In order to collect the necessary data to provide answers to the research questions, the following research instruments were used:

- Documentary sources, that is, the review of related literature to answer the first research question
- A self-administered questionnaire
- An interview schedule
- An observation schedule

A total number of 37 questionnaires were administered to the agricultural libraries and documentation centres in the following ministries, institutions and organizations:

1. Pasiansi Wildlife Training Institute, Mwanza.
2. Selian Agricultural Research Institute, Arusha.
3. Co-operative College, Moshi.
4. Livestock Training Institute, Morogoro.
5. Livestock Production Research Institute, Mpwapwa, Dodoma.
6. Livestock Training Institute, Mpwapwa, Dodoma.
7. Livestock Research Centre, Tanga.
8. Veterinary Investigation Centre, Tabora.
9. Agricultural Research Institute, Mlingano, Tanga
10. Agricultural Research Institute, Mtwara.
11. Agricultural Research Institute, Hombolo, Dodoma.
12. Livestock Training Institute, Buhuri, Tanga.
13. Agricultural Training Institute, Mlingano, Tanga.
14. National Environmental Management Council, Dar es Salaam.
15. Ukiriguru Agricultural Research, Mwanza.
16. Beekeeping Training Institute, Tabora.
17. Agricultural Research Centre, (Kifyulilo Tea Farm), Mufindi Iringa.
18. Tsetse and Trypanosomiasis Research Institute, Tanga.
19. College of African Wildlife Management, Moshi.
20. Makutupora Viticultural Research Centre, Dodoma.
21. Veterinary Investigation Centre, Iringa.
22. Veterinary Investigation Centre, Mpwapwa, Dodoma.
23. Tanzania Pesticide Research Institute, Arusha.
24. Agricultural Training Institute, Tengeru, Arusha.
25. Tanzania Commission for Science and Technology, Dar es Salaam.
26. Horticulture Research Institute, Tengeru, Arusha.
27. Tanzania Forestry Research Institute, Morogoro.
28. Tanzania Bureau of Standard, Dar es Salaam.
29. Lyamungu Agricultural Research Centre, Moshi.
30. Tanzania Food and Nutrition Centre, Dar es Salaam.
31. Kunduchi Fisheries Research and Training Institute, Dar es Salaam.
32. Ministry of Agriculture, Livestock Development and Cooperatives, Dar es Salaam.

33. Mbegani Fisheries Development Centre, Bagamoyo.
34. Agriculture Training Institute Library, Ukiriguru, Mwanza.
35. Uyole Agricultural Research and Training Centre, Mbeya.
36. Sokoine National Agricultural Library, SUA, Morogoro.
37. Agricultural Research and Training Institute, Ilonga, Morogoro.

Of the 37 copies of the questionnaire administered, 34 responses were completed and collected or posted to the researcher. This was an 84% response rate. Addresses of the respondents appear on **Appendix C1**.

A total number of 18 interviewees was chosen on the basis of their designations within the respective institutions and ministries. These included heads of agricultural research and training institutions, heads of libraries and documentation centres and senior officers from MoA (**Appendix C2**). The observation method was used to complement the questionnaire and the interviews.

4.2 Demographic Data on the Libraries and Documentation Centres

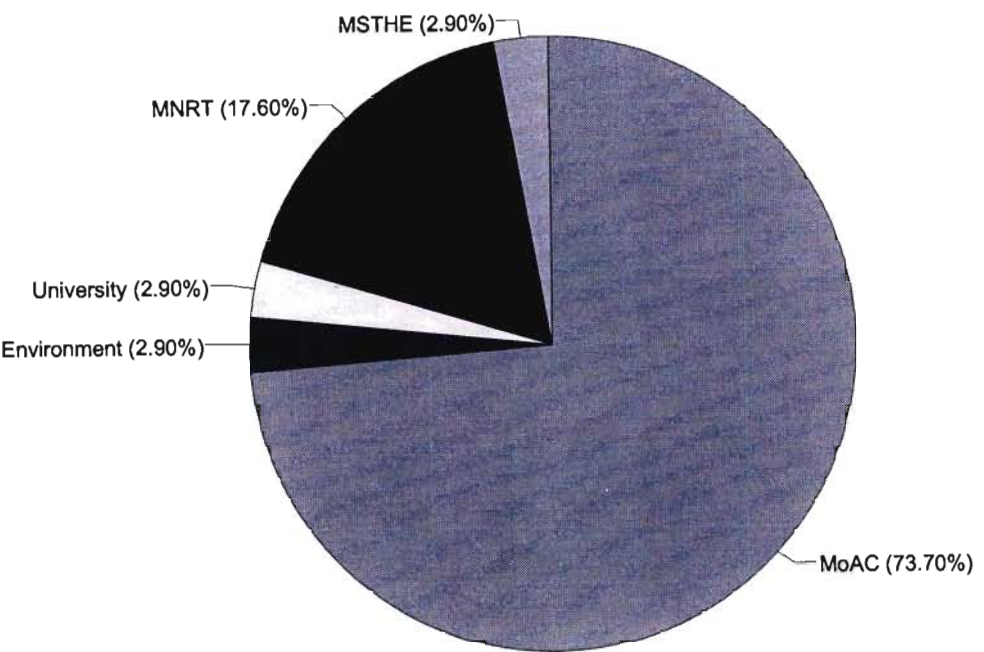
Some items of the self-administered questionnaire were designed to provide the researcher with background information on the libraries and documentation centres, namely: the name, postal address, parent ministry/institution, year of establishment, zonal location, field of specialization, user groups and the frequency of use of the libraries by agriculturalists and other potential users. This information was essential because it influences the access and use of agricultural libraries and documentation centres' services. Furthermore, such information provides indicators as to the institutional capacity of the libraries and documentation centres to implement some of the strategies, such as cooperative and inter-lending activities. For instance, the more the services of a particular agricultural library or a documentation centre are used, the more they are likely to influence the library management's decision on whether the users should have more access to information in other libraries, thereby leading to cooperation in resource sharing. In addition, extensively used libraries and

documentation centres' services would justify requests from parent institutions for adequate human, financial, material and other resources. All 34 libraries and documentation centres gave their background information. The self-administered questionnaires about libraries and documentation centres were completed by either the heads, deputy heads or officers in charge of the libraries and documentation centres. It was assumed that the targeted respondents were informed and/or had access to the relevant information and, if need arose, would solicit data from relevant officers within the institutions and research stations. Thus the following sub-sections and tables indicate the study population's background information findings.

4.2.1 Parent ministries and institutions

The need to know parent ministries, institutions and organizations of libraries and documentation centres was based on the fact that agricultural libraries and documentation centres are not independent institutions. They are dependent upon and answerable to the institutions under which they are directly located. In other words, the library directors, chief librarians or officers report to the institutional heads. Furthermore, the libraries' and documentation centres' affluent parent ministries and institutions heavily influence the kind of information resources and the capacity of the libraries to implement the recommended policies and strategies for effective agricultural information access. Therefore, respondents indicated the parent organizations to which they belong.

Figure 4.1 Libraries’ and documentation centres’ parent ministries or institutions



Key: MoAC - Ministry of Agriculture and Cooperatives
 MNRT - Ministry of Natural Resources and Tourism
 MSTHE - Ministry of Science, Technology and Higher Education

Figure 4.1 reveals that 73.7% of all libraries and documentation centres surveyed were under the MoAC’s training institutions, organizations and research stations directly answerable to the MoAC. Therefore, all respondents indicated MoAC as their parent ministry rather than the institutions/organizations or research centres/stations. This is because all such institutions are ultimately answerable to and receive resources from the MoAC, although the influence of personal initiatives or organization cultures of

individual institutions cannot be underestimated. In Tanzanian environment, particularly in the civil service, a manager's commitment and her/his managerial skills, which include negotiation and other personal attributes, play a very important role in the achievement of the organization/institution/directorate or department's goals and objectives. One library (2.9%) appears under the university, that is, the National Agricultural Library of Tanzania. Agriculture being a multi-disciplinary subject, seven other libraries and documentation centres appear under other ministries, that is, the MSTHE and the Ministry of Natural Resources and Tourism, accounting for 20.5%. One library (2.9%) appears under "environment". This is the National Environmental Management Council' library. The National Environmental Management Council (NEMC) is under the Vice-President's Office.

4.2.2 Zonal locations and subject specialization of libraries and documentation centres

The agricultural libraries and documentation centres are spread out in the seven agricultural zones, which helps to define their fields of specialization (as indicated in Chapter 2, Tables 2.1 and 2.2), and also the various categories of users and services rendered. Table 4.1 indicates zonal locations and the subject specialization of the libraries and documentation centres.

Table 4.1 Distribution of zonal locations and field specializations of libraries and documentation centres

N = 34

Eastern zone	12	35.4	Agriculture, forestry, veterinary medicine, basic sciences and research
Northern zone	7	20.6	Agriculture, crop science, wildlife management, environmental management marketing and pesticide control and research.
Lake zone	3	8.8	Agriculture, research, veterinary medicine and animal diseases control
Southern highlands	3	8.8	Agriculture, research, crop science (tea, tobacco and beans)
Southern zone	1	2.9	Agriculture, research, crop science
Central zone	5	14.7	Veterinary medicine, agriculture and research
Western zone	3	8.8	Agriculture, research, agro-forestry and bee-keeping
Total: 7 Zones	34	100.0	

The agricultural zones are all agricultural research-based in the fields of their specialization and hence each individual zone has a unique role, that of generating information for users. However, needs of users involve the agricultural zones, that is, the Zonal Information Liaison Officers (ZILOs), libraries and documentation centres' personnel and extension officers.

As observed by the researcher, due to the nature of the libraries and their location in remote zonal areas, the need arises for serious consideration of communication linkages of the agricultural zones. The need for a good communication infrastructure among the zones and agricultural stations/centres was expressed by 40% of the

interviewees, mostly heads of training and research institutions/stations. The interviewees, that is, the zonal research and training centre directors, heads of agricultural research stations and officers in charge of documentation centres argued that each agricultural zone should have access to all proposed research projects, including the on-going, completed and abandoned projects. They considered this information important in carrying out joint research where their priorities of research activities overlap as shown in Chapter 2, Table 2.2. It was further observed that a substantial number of agricultural research and training institutions were located in remote areas, and therefore were lacking access to and use of current information. In addition, the less affluent libraries and documentation centres were further burdened by a demoralized staff due to lack of reliable communication and network with colleagues in other similar libraries.

4.2.3 Library users, services and activities

Libraries and documentation centres, through heads or deputy, heads were also requested to indicate their target user groups, and the services and activities rendered to users. This information was important, on the assumption that knowing the user groups and services rendered to them would shed light on what is available in the agricultural libraries and documentation centres and the extent of the resources the library and the documentation centres should have in order to effectively meet the needs of the users. The information was also considered important in relating to the activities in which services and activities could be exchanged or made cooperative. Furthermore, it was important to know the agricultural user groups which used the library services more frequently, so that needs of other potential groups could be studied. Table 4.2 shows the user groups in the order of a ranking scale of one to eleven, based on the number of possible users and other potential users which respondents were requested to specify.

Table 4.2 Ranking of user groups of agricultural libraries and documentation centres**N = 34**

Ranking scale	Trainers	Trainees	EO	Farmers	Researchers	BM	PM	EP	AGBI	AGRI
1	9 (26.5%)	7 (20.6%)	4 (11.8%)	0	17 (50.0%)	0	0	0	0	0
2	11 (32.4%)	5 (14.7%)	4 (11.8%)	4 (11.8%)	2 (5.9%)	1 (2.9%)	2 (5.9%)	0	1 (2.9%)	0
3	2 (5.9%)	8 (23.6%)	8 (23.5%)	4 (11.8%)	5 (14.7%)	0	2 (5.9%)	0	1 (2.9%)	3 (8.8%)
4	0	4 (11.8%)	9 (26.5%)	2 (5.9%)	6 (17.6%)	0	1 (2.9%)	2 (5.9%)	1 (2.9%)	1 (2.9%)
5	3 (8.8%)	1 (2.9%)	2 (5.9%)	10 (29.4%)	1 (2.9%)	1 (2.9%)	1 (2.9%)	0	2 (5.9%)	5 (14.7%)
6	1 (2.9%)	0	1 (2.9%)	3 (8.8%)	1 (2.9%)	3 (8.8%)	1 (2.9%)	2 (5.9%)	2 (5.9%)	6 (17.6%)
7	0	0	0	0	1 (2.9%)	1 (2.9%)	3 (8.8%)	5 (14.7%)	3 (8.8%)	2 (5.9%)
8	1 (2.9%)	0	0	1 (5.9%)	0	0	2 (5.9%)	3 (8.8%)	3 (8.8%)	1 (2.9%)
9	0	2 (5.9%)	0	1 (2.9%)	1 (2.9%)	2 (5.9%)	1 (2.9%)	2 (5.9%)	4 (11.8%)	1 (2.9%)
10	1 (2.9%)	3 (8.8%)	0	1 (2.9%)	0		1 (2.9%)	1 (2.9%)	1 (2.9%)	0
11	1 (2.9%)	0	0	0	0		0	0	0	0
No response	5 (14.7%)	4 (11.8%)	5 (14.7%)	7 (24.6%)	0	26 (79.6%)	20 (59.0%)	19 (55.9%)	16 (47.2%)	15 (44.3%)
Total	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)

Key: EO - Extension officers
BM = Businessmen

PM = Policy makers
EP = Economic planners

AGBI = Agro-based industries
AGRI =Agricultural institutions

OTH - Other

Table 4.2 reveals that researchers, trainers, trainees and extension officers are the major user groups of agricultural libraries' and documentation centres' services. On the whole, an average of 50.0% of the respondents ranked researchers first on the scale of one to eleven as the main users of agricultural library services, while 26.5% ranked trainers the top users of library services. An average of 20.6% of the respondents ranked trainees as major user groups of the services. The results also indicate that extension officers are one of the major user groups of agricultural libraries and documentation centres' services.

Furthermore, Table 4.2 shows the majority of respondents (76.6% gave no response as to whether or not business men do use agricultural libraries' and documentation centres' services. The results demonstrate that only 2.9% of the respondents ranked businessmen second on a scale of one to eleven.

The highest ranking that economic planners received was fourth out of eleven and this was given by two libraries. Five libraries (14.7%) ranked economic planners seventh out of eleven as main users of the services. The results also demonstrate that the highest ranking that policy makers received was third out of eleven and this was given by three libraries, representing an average of 8.8% of the respondents. An average of 59.0% of the respondents did not state whether or not the policy makers use the services.

Despite the negative results on the use of agricultural library services by policy makers, the interviews and discussions with policy makers in the agricultural sector on their level of awareness of the potentials of services of agricultural libraries and documentation centres revealed a more positive situation. Out of the 18 interviewees, 13 (72.2%) said that their level of awareness of the potentials of agricultural library services in the agricultural sector was very high. An average of 16.7% said it was high while 11.1% conceded that it was average. One therefore fails to reconcile the fact that agricultural information is so crucial in policy decision issues, as seen in Chapter 2 section 2.4.3.5, with the fact that the policy makers do not seem to be using the libraries' services much.

4.2.4 Main services and activities of the libraries and documentation centres

Activities of the agricultural libraries and documentation centres would justify the requisition of an adequate budget from the parent institutions, would indicate their capacity to implement the recommended policies and strategies and would also likely influence a greater use of the services. It is further assumed in this respect that functions of the libraries in the provision of different and unconventional information services would also attract not only a large number of users but also different user groups. Respondents were asked to indicate in rank order out of nine and any other, thus ten main services and support services which they provide to users. The order of ranking was one to ten with one reflecting the most important service and ten the least. Table 4.3 shows the main services and activities of the libraries surveyed.

Table 4.3 Ranking of main services and activities provided by agricultural libraries and documentation centres

N = 34

Ranking scale	AMRR	PTM	PEM	INRF	GITU	RSTU	RAUN	ISFU	ARRP	OTH
	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage	Frequency and percentage
1	15 (44.1%)	18 (53.1%)	1 (2.9%)	2 (5.9%)	6 (17.6%)	1 (2.9%)	0	8 (23.5%)	1 (2.9%)	-
2	1 (2.9%)	3 (8.8%)	10 (29.9%)	1 (2.9%)	4 (11.8%)	4 (11.8%)	0	3 (8.8%)	2 (5.9%)	-
3	5 (14.7%)	4 (11.8%)	8 (23.5%)	2 (5.9%)	7 (20.6%)	3 (8.8%)	1 (2.9%)	5 (14.7%)	5 (14.7%)	-
4	2 (5.9%)	2 (5.9%)	5 (14.7%)	2 (5.9%)	5 (14.7%)	5 (14.7%)	2 (5.9%)	1 (2.9%)	1 (2.9%)	-
5	1 (2.9%)	1 (2.9%)	1 (2.9%)	2 (5.9%)	1 (2.9%)	2 (5.9%)	0	6 (17.6%)	9 (26.5%)	-
6	0	0	2 (5.9%)	3 (8.8%)	2 (5.9%)	1 (2.9%)	1 (2.9%)	1 (2.9%)	0	-
7	3 (8.8%)	1 (2.9%)		1 (2.9%)	3 (8.8%)	1 (2.9%)	2 (5.9%)	4 (11.8%)	2 (5.9%)	-
8	-	0	1 (2.9%)	-	1 (2.9%)	7 (20.6%)	0	1 (2.9%)	0	-
9	-	0	-	-	1 (2.0%)	3 (8.8%)	0	0	0	-
10	-	0	-	-	0	0	0	0	0	-
No response	7 (20.6%)	5 (14.7%)	6 (17.6%)	14 (41.2%)	4 (11.8%)	7 (20.6%)	28 (82.3%)	5 (14.7%)	14 (41.2%)	-
Total	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)	34 (100.0%)

Key: AMRR = Acquisition and management of research reports
PTM = Provision of training materials to trainers
PEM = Provision of materials to extension officers
INRF = Information repackaging for farmers
GITU = General information to users

ARRP = Assisting researchers in research projects
RSTU = Referral services to users
RAUN = Research activities in user needs
ISFU = Information search for users
OTH = Other activities (if any)

Table 4.3 indicates that, the highest ranked activities and services of the libraries and documentation centres were: provision of training materials to trainers (53.1%), acquisition and management of research reports (44.1%), information search for users (23.5%) and provision of general information to users (17.6%). The results further indicate that information repackaging for farmers, research activities in user needs and assisting researchers in research projects were ranked low. All respondents confirmed that the libraries did not carry out any other activity or services.

4.3 Human Resources

One of the prominent problems identified in the literature that affect libraries, particularly in developing countries, is the lack of qualified personnel for efficient and effective functioning of libraries and documentation centres. Shortage of trained personnel in information management and information technology (IM&IT) has been mentioned in several studies as a major limitation to effective and rapid access to agricultural library information. The shortage of trained professionals has been said to be at all levels, that is, managerial, operational and technical levels. Hence it was necessary for this study to endeavour to establish the status of staffing in libraries and documentation centres in Tanzania.

4.3.1 Library staff

Libraries and documentation centres were requested to give information on the status of the staff, that is, the availability of professionals, non-professionals or technicians working in the library. Libraries were also requested to indicate the level of education of the heads of libraries and documentation centres. This information was essential because one cannot discuss effectiveness and capacity of the agricultural library system in Tanzania in the absence of background of number of staff, status and educational and professional level of the library officers, directors or chief librarians. For the purpose of this study, professional staff are defined as persons with a first professional

level of training at degree level in librarianship or any other field with additional training in library and information studies (LIS) at postgraduate level or masters level. For instance, a Bachelor of Library and Information Studies or Post-graduate Diploma or Masters in Library and Information Science (MLIS), in the case of persons who study in America.

Findings obtained from the responses indicate noticeable disparities of trend of professional and non-professional staff in agricultural libraries and documentation centres. The notable agricultural libraries and documentation centres under institutions such as Sokoine University of Agriculture, Tanzania Pesticide Research Institute, College of African Wildlife Management, Moshi Co-operative College and the MoA headquarters, were better off in terms of the number and qualifications of staff. The rest of the libraries were lacking in this respect. It can be argued that generally agricultural libraries and documentation centres in Tanzania lack qualified trained personnel in agricultural information handling. Table 4.4 presents the number of library professionals, non-professionals and technicians, while Table 4.5 presents the level of education of the heads of the libraries and documentation centres.

Table 4.4 Status of library staff

N = 34

No. of Respondents	Professionals	Non-professionals	Technicians	Total No. of Staff
1 (2.9%)	11	32	1	44
1 (2.9%)	1	4	-	5
8 (23.6%)	-	9	-	9
12 (35.9%)	-	12	-	12
Others: 5 (14.2%)	-	-	-	-
No response: 7 (20.6%)	-	-	-	-
Total: 34	12	46	1	70

Table 4.4 indicates the status of staff in agricultural libraries and documentation centres in Tanzania. In the survey sample of 34, only one library, that is, the Sokoine National Agricultural Library (SNAL) had 11 professionals, 32 non-professionals and one technician. The national status of this particular library accounts for what seems to be a better status of staff as opposed to the rest. However, the interview with the director of the National Agricultural Library revealed that the library still had unfilled posts at all levels, professional, non-professional and technical. Nonetheless, the onsite observations and information from the interview with the director, revealed that the actual number of professionals at the time of the survey for this study, and according to the given definition in this study was six. The rest had just been recruited and were on study leave for professional qualifications. Some of the para-professional staff had also been recruited and were still to be trained at either certificate or diploma levels.

4.3.2 Qualifications of heads of libraries

As indicated earlier in Section 4.2, the heads of agricultural libraries and documentation centres were the target group for completion of the self-administered questionnaire about their centre or library. The researcher considered it important to know the level of education and professional qualifications of the respondents because in policy formulation there must be initiators who can define the problem and set the strategies and objectives of the policy. It is therefore assumed that heads of agricultural libraries and documentation centres could professionally initiate agricultural information policy. Furthermore, implementation of policy and strategies requires persons who have the professional and intellectual capacity to operationalize the policy or strategy. It is therefore further assumed that professionally qualified and highly educated staff are more likely to assess the capacity needed for policy implementation.

Table 4.5 Level of education and professional qualifications of heads of libraries and documentation centres

N = 34

Educational Qualifications	Number of Respondents	Percentage
Professionals with first degrees in LIS (BLIS) and Masters Degree in LIS (MLIS)	3	8.8
Masters Degree in Agriculture (MSc)	3	8.8
Diploma in Library and Information Studies (Dip.Lib.)	3	8.8
Certificate in Library Studies (Lib.Cert.)	6	17.6
Primary Education Standard VII (Primary Ed. Certificate)	8	23.6
Not mentioned	11	32.4
Total	34	100.0

An analysis of the level of education and training of the heads of the libraries and documentation centres showed that 23.6% had completed primary education up to standard seven, whereas 32.4% of the respondents did not indicate their educational level and professional qualifications. An average of 8.8% of the respondents were Senior Agricultural Research Officers (SAROs) with Masters Degrees in Agriculture. Only three respondents out of the thirty four, that is, 8.8%, had professional LIS training. One had a first degree in LIS and two had Masters Degree in LIS.

4.3.3 Staff development and continuing education

Respondents were asked to indicate whether or not their agricultural library or documentation centres ran any training programme(s). The reason for this was to find

out the extent to which Tanzania has implemented one of the strategies, that is, training the agricultural information specialists for effectiveness in information delivery in multimedia formats.

Nine out of thirty four (26.5%) of the libraries indicated that they do have training programmes while twenty three (67.6%) stated that they did not. Two respondents (5.9%) did not answer the question because they did not know or the subject was not applicable to them.

The respondents who stated that they did not have a training programme(s) for library staff were requested to give reasons. A variety of reasons were given by the 23 respondents (67.6%) and these have been tabulated below in the frequencies of occurrence on Table 4.6

Table 4.6 Reasons for lack of training programmes for library staff

N =23

Categories of Answers from Respondents	Frequencies of Responses	Related Percentage
Lack of donor funds for training library staff	23	100.0
Training programme for library staff depends on the budget of parent ministry	12	52.2
There is no formal training programme for library staff	7	30.4
Lack of commitment by parent organization to train library staff	5	21.7
Training programmes are only for researchers and lecturers	4	17.4
Training programme(s) depend on the availability of funds	3	13.0

It can be deduced from the reasons given that training of library staff was mostly dependent upon donor funds. Therefore, there was no formal training programme(s)

for the staff deliberately set up or planned for by institutions. However, information from the interviews with the officials at the MoAC headquarters revealed that the MoAC was responsible for the Ministry's staff development. This information seems to support the reason given by 12 respondents (52.2%) that "training programme for library staff dependent upon the overall budget of the parent ministry." Information from the interviews with the heads of libraries further revealed that agricultural sector in Tanzania is heavily dependent upon international donor community, particularly so in training agricultural trainers and researchers and in funding research projects in specific fields. However the component of training library staff to attain professional, para-professional or technical qualifications is missing in almost all donor funded projects. The information seems again to support the belief that libraries and documentation centres in the agricultural sector are not accorded the priority they deserve.

4.3.4 Training priorities for library staff

There are few well trained agricultural information specialists and documentalists in Africa and especially so in Tanzania. For instance, among the 34 surveyed libraries and documentation centres, only three were managed by information professionals.

From the literature review on the accessibility of agricultural information in libraries and documentation centres, the researcher identified fourteen areas in which information professionals need training and the respondents were given the opportunity to indicate the fifteenth area that they thought was equally important. Respondents were asked to rank the training areas from one to fifteen, one being the most important area of training that they think must be provided, and fifteen the least important. The ranking scale and the training areas are shown in Table 4.7

Table 4.7 Ranking of training areas for agricultural library staff

N = 34

Ranking scale	BC	CT	EP	CC	AB & IND	MAIS	IS	SAD	AVAM	DBC	IFR	SE	INFM	MRR	OTH
1	8(23.5%)	2(5.9%)	0	6(17.6%)	3(8.8%)	12(35.3%)	3(8.8%)	1(2.9%)	0	0	7(20.6%)	1(2.9%)	0	15(44.1%)	0
2	4(11.8%)	2(5.9%)	4(11.8%)	2(5.9%)	1(2.9%)	2(5.9%)	2(5.9%)	0	4(11.8%)	2(5.9%)	0	0	1(2.9%)	1(2.9%)	0
3	1(2.9%)	2(5.9%)	1(2.9%)	8(23.6%)	3(8.8%)	5(14.7%)	1(2.9%)	1(2.9%)	1(2.9%)	2(5.9%)	0	1(2.9%)	1(2.9%)	1(2.9%)	0
4	0	2(5.9%)	0	2(5.9%)	1(2.9%)	1(2.9%)	4(11.8%)	0	4(11.8%)	2(5.9%)	2(5.9%)	1(2.9%)	0	1(2.9%)	0
5	0	2(5.9%)	0	3(8.8%)	6(17.6%)	0	4(11.8%)	0	3(8.8%)	2(5.9%)	1(2.9%)	3(8.8%)	1(2.9%)	0	0
6	3(8.8%)	1(2.9%)	3(8.8%)	0	1(2.9%)	3(8.8%)	1(2.9%)	0	0	3(8.8%)	0	0	3(8.8%)	5(14.7%)	0
7	0	3(8.8%)	2(5.9%)	0	1(2.9%)	2(5.9%)	2(5.9%)	3(8.8%)	1(2.9%)	1(2.9%)	0	0	1(2.9%)	2(5.9%)	0
8	2(5.9%)	1(2.9%)	1(2.9%)	1(2.9%)	0	1(2.9%)	2(5.9%)	0	5(14.7%)	2(5.9%)	9(26.4%)	0	1(2.9%)	1(2.9%)	0
9	2(5.9%)	5(14.7%)	2(5.9%)	0	2(5.9%)	1(2.9%)	0	2(5.9%)	3(8.8%)	0	0	1(2.9%)	1(2.9%)	1(2.9%)	0
10	0	0	3(8.8%)	1(2.9%)	2(5.9%)	0	4(11.8%)	2(5.9%)	0	2(5.9%)	0	1(2.9%)	1(2.9%)	1(2.9%)	0
11	5(14.7%)	0	5(14.7%)	2(5.9%)	0	2(5.9%)	1(2.9%)	2(5.9%)	1(2.9%)	0	0	12.9%	1(2.9%)	0	0
12	0	3(8.8%)	3(8.8%)	2(5.9%)	0	2(5.9%)	1(2.9%)	2(5.9%)	1(2.9%)	0	3(8.8%)	3(8.8%)	0	1(2.9%)	0
13	2(5.9%)	0	0	1(2.9%)	2(5.9%)	0	0	2(5.9%)	1(2.9%)	0	3(8.8%)	2(5.9%)	1(2.9%)	1(2.9%)	0
14	0	0	2(5.9%)	0	3(8.8%)	0	0	0	0	0	1(2.9%)	2(5.9%)	4(11.8%)	0	0
No response	7 (20.6%)	11 (32.4%)	8 (23.6%)	6 (17.6%)	9 (26.4%)	4 (11.8%)	9 (26.4%)	19 (55.9%)	8 (23.6%)	18 (52.9%)	8 (23.6%)	18 (53.2%)	18 (52.9%)	4 (11.8%)	34 (100.0%)

Key: BC = Basic computing AB & IND = Abstracting and Indexing IFR = Information repackaging OTH = Other
CT = Communication technology MAIS = Management of Agr. Infor. Services SE = Scientific editing
EP = Electronic publishing IS = Information searching INFM = Information marketing
CC = Cataloguing and classification AVAM = Audio Visual Aids materials MRR = Management of research reports
DBC = Database construction and management SAD = Systems analysis and design

4.3.4.1 Training in management of research reports

Table 4.7 shows that training in management of research reports was ranked first on a scale of one to fifteen by 44.1% of the respondents. In addition, five libraries (14.7%) ranked training in management of research reports sixth out of fifteen as an important area of training agricultural library staff. The finding indicates the problems of bibliographic control of research reports that exist not only in Tanzania but also in most Third World countries.

Researchers in the information field like Aina (1990), Mchombu (1991), Kaniki (1992), Chailla and Matovelo (1999), Dulle *et al.*, (2001) and many others have pointed out that research reports are the most important information in the agricultural sector and therefore have to be well organized and managed for easy access. However, the limitations in the access and use of research reports arise from the facts that

- 1) They appear mostly as grey literature
- 2) Their circulation is limited
- 3) There is an inadequate number of trained library staff capable of evaluating the relevance of unpublished reports based on the identified needs of individual agricultural information users
- 4) Most important of all, research reports are technical reports which makes them more difficult to organize and manage

Currently Moshoeshoe-Chadzingwa (200-) is doing a study (PhD) in the role of technical reports in channelling information for development, highlighting Lesotho as a case study. Moshoeshoe-Chadzingwa argues and rightly so that, for technical reports to effectively and efficiently contribute to development, they must be accessible for use. It is assumed that, the study on the technical reports will enlighten the agricultural information specialists on how best to manage the agricultural research and consultancy reports among many others in the agricultural sector.

4.3.4.2 Training in management of agricultural information services

This is another critical area where respondents indicated the need for training the library staff. Table 4.7 reveals that 12 libraries and documentation centres ranked

training in management of agricultural information first on a scale of one to fifteen, while an average of 14.7% of respondents ranked it third out of fifteen. The need expressed by the respondents is justified by the educational status of library staff in agricultural libraries and documentation centres as shown on Tables 4.4 and 4.5 respectively.

4.3.4.3 Training in basic computing

Table 4.7 shows that eight respondents (23.5%) indicated that computing was the top ranked training priority area. The results further demonstrate that four libraries (11.8%) ranked training in computing second on the scale of one to fifteen. One respondent (2.9%) ranked it third, while three respondents (8.8%) gave it a ranking of six.

4.3.4.4 Training in electronic publishing

The data as presented in Table 4.7 further demonstrates that 11.8% of the respondents indicated training in electronic publishing for library staff as their top priority and ranked it second as opposed to 23.6% of the respondents who gave no ranking scale at all. However, electronic publishing was the fifth training area with the highest ranking frequency.

4.3.4.5 Training in communication technology

Eleven respondents (32.4%) did not feel that training in communication technology was a priority at all. Ten respondents (29.4%) indicated that communication technology was the highest priority in the training areas for library personnel. It was ranked seventh by 8.8% respondents and ninth by 14.7% respondents on a scale of one to fifteen respectively.

In summary, the data on Table 4.7 shows seven training areas considered by the respondents as a priority in training of agricultural library personnel:

1. Management of research reports
2. Management of agricultural information services
3. Cataloguing and classification

4. Basic computing
5. Electronic publishing
6. Information repackaging
7. Information search

Apart from 14 areas of training provided by the researcher as being important, there were no other training areas indicated by the respondents.

4.3.5 Curriculum in agricultural information handling

There are no schools of library and information science in African countries which offer specialized education and training qualifications at diploma or degree levels in agricultural information services. However, some of the priority training areas for agricultural information specialists have been included in a very few curricula of the available schools of LIS and more can be done. With the assumption that existing LIS programmes can include agricultural information courses or modules, all respondents were asked to indicate whether agricultural information handling should be taught in LIS schools. Ten respondents (29.4%) indicated the need for LIS schools' curricula to include agricultural information handling, while 20.6% did not find it necessary. Sixteen respondents (47.1%) did not know, whereas close to three percent did not respond.

4.3.6 Basic and continuing education programmes for library staff

Basic and continuing education, just like formal training of agricultural information specialists, is important. Continuing education in form of refresher courses, seminars and workshops for further knowledge is even more critical in the fast changing technologically inclined society in which we operate. Contacts with national, regional and international professional colleagues, organizations and associations on current information development is important. Respondents were asked to state whether their staff had opportunities to attend courses and conferences nationally, regionally or

internationally. The information was important for discussions on the awareness of the recommended strategies and policies for improvement of agricultural library services in Tanzania and also on the availability of continuing education for agricultural information specialists as part of training programme(s). Furthermore, agricultural information management today is highly influenced by ICTs which affects the amount and nature of information collection and the manner in which it is delivered. Therefore, it was important for the researcher to know if agricultural information specialists were given opportunities to be informed of the changing technologies often discussed in workshops and seminars.

Fourteen (41.2%) of the respondents stated that the professional staff had the opportunity to attend conferences and workshops, while 44.1% said that they did not have such opportunity. Close to six percent of the respondents did not know and the remainder (8.8%) did not respond.

The libraries' heads indicated that staff had the opportunities to attend seminars and conferences and were further asked to indicate the number of conferences and seminars attended during the 1995/96, 1996/97, 1997/98 and 1998/99 financial years according to status of such programmes, whether national, regional or international. The results are shown in Table 4.8 below.

Table 4.8 Continuing education programmes: Workshops, seminars and conferences attended and their status 1995 to 1999

N = 14

Status of continuing education programmes attended by staff 1995 - 1999	1995/96	1996/97	1997/98	1998/99
National/local conferences	2	5	2	6
Regional conferences/workshops	1	4	1	5
International conferences/workshops	1	1	-	2

It must be pointed out that the conferences in all three categories were attended mostly by SNAL and the Division of Research and Development (DRD) Library of the Ministry of Agriculture.

To facilitate continuing education, attending conferences and seminars, and also in-service training for the library staff, require funding. The study inquired about the source of funding for such activities. Out of 14 respondents, one respondent (7.1%) stated that the funds came from the library vote. In other words, the library regularly budgets for such activities. The other four (28.6%) who indicated that their staff had an opportunity to attend continuing education programme said the cost was met by donor funds and 14.3% said the funding came from the institutional central code. There were no other sources of funds mentioned.

Policy makers interviewed were requested to comment on the shortage of staff in agricultural libraries and especially so in the MoAC's documentation centres. They were also asked to comment on staff qualifications and training.

A total number of 18 policy makers were interviewed and of these, 72.2% conceded that agricultural libraries and documentation centres' personnel needed professional training in the current ICTs. Eight interviewees (44.4%) acknowledged that libraries and documentation centres were important in acquiring, synthesizing and disseminating agricultural information. However, 61.1% commented further that the libraries were not performing these functions either due to lack of technical know-how or lack of technical professionals. Three interviewees (16.7%) were of the opinion that, given adequate facilities, the libraries and documentation centres could be a central agent in repackaging agricultural information for extension officers and could even reach the farmers. After further probing on the solution(s) of the problem(s) of recruitment and training of agricultural information specialists, 88.9% of the interviewees stated that the major limitation was lack of funds. This, they indicated, was mostly donor funds because the agricultural sector was heavily dependent upon donor community.

4.4 Financial Resources

This section provides data on the financial capacity of the libraries and documentation centres, the impact of the libraries' financial situation on the implementation of the recommended policies and strategies and finally the extent to which the budget has been a limitation to implementation of policies and strategies for improvement of agricultural library services. The data is particularly relevant to the research questions three, four and five. These relate to the extent to which policies have been implemented, the capacity to implement and the effects of the lack of implementation.

4.4.1 Participation of libraries in budget preparations

Respondents were asked to state whether they prepared annual budgets to meet their requirements in terms of personnel, services, activities, equipment and other items deemed necessary. It is important for the heads of the libraries and documentation centres to be involved in annual budget sessions because they know the libraries' needs and requirements and have the ability to provide priorities for funding. Of the 34 libraries and documentation centres, only eight, representing 23.5%, stated that they prepare annual budgets while 24 libraries (70.6%) said they did not. An average of 2.9% indicated that they did not know and the same percentage did not respond.

The major reason given by all the 24 respondents who did not do their annual budgets was that the budget was prepared, discussed and approved for allocation by the parent ministries/institutions. The libraries had no active role in budget preparation.

4.4.2 Library budgets

To provide an overview of the budgets allocated to libraries and documentation centres, the eight respondents (23.5%) out of 34 who indicated that they prepare budgets for their libraries were asked to state the amount allocated for the financial years 1995/96 to 1998/99 in Tanzanian shillings. In order to comprehend the implications of the

budgets, the American dollar (USD) equivalent of the Tanzanian shilling has been given. The currency exchange rate at the time of data collection for the study was 800 Tanzanian shillings to one American dollar (Bank of Tanzania, 2000:24).

The responses showed that five out of eight respondents (62.5%) who had earlier indicated that they prepare annual budgets were allocated a budget of less than 500,000 Tanzanian shillings, an equivalent of USD 625 for the 1995/96 financial year. The same amount was allocated to the same libraries during each of the following financial years: 1996/97; 1997/98 and 1998/99. Some of the libraries operating with this meagre budget were those of the MoA's training institutions and Ministry of Natural Resources and Tourism.

However, the big libraries like SNAL, DRD Library of the MoA and College of Wildlife Management were better off financially. These libraries were allocated an equivalent of about USD 18,750 in the 1996/96 financial year, 25,000 USD in 1996/97 and USD 30,000 in 1997/98. The same libraries were operating with a budget of more than 40,000,000 Tanzanian shillings (USD 50,000) in 1998/99. All the eight respondents indicated that the budgets did not include salaries, annual leave allocations and medical expenses for the staff. Budgeting for these items was done centrally by the parent ministries and institutions.

Let it be noted that Tanzania was at this period, that is, 1995-1999, fully implementing the IMF and WB conditionalities, one of them being the retrenchment exercise in the civil service and government institutions. Therefore, and according to the information from the interviews with the policy makers, Tanzania did not have money to allocate the ministries the full budget that they had requested for their various institutions. The MoA's libraries and information documentation centres in the remote research/training stations were hard hit and some research stations had virtually no budget to operate with.

4.4.3 Donor supplement to libraries' budgets

Apart from government funding, one source of supplementary funding upon which Tanzanian ministries and institutions are dependent is donor support. Libraries were asked if they receive supplementary funding from donor countries or agencies. Of the 34 respondents, ten (29.4%) indicated that they received donor funds, while five (14.7%) indicated that they did not. Four (11.8%) did not respond and fifteen (44.1%) did not know.

After further probing through the self-administered questionnaire to state the percentage of donor input in their budget, three out of ten libraries (30.0%) stated that the donor input ranged from 86% to 97.5% of the financial budget for the years 1996/97, 1997/98 and 1998/99. The libraries were SNAL, DRD Library and the College of African Wildlife Management Library. Seven libraries confirmed that their parent ministries/institutions were recipients of donor funds but did not know precisely the percentage that was given to the libraries. Donor funds in these institutions were administered centrally.

4.4.4 Activities and/or services for which the library budget is used

Information was requested from the libraries and documentation centres to state the percentage of the total budget spent on 12 activities identified by the researcher. Respondents were also given an opportunity to mention any other activities or services that the library budget was spent on, over a period of four years: 1995/96 to 1998/99. The activities and services included: attending conferences, seminars and workshops, subscriptions to journals, books purchase, staff training, interlibrary loans, exchange of publications, library user training, acquisition of electronic materials, purchasing of audio-visual materials, research activities and in-house training programmes.

Figure 4.2 shows a bar graph of the distribution of the library budget allocation for seven of the above mentioned activities.

Figure 4.2: Library budget allocation for services and activities for financial years 1995/96 - 1998/99

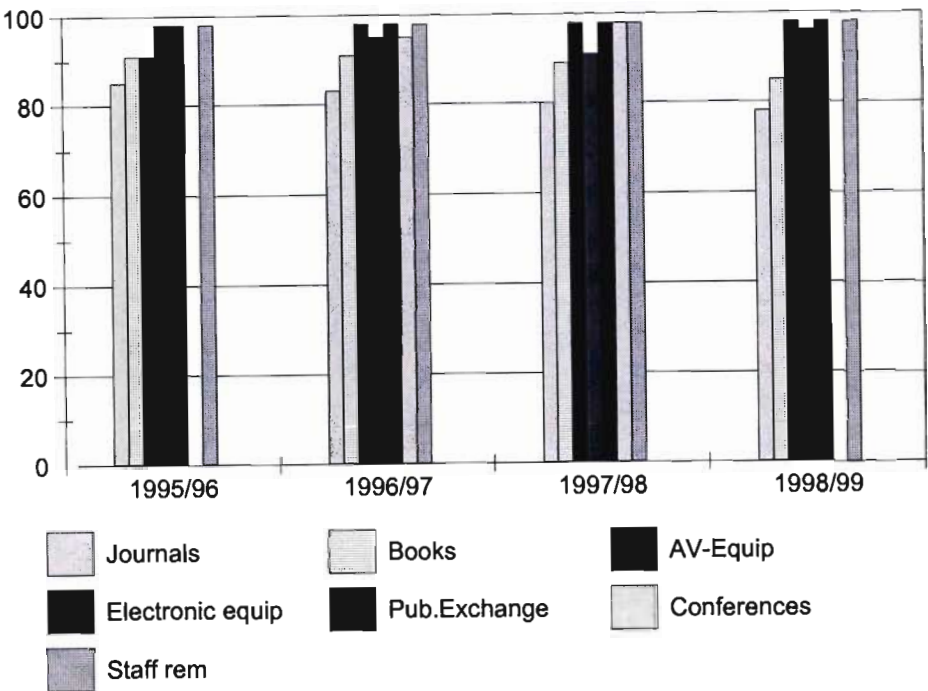


Figure 4.2 above, reveals that the libraries spent a large percentage of the budget on three activities: journal subscriptions, books acquisition and audio-visual materials. There were no other activities mentioned. In addition, there was no budget allocation for five essential activities, that is: staff training, inter-library loans, in-house training, research activities and library user training.

4.5 Collection Size of the Libraries and Documentation Centres

To provide information on the research questions three and four, libraries were asked to indicate the number of book volumes, periodical titles, research/consultancy reports and other materials that they had for a period of four years: 1995/96 to 1998/99. The information was necessary for the researcher to establish the trend of acquisition of these materials by the libraries. This information is useful in the discussion of the institutional capacity of libraries and documentation centres to network, and the extent to which they have been affected by lack of implementation of the policies and strategies. Table 4.9 indicates the type of materials and number of libraries which have the largest collection.

Table 4.9 Collection Sizes of Libraries and Documentation Centres 1995 - 1999

N = 34

Size of collection	1995/96								1996/97								1997/98								1998/99							
	books		periodicals		reports		others		books		periodicals		reports		others		books		periodicals		reports		others		books		periodicals		reports		others	
	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%	No of libraries	%
Less than 50 items	24	70.6	32	94.1	30	88.2	8	23.5	25	73.5	32	94.1	28	82.4	8	23.5	24	70.6	32	94.1	27	79.4	10	29.4	21	61.8	30	88.2	25	73.5	13	33.2
51-100	0	0	0	0	0	0	0	0	1	2.9	0	0	2	5.9	0	0	1	2.9	0	0	3	8.8	0	0	1	2.9	2	5.9	4	11.8	0	0
101-500	1	2.9	1	2	1	2.9	0	0	0	0	1	2.9	1	2.9	0	0	2	5.9	0	5.9	1	2.9	0	0	2	5.9	0	0	2	5.9	2	5.9
501-1000	1	2.9	0	0	1	2.9	0	0	1	2.9	0	0	1	2.9	0	0	0	1	1	2.9	1	2.9	0	0	0	0	1	2.9	0	0	0	0
1001-5000	5	14.7	0	0	1	2.9	0	0	4	11.8	0	0	1	2.9	0	0	4	11.8	0	0	1	2.9	0	0	5	14.7	0	0	2	5.9	0	0
5000 and above	2	5.9	0	0	0	0	0	0	2	5.9	0	0	0	0	0	0	2	5.9	0	0	0	0	0	0	4	11.8	0	0	0	0	0	0
no response	1	2.9	1	2.9	1	2.9	26	76.5	1	2.9	1	2.9	1	2.9	26	76.5	1	2.9	1	2.9	1	2.9	24	70.6	1	2.9	1	2.9	1	2.9	19	55.9
Total	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100	34	100

Table 4.9 shows the trend of collection size in agricultural libraries and documentation centres in the period of four years: 1995-1999. Looking at the data presented on Table 4.9 there were only three libraries which had a substantial collection size of research reports. These were SNAL, DRD (MoA) Library and College of Wildlife Management. The peculiarity of the data on Table 4.11 is interesting even to the researcher. The expectation of the researcher was to find a sizable amount of materials and particularly research reports which were well documented and easily available to users.

On the contrary, the observations made revealed a different information as to the collection of the size of materials in the documentation centres. An average of 55.9% of all the surveyed libraries and documentation centres had less than ten journal titles, fifty book volumes and twenty research and consultancy reports in the agricultural field. These libraries were mostly the MoAC's documentation centres under research institutes and stations. The other materials indicated were five to ten annual reports, conference papers or proceedings from the MoAC headquarters, SNAL and the CTA. In general, the 19 (55.9%) libraries and documentation centres did not have much to offer to user groups such as researchers and consultants and even farmers who would for instance, need an up-date information on prices of fertilizers, farming equipment or crop produce.

4.6 Library Cooperation

This sub-section presents data on the extent to which agricultural libraries and documentation centres cooperate in inter-library lending and in carrying out joint activities. The data in the section intended to inform the researcher on research questions one and two, that is: finding out if the strategies and recommendations for improvement of agricultural library services had been translated into policies and legislation and the extent to which agricultural libraries had implemented the recommended strategy of resource sharing.

Respondents were asked to state whether their libraries and documentation centres co-operated in activities such as inter-lending of books, journals, exchange of publications and accessions lists, among many others. Sixteen libraries, representing 47.1% of the respondents, stated that there was cooperation among them and other libraries and documentation centres. On the other hand, 35.3% of the respondents indicated that such cooperation did not exist, whereas 17.6% stated that they did not know anything about cooperation.

4.6.1 Cooperative activities among libraries

In order to get an overview of the type of resource sharing activities in which the libraries were engaged in, and the frequency of such cooperation, respondents were asked to indicate the activities among the ten identified and listed by the researcher in which they cooperated in order of ranking. Respondents were further given an opportunity to mention any other activities in which they cooperated. The results from the analysis are shown in Table 4.10.

Table 4.10 Cooperative activities among agricultural libraries and documentation centres

N = 16

Name of activities	Number of libraries	Related percentage
Exchange of publications	16	47.1%
Inter-lending of books	16	47.1%
Inter-lending of research reports	16	47.1%
Inter-lending of journals	14	41.2%
Training activities	2	5.9%
Union catalogue of periodicals	2	5.9%
Union catalogue of books	—	—
Co-operative acquisition	2	5.9%
Staff exchange	—	—
Workshop organization	2	5.9%
Joint research activities	2	5.9%
Joint publishing	2	5.9%

Table 4.10 shows that the highest ranked activities by most libraries are exchange of publications, inter-lending loans of books, research reports and journals. The least ranked activities in which libraries cooperate in are workshop organization, joint publishing and joint research activities. These were mentioned as other activities that the libraries cooperated in.

4.6.2 Cooperation of libraries with SNAL

The Sokoine National Agricultural Library (SNAL) is the largest agricultural library in Tanzania with the largest collection and with an adequate number of qualified professionals, among whom a large percentage has a first degree in agriculture or agricultural related subjects. Furthermore, as indicated in background information to this study, SNAL is the country's national agricultural library, charged with various functions as spelt out in the Parliamentary Act No. 21 (Republic of Tanzania, 1991).

Among the several functions of SNAL, four specifically relate to cooperation and resource sharing. These are:

- “(a) *Supervise, coordinate, advise and offer consultancy and liaison services to all cooperating agricultural libraries in the United Republic for the purpose of improving the services they provide.*”
- “(b) *Act as national bibliographic and documentation centre ...*”
- “(c) *Establish and maintain union catalogue for easy location of the material available in the system.*”
- “(d) *Collect and maintain records of agricultural research and development projects in progress or completed, so as for the library to serve as a national clearing house for all agricultural materials.*”

The expectation is that SNAL provides services to other agricultural libraries and co-ordinates the services and activities of agricultural libraries and documentation centres in the country. In line with this assumptions, respondents were asked to state if they co-operate with SNAL. Nine out of 34 respondents (26.5%) stated that they do, while 23 (67.6%) indicated that there was no co-operation with SNAL. On the other hand, 5.9% of the respondents either did not know or did not respond to this question, implying that they did not know.

After further probing in the self-administered questionnaire to find what kind or type of materials and services the libraries received from SNAL on a ranking scale of one to fourteen, the results from the analysis revealed the following:

Out of nine respondents who indicated that they cooperate with SNAL, six respondents (66.7%) said that they received agricultural annual proceedings from SNAL. This was ranked first out of the fourteen services, while 33.3% ranked newsletters, SUA

Agricultural Research News and accessions lists as second. An average of 22.2% of the respondents indicated that they received photocopies of journal articles and 11.1% received training in IT. These were ranked tenth out of fourteen. There were no other activities mentioned.

Respondents who did not cooperate with SNAL were asked to indicate in priority order the problems which they had or which were a stumbling block to cooperation with SNAL. The libraries stated the problems on a ranking scale of one to five. For 20.6% of the respondents, the top ranked problem was that of distance between their centres and SNAL (see Map I). Ten respondents (29.4%) ranked 'no contact with SNAL' as top reason out of the five for not engaging in cooperation. An average of 8.8% of the respondents stated that they were not aware of the activities and ranked lack of awareness of SNAL activities and responsibilities as the number one reason.

In general, the results showed that the major problems in cooperating with SNAL were lack of communication and awareness of potentially cooperative activities and services, or of the materials and services that SNAL could offer to other agricultural libraries and documentation centres.

4.6.3 Problems encountered in cooperation

In addition to information on the status of cooperation among the libraries and documentation centres and particularly cooperation with SNAL, respondents were asked to indicate which of the eight key problems, as identified from the literature, they experienced in the process of cooperation. Respondents were given the opportunity to add any other problems they encountered and ranked them on a scale of one to eight. Table 4.11 summarizes the responses.

Table 4.11: Problems encountered in cooperation among agricultural libraries.

N = 34

Inadequate number of staff		Lack of financial resources	Poor communication	It is not mandatory	Not willing to co-operate	It is not necessary	Lack of materials and equipment	Lack of guidelines for co-operation
12 (35.3%)		10 (29.6%)	11 (32.4%)	1 (2.9%)	7 (20.5%)	1 (2.9%)	9 (26.5%)	5 (14.7%)
5 (14.7%)		8 (23.5%)	3 (8.8%)	4 (11.8%)	5 (14.7%)	3 (8.8%)	3 (8.8%)	2 (5.9%)
3 (8.8%)		2 (5.9%)	4 (11.8%)	6 (17.6%)	9 (26.5%)	2 (5.9%)	6 (17.6%)	7 (20.6%)
1 (2.9%)		1 (2.9%)	1 (2.9%)	4 (11.8%)	1 (2.9%)	1 (2.9%)	2 (5.9%)	4 (11.8%)
4 (11.8%)		5 (14.7%)	7 (20.6%)	7 (20.6%)	2 (5.9%)	-	1 (2.9%)	9 (26.5%)
1 (2.9%)		2 (5.9%)	2 (5.9%)	-	6 (17.6%)	-	1 (2.9%)	5 (14.7%)
1 (2.9%)		1 (2.9%)	1 (2.9%)	-	3 (8.8%)	-	1 (2.9%)	-
-		-	-	-	1 (2.9%)	-	-	-
No response	7 (20.6%)	5 (14.7%)	5 (14.7%)	12 (67.6%)	-	27 (79.5%)	11 (32.4%)	2 (5.9%)
Total	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)
Ranking scale	1	3	2	6	5	7	4	6

Table 4.11 reveals that inadequate numbers of staff was ranked first as a major problem that inhibits cooperative activities among agricultural libraries and documentation centres. Poor communication and lack of financial resources were ranked second and third respectively.

An average of 26.5% of the respondents ranked lack of materials and equipment fourth on a scale of one to eight while unwillingness to cooperate was ranked fifth. Lack of guidelines for cooperation was ranked sixth out of eight. There were no other problems mentioned.

4.7 Publicising of Agricultural Library Services and Activities

In the literature, lack of awareness of the services and activities rendered by agricultural libraries and documentation units was identified as one of the factors that hamper effective use of services. Hence the recommendation that agricultural information specialists should adopt techniques of marketing the services. This is considered important due to the many competitors in information delivery systems, among which the major one is the internet.

The respondents were asked to state if they publicized the services. The results from the analysis revealed that 58.8% of the respondents indicated they were not publicizing their library services, while 8.8% indicated that they publicized their services. Of all respondents 20.6% stated that they did not know whether or not any publicity of service was done.

4.7.1 Activities and services for promotion of awareness of libraries and documentation centres

The literature review identified eleven key activities and services which libraries and documentation units could perform to make users aware of the services. Respondents were asked to rank the activities in priority order on a scale of one to twelve. The

respondents were further given the opportunity to rank any other activities that they did for publicity of the library services. The activities identified from the literature were:

- 1) Indexing and abstracting services
- 2) Information search for users
- 3) Production of monthly/quarterly acquisition lists of books, periodicals, theses, research reports and dissertations
- 4) Communication of relevant and current information to users
- 5) Repackaging of technical research finding for extension officers and farmers.
- 6) Printing of newsletters for farmers
- 7) Video shows on how to use the library facilities
- 8) Participation in Farmers' Day
- 9) Workshop for users and potential users
- 10) Joint meetings with researchers
- 11) Joint meetings with extension officers
- any others done for the purpose of publicising the library services

The results revealed that all three respondents who stated that they publicized the library services ranked the following services first out of twelve: communication of relevant and current information to users via accessions lists, information searches for users, participation in Farmers' Days and joint meetings with researchers. Of the three respondents, one ranked joint meetings with extension officers first on a scale of one to twelve, while two respondents ranked repackaging of technical research findings for extension officers and farmers second out of twelve. Some of the activities were not ranked at all and there were no others mentioned.

4.7.2 Factors hindering publicity of library services

Respondents were asked to state the reasons which hindered publicity of library services. From the literature, nine possible reasons were identified and respondents were asked to state them in ranking order of one to nine. Table 4.12 shows the results.

Table 4.12 Reasons for lack of publicity about library services**N = 20**

Reasons for lack of publicity about library services	Number of libraries	Related percentage
Inadequate number of qualified staff	17	85.0%
Lack of staff motivation	12	60.0%
Inadequate budget	11	55.0%
<u>Other reasons</u> Lack of guidelines for publicity of library services	9	45.0%
Lack of skills in printing and editing	8	40.0%
Lack of necessary facilities such as photocopying services	7	35.0%
Lack of electronic facilities for networking	4	20.0%
Do not find it necessary	2	10.0%
Not required to do so by parent ministry/institution	-	-

Table 4.12 reveals that the reasons for non-publicity of the library services which had the highest frequency ranking were: inadequate number of qualified staff, lack of motivation and inadequate budget.

Libraries were also asked whether they had access to the internet. This question was important because the Internet is the most powerful tool to search for, retrieve, and disseminate information. The Internet offers access to all kinds and sorts of information in all kinds of formats. Library collections in various parts of the world can be accessed easily and quicker than in on-line searching. Out of 34 libraries and documentation

centres, only four stated that their parent institutions had Internet connectivity. Asked to indicate the Internet services available and used, the respondents (75.0%) indicated e-mail services while 25.0% indicated both e-mail services and world wide web (www).

4.8 Policies and Strategies for Improving Agricultural Library Services

Part IV of the self-administered questionnaire aimed at collecting data that could provide answers to research questions one and two, that is: to find the policies, strategies, recommendations and suggestions advanced by agricultural information researchers and consultants for improvement of agricultural library services. To find if libraries were aware of these strategies and the extent to which Tanzania has implemented them. Providing a list of policies, strategies, suggestions and recommendations was considered important for discussions of findings relating to all other four research questions. In general, the list of the policies, strategies, recommendations and suggestions from the literature is the central issue in this study.

4.8.1 List of policies and strategies for improvement of agricultural library services

One of the sources of relevant data for this study was documentary sources. Available literature on agricultural information and other related subjects was consulted and the researcher generated a list of policies, strategies, suggestions and recommendations for improvement of agricultural libraries' information access and use. These are presented in Table 4.13 below in three categories, namely: very frequently, fairly frequently and frequently.

Table 4.13 Policies, strategies and recommendations for improvement of agricultural libraries and services

Policies, strategies, recommendations and suggestions for agricultural information access and use	Frequency of occurrence in the literature
Third world countries should include agricultural libraries and documentation units in the national development plans	+++
Agricultural libraries and documentation units should have adequate budget for physical and fiscal resources	+++
Ministries/institutions should recruit staff with first degrees in agriculture or related subjects for further professional training	+++
Agricultural information management aspects should be introduced in the curriculum of the schools of Library and Information Studies (LIS)	+
Agricultural libraries should formulate ICT policies to facilitate development of IT infrastructure	+++
African countries should designate one of the schools of LIS a training centre for agricultural information specialists	+
Formulation of National Information Policies should be mandatory in Third World countries	+++
Information specialists should be trained in information management and information technology (IM & IT).	+
Information specialists should be trained to access agricultural information guides and listserv on agricultural information and libraries on the internet	++
Participation of agricultural information specialists in national and regional workshops	+
Information specialists should train the policy makers and the management how to get relevant and current information from the internet	+
Agricultural information specialists should publicise information services for awareness of their potentials to offer current and relevant information in multimedia formats	+++
Institutional, national and regional databases of agricultural research projects should be created, managed and should be accessible to all agriculturalists and donor community	+++
Marketing of library services should include current awareness services	+++
To compete successfully with other information providers in the sector, agricultural information specialists should carry out user information needs assessment from time to time	+++
Agricultural library staff should have an attractive scheme of service in addition to other motivations and incentives	++
There should be effective bibliographic control of agricultural research and consultancy reports nationally	++
Agricultural libraries should train some of the library staff in collection and organization of grey literature for easy access	+
Cooperation must be established among libraries and documentation units for resource sharing	+++

Key +++ = very frequently
 ++ = fairly frequently
 + = frequently

Source: Chapter 2 , Review of related literature. pp.29-105

4.8.2 Awareness of the policies, strategies and recommendations

Libraries and documentation centres were asked if they were aware of any of the eleven policies and strategies listed down by the researcher in question 54. Of the 34 respondents, three (8.8%) gave a positive indication. An average of 79.4%, representing 31 libraries and documentation centres, were not aware of any of them while four (11.8%) of the respondents were non-responsive.

Respondents who were not aware of the policies and strategies were asked to state possible and likely reasons among the seven listed by the researcher in question 55. Respondents were also asked to specify any other reasons for their lack of awareness of the policies and rank their reasons on a scale of one to eight.

The results from the analysis showed that of the 79.4% respondents who had stated that they were not aware of the policies and strategies, an average of 70.9% ranked first the following strategies on a scale of one to eight: lack of awareness of policies, strategies and recommendations by parent ministries and institutions, lack of national machinery for guidance and lack of communication from SNAL. Five libraries (16.1%) considered lack of agricultural information policy and lack of capacity or facilities for implementation as the most important reasons for them for not being aware of the policies and strategies, ranking them second out of eight.

The libraries which indicated that they were aware of the policies, strategies and recommendations were asked to state those which their libraries had implemented from a list of eleven possible strategies and recommendations provided by the researcher in question 54. Of the three libraries that had stated that they were aware of the policies and strategies, one library (SNAL) had implemented and was still implementing the following strategies, which they ranked first on a scale of one to eleven: having an adequate number of staff at each service point, training staff in agricultural information handling, working out strategies for marketing the services and

having an attractive scheme of service for library employees. The National Agricultural Library ranked all the other strategies fourth out of eleven.

On the other hand, two libraries stated that they were implementing the strategy of adopting and adapting to agricultural information technology, having an attractive scheme of service for staff retention and working out modalities of net-working and cooperation. The two libraries ranked these first out of eleven.

Information from the interviews with 18 policy makers revealed that six heads of libraries (33.3%) said they were aware of most of the policies and strategies but stated that Tanzania lacked the capacity for implementation. The six interviewees referred to the low budget allocated to libraries and lack of training programmes for library staff as being the major limiting factors for implementation of the policies and strategies.

Fifteen out of 18 of the interviewees acknowledged awareness of the recommendations for a NIP. However, they were of the opinion that a NIP would not solve the magnitude of problems of agricultural libraries, particularly those of the documentation centres. The interviewees cited various policies in Tanzania, such as land policy, food policy and national environmental policy, which have been in existence for a number of years without positive results. They further cautioned that many policies tend to create chaos rather than solve the problems. After further probing on this issue, they conceded that Tanzania's agricultural sector lacked the machinery for monitoring and evaluating policies from time to time.

4.9 Institutional Policies for Libraries' Operational Activities

Policies can be at national or institutional level. In the absence of a national information policy, respondents were asked to indicate if they had institutional policies for library operations. The information was important for the study to identify the policies, guidelines and regulations at the micro-level which governed the libraries' functions.

The results showed that 13 out of 34 responding libraries or 38.2% of the respondents acknowledged that there were institutional policies concerning operational activities of the libraries and documentation centres. Of all the respondents, 35.3% said that their libraries did not have regulations on library operations. On the other hand, about 20% of the respondents indicated that they did not have any information on the subject matter.

4.9.1 Institutional strategic plans and development of agricultural libraries and documentation centres

Libraries were asked to state whether their parent ministries/institutions had strategic plans for improvement of the services. The results revealed that 16 respondents representing 47.1% reported that the parent institutions and ministries had a strategic plan in place. Among other things, one of the strategies was to improve the libraries or documentation centres. However, 20.6% of the respondents indicated that the parent institutions did not have a strategic plan while 26.5% confirmed that they did not know about the existence of a strategic plan for improvement of the libraries and documentation centres.

Respondents who stated that the institutional strategies included development of the libraries were asked to indicate which activities had been put in place for the capacity building of libraries by ranking them.

Table 4.14 Activities in the institutional strategic plan for library capacity building

N = 16

Activities	Number of libraries	Related percentage
Procurement of library equipment	8	20.4%
Computerization of library services to facilitate networking	6	37.5%
Staff recruitment	2	12.5%
Expansion of library building	1	6.3%
Training staff in agricultural information handling	1	6.3%
Strategies for retention of trained staff	-	-
Plans for career advancement for libraries	-	-

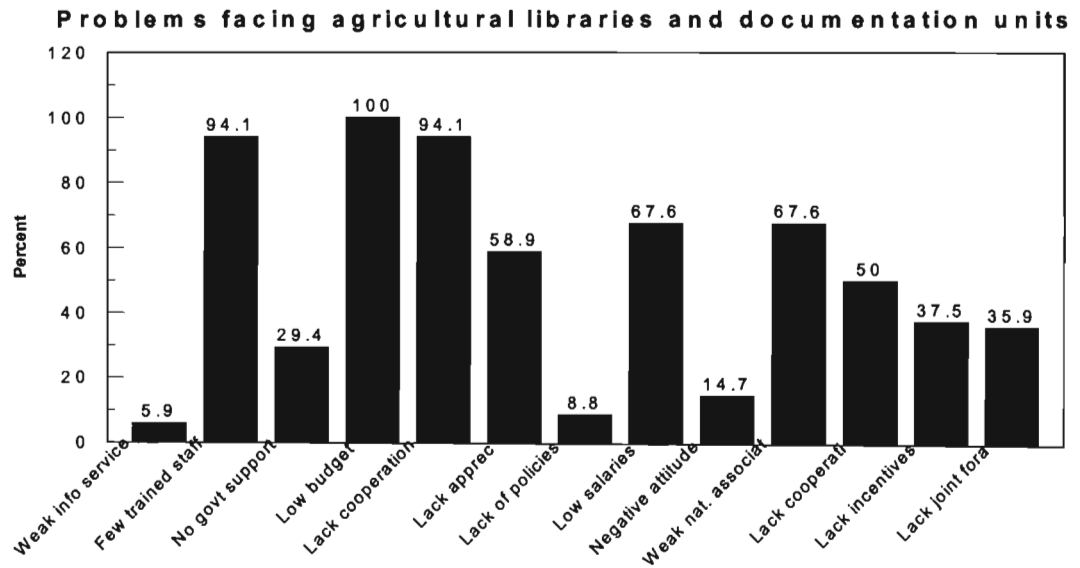
Table 4.14 reveals that activities which were ranked by most libraries and documentation centres were procurement of library equipment, computerization of library services and staff recruitment.

Similarly, an average of 33.3% of the interviewees said that recruitment of adequate numbers of library staff and training programmes for the same had been given top priority in the Medium Strategic Plan of the MoAC for 1999-2004. In addition, procurement of equipment for information technology management and transfer had also been prioritized in the MoAC's Medium Strategic Plan.

4.10 Major Problems of Agricultural Libraries and Documentation Centres

Respondents were asked to indicate the problems which in their opinion were affecting the agricultural libraries and documentation units most in Tanzania. Thirteen problems were identified from the literature, and the respondents were requested to indicate them in the order of ranking, one being the most critical and thirteenth the least critical. Figure 4.3 shows problems which were considered critical in agricultural libraries' and documentation centres' environment.

Figure 4.3



The major problems as seen in figure 4.3 are: low budget, lack of co-operation, inadequate number of trained staff, a weak National Professional Association, low salaries of library staff compared to their counterparts in the private sector and lack of cooperation among information specialists.

4.11 General On site Observations

Size of the library buildings

Some respondents of the main questionnaire refrained from indicating the actual size of the library or documentation centre. An observation revealed that, in general, library staff and user space provisions in almost all of the MOAC's documentation centres appeared inadequate. Essential facilities like staff tea rooms, workrooms and other essential amenities were lacking. None of the agricultural libraries or documentation centres had facilities for the use of the services by handicapped users.

Directional signs and posters

It was observed that, in some institutions visited, one had to ask for the direction to the library due to lack of directional signs or posters. From the researcher's point of view, the location of the library was difficult to establish, compared to other institutional buildings.

Libraries' and documentation centres' collection

Reading materials, as it was observed, were in short supply in almost all of the documentation units. Books, periodicals, agricultural reports and local daily newspapers were outdated and therefore not suitable for users seeking current information. Furthermore, some documentation centres did not maintain reader statistics or user records. User statistics were found in major agricultural libraries and documentation centres only such as SNAL, DRD (MoA) Library, College of African Wildlife Management and COSTECH.

Agricultural reports, initially indicated as few, which made the data look rather peculiar, were actually available but haphazardly kept, making physical counting impossible. As observed, the reports were available but due to poor organization and management it was not possible to tell the number of the collection.

Organizational and management of library materials

Organization and management of library collection in a manner which they can be easily accessed for use was lacking in most of the documentation centres. This can be attributed partly to lack of trained staff. In most cases as it was observed, only the persons in charge could locate/retrieve documents requested by users. In other words, it was not easy for users to access information they required even if such information was available.

4.12 Summary

This chapter dealt with the analysis and presentation of the findings from data obtained from the field survey. Major findings were:

- The most frequently cited policies and strategies for improvement of agricultural libraries and documentation centres were:
 - Agricultural libraries and documentation centres should be included in national plans so as to be prioritized in allocation of resources.
 - Libraries and documentation centres should be allocated adequate budgets for physical and fiscal resources.
 - Libraries and documentation centres should have an adequate number of trained staff and technicians at any given time for efficiency and effectiveness in information delivery.
 - National information policies should be formulated to give guidance to agricultural information flow and IT infrastructure.
- In general, there was a pronounced shortage of qualified staff in 97.1% of all (34) libraries and documentation centres surveyed. Human resources development programmes were lacking in all libraries and documentation centres. This was confirmed by lack of formal training programmes and continuing education.

- As a result of (2) above, the heads of 94.1% of the thirty four libraries and documentation centres surveyed had no professional qualifications. Therefore they lacked the critical managerial and professional skills in dealing with the challenges posed by today's information environment which is dictated upon by constantly changing technologies and limited financial resources from the parent ministries/organizations.
- Fostering of continuing education was lacking in all libraries. Only a few members of staff had opportunities for attending national, regional and international conferences.
- Libraries and documentation centres, particularly those under the MoAC's research and training institutions, did not operate with adequate budgets. The sizes of budgets were very low and larger budgets were limited to a few. However, the affluent libraries' budget was heavily subsidized by donor funds.
- As a result of (5), the size of collections of materials in some libraries and documentation centres was negligible making one to query the justification of the existence of such documentation centres for they were not meeting the need of the users.
- Cooperation was generally lacking among the agricultural libraries and documentation centres, particularly with the National Agricultural Library (SNAL). This is despite the fact that the key function of SNAL is to foster cooperation among agricultural libraries and documentation centres.
- An average of 97.1% of the libraries, was not aware of the policies, strategies, and recommendations by agricultural information specialists, consultants and international organizations for improvement of agricultural library services.
- Information from the interviews revealed that the period between 1995/96 to 1998/99 was financially hard on Tanzania, hence the scarce of, and allocation

of limited financial resources to all ministries and institutions. This was the period when Tanzania was experiencing the full impact of IMF and WB conditionalities and paying its external debts.

CHAPTER 5

INTERPRETATION AND DISCUSSION OF STUDY FINDINGS

5.1 Introduction

This chapter discusses the findings which emerged from the analysis of research findings presented in Chapter 4. As observed by Kerlinger (1978:17) analysis of research data and information does not in itself provide answers to the research problem, objectives of the study and the research questions. It is therefore essential to interpret and discuss the data and information from the analysis of the data to ensure that research questions have been responded to. It is also necessary to interpret the data to establish whether the objectives of the study have been met or not and the research questions answered or not answered. This chapter is mainly arranged in order of the research questions.

The purpose of this study was to determine the extent to which key policies, strategies, recommendations and suggestions advanced by scholars, international consultants and other bodies to enhance agricultural information accessibility and use have been implemented in Tanzania. The study aimed at assessing the extent to which the strategies, recommendations and suggestions have been translated into policies and legislation and the impact of their implementation on the agricultural library information system by carrying out an assessment of agricultural libraries and documentation centres in Tanzania. Specifically, the main objectives of the study were:

- To identify, consolidate and generate a “list” of key policies, strategies, recommendations and suggestions made by various scholars, international consultants and other bodies aimed at improving accessibility to and use of

agricultural information in general, and specifically to improve use of agricultural library services in Tanzania.

- To establish the extent to which Tanzania has implemented the strategies, recommendations and suggestions identified in 1.above.
- To assess the capacity of the agricultural libraries and documentation centres in Tanzania to implement the strategies, recommendations and suggestions for agricultural information access and use.
- To assess the impact of implementation of the policies and strategies where this has been achieved and the impact of lack of implementation where there has been none.
- To identify factors which have hindered the implementation of the strategies and recommendations in Tanzania.
- To make suggestions on how to improve the mechanisms involved in implementing the strategies and recommendations for improvement of agricultural libraries and documentation centres in Tanzania.

The study was designed to meet its purpose and the objectives through the following research questions:

- What key policies, strategies, recommendations and suggestions have been advanced to improve access to and use of agricultural library services and have the strategies and recommendations been translated into policies or legislation in Tanzania?
- How far has Tanzania implemented the policies, strategies, recommendations and suggestions mentioned above?

- What is the capacity of the agricultural library system in Tanzania to implement the recommended policies and strategies?.
- What factors have hindered the implementation of the policies, strategies and recommendations in Tanzania?

In order to obtain data in response to the posed research questions, 34 agricultural libraries and documentation centres in Tanzania were involved in the study. The study population excluded libraries and documentation centres of international and non-government organizations. The study also did not include libraries and documentation centres in Zanzibar for reasons mentioned in Chapter One.

Two main research instruments were used in gathering primary data to answer the research questions, namely:

1. A self-administered questionnaire targeted at the libraries and documentation centres and completed by heads or deputy heads of the centres;
2. An interview schedule targeted at the heads, deputy heads or officers in-charge of the libraries and documentation centres, heads of training/research institutions and officials at the MoA.

To supplement the main data collection instruments, the researcher visited and observed various aspects of the libraries and documentation centres' services and functions and used secondary sources in the form of literature and other documentary evidence. The combination of more than one method of data collection was useful in verifying information provided by the respondents of the main questionnaire and thus increased the reliability of the research findings. The application of triangulation technique, that is, combining more than one data collection technique, was recommended by Line (1982:63) for dealing with socially complex problems for which one source of data is perceived not to be sufficient and reliable. The method was also used successfully by Katundu (1998) and Kiondo (1998) in their studies of the use and sustainability of IT in academic research libraries in Tanzania and access to gender and

development information by rural women in the Tanga Region in Tanzania respectively.

5.2 Findings in Response to Research Questions

According to information from documentary sources, analysis of the data and the interviews and observations, the following are the findings in response to the research objectives and research questions. As stated earlier on, this Chapter is mainly arranged in order of the research questions.

5.2.1 Key policies, strategies, recommendations and suggestions which have been advanced to improve access to and use of agricultural library services and the extent to which the strategies, recommendations and suggestions have been translated into policies or legislation in Tanzania

To address the first part of the above first research question, documentary sources were reviewed and a list of policies, strategies, recommendations and suggestions was drawn up. The list has been presented in Table 4.13. Table 4.13 shows the frequency in which the policies and recommendations appeared in the literature review, namely, that some key policies and strategies appeared frequently, fairly frequently or very frequently. The following are some of the policies, strategies and recommendations that were found to appear very frequently and which will facilitate the discussion of findings which are related to other research questions. The strategies and recommendations which appear fairly frequently or frequently are important but very much dependent upon or related to key ones which seemed to appear very frequently.

5.2.1.1 Training of agricultural library staff

It has been recommended that one of the strategies for making agricultural libraries and documentation centres an efficient and effective information delivery channel is for

libraries and documentation centres to have an adequate number of trained professional and technical staff.

According to Nawe (2001), libraries of East Africa are faced with the problem of acquiring adequate, current and relevant information for their clients. “The problem is complicated further by the need for human resources with adequate skills and right attitude. In addition to these problems are increasing expectation of clients as a result of developments in ICTs” (Nawe 2001:31).

The increase in electronic information and communication technologies and, in particular, networked information advances has changed modes of communication and resulted in significant changes in information access, repackage, storage and dissemination. This requires a highly trained calibre of information professionals in multi-skilled and multi-talented in information handling.

Similarly, Sharp (2001) argues that information specialists today are working in information-rich environments characterized by greater access to a range of information, increased speed in acquiring information, and greater complexity in locating, analyzing and linking information. Information specialists in the 21st century are faced with the challenge of the constantly changing technology, continuous learning of the updated technologies and lack of substantial financial investment in technology. As Sharp (2001:78) observes, this is a new global library environment which justifies the need for trained information specialists and technicians in the agricultural sector who have the skills, capacity and ability to work with the diverse groups of information users and who are sharply aware of the combination of opportunities and problems posed by information environment. Trained personnel must have the confidence to manage an information system based on the principle that information is an input in the agricultural sector without which agricultural production cannot realize its full potential within the country's economy.

5.2.1.2 Training in specialized programmes

One of the strategies which has often been recommended for enhancement of access to and use of agricultural library services is the recruitment of staff with first degrees in agriculture or related fields for further specialized professional training in agricultural information handling. The argument is that if there are agricultural information specialists per se this will enhance availability, access to and use of agricultural information.

The implication of this, however, is for the LIS schools to have specialized programmes for agricultural library personnel which may in most cases not be possible. There are some initiatives which have been made earlier for such specialized programmes but several problems were noted. For instance, a seminar on information provision to rural communities held in Gaborone, Botswana (1994) recommended that training of rural communities information personnel should be strengthened. The seminar was followed by the Expert Meeting for Schools of Library and Information Science in Africa on training personnel for rural community information provision services. The seminar was organized under the auspices of IFLA core programme (IFLA 1998). The meeting went as far as working out a model curriculum for professionals, technicians and the Continuing Education (CE) programme.

However, there are difficulties in offering 'stand-alone' specialized programmes in LIS programmes (Kaniki 1994:27). The implications of starting a specialized programmes in LIS schools such as agricultural information organization and management are: needs assessment of the course, employment of additional staff, employment opportunities for the graduates and sustainability of the programme in LIS schools.

While it is argued that development is dependent upon availability, accessibility to and use of information by rural communities, which are the most disadvantaged groups but crucial in agricultural production, training of information personnel specifically for management and provision of information in rural communities would not, as argued by Kaniki (1994), be a very popular course with many students. This is because of

limited job opportunities in rural areas, preference for working in urban environment and the poor infrastructure and social conditions of the rural areas.

The same would imply tailoring a specialized training programme for agricultural information provision particularly in Tanzania. Agriculture is not usually an urban occupation and neither in normal circumstances is production-oriented research. Agriculture is predominantly a rural occupation and practical-oriented research is carried out in participation with the rural communities. This means agricultural information personnel would be required in different agricultural zones in the remote agricultural research and /or training institutions and stations. Extra costs in this case would include fringe benefits for the personnel, more training to equip them with various skills to cope with conditions in rural areas and a conducive working environment all of which were found to be lacking in some of the agricultural research stations' documentation centres in Tanzania. As observed by Kaniki (1994):

It will be naive for LIS educators to assume that by simply teaching prospective rural information service providers the traditional library and information science courses, they will equip them for their tasks ahead. There is need to specially equip persons who will work with varied rural communities with various skills.

(Kaniki 1994:4)

On the other hand, specialized programmes for information personnel have been made possible in United States, where according to Dowling (2001:138), there are over 2000 law libraries, including academic, state, court, private law firms and corporate law libraries and other legal institutions' libraries. Likewise, there are approximately 3000 medical libraries which are delivering timely accurate and current information to communities. Therefore, it is likely that employment opportunities for specialized information personnel is not so limited in United States.

It is the opinion of the researcher that training of information professionals in agricultural information management can be possible given the political will and understanding of its value to the society and economy in general. Agriculture has been cited and is cited continuously by the Third World Countries as their 'backbone' and

the ‘mainstay’ of their economies, but practically there is little evidence to demonstrate the importance that they attach to the agricultural sectors. This is evidenced in Tanzania by the government’s efforts to privatize some of the activities in the agricultural sector, and by the frequent food shortages in the country. A specialized programme in agricultural information management is justified by the nature of agriculture itself. Agriculture is so wide that it has become increasingly difficult to define. It is the most interdisciplinary subject in nature, covering biology, science, medicine, chemistry, engineering, climatology, food technology, environmental science, economics, physics, just to name a few. As a result, agricultural information has posed serious problems to information specialists because it is difficult to identify all area subjects related to agriculture. Less Developed Countries should, therefore, make deliberate plans for the substantial funding of LIS schools so that they may have the capacity to offer a specialized programme in agricultural information provision.

In addition to the above, the library managers who are already burdened by limited budgets and yet have to cope with the ICTs developments should encourage library personnel to pursue Continued Education (CE), which is a self-initiated education for improving one’s educational skills. This is a very new concept in Tanzania but one, which every library manager and individual should focus on due to the scarcity of resources for formal training often expected from employers or donor communities. In view of this, the researcher has found it important to give a definition of Continuing Education.

5.2.1.3 Continuing Education (CE) for library staff

The term CE means different things to different people. According to the American Library Association, (1999:49), “continuing education is a learning process, acquired knowledge, skills and attitudes of individuals. This process comes after the preparatory education needed for involvement in or with information, library and media services”. Kart (1990:208), affirms that, for the library profession, Continuing Education implies lifelong learning to keep an individual up-to-date with new knowledge. It prevents obsolescence. Hence, CE has been acknowledged to enhance one’s knowledge in:

- *Updating a person's education*
- *Allowing for diversification to a new era within a field*
- *Assuming that the individual carries the basic responsibility for his or her own development*
- *Involving educational activities beyond those considered necessary for embrace into the field* (Kart 1990:206)

The assumption is that, these elements of lifelong learning, updating, diversification, individual responsibility, education beyond the entrance degree, can be effectively addressed by self-directed, contact learning.

In this respect, CE is usually a self-initiated learning in which individuals assume responsibility for their own development. It is broader than staff development which is usually initiated by an organization for the growth of its own human resources. Staff training programmes within an organization can be a right of an employee while CE should be viewed as a self-initiative learning process.

The new information technology has demanded a wider range of responses from libraries, including CE. The increased use of information technology presents new challenges to members of the library community. Newly recruited library personnel and the long serving personnel in the profession need to learn how to use IT in information management and provision. In addition to the new IT, environment is the motivating and directing force for continuing professional education, especially in times of scarcity of financial resources when employers should not be expected to meet the cost of CE.

In Tanzania, the challenge posed by developments of ICTs globally to library professionals is that:

Professionals with a positive mind set are accepting change and adapting to an environment of constant change. They are thus prepared for flexibility in undertaking their assignments and are out to look for the opportunities offered by ICTs developments, even where there is a significant need for improving their educational and skills levels.

(Nawe 2000:24)

This confirms that CE has become more of a need than a preference as more IT comes on the market.

5.2.1.4 Budget allocations to libraries and documentation centres

It has been very frequently recommended that libraries and documentation centres be given adequate funds for their planned activities and functions. One characteristic of libraries in Tanzania is that they are not independent organizations with their own sources of funding. Katundu (1998) in his study of the use and sustainability of information technology (IT) in academic and research libraries in Tanzania came up with similar findings to the researcher, namely that library budgets were dependent upon the parent ministries, institutions or organizations. "In some instances it was the parent organizations' management which had more say on how much the library could spend and not the library management (Katundu 1998:98-99).

There was also a high dependence on donor funding especially funding on IT training. Therefore, when the donor funding period ends, there is often a problem of sustainability.

Similarly, Kiondo (1998:239) on the issue of barriers to information exchange in rural areas, argues that government organizations' development communication strategies lack the necessary policy directive, skilled human resources and financial base to implement participatory approaches, and thus they lag behind the NGOs which have their own mechanisms of budgeting.

Mambo (1998), in his investigation of the development of computer library networks among institutions of higher learning in Tanzania, found that some of the libraries he visited were closed due to the government failure to provide money for the 1996 budget.

This is a prevailing situation in the civil service in Tanzania. It is, therefore, not surprising if the financial requirements of a documentation centre under the MoA are completely left out in this erratic, unrealistic and bureaucratic mode of budget allocation. The well-endowed libraries which seem to be better off in terms of human

and material resources, such as SNAL, DRD library and the College of African Wildlife Management library are actually dependent upon donor fund supplements. This has its own repercussions in the short or long run. For instance, Rosenberg (1996) in her study of university libraries in Africa and their capability of sustaining themselves with or without donor support pointed out that the absence of information policies and lack of effective planning are some of the major factors which affect sustainability of the university libraries' services. The university libraries were evaluated in terms of their ability to sustain themselves within the available resources. The findings revealed that it was near to impossible for the university libraries to sustain themselves without the legacy of donor interventions to assist university libraries in Africa towards sustainability. For instance, it is difficult for the researcher to imagine SNAL, which is both a university library and a national agricultural library, implementing the strategies for improvement of its services to its clients and sustainability of some of its services without the 'back-up' of donor funds. This is the legacy of African universities' libraries which, given the poor economic base of the African countries, is difficult to remedy.

This study found that 23 libraries do not have formal training programmes for staff in place due to "lack of donor funds for training library staff". Table 4.6 also indicated that 12 respondents stated that library staff training was dependent upon the budget of parent ministries/institutions/organizations while seven libraries acknowledged the lack of formal training programmes for library staff within their parent ministries/organization/institutions.

To remedy this situation, library professionals should set small, achievable goals in funding and development of library human resources which can be supported by parent ministries and institutions morally if not financially. The managerial skills of the library manager are needed in negotiating with parent institutions for approval and funding of the prioritized areas of training for library staff as well as other activities and functions.

5.2.1.5 Formulation of ICT policies

The impact of new information technologies has led to the need for a long vision in technology planning and to the need for training library professional in information management and information technology (IM&IT). Therefore, it has been strongly recommended that agricultural libraries should formulate ICT policies to facilitate development of IT infrastructure. However, Katundu (1998:170) noted the absence of IT policies, systematic planning and effective decision making in relation to IT needs in Tanzania. One of the examples is the two largest university libraries in the country, the SNAL and the University of Dar es Salaam (UDSM) libraries, which are not aware of each other's plans in ICT development even though both are computerizing their services, among other ICT activities.

Lack of IT policies and the dependency on donor funding in IT have both contributed to the poor IT infrastructure in Tanzania and possibly in other Less Developed Countries. Donor funding in IT in Tanzania particularly in institutions of higher learning, amounts to approximately 85% of the total budget for ICTs. This implies problems of sustainability after the donor span period (Rosenberg 1994 and 1996, Katundu 1998). The challenge in ICT is to have IT policy/policies in place to ensure sustainable ICT acquisitions, management and maintenance although this implies more financial resources for libraries from parent ministries/institutions. Such resources may not be readily available. As Nawe (2001 reports:

Libraries have to compete with other units for resources. More often than not, justification for funds requested by the library is rarely acceptable to other faculties, departments or units especially in the area of ICT where the library or information profession is increasingly misconceived by clients and other ICT "experts" as no longer being important.

(Nawe 2001:32)

5.2.1.6 Resource sharing and networking

Resource sharing and networking is yet another priority strategy on the list of recommended policies, strategies and suggestions on the improvement of access to and use of agricultural information services and resources.

Resource sharing, as Mambo (1998:166) states, requires good collection, tools and skilled staff to maintain current and relevant collections. Among the 34 agricultural libraries and documentation centres surveyed, only four libraries could boast of substantial collection size and qualified staff who could carry out activities involved in resource sharing, such as database construction and management and current awareness services. The MoA documentation centres have great prospects in resource sharing since most of them are located in zones with specializations in training and/or research. However, as the data on Table 4.9 revealed, the documentation centres indicated that they did not have enough resources/materials in terms of books, journals, and research reports to be shared. Agricultural research reports, consultancy reports and MoA annual reports were expected to be plentiful but the data showed that the reports in these centres were few. However, through observations it was found out that agricultural reports, particularly research reports, were actually available and an interesting point is that each library or documentation centre had a special section where these reports were kept in safe custody. The issue is that they were kept haphazardly and without any organization or indexing system for easy retrieval. These reports have been referred to in this study as technical reports or grey literature, which according to Van Niekerk (1985), Kaniki (1992) and Moshoeshe-Chadzingwa (200-) are very important but difficult to access.

The respondents in this study indicated the research reports as being few. This was possibly due to library personnel's lack of basic background knowledge in agriculture to realize the importance of the agricultural research and consultancy reports as well as lack of bibliographic control of technical reports. It could also be attributed to lack of interest in the documentation centres by the parent institution's management, which results in such reports being kept by researchers in their offices. The research reports

in the libraries were not very much in use, hence the disorganization and lack of interest in them by the library personnel and, possibly, the users.

Generally, agricultural reports or technical reports form the bulk of the problematic type of grey literature in the agricultural sector. Problematic not only to information professionals but also to generators of such reports who do not assist in the organization, distribution and dissemination of the reports. They are even more problematic to users due to factors such as availability, accessibility, format, and benefits which are often not direct and visible. Moshoeshoe-Chadzingwa's study aims at promoting the use of technical reports for development activities in all sectors.

Furthermore, unless there is a record from researchers of what is being produced, identifying vital information is bound to be difficult. Hence the alleged inaccessibility of scientific reports in libraries by researchers. There should be an effective bibliographic control of technical reports. Bibliographic control aims at making users aware of what has been produced or what is available and ensures that the reports are organized and deposited for future reference and use. There should be a campaign for effective legal depository laws that would compel researchers, consultants and even the government itself to deposit any agriculture or agricultural related reports and materials at the National Agricultural Library. The SNAL is governed by a legal depository legislation. In other words, SNAL is one of the three libraries in Tanzania, the others being the University of Dar-es-Salaam library and Tanzania library Services, where three copies of materials published in the country or outside the country on issues relating to Tanzania should be deposited. It has, however, been difficult to interpret this legislation and therefore to enforce it. This is one of the indicators on how difficult it is to track down policies so as to determine their effectiveness. Most Third World countries do not have a culture of monitoring and evaluating their policies. Yet policies are made on daily basis in these countries, but sadly remain ineffective.

5.2.1.7 Marketing of library services

To compete successfully with other information providers in the sector, it has been recommended that agricultural information specialists should make their parent ministries/institutions, users, potential users and the policy makers aware of library services, activities and functions. It was seen in the literature review that use and non-use of an information delivery channel depend on the awareness of its services, the availability of information, the information retrieval skills of the users and the specific needs the information is required for. Users and potential users must be made aware of what the libraries and documentation centres have to offer and of the acquired current literature in the field.

Secondly, for the above to be realized, one of the strategies that has been recommended is for the information specialists to work out marketing techniques for library services and resources by carrying out user needs assessment as frequently as possible so as to be able to find out the diversified and constantly changing needs of the users. As Mchombu (1991) argues, there is no shortage of data which provides consistent evidence of the extremely low use and impact of library services in Africa.

*In most government and parastatal organizations,
the so-called library is often a storehouse for old newspapers,
empty boxes and other irrelevant materials. Many libraries
do not monitor their performance and they are the same people
accusing policy makers and planners for their failure to
utilize information in their work"*

(Mchombu 1991:32).

However, to carry out regular and reliable user needs assessment requires a highly qualified researcher and funds to do so efficiently and effectively, using possibly one of the techniques such as the 'critical incident technique' to determine user needs.

In user needs assessment, a 'critical incident' technique can be used, that is, identifying situations and instances "where" and "when" a person or community responds to the state of lacking information. In this case, it can be possible to identify the community's information needs. Also, by analyzing "why", "how" and "who" uses "what" kind of

information, it is possible to identify the various states of lack of information, uncertainty or information need.

There are criticisms of the “critical incident” technique employed in research to assess the information needs of agriculturalists. Kaniki (1995 and 1997) summarize the criticisms as follows:

- The technique heavily depends on the respondent’s memory and ability to remember “important” events and it likely “ignores” the important aspect of how information is actually used, that is, if analysis can be done of how and for what purpose information is actually used, it would be a better indicator for information needs.
- At the time of completion of a questionnaire or an interview, people do not recall the important incidents and much of the information seeking process.

In spite of the criticisms of the ‘critical incident’ technique, Kaniki (1995) asserts that:

Although some people may not remember every detail of their information seeking process, the amount of data collected through this technique, if conducted properly can be sufficient to provide an adequate understanding of information needs within a community.

(Kaniki 1995:10-11)

It is important for agricultural information specialists to know the user needs and also to be able to predict future user needs in order to render value-added-service to users. The argument of many scholars today, like Sweeney (1997), is for libraries to give a value-added service to customers. The “value-added” concept has been adopted by public libraries in America with a strong belief that being behind the “value-added service curve” means that the needs of the majority of the people are being met elsewhere. It also means a loss of potential users of the library services. In addition, being behind the “value-added service curve” is creating a scenario for failure. The value-added concept can be adopted in Tanzania by the agricultural information system with great benefits. Agricultural information specialists have to give the customers not only the expected services, but also surprise them with extra information which they

did not expect but which is of value to them. In most cases today, it is impossible to envisage a modern organization succeeding without being slightly ahead of service improvement techniques. For instance, if agricultural libraries and documentation centres in Tanzania are not viewed by the majority of researchers, policy makers, institutions/organizations as current, relevant and capable of meeting their needs timely, it is very likely that they will go on being marginalized by lack of social, political and economic support.

5.2.1.8 Formulation of national information policy/policies

Effective implementation of the strategies and recommendations for improvement of access to and use of agricultural library information services and resources is dependent upon a national information policy defined by Boon (1992:90) as “A set of guidelines for creating national infrastructure for information access, provision and use”. National information policies have a legal purpose for either individuals, organizations or governments. Policies are oriented to change and action intent on transforming procedures and practices according to ideal values.

Formulation of NIPs in Less Developed Countries has been very frequently recommended due to observable shortcomings and defaults in their information sectors. The NIPs have been recommended to restore order to the chaotic information situation in such countries thereby ensuring access to, and use of agricultural libraries’ services. In the case of Tanzania as stated in Chapter 2 section 2.2.4.4, there are sectoral policies related to information, technology and research which lack coordination. As observed:

The current situation is characterized by structures which are dedicated to parts of the information field and which are fragmented across different ministries.

(Mukangara 2000:160)

It would be difficult for the Tanzanian Government for instance, to manage and stimulate an integrated approach to information provision or to motivate coordination and cooperation among the existing libraries, documentation centres, non-government agencies and private information sectors in the absence of a NIP. Fragmented policies

cannot be effectively implemented in developing countries such as Tanzania, where policy analysis and implementation capacity is limited. National information policies seem to work better.

However, there is little evidence to support the view that NIPs work better. Mchombu (1991) argues for the recognition of several linking policies rather than one monolithic one and recent initiatives in Britain support this view. Coordination is achieved through mechanisms for linking several sectorally based policies. The coordination function may be set up in a NIP.

In summary, the above are only some of the very frequently recommended policies, strategies and suggestions for the improvement of access to and use of agricultural libraries' information services and resources. The fairly and frequently cited ones include: training of library staff in collection, organization and management of grey literature, working out attractive schemes of services for library staff in addition to other incentive packages, and training research scientists, management and other potential users in how to get relevant, current and timely information on the Internet. In other words, users in general should be equipped with information search skills.

5.3 The extent to Which Strategies, Recommendations and Suggestions Have Been Translated into Policies or Legislation in Tanzania

It was acknowledged in the literature review that Tanzania has established institutions and bodies with legal mandate to oversee dissemination of scientific information and development and training in ICT. In answering part "b" of the first research questions posed in this study, reference has been made to the existing sectoral information policies.

Part "b" of research question number One was:

- **Have the strategies, recommendations and suggestions been translated into policies or legislation in Tanzania?**

The findings of this study pertaining to information policy in Tanzania are consistent with the findings of Sekimang'a (1992), Katundu (1998), Mambo (1998) and Mukangara (2000), in that Tanzania does not have a national information policy *per se* but has sectoral information policies in place. Therefore, the researcher cannot certify that all strategies, recommendations and suggestions for the improvement of agricultural library services have been translated into policies or legislation. There is evidence, however, that some have been partly translated into policies and legislation.

The existing sectoral information policies in Tanzania cannot be ignored for they touch on different aspects and issues of information, including agricultural information. The following is a brief highlight on some of the sectoral policies and how they relate directly or indirectly to information in general, and to agricultural information access and use in particular.

5.3.1 The National Science and Technology Policy

The National Science and Technology Policy for Tanzania was established in 1985 and revised in 1996. Some of the objectives of the policy, as stated in the literature review, Chapter 2, section 2.2.4.4, which have a direct link with effective scientific information organization management and provision are:

- To stimulate the generation of scientific and technological knowledge which is to be applied in socio-economic development;
- To establish an appropriate legal framework for the development and transfer of technology;
- To provide attractive terms and conditions of service including adequate research facilities and a conducive research environment in order to motivate and retain scientists and technologists, making them give their best services to the country.

The above objectives of the National Science and Technology policy of Tanzania are related to the recommendations for ICT policies. The policy has been empowered legally to work out incentive packages for retention of scientists and technicians in the

civil service which is one of the frequently recommended strategies aimed at strengthening the human resource capacity in the agricultural sector.

5.3.2 The Tanzanian Commission for Science and Technology (COSTECH)

COSTECH was established in 1986 by the Tanzania Parliamentary Act No. 7. According to the Act, COSTECH has been given a legal mandate to oversee all aspects of research, science and technology of libraries of higher learning institutions in the country. The information from the interview with the head of COSTECH's training and documentation services, who was also the acting director revealed that all institutions of higher learning in Tanzania, including SUA and their libraries such as SNAL are affiliated to COSTECH. The COSTECH carries out the following activities which are entrenched in its objectives and functions:

- Coordination of all scientific research projects in the country.
- Supervision and administration of technology acquisition in the country.
- Provision of consultancy services in ICTs.
- Training library staff from institutions of higher learning in basic computing and in ICTs.

To the best knowledge of the researcher, COSTECH has carried out some of its responsibilities effectively, particularly the component of training library staff and women researchers from institutions of higher learning, the use of ICTs in library and information services, and application of IT in research. Women researchers from SUA and library personnel from SNAL have benefitted from training programmes organized and sponsored by COSTECH.

In addition, the COSTECH Act No. 7 section 14(3) 1986, established research and development advisory committees covering agriculture and livestock, industrial and energy research, medical research, basic science and social sciences. COSTECH has the potential to coordinate the information centres in the country and to give guidelines on the standardization of IT. More often than not, SNAL has sought advice and

consultancy services from COSTECH. The only setback to solicitation, accessibility and use of COSTECH's services and facilities is the lack of awareness of its potential role in development of agricultural libraries and documentation centres. In order to make COSTECH more effective and to promote its awareness among information specialists, there is a need to legalize its roles and functions, particularly its role in the agricultural sector and to monitor its implementation and effectiveness.

For instance, COSTECH's research and development advisory committees' objectives and purposes, as observed also by Mukangara (2000), have not materialized into legislation or regulations regarding information handling technologies. The functions of the advisory committees are not clear in terms of agricultural information handling and particularly the coordination of the various agricultural information documentation centres in the country.

5.3.3 The Ministry for Science, Technology and Higher Education (MSTHE)

The MSTHE, which was established in 1990, is a parent-ministry of all institutions of higher learning institutions in Tanzania, that is, universities, institutes and technical colleges. Nonetheless, some of the colleges, such as colleges of education, and institutes, such as Institute of Finance Management (IFM) and Institute of Development Management (IDM), are under different ministries.

The MSTHE's responsibilities are:

- 1) Funding of all institutions under its umbrella.
- 2) Overseeing the student sponsorship in its institutions in terms of loans.
- 3) Ensuring the availability of salaries for staff and funds to meet other expenses of the institutions such as maintenance and renovations of the buildings.

The Sokoine University of Agriculture (SUA) is under the MSTHE but SNAL, though a policy in itself, is under SUA. In other words, the MSTHE is not responsible for the libraries of its institutions.

However;

In its higher education policy draft 1994, the MSTHE stated that cooperation between institutions of higher education must exist. The policy states further that, one aspect of the rationale of cooperation will be the facilitation of exchange of information and experience. The policy requires that the library "create an inter-library network for purposes of getting access to various documents.

(Mambo 1998:154)

Therefore, the MSTHE should be committed to its policy draft in ensuring that co-operation among the higher institutions of learning exists to facilitate exchange of information and personnel so as to foster continuing education by learning from each other. The implication of this, however, is having enough materials and professionally trained personnel for exchange and monitoring policy instruments in place to see that the policy is implemented.

5.3.4 The Sokoine National Agricultural Library (SNAL)

SNAL was established in 1991 (Tanzania Parliamentary Act No. 21). This was another step towards making agricultural information more available and accessible. The Parliamentary Act empowered SNAL to carry out, among many others, the following functions: coordination of all agricultural libraries and documentation centres in the country, supervision of the coordination, advising and offering consultancy services to all cooperating agricultural libraries and acting as a national bibliographic and documentation centre. It was the nearest that Tanzania had come to making a national agricultural information policy.

Policies, however, must be operationalized. In the case of SNAL, one may question its effectiveness in coordinating, advising and offering consultancy and liaison services to other agricultural libraries and documentation centres in Tanzania. Also, SNAL's efforts to ensure and foster cooperation and resource sharing among agricultural libraries in Tanzania may be questionable. It can be argued that SNAL lacked, right from the beginning, that is, 1991, the basic policy process outlined in Table 2.3, that is: problem definition and verification, prioritization of identified problems, policy experimentation or trial, choice of instruments and strategies in implementation,

institutional arrangements, analysis of unexpected problems, consultative forums among stakeholders in the Act including the MoA, instruments for measurements of inputs and outputs, institutional capacity of SUA to implement the SNAL Act and monitoring and evaluating machinery of the degree to which the Act has achieved its goal.

The research findings revealed that an average of 67.9% of libraries and documentation centres did not cooperate with SNAL, the major reasons being communication problems and lack of awareness of the services that SNAL can offer. One particular respondent intimated that SNAL lacks 'protocol in public relations'. It is evident that SNAL has its own limitations in meeting its legislated mandates, which warrants a study on its own and, therefore, it has not exclusively been made a point of discussion in this study.

In summary and as stated in 5.2.1.8, in spite of the existence of the sectoral policies in Tanzania which are related to information, there is a dire need to develop a framework for NIP that will coordinate, consolidate or combine the sectoral policies in the best way possible. The present situation in the information sector makes it difficult to monitor and evaluate the existing policies for efficiency, effectiveness and impact of their implementation or lack of implementation on agricultural information, access and use. In a nutshell, in Less Developed Countries like Tanzania, a national information policy is critical. The lack of capacity in enforcement and interpretation means that the many "little" fragmented policies are difficult to implement.

5.4 The Extent to Which Tanzania has Implemented the Policies, Strategies and Recommendations Advanced to Improve Access to and Use of Agricultural Library Services

As discussed in Chapter 2, information can be available but not accessible to users and this has been noted as a persistent obstacle to agricultural development in Third World countries. These countries, including Tanzania, have limited access to global sources of scientific and technical information, although these countries are aware of the existence of such information. Having knowledge about the existence of information

and resources is often not enough to solve any information needs if a user cannot “physically” have the resources or information required.

However, to facilitate access to agricultural information, users should be able to define their needs, and the type of information required to satisfy their needs. In addition, the users must know how to search for the information and, finally, how to use it.

The research questions number Two of the study was aimed at finding out how far Tanzania has implemented the policies, strategies, recommendations and suggestions identified in research question number One and tabulated in Table 4.13.

5.4.1 Status of the library staff

The findings confirmed that there was a paucity of skilled library personnel in the agricultural library profession. In all libraries and documentation centres surveyed, only 5.9% had professional staff while 2.9% had one technician. In this study, professional staff have been defined as persons with a first professional level of training at degree level in librarianship or any other field, with additional training in LIS at postgraduate level or masters level. A technician is a person with a first degree in computer science, a diploma or an advanced certificate in IT.

An average of 94.1% of the libraries and documentation centres surveyed were lacking in such manpower and, furthermore, 97.1% had no technicians. Through the interviewees with heads of libraries, it was found out that one of the explanations for this situation was the retrenchment exercise that Tanzania had embarked on since 1996, that is, downsizing the manpower in the civil service and parastatal organizations

Lack of professionally trained staff was further reflected by the number of qualified staff that were managing the libraries and documentation centres, as shown in Table 4.5. The findings revealed that only three libraries were managed by information professionals, namely: SNAL, DRD library and Tanzania Pesticide Research Institute library. SNAL, DRD and College of African Wildlife Management were considered

better off in terms of both human and financial resources. Library managers/directors/chief librarians/officers should be highly trained and capable of facilitating collective leadership, working with diverse groups of information users and colleagues and committed to publicizing the library and information services. A trained professional officer/director/manager of the library or documentation centre is critical, particularly today, in dealing with the challenges posed by the information environment and in managing the meagre financial resources effectively.

5.4.2 Libraries' staff development

Apart from having an inadequate number of staff and library managers with professional training, the findings also established that the agricultural libraries and documentation centres lacked formal training programmes for personnel at professional, non-professional and technical levels. In other words, the library staff lacked formal training programmes at certificate, diploma, degree, masters and doctoral levels. The qualifications would enable the staff to 'go up the ladder' and avail them of career opportunities and salary increases. In every ministry, organization or institution in Tanzania, staff promotion is usually based on academic/professional/technical qualifications from recognized institutions or universities. The same applies to the library profession, as in accountancy, law, technical and many others. As discussed in section 5.2.1.3, formal staff training programmes are different from Continuing Education which is basically the responsibility of an individual.

Lack of formal training programmes for library staff was confirmed by an average of 67.6% of the libraries and documentation centres. The major reasons as shown on Table 4.6 for the lack of training programmes were:

- Lack of donor funds earmarked for training library staff which had a frequency response rate of 100.0%.
- Inadequate allocation of funds by parent ministries/institutions for that purpose - this had a frequency response rate of 52/2%.
- Lack of formal training programme(s) in general for library staff - this had a response rate of 30.4%.

The study, therefore, established that agricultural libraries and documentation centres in Tanzania did not have formal training programmes. This was a similar finding in all libraries under the ministries, universities and other institutions/organizations. Information from the interviews with the heads of libraries and documentation centres revealed that training of library staff was very much dependent upon availability of donor funds, particularly at Masters and Doctoral levels. In their opinion, it was of no use to have a training programme for staff in place when funds were rarely allocated for that purpose.

However, all libraries and documentation centres expressed the need for training in the following priority areas, which are indicated on Table 4.7, namely:

- Management of research reports.
- Basic computing.
- Database management.
- Cataloguing and classification.
- Information search.
- Information repackaging for users.

From the training needs expressed above it can be confirmed that there is a need for training agricultural information personnel in IT related fields. The term IT has been defined in broad sense as “technologies dedicated to information storage, processing and communication”. IT focuses on the hardware, software, telecommunications and office equipment that transform data to useful information (Kiplang’at 1999:132). For the purpose of this study IT has been defined to include specifically CD-ROM, computer networks, electronic publishing and other information support systems like GIS and MIS. IT offers unlimited opportunities to access and use information. However, these opportunities in developing countries like Tanzania are limited by many factors, among which are lack of IT technicians, poor communication infrastructure and lack of effective ICT policies. Consequently, in all libraries surveyed in Tanzania, the findings revealed that only one library had one IT technician, holder of a certificate in IT.

It has been argued that traditional training programmes in LIS schools hardly ever include modules on IT (Chisenga, 1995:22). Katundu (1998), in his study of academic and research libraries in Tanzania, found that IT in these libraries was at the “initial stages of being developed and therefore the situation did not reveal a fully developed IT infrastructure in all libraries”. One of the reasons given was lack of trained staff, which includes technicians and the donor dependency syndrome in ICT training.

It must, however, be realized that libraries should not in all cases rely on parent ministries/institutions to finance formal training in the library profession. As discussed in sections 5.2.1.2 and 5.2.1.3, not all skills can be attained through formal training, especially in ICTs. There is a need to sensitize library personnel on the importance of CE. In the light of scarce resources, the responsibility of keeping up to date professionally rests on the professional herself/himself and not entirely on the employer. CE prevents obsolescence. Unfortunately, and unlike other professionals library professionals seem to expect that the employer should pay for Continuing Education. Hence the need to sensitize library personnel to change its attitude.

Attending conferences, seminar and workshops can be defined as a process of Continuing Education. The study aimed at finding out the extent to which library staff were given opportunities for Continuing Education in the form of attending conferences and seminars.

The study found that, of the 34 libraries and documentation centres surveyed, only 14, representing 41.2% had the opportunity to attend conferences and workshops. According to the data presented in Table 4.8, an average of fifteen national/local conferences and workshops were attended over a period of four years, 1995-1999. Eleven regional conferences and workshops and four international conferences/workshops were attended. This opportunity was available mostly to two libraries, SNAL and DRD library.

The study, therefore, confirmed that agricultural libraries and documentation centres' semi-professional staff did not have opportunities to attend national, regional or

international workshops/seminars. Such opportunities were few and far between for professional staff in libraries under more affluent parent ministries/institutions.

In the light of limited financial resources to attend regional and international workshops and seminars, initiative of self-learning could be applied internally where, for instance, ad hoc meetings among heads of libraries and documentation centres could be arranged. Such meetings would be a source of information on different strategies that could be implemented which do not need financial input. There are many potential ways of learning from each other and fostering contact among agricultural information professionals.

5.4.3 Financial resources

Implementation of policies, strategies and recommendations is partly dependent upon the institutional capacity of the libraries and documentation centres. Implementation will have to be determined by the physical and fiscal resources that the libraries have. The major determinant factor is the budget of the libraries and also the capacity of the library manager to vigorously solicit funds and appropriately manage them. It is therefore important for library managers to participate in the budget sessions because they know the activities, services, users and other functions of the library and therefore they can prioritize and justify the activities to be funded. It is equally important for the manager to have negotiating skills in order to be able to strike a balance when all the activities cannot obtain funding. Nawe (2001) is very right when she says that justification for funds requested by the library is rarely acceptable to other faculties, departments and units. Budget sessions are sometimes the case of 'survival for the fittest' because, in most cases, the faculties, departments and units are many and all of them are competing for the budget which, is hardly enough to go around.

Neuman and Franzen (1999:63) observed that libraries in the national systems of most Third World Countries are poorly stocked, budgets are limited and access to outside information sources is also scarce. However, libraries in the developed world such as in United States, have not had what the librarians call "an adequate budget" but have managed with the allocated budget by prioritizing library activities.

The empirical study findings in Tanzania regarding the budgets of libraries and documentation centres were as follows:

- An average of 70.6% of the libraries and documentation centres did not participate in the annual budget estimates for their activities and services. They operated with what they were given on a monthly or quarterly basis by their parent ministries/institutions.
- The annual budgets for most libraries and documentation centres ranged between Tanzanian shillings 500,000 to 15,000,000 (USD 625 to 18,750). For the national agricultural library and the DRD library of the MoA, the annual budget ranged between Tanzanian shillings 15,000,000 to 40,000,000 (USD 18,750 to 50,000). However, in these libraries the budgets were heavily subsidized by donors, to the range of 66% to 78%. The subsidy was mostly in the areas of training and IT acquisition. The government budget on the whole was used for operational activities and stationery and could only subscribe to a few titles of scientific journals and local newspapers and purchase a few titles of books. In the well-endowed libraries, subscriptions to journals and purchasing of books were among the activities which were subsidized by donor funds.

According to Rosenberg (1994 and 1996) and Katundu (1998), external funded information activities and projects have a time-bound character. Since national budgets for information are limited, these activities are generally not sustainable after donor project termination or funding. As a result, donors have developed a tendency to build in a policy of sustainability of the project after their funding period to ensure that there is continuity. For instance, Priestley (1993), quoted in Katundu (1998), in her evaluation report of SAREC's library support programme 1985-1993 in Ethiopia, Mozambique and Tanzania, in which SNAL was one of the beneficiaries, pointed out that:

SAREC took the initiative to strengthen the research infrastructure of some universities by establishing a programme for support to university (and research) libraries. However, no support can or should last for ever

and it is important for any library to plan for eventual independence of donor funding.
(Priestley, 1993:25).

This implies that sustainability may not feature prominently and implicitly in donor project documents, but in reading between the lines of the project document, such implication is apparent.

The issue of sustainability of services and activities in the information sector has been supported by Rosenberg (1994) who argues that most of the Third World countries lack strategies through which the sustainability of information services and information technology could be effectively planned. Rosenberg (1994:247) cites some strategies that have been attempted in developing countries such as resource-sharing and cooperation which have had insignificant or no success. The failure of successful implementation of strategies has been attributed to lack of information policies at institutional or library level. It has also been attributed to lack of strategic development plans in most of the libraries. Hence, Rosenberg (1996:361) emphasizes information policies and library plans as essential for establishing suitable frameworks within which the strategies, including sustainability, could have been implemented.

Findings in all libraries and documentation centres were that the budget allocated was very limited to meet all their priority activities. The observations revealed that some of the documentation centres under the MoA lacked funds for essential cleaning materials besides stationery and other basic needs. The situation in some cases was unhealthy. Budgets have never in most cases been adequate but it is expected that funds for basic and necessary services and functions should be made available to libraries and documentation centres.

Information from interviews confirmed that the budgets allocated to agricultural libraries and documentation centres were limited. This was the prevailing situation in all activities in the agricultural sector, and also in all other sectors of the economy. The interviewees stated categorically that it was not intentional to only libraries and documentation centres in the agricultural sector, but other sectors such as health and

education had also been affected equally. This was due to the poor economic base of the country.

As argued by Zell (1991), quoted in Dulle, *et al.* (2001:188), one of the practical problems affecting libraries in Africa is the “collapsing economies” which has taken a heavy toll on education budgets and in turn, on libraries and book industries. “The economic situation has a bearing on the decline of funds for book and journal purchases. Thus most libraries are unable to purchase new books and are incapable of maintaining the subscriptions of their current periodical holdings”.

Related to the inadequate budget for libraries, were the activities and services for which the library budget was used and the size of the material collections in the libraries and documentation centres, as shown on Table 4.9. From the analysis, it was possible for the study to state that the meagre financial resources were mainly used for subscriptions and acquisition of books. Activities like staff training, inter-library loans and library-user training were not allocated any funds. Therefore, inadequate budgets were one of the limitations of efficiency and effectiveness of libraries and documentation centres as a key information delivery channel in the agricultural sector. Therefore, Tanzania has not implemented the recommendation that agricultural libraries and documentation centres should be adequately funded. In researcher’s point of view, there has not been an “adequate budget” in any organization. The libraries and documentation centres rather need managers who can use the meager resources innovatively.

Nevertheless, library budgeting should be viewed as part of the effective planning of library information services. For libraries and documentation centres, regardless of their size, budgeting is important as one of the means through which an organization could obtain and allocate resources rationally for specific activities and functions. Library budgeting in Tanzania, does not, however, guarantee the availability of actual funds for items budgeted for, but this is the only way to seek recognition and acceptance as a key information delivery system in the agricultural sector.

5.4.4 Resource sharing

Resource sharing or networking is based on the principle of collaboration and cooperation and it can be a flexible structure which emphasizes a participative model. Participating libraries continue to provide specialized services both to their own users and to the network. The structure should, however, have a coordinating centre which will foster collaboration and cooperation for effective coordination of activities in the network. Through the network, some economy in the use of agricultural information resources can be realized. However, networking implies among other things, the supply of computers to all libraries cooperating in the use of CD-ROMs, and on adequate number of scientific journals. An example of this cooperation is found in Ghana where the Ghana Agricultural Information Network System (GAINS) was established in 1991 (Sam 1991). GAINS has a national centre in Accra, based at the Institute for Scientific and Technological Information (INSTI). The centre acts as a referral centre for requests on any agricultural subject. "It is also the site where important general and multi-disciplinary literature in the field of agriculture is held" (Sam 1991:108)

Using Coordinating Centres for Resource Sharing is one model. There are also others, like the Distributing Model where, having put policy and procedure in place, libraries do the sharing on their own with no "middle" coordinator.

The Institute for Scientific and Technology information (INSTI) in Ghana has succeeded as a Coordinating Centre for GAINS for three major reasons:

- It is a flexible structure which emphasizes participation rather than issuing directives and circulars to participatory agencies.
- It is focused on fostering collaboration and cooperation for effective coordination of activities to the network
- Its management of its nine-member board is superb and effective in the sense that it has representation from appropriate bodies, that is: the Ministry of Food and Agriculture, research institutes and universities who are committed to the success of the cooperation. The principle of commitment is important in the central model of cooperation because each participating member has a role to play.

This is a model which the researcher recommends for Tanzania because it can work given the political will and commitment on the part of the MoA, research and training institutions and all stakeholders in the agricultural and agricultural related sectors who would be the beneficiaries of the model. There must be political will and commitment because, for a centralized system like GAINS, there are many requirements and inputs which are critical, such as: human resources to do the work, communication linkage, funds for staff and linkage, equipment, training of personnel and constant maintenance of the technology. Above all the 'hub' must be locally funded in every aspect so as to create a sense of responsibility from the beginning for reasons of sustainability.

As argued by Ekpenyong (2001), cooperation among agricultural libraries and documentation centres should facilitate and encourage standardization of hardware, software and mode of bibliographic data entry. Ekpenyong (2001) reports that:-

In the twenty first century, strategic cooperation among libraries will go a long way in satisfying the research needs of scientists. At present, this is the preferred choice in this era of inadequate funds, dwindling economic resources and advancing technology. To beat global inflation, therefore, electronic resource sharing and the Internet constitute the choice.

(Ekpenyong 2001:118)

The finding in Tanzania as indicated on Table 4.10 confirmed that there was no formal cooperation between the libraries and documentation centres. There was, however an informal cooperation between sixteen libraries, representing 47.1%.

The cooperation among the libraries and documentation centres was mostly in exchange of publications, inter-lending of books and inter-lending of research reports. These three activities had a ranking frequency of 47,1%. The cooperation in inter-lending of journal articles had a frequency ranking of 41.2% while cooperation in training activities, union catalogue of periodicals, cooperative acquisition, workshop organization, joint research activities and joint publishing activities each had a ranking frequency of 5.9%. There was no network based on ICTs amongst the libraries. There is, however, an explanation for this situation.

Library cooperation in Third World countries, including Tanzania, is hampered by lack of resources. Activities such as inter-library lending and exchange of publications has been adversely affected by declining financial resources as well as poor and increasingly expensive postal services. Individual libraries can no longer risk or afford to send their only copies of a book or report to another library as the item might not reach its destination or might not be returned. With very meagre budgets, libraries cannot afford extra copies for exchange purposes.

On the other hand, the observations revealed that there were a substantial number of various agricultural reports of research work and other items which were potentially useful but which potential users were not aware of due to poor bibliographic control. Unless there is a record of what is being produced, identifying vital information will be difficult. Bibliographic control aims at making people aware of what has been produced or what is available and ensures that these materials are also well documented.

Resource sharing as seen in the case of Ghana evolves around information technology. Inventory of existing resources can be followed up by cooperative ventures in the production of union catalogues of holdings, creation of bibliographic databases on specific agricultural disciplines and products. Computers in this case are utilized in the creation of multiple sets of data which can then be shared amongst cooperating partners. Furthermore, the technology can be used to quickly reproduce part or the whole of a document and speedily transfer it to another location. Digitization and scanning of documents, especially those that are in the public domain like government reports can be scanned as needed and shared. In Tanzania, however, the availability of such technology as established by Katundu (1998) is still patchy, even in the institutions of higher learning, and therefore has not reached a stage of nation-wide networking. The technology would have been very useful in linking up the agricultural research zones where remote research stations are at a disadvantage in information access.

Related to the above finding that there is little or no formal cooperation or networking based on IT amongst the agricultural libraries and documentation centres in Tanzania,

is the finding that the majority of the libraries and documentation centres (67.6%) did not cooperate with the national agricultural library (SNAL).

The reasons given were lack of communication and lack of awareness of activities that could be shared with SNAL. In this case, there should be a specific study on SNAL to find out its institutional capacity and limitations in carrying out its mission. The SNAL's designation is equivalent to the set-up in Ghana, and if Tanzania was to adopt the Centralized Mode of Cooperation in the agricultural information sector, SNAL would be the starting point.

General problems encountered in co-operation among agricultural libraries and documentation centres were ranked on a scale of one to eight and Table 4.11 showed the problems according to the ranking scale as being: inadequate number of staff, poor communication, lack of financial resources, lack of materials and equipment to facilitate networking, unwillingness of the libraries to cooperate and some considered it not necessary, possibly due to lack of guidance.

Several writers such as Plucknett and Smith (1984) and Hailu (1989), have suggested prerequisites for successful resource sharing and networking. These are, among many others:

- A clear definition of the problem.
- Drawing up a plan of action.
- Wide sharing of the defined problem among the potential participants.
- Evidence of strong self interest in participating in the network.
- Trained personnel to represent participating members and contribute to specific tasks and network coordination meetings.
- There should be a strong leadership comprised of a steering committee and a full time coordinator. All participants must be involved in the decision making process affecting the activities of the network and be treated as equal partners.

In summary, for successful networking using any model, the push for the network should come from the 'grassroots' where the problem will be well defined, and not

from parent ministries, organizations or library management. The designated centre for coordinating the network should be very active in drawing up a plan of action. Once networking has been agreed upon, no libraries or documentation centres should be barred from full participation. In reality, cooperation or networking implies equal partnership with equal inputs into the network. It is therefore important for the centre to initiate that and to see that there is an equal partnership.

5.5 The Capacity of Agricultural Library System in Tanzania to Implement the Policies and Strategies

The answer to research question number Three of the study, namely “ What is the capacity of the agricultural library system in Tanzania to implement the strategies, recommendations and suggestions identified in research question number One?, is that the capacity is simply inadequate.

The institutional capacity of libraries to implement the recommended policies and strategies is dependent upon many factors and available resources. The data and information from the interviews confirmed that the agricultural libraries and documentation centres did not have an adequate number of professional, non-professional and technical staff. They also lacked highly trained managers with a vision and mission for the library or documentation centre, who could manage the meagre resources effectively and innovatively and who could work amicably with the diverse users of agricultural information.

In addition, in order to implement the policies and strategies, libraries need adequate funds to meet their priority activities and functions. This requires recognition of the role and importance of libraries and documentation centres as a key information delivery channel in the sector by policy makers and the users in general. The following findings from the study are indicators of the incapacity of the libraries and documentation centres to implement the policies and strategies:

5.5.1 Human capacity

- a) Agricultural libraries and documentation centres operated with a limited number of qualified staff at all levels, that is professional, non-professional and technical. Technicians were lacking in 97.1% of the libraries and documentation centres surveyed.
- b) Trained library personnel at professional level were few and were only found in big libraries and documentation centres like SNAL, DRD Library, TPRI and African Wildlife Management College Libraries.
- c) Most libraries and documentation centres were managed by semi-professional staff which is not helpful at all, as discussed earlier. Library managers should be highly trained in the profession in order to be able to cope with the Tanzanian information environment and global information in general.
- d) There are no career prospects for the library staff due to lack of formal training programmes in place. In addition, library personnel are not adept to Continuing Education which the researcher has described as “a self initiative education for the development of an individual for her or his own benefit”.
- e) There is little resource sharing and cooperation among the libraries and documentation centres. Resource sharing is essential in access to and use of the various resources of libraries. Information should be accessible by researchers from different zonal locations. The available technology, as pointed out by Smith (2000), is supposed to facilitate resource sharing through electronic networks. Requests for information can come in a variety of ways including e-mail and document delivery through transfer of scanned images over the network. Kaaya (2000) cites several organizations assisting electronic connectivity in Africa, which include IDRC, the World Bank and the United States Agency in Development. The government should however, be fully committed and supportive of electronic networks to avoid the donor dependency syndrome.

In the light of the above limitations, one fails to see how the libraries and documentation centres could implement the recommended policies and strategies. For instance, in resource sharing and networking there must be trained personnel with special skills to build not only bibliographical databases but also non-bibliographic ones. Haravu (1994:253) argues that some of the most valuable resources in a network are human resources development and sharing of the skills. If such human capital is lacking and the skills are not available, it is not possible to implement the strategy.

5.5.2 Financial capacity

- Budget allocation to the libraries and documentation centres was inadequate for physical and fiscal resources. The study came up with the finding that in all libraries and documentation centres, with the exception of SNAL and the DRD library, there were large gaps in the book and journal collections. Most of them had less than 50 items in their stock.

Similar findings from the observations were that:

All documentation centres under the MoAC's research institutions/stations lacked current literature. Most of the collection had been acquired largely through inconsistent gifts. These documentation centres were dependent upon the Ministry's DRD library for current materials for the researchers and, due to communication problems, such requisitions took time to reach the user. The bibliographic control of technical reports, that is, research and consultancy reports was poor.

Therefore, in terms of human resources, financial capacity and the size of collection, the libraries were not in a position to implement the policies, strategies and recommendations. The exceptions though, were the DRD library, SNAL and TPRI which apparently were aware of the strategies and recommendations for the improvement of the agricultural library information system, and were still in the process of implementing some of them.

5.6 Effects of Lack of Implementation of the Recommended Policies and Strategies on Agricultural Library Services

What has clearly emerged from the study findings is that agricultural libraries and documentation centres in Tanzania are still conventional. The great majority of their holdings still appear in print form and as observed, the service rendered to users is also traditional. Only the national agricultural library and DRD library of MoA can boast of a substantial number of trained agricultural information specialists. As a result of this, the majority of agricultural libraries and documentation centres are managed by semi-professional staff or primary school leavers assisted by a research officer. In most cases, library personnel lack background knowledge in agriculture or agricultural related fields. In other words, they do not have agricultural or scientific background. One can also speculate that they lack the capacity and necessary status or rank to adequately motivate and 'demand' for appropriate resources within the parent institution. To obtain resources depends partly on the assertiveness and negotiating skills of an officer in charge of the library.

Another equally important effect of lack of implementation of the policies, strategies and recommendation for libraries is that there are important potential user groups that are not being served by agricultural libraries because information specialists have no means of predicting their needs partly due to lack of funds to carry out recommended user needs assessment and, most importantly, due to lack of knowledge in agriculture and agricultural related fields.

In this respect, the study findings confirmed that researchers, trainees, trainers and extension officers are the major user groups of agricultural library services. However, there are other potential users like farmers, businessmen, economic planners, policy makers, agro-business industries and agricultural institutions which should be using the agricultural library resources effectively. As discussed in the literature review, availability of relevant and current information to policy makers, for instance, leads to rational decision making. It is one of the responsibilities of information specialists to provide relevant and current information to decision and policy makers in the sector

and to instruct the same group on how to use the Internet and various agricultural databases in search of current information.

Another important effect to note is that, due to meagre budgets allocated to libraries, information specialists are not able to develop current awareness programmes for services by holding frequent bibliographical sessions and organizing seminars and workshops for users. Tanzanian agricultural library information system is not fully utilized partly due to lack of awareness of what it has to offer to scientists and other potential users. Hence the need to promote access to and use of the service through resource sharing and networking particularly through inter-institutional current awareness.

5.7 Factors Which Have Hindered Implementation of Policies and Strategies

Research question number Five enquired about factors or problems which hindered the implementation of policies, strategies and recommendations for the improvement of agricultural information services. It was assumed that agricultural libraries and documentation centres were not the most effective and efficient information delivery channel in the agricultural sector and, therefore, it was considered important to:

- Find out if the libraries and documentation centres were aware of the policies and strategies, and also to find reasons for lack of awareness.
- Identify the factors which were the cause of lack of implementation of the policies and strategies for the improvement of agricultural library services.
- Find out whether libraries had practical solutions to those problems which they could share with one another.

5.7.1 Awareness of the policies and strategies

To provide answers to research question Five, responses from the libraries and documentation centres were analyzed and the findings established that an average of 79.4% was not aware of the policies strategies and recommendations.

From the frequency of responses and related percentages, the problems which hindered the implementation of policies and strategies were :

- * Lack of awareness of the policies and strategies
- * Lack of communication from the National Agricultural Library
- * Lack of institutional capacity for implementation
- * Lack of a national agricultural information policy
- * Lack of awareness of the policies and strategies by parent ministries/institutions

Information from the interviews confirmed that 66.7% of the 18 policy makers interviewed were not aware of the strategies, policies and recommendations for improvement of agricultural information services. The policy makers interviewed suggested causes of problems of inefficiency and ineffectiveness of agricultural libraries, which can be categorized in four categories, namely: lack of funds, lack of trained staff, lack of awareness of libraries and documentation centres' services and lack of awareness of the policies and strategies.

To identify factors which hindered the implementation of the policies and strategies, it was necessary first to identify problems facing agricultural libraries and documentation centres. The problems were presented in figure 4.3. The problems have been categorized into four main categories for discussion:

- Problems resulting from inadequate budget allocations.
- Problems resulting from lack of human resources development programme(s)
- Problems associated with lack of networking among libraries.

- Problems associated with the status/profile of the profession of information specialists.

5.7.2 Libraries' budgets

Budget-related problems included those problems affecting the services, activities and functions of the libraries. The financial problem was considered most critical by a ranking frequency of 100.0% and this was perceived as been the cause of other problems. Obsolescence and low capacity of some libraries are part of the financial resource-related problems.

5.7.3 Human resources

Human resources development-related problems had a frequency ranking of 94.1% of the libraries and documentation units. The associated problems have been discussed throughout this study. However, apart from lack of trained personnel, continuing education for those already in the sector should be encouraged by parent institution/organizations. These institutions should also work out attractive schemes of service, salary package and prospective career development for the retention of trained staff in the sector.

5.7.4 Resource sharing and networking

Networking among libraries is one factor which ensures resource sharing and more access to information. In Tanzania, this was found to be lacking, and as a result the documentation centres in remote agricultural research stations did not have much to offer. The issue is that the potential of a well coordinated national library network to provide wide and efficient access to certain types of information needs of researchers, policy makers and other users has not yet been fully appreciated.

5.7.5 Professional status

Problems associated with the status of the profession within the community includes the low profile that the library personnel is accorded by users, and the community as a whole. However, the traditional role of a librarian is changing from that of passive to proactive to be able to offer services to meet the user needs and to be able to compete with other information providers in the sector.

Based on the research results, the solutions advanced to all the problems by the libraries and documentation centres were optimistic and realistic. Generally, the proposed solutions were concerned with the efficiency and effectiveness of the library agricultural information system in the sector and have been categorized into six categories, namely:

1. Categorization of library information as a rare profession like accountancy and medicine. This solution originates from the fact that the scheme of service for library personnel is ranked lower than that of their counterparts in other professions, such as technicians and accountants.
2. Introduction of recruitment programmes to fill the vacant posts in agricultural libraries and documentation centres, most of which were left vacant after the retrenchment exercises.
3. Formulation of a policy on the percentage of the institutions/organizations' budget that should go to the libraries and documentation centres annually. The feeling of many libraries and documentation centres was that when other departments were getting a bigger share from the overall budget of the parent institutions/organizations, the libraries were on the periphery of the receiving end.
4. Formulation of a policy on training agricultural library personnel in information technology.

5. The National Agricultural Library should organize seminars/workshops for semi-professional and IT technicians.
6. Agricultural library information specialists should seek support from sister international professional associations.

All libraries seemed to have wealth of innovative ideas in the form of solutions to the problems and these solutions are in fact strategies and recommendations for the improvement of the agricultural library information system. This confirms the need to have a NIP which would give much needed guidance in solving the problems in a systematic way by identifying and recognizing the problems, and designing a policy with programmes, activities, instruments and capacity to achieve them.

5.8 Summary

This Chapter has shown the picture of agricultural libraries and documentation centres in Tanzania. The chapter began with the major research question, namely, the list of strategies and recommendations by academics in agricultural information, international consultants and other bodies, advanced for improvement of access to and use of agricultural information and specifically the library agricultural information services. The major policies and strategies were: training, adequate funding, formulation of ICT policies, resource sharing and networking and formulation of a national information policy/policies.

The study revealed that there are various sectoral policies which are related to information and specifically to information technology and research. Tanzania lacks a concrete national information policy to partly coordinate the 'little' sectoral policies which are already in place and which cannot be ignored but which are difficult to implement, monitor and evaluate.

It was seen from the literature review that a precondition for implementation of the policies, strategies and recommendations for the improvement of the agricultural library information services is the formulation of a NIP which would, among other

things give guidance to funding, human resources development and networking so as to strengthen the capacity of the agricultural library information system to participate in both national and regional collaboration programmes. Furthermore, in developing countries where resources for policy implementation, monitoring and evaluation are difficult, NIPs have more chance in developing the information sector.

The institutional capacity for implementation of the policies, strategies and recommendations was found to be lacking in 94.1% of all libraries and documentation centres surveyed. The capacity was lacking particularly in manpower, finance and collection size. The absence of formal resource sharing and networking has made some researchers unable to access information from other libraries outside their institutions or workstations.

The findings also supported the argument that most of the libraries and documentation centres were not aware of the strategies, recommendations and suggestions. This was also confirmed by information from the interviews which revealed that, 66.7% of policy makers were not aware of the strategies and recommendations.

The libraries were aware of the problems facing their libraries and major suggestions for solving them were: recruitment of library personnel to fill the vacant posts left after the retrenchment exercise, categorization of library profession as a rare profession and formulation of policies on staff training and budget allocation. The suggestions were made on the assumption that, if implemented, the agricultural library information system in Tanzania would be effective and efficient in information delivery to users.

An effective library information system guided by NIP should be able to determine its user needs and obtain timely, relevant and current information from various resources and in different formats for the users. It should be able to organize, document and manage the library collection, including the agricultural research reports, which are a major source of information in the agricultural sector. It should also be able to integrate with other information delivery channels in the country, such as extension personnel, zonal liaison officers and farmers.

For the libraries and documentation centres to remain centres of excellence in delivering agricultural information, the information specialists must take advantage of every reasonable financial opportunity to ensure access to and use of current, accurate and timely information by all agriculturalists. The role of library personnel in agricultural information handling and provision can be facilitated by CE particularly so in the ICTs.

CHAPTER 6

SUMMARY OF STUDY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This Chapter presents a summary of the study findings, conclusions and researcher's recommendations based on the research findings. It also provides suggestions for further studies and areas of further research for effective implementation of policies and strategies for agricultural information access and use in Tanzania, particularly that of agricultural libraries and documentation centres. The summary of the study findings is based on the research questions.

6.2 Summary of the Study Findings

The summary of the findings is based on each research question.

Research question number One, namely: What key policies, strategies, recommendations and suggestions have been advanced to improve access to and use of agricultural information, particularly that of agricultural libraries and documentation centres, and have the strategies, recommendations and suggestions been translated into policies or legislation in Tanzania?

Mainly based on the international literature and studies of agriculture and information systems and services, the study generated a list of recommended policies, strategies and suggestions for enhancing accessibility and use of agricultural library services. Table 4.15 shows the list and indicates the frequency of occurrence of each policy, strategy or suggestion in the literature. The frequency occurrence in this case reflects the urgent need for implementation of the policy or strategy in question.

The most frequently recommended policies and strategies are:

6.2.1 Formulation of NIPs

It has been argued that formulation of NIPs will give guidance to the activities in Less Developed Countries' information environment, particularly the organization and management of agricultural information for more access and use. The International Development Research Centre (IDRC) (1989) emphasized on the formulation of NIPs in the developing countries because it is usually the practice of the governments of the Less Developed Countries to allocate budgets and other resources according to principles and regulations laid down. Secondly, there is a need in these countries to have policies in place for coordination, networking, resource sharing, data standardization and creation and maintenance of data bases. The underlying factor is that information is an essential input for an effective and functional National Agricultural System (NARS). The major objective of a national information policy is to facilitate access to and use of relevant information by users which would in turn contribute positively to agricultural development, effective NARS and effective and efficient national libraries. As observed by Neuman and Franzen (1994)

“The absence of a clear structure, individual organizations and projects operate according to their own insights on an ad-hoc basis. Isolated systems are developed and activities concentrated in particular parts of NARS, without developing a coherent, mutually reinforcing system. In this situation parts of NARS have access to most information whereas other parts are completely isolated. The lack of coordination is a burden to organizations who receive multiple data-collection for different purposes”.

(Neuman and Franzen 1994:64)

Furthermore, Younis (1986) attributed the lack of NIPs in Less Developed Countries to lack of strong and effective national libraries.

Lack of strong national libraries has made other organizations which have their own vitally important role, to assume some of the responsibilities which national libraries are uniquely fitted to discharge.

(Younis 1986:308)

For instance, the Sokoine University of Agriculture library is also the Tanzania National Agricultural Library. It has been charged with the task of organizing, managing and disseminating agricultural information at the national level. Some of its responsibilities and functions relate to the coordination of agricultural information documentation centres in the country, provision for guidance on cooperation and resource sharing, and collection and maintenance of records of agricultural research and development projects both in progress and complete. However, the study findings established that 67.6% of the agricultural libraries and documentation centres surveyed did not cooperate with or benefit from SNAL. The problems given were that of distance, lack of contact/communication with SNAL, and therefore a lack of awareness of the National Agricultural Library's resources and its role in the Tanzanian agricultural information system. In this case, the National Agricultural Library of Tanzania has not been able to fully carry out its responsibilities as spelt out in the Parliamentary Act No.21 of 1991 that established it. Nonetheless, poor communication facilities are a general bottleneck for access to and dissemination of information in most Third World countries.

Otike (1996:44) suggested that formulation of NIP will make it possible for the institution of national libraries where there is none and also ensure the institutional capacity of the existing national libraries to carry out their responsibilities.

In summary, the study found out that Tanzania did not have a NIP *per se*. However, it has the sectoral policy relating to scientific, technical and agricultural information. The main problem with implementing the goals and strategies of SNAL is the sheer size of the problem, that is, taking care of the whole country's agricultural information system. Agriculture is a wide, diversified and difficult field to define. Related to the problem of definition of the agricultural field is the limited capacity of SNAL to carry out its legislated mandate. On the other hand, what capacity does SNAL need to be able to fulfil its national responsibilities to other libraries and documentation centres in the sector? For ten years now, what could be an answer to its limited capacity? There is no single nor simple answer in any one case.

6.2.2 Trained library personnel

Another recommendation that occurred frequently in the reviewed literature is the need for the ministries/institutions to recruit and train an adequate number of library personnel at managerial, technical and operational levels. Personnel should, however, have a basic knowledge of agriculture, where possible a first degree in agriculture or related subjects and further professional training in agricultural information organization and management. The study findings confirmed that SNAL has started the implementation of this particular policy. The observation and the information from the interview with the SNAL director confirmed that SNAL's recruitment of professional staff is based upon possession of a first degree in agriculture or agricultural related fields. The Ministry of Agriculture/DRD library is also implementing this strategy, albeit at a slower pace.

The findings of the study established that formal training programmes lacked in all libraries and documentation centres surveyed. The information from the interviews revealed that the library managers who indicated that they budget for their library activities were often discouraged from working out staff training programmes due to non allocation of funds by the parent ministry/institution for staff development. The data further revealed that training of library personnel was largely dependent upon the availability of donor funds. This, as discussed in Chapter 5, is a donor dependency syndrome which should, if possible, be minimized or taken with caution because it is not guaranteed and its sustainability is often questionable. Experience from institutions of higher learning in developing countries has shown that external funded information activities have a time-bound character. Since national budgets for information are limited these activities are generally not sustained after project-termination.

The information environment in the 21st century, poses several challenges to information specialists. It requires among many other resources, skilled information personnel in national systems. Therefore, and, as Nawe (2000) argues, "Development of ICTs demands that library personnel at all levels stay mentally engaged through out

their careers, so that knowing how and when to change their work becomes an essential component in their working life” ((Nawe 2000:27). This implies self-initiative education which has been referred to in this study as a continuing education (CE). This is unfortunately a “culture” which library personnel has to cultivate to remain ahead of the information provision techniques.

6.2.3 Publicity of library services

Another recommendation is for libraries to be proactive and market/publicize their services so as make potential users aware of library services and other resources. The publicity of library and information services in Tanzania, as in other parts of the Third World countries, is a concept with which most libraries and documentation centres are still not familiar. However, it is the role of the agricultural libraries to focus their collection on the users’ needs and on the mission of their parent organizations/institutions and it is equally their responsibility to make users aware of such collections. The findings from the study revealed that the primary users of most agricultural libraries and documentation centres are research scientists and extension personnel. Therefore these should be prioritized and made aware of the services and other facilities that the libraries can offer. This will provide a multiplier effect in the sense that the information will trickle down to the end users, which are farmers. The publicity can be done through different channels, the most effective one being the media, so that users and potential users of agricultural library services may be aware of the resources that the libraries have and other services that information specialists can provide. It is important for information professionals to be able to compete successfully with other information providers such as the Internet and other information brokers. This implies that strategic marketing skills are of a vital importance for survival of library information systems.

6.2.4 Allocation of adequate financial resources

The priority list of policies, strategies and recommendations to improve accessibility and use of agricultural library information services included also the recommendation that agricultural libraries and documentation centres should be allocated adequate

budgets for staff development at all levels, for procurement of equipment, materials and for operational activities. Tanzanian economy, which is to a larger extent, dependent upon donor support, has experienced an unfavorable economic situation over the years and this has had an adverse effect on its social services, including education. Consequently, this has also affected library budgets. Information from the interviews confirmed that the allocation of meagre financial resources affected all sectors of the economy and not the agricultural libraries and documentation centres only. This implies having in place highly skilled agricultural information managers who can effectively manage high operational costs with limited financial resources. This requires tough management decisions on setting priorities and strict financial management.

6.2.5 Formulation of ICTs policies

Formulation of IT policies has been frequently recommended to facilitate IT infrastructure, networking and access to agricultural information by research scientists in remote stations. The study by Katundu (1998) on the use and sustainability of IT in academic and research libraries in Tanzania reaffirms the need for such a policy. Katundu's study (1998) revealed that the problems affecting IT use and sustainability in libraries were technology related, such as incompatibility of some hardware and software resulting from non-standardization of IT equipment. Some problems were also related to resources, particularly insufficient funding for IT development. "In some way it is seen as an additional cost burden to already burdened libraries due to poor funding" Katundu (1998:114).

Related to IT use and sustainability is lack of IT training programmes in the country and retention of IT trained and professional staff in general. The recommendation for formulation of IT policy is valid. The policy would work out strategies to address all the problems of developing training programmes for analysts, programmers and data processing personnel. Such a policy would also ensure compatibility in operating systems and data formats, and standardization in training, related to ICTs.

Effectively applied, IT has a lot of potentials to alleviate some of the problems reflected in the implementation of strategies. For example it can be used for resource sharing through networking as observed by Mambo (1998). The ICTs can facilitate information sharing, training of library personnel, particularly those in “one person library” in the agricultural research stations. The ICTs developments have become a global issue which countries like Tanzania cannot ignore, but should embrace through the development of systematic identification of national objectives, policy guidelines and organizational frameworks for implementation of policies.

6.3 Summary Findings to Research Question Number two

Research question number Two: How far has Tanzania implemented the policies, strategies recommendation and suggestion in research question number One ?.

- Among all libraries and documentation centres surveyed, 79.4% were not aware of the policies, strategies and recommendations. Only a few libraries, the National Agricultural Library, the MoA’s DRD library, and the TPRI library were aware of the policies and strategies. One should note, however, that this was only at management level. It may well be that staff at lower cadres were not aware of the policies and strategies and what the benefits are. In any case, full implementation of the policies and strategies is incapacitated by fragile institutional capacity.
- The majority of policy makers were aware of the strategies and recommendations, particularly that of formulation of a National Information Policy. However, they were of the opinion that the already existing sectoral policies need evaluation for effectiveness and the possibility of linking or forming a coordinating body. The policy makers were skeptical and non-committal in formulation of a National Information Policy *per se*. The present situation was not encouraging for the formulation of other policies which would add to the already existing policies, creating a “policy fatigue syndrome”.

- Major reasons given by the libraries and documentation centres as to why they were not aware of the policies were lack of SNAL's cooperation and communication, lack of resources such as human and material resources for implementation of the policies and strategies by parent ministries/institutions.
- Similarly, the majority of libraries had no regulations or policies to guide their overall collection development including selection and use. As mentioned before, the library collection should focus on the users and on the objectives, goals and mission of parent ministries and institutions. It is vital to have collection development policies for cooperation and resource sharing among libraries with similar activities, functions and users. This avoids duplication of materials particularly scientific material which is expensive and available in most cases in single copies. Cooperation and resource sharing is currently the preferred choice in this era of inadequate funds, dwindling economic resources and advancing technology.

6.4 Summary Findings to Research Question Number Three

Research question Three: What is the capacity of the agricultural library system in Tanzania to implement the policies, strategies and recommendations identified in research question One?.

- The study established that most agricultural libraries and documentation centres have limited financial, human and material resources.
- The budgets of most libraries offer very limited support to an agricultural library or a documentation centre which constantly needs an up-to-date scientific collection for researchers and other users. Donor support which supplements the budgets of the few libraries, has not been able to solve all the problems facing these libraries. Moreover, sustainability of the activities that are being funded by donors is uncertain after the donor funding period. The lack of adequate budgets is aggravated by the lack of highly qualified and astute library managers who can set priorities and work with minimum resources.

There has not been acknowledgement of adequate budgets from managers of any organization because one cannot actually define what an adequate budget is or should be. The needs are many, but resources are limited. For the agricultural sector, resources are even more limited because agriculture is a very large field.

- The institutional capacity of agricultural libraries and documentation centres to implement the policies, strategies and recommendations is further weakened by staffing constraints at all levels, that is, professional, para-professional and technical levels.
- Some libraries were relatively better off than others in terms of collection, funding and staffing. These included the National Agricultural Library, the DRD (MoA) library, College of African Wildlife Management library and Moshi Co-operative College library.
- The agricultural information library system in Tanzania provides a foundation for effective implementation of the policies and strategies although it may not be considered very solid. The National Agricultural Library (SNAL) is already in place. It is only partly incapacitated in carrying out its national mandate. What is missing are the other aspects such as resource sharing, a bibliographic control system and communication with remote agricultural research training and research stations. However, for resource sharing to succeed especially in the Tanzanian agricultural environment, “There must be sufficient resources to share and the institutions must have finance to continue to build up and develop these resources” Rosenberg (1993:50).

6.5. Summary Findings to Research Question number Four

In which ways has the implementation or lack of implementation of the policies, strategies and recommendations affected agricultural libraries and documentation centres in Tanzania?

6.5.1 Lack of trained personnel

An adequate number of trained library staff at all levels, that is, professional, non-professional and technical, was found lacking. Professionals in agricultural information handling in Less Developed Countries are few in number. Lack of trained staff implies that some libraries and documentation centres are poorly managed by unqualified personnel, which results in the undermining of the services by the users. In such cases, users have low expectations of the quality of service offered. The implication of this is that when potential users want to use the services, their information needs cannot be met fully.

In addition to what has already been pointed out, professionally trained managers are critical in managing the libraries at this time of constant change in IT and limited financial resources.

6.5.2 Financial constraints

Agricultural libraries and documentation centres lack the financial capacity to purchase the necessary inputs and to finance the advancement of information systems. The technical infrastructure to support the ICTs is not sufficiently developed. The information systems at MoA's headquarters and SNAL are not even linked despite the advancement of technology. This implies problems of agricultural information access which results in user dissatisfaction. Only a few libraries could boast of satisfactory annual budgets. However, the budgets were heavily subsidized by donor funds. Most libraries' and documentation centres' budgets were dependent upon parent ministries and institutions. Such funds were made available to libraries on a monthly or quarterly basis. The ICTs developments have made the library managers more aggressive in soliciting funds from donor communities. This is not a solution. Parent ministries/institutions should be committed in funding the libraries' prioritized activities and particularly training of library staff at professional, para-professional and technical levels.

6.5.3. Poor cooperation among the libraries and documentation centres

According to Boon (1992:67), lack of cooperation among the information services results in duplication of information services. The study established that there was little cooperation particularly in exchange of publications, interlending of books and research reports, in which 47.1% of libraries were involved. Boon (1992) attributes lack of cooperation to lack of NIPs to coordinate the activities in the information sector and also to non-functioning of library associations. Of the 34 libraries and documentation centres surveyed, 67.6% indicated a 'weak national professional association' as one of the major problems facing agricultural libraries and documentation centres.

Similarly, Mwacalimba (1974) argued that, "The roles and functions of an average library association include bonding together all persons with an interest in the profession". Mwacalimba (1974:8) identified five essential objectives of an ideal Library Association that is:

1. *Publicity and fostering of library services*
2. *Provision of forum for exchange of ideas relating to practice and professional developments in the information sector*
3. *Safeguarding the interests of librarianship and the profession*
4. *Enhancing the quality of library services and education*

(Mwacalimba 1974:8)

The Tanzania Library Association exists but in general it has not been very active or effective in ensuring, among other things, that libraries and documentation centres are aware of the sectoral information related policies.

6.5.4 Lack of effective legislation

The findings also established that Tanzania did not have a National Information Policy *per se*. This is not peculiar to Tanzania. Most African countries have no legal framework to provide guidelines for the organized and harmonious development of the

library system (Sheba 1998:53). Nevertheless, the importance and role of legislation is that it grants the legal framework and guarantees continued service.

6.5.5 Lack of bibliographic control of technical reports

Technical reports are a valuable channel for development, as has been argued by several scholars. Technical reports, which include agricultural research and consultancy reports form the bulk of the problematic type of grey or development literature. The value attached to technical reports is not known to most library personnel due to lack of background knowledge in agriculture. The observations revealed lack of documentation, organization and management of research reports in most libraries and documentation centres surveyed.

In summary, lack of implementation of the policies has affected the libraries and documentation centres in many ways. The libraries and documentation centres, as one of the key agricultural information providers to research scientists, extension officers, farmers, the donor community and other potential users, have not been effective and efficient in providing timely, relevant and current materials to users. The size of collections in some libraries and in MoA's documentation centres are minimal and outdated to the extent that one wonders how these information units can provide relevant and current information to researchers.

Due to inadequate budget allocation and scarcity of donor funds, library personnel have minimum exposure to regional and international meetings, conferences, seminars and workshops. Only a few senior information specialists have rare opportunities of attending such meetings, which are often sponsored by donor funds. Lack of exposure inhibits worldwide knowledge on current technical issues in the profession.

The observations revealed that personnel in remote agricultural research documentation centres were disadvantaged due to isolation and lack of contact with their peer groups.

6.6 Summary Findings to Research Question Number Five

Question number Five enquired about factors which have hindered the implementation of the policies, strategies and recommendations for more access and use of agricultural libraries' and documentation centres' services in Tanzania.

The problems or factors which hinder implementation of policies and strategies can be categorized into five categories: inadequate budget allocations; lack of library manpower and manpower development; lack of cooperation among the agricultural libraries and documentation centres; lack of proactive information specialists; and most importantly, lack of support and recognition of their importance by parent ministries/institutions. However, libraries' services in training institutions like LITIs and MATIs were highly appreciated compared to the services of documentation centres in some agricultural research stations.

Agriculture is a very wide field and therefore needs political will and a sound economy to fund it adequately.

6.7 Conclusions About the Study

Agricultural libraries and documentation centres are one of the potential key information delivery channels in the agricultural sector in Tanzania. However, effectiveness and efficiency in the provision of services by the agricultural information library system is dependent upon the users' access to and use of the library services and resources.

To this end, agricultural library services in Less Developed Countries have been widely criticized for their ineffectiveness. One of the major reasons for this is the lack of a National Information Policy which would be a statement of intent on the part of governments, to integrate an information network of personnel, standardize the hard and software and data practices aimed at supporting the activities in the information sector.

Agricultural information scientists, international organizations and consultants have recommended policies and strategies for the improvement of access to and use of agricultural library services and other facilities. Some of these policies, strategies and suggestions are related to materials, human and financial resources. This study investigated the extent to which the policies, strategies and legislation have been translated into legislation in Tanzania and the extent to which implementation had taken place.

The study concluded that Tanzania lacks a National Information Policy *per se*. There are many sectoral policies which are directly, indirectly or relatively related to agricultural information organization and management. The most prominent one is the Sokoine National Agricultural Library (Parliament Act No. 21, 1991). The National Library has been charged with numerous functions spelt out in the Act, among which is to act as a national bibliographic and documentation centre and to collect and maintain records of agricultural research and development projects. How effective SNAL policy has been in carrying out its mandated functions is a further study which has been suggested by the researcher.

The study also established that there is a paucity of trained library staff in all 34 surveyed agricultural libraries and documentation centres in Tanzania. In order to mitigate the reported paucity of trained library personnel, there is a need to adopt and implement the following intervention strategies:

- 1) Need for recruitment of an adequate number of library personnel with background knowledge in agriculture and its related fields, to be trained on sustainable basis.
- 2) Need to have comprehensive basic professional training programmes and CE in place.
- 3) Need to have adequate budget to implement the training programmes.
- 4) Need to sensitize library professional to the importance of CE in ICTs.

The findings also confirmed that most of the libraries and documentation centres were not aware of the recommended policies, strategies and suggestions for enhancement of access to and use of library services. Information gathered from the interviews indicated the same. The major identified factors which hindered the implementation of the policies and strategies in Tanzania were lack of awareness of such policies and strategies, limited budgets and lack of human resources. It is very difficult to implement what one is not aware of. Any policy or strategy should be studied before implementation in order to foresee or determine its impact.

In summary the study's conclusions were:

1. The Tanzanian agricultural sector requires information delivery systems which can provide accurate and timely information to agriculturalists. Given adequate, appropriate and up-to-date resources and facilities, agricultural libraries and documentation centres can efficiently and effectively deliver timely, relevant and accurate information to satisfy the information needs of users in the sector.
2. There is no network between the agricultural libraries and documentation centres. The information systems can be networked and designed to provide the information required to support activities in the agricultural sector.. This will enhance accessibility to and use of libraries and documentation centres' information services and facilities. Furthermore, it will be a checking mechanism for duplications which results in wastage of resources.
3. Most of the agricultural libraries and documentation centres were headed by non-professionals who lacked skills and knowledge in dealing with the challenges posed by ICTs' developments and who could manage to operate within the limited financial resources.

The study has given a concise overview of the library agricultural information system in Tanzania. It has identified the factors which are said to be the source of their ineffectiveness and inefficiency. Other studies can be conducted on the sectoral policies.

Above all, the study has established that information is essential in agricultural research for developing ideas, conducting research, communicating results and making those results useful in the future. This study has throughout considered agricultural information a valuable input into the agricultural sector, a capital investment equal to that of equipment and credit. The value of agricultural information or the need for access to and use of agricultural information by researchers, trainers, trainees, extension personnel, farmers and policy makers has been emphasized on. Self-initiative training in the form of Continuing Education has been recommended for library personnel.

6.8 Researchers' Recommendations

This study was intended to find the extent to which key policies, strategies and recommendations advanced by scholars, international organizations and consultants to improve accessibility to and use of agricultural information, specifically in the libraries and documentation centres' services, have been implemented in Tanzania.

The study findings established that there has not been an effective and efficient implementation of the policies and strategies due to a number of problems, the main ones being: lack of awareness of the policies and strategies; lack of communication with the National Agricultural Library and lack of institutional capacity of agricultural libraries and documentation centres to implement the policies and strategies. Therefore, effective planning, organization and management of the agricultural library information system in Tanzania is lacking. Based on this specific finding, the following recommendations have emerged. However, the lack of capacity and resources means that, generating more policies which might lead to "policy fatigue". The magnitude of the agricultural sector is big. The most important strategy is to set priorities. The researcher recommends that:

1. The situation of most of the agricultural libraries and documentation centres' resources, that is, material collection, personnel and infrastructure should be improved. Parent ministries/institutions should provide a budget to meet basic needs so that they may be institutionally capable of providing up-to-date, reliable and complete information to users and to justify their existence.

Collections in some documentation centres were, as observed, limited and outdated. Furthermore, some of the documentation centres had no adequate space for staff, or users and were lacking essential facilities normally in place where people are likely to spend more than an hour.

As argued earlier, there has not been an “adequate budget” for any organization, but in this case, the basic needs of the documentation centres should be met. Most of them were “a one person library”. This in itself is demoralizing. Coupled with the uncondusive working environment and lack of basic needs, it is likely that the retention of these personnel could prove impossible.

2. Long-term, short-term and in-house training programmes for library personnel at all levels should be clearly worked out for enhancement of agricultural information provision skills. The skills include among many others, organization and management of agricultural information and repackaging and delivery of agricultural information to users. SNAL can play a very important role in this. SNAL can tailor training programmes to equip library personnel with skills and knowledge. In a nutshell, the more affluent libraries like DRD (MoA) should audit themselves to see what assistance they can provide in terms of expertise, materials and resource sharing. There is also a need to have deliberate incentive packages and clear and motivating career structures for retention of trained staff.
3. Agricultural libraries and documentation centres should collaborate with COSTECH to draw up a working plan to be used by the libraries so as to make resources more accessible to users. The Tanzania Commission for Science and Technology has a role to play in the development of agricultural libraries and documentation centres in the country, particularly when the libraries are trying to adopt a network for resource sharing. To this effect, Mambo (1998) points out that:

COSTECH must work closely with libraries and institutions of higher learning in the country for its full potential to benefit such libraries. Such relationship would enable academic libraries to utilize available opportunities in

*COSTEH such as training, research and technology
development projects.*
(Mambo 1998: 119)

COSTECH should provide guidelines on ICTs developments and standardization of equipment and data in the country.

4. In reference to recommendation 3. above, there is an urgent need for consolidation and coordination of sectoral policies related to agricultural information into actual National Information Policy. This will guide and coordinate information activities in the agricultural information library system particularly in IT, including computer networking among the National Agricultural Library and the MoA's libraries and documentation centres in the sector. In preparation for incorporating information centres in the rural areas in the network, IT standardization records and data input in machine readable formats should be done. The information put on CDs should be made available to those libraries lacking access to current information and which have no Internet connectivity.
5. A database of agricultural research projects completed, on-going and abandoned should be created by the National Agricultural Library, which is legally designated as a disseminator of agricultural information to users. The database should be effectively managed, constantly up-dated and easily accessible to other agricultural institutions and research scientists.
6. The emphasis on training library professional in ICTs should be on Continuing Education (CE) programmes rather than on formal training programmes set up and expected to be financed by parent ministries/institutions. The CE modules should not be based at one point but should be offered at other sites and web based. The development of ICTs has changed the library environment and have been a motivating factor for CE. It is therefore the duty of the library manager to sensitize library personnel to the importance of CE. The parent Ministries and Organizations should however be supportive financially in these endeavors.

7. The current IT communications should be utilized to establish a strong linkage among Agricultural Zones. This would facilitate information access and flow to research scientists and library personnel in remote stations. There is a lot of grey literature in some of the research stations which would be of great use and value to researchers in other zones and research stations. However, due to poor communication infrastructure, the information is inaccessible.
8. Institutional reports such as research reports, annual reports and conference proceedings should be given a wider circulation among agricultural libraries and documentation centres. However, standardization of these reports for circulation is important. Standardization needs to be worked out by the agricultural information personnel in their recommended forums and, thereafter, be reinforced by a policy to facilitate access and use of the literature. Again, it is recommended that SNAL takes the lead in the bibliographic control of technical reports or grey literature in the sector.
9. Agricultural information specialists should form a pressure group for identification of problems pertaining to the agricultural library system and to make recommendations to policy makers on how to alleviate the situation.
10. Information needs assessment should be conducted frequently in order to identify information needs of research scientists, trainers, trainees, extension personnel and other potential users in the sector. This will enable the information professionals to give an “added-value” service to users.
11. As observed, the Tanzanian agricultural sector is not short of information but a major problem is lack of effective organization and management for accessibility and use. The study further recommends that confidentiality of consultant reports in the MoA be removed so that the information can be accessible to users

6.9 Suggestions for Further Studies and Areas of Research

A number of related issues arose during the study which need to be investigated in order to improve the effectiveness of agricultural libraries and documentation centres.

- There is a need to do policy analyses of sectoral policies which are related to information in Tanzania, to identify those which are related to agricultural information. The investigation should include an evaluation of their implementation, monitoring and effectiveness. Is it possible to consolidate or to coordinate these policies to cover agricultural information organization, storage and provision in the sector?
- Evaluative study of SNAL should be done. The Sokoine National Agricultural Library was established in 1991. The National Library was given responsibilities, some of which the Library has not managed to carry out. There is a need for a comprehensive study on the Tanzania National Agricultural Library, to revisit the Act of Parliament that established it, to evaluate its institutional capacity to carry out the functions and also to evaluate its effectiveness to-date.
- Thirdly, a feasibility study of the libraries and agricultural documentation centres in Tanzania is required in order to identify user needs for provision of timely, relevant and up-to-date information.
- Further research is suggested to include also the identification of information policy and strategies from information policy instruments in Tanzania and their analysis for review, consolidation, dissemination and evaluation for NIP platform.

REFERENCES

- Abidi, S.A. 1993. *Agricultural information needs of the countries of East Africa*. Uganda: CTA.
- Adams, M.E. 1982. *Agricultural extension in developing countries*. Singapore: Longman Group Limited. (Intermediate Tropical Series).
- Adimorah, E.N. 1977. Agricultural librarianship, documentation and information services in Nigeria. *International Library Review*, 9:413-428.
- Adimorah, E.N. 1984. Information and documentation for integrated rural development in Africa. *IAALD Quarterly Bulletin*, 29(2):21-28.
- African Development Bank. 1999. *African development report: infrastructure development in Africa*. Oxford: Oxford University Press.
- Agha, S.S. and S. Akhtar. 1992. The responsibility and the response: sustaining information systems in developing countries. *Journal of Information Science*, 18:283-292.
- Aina, L.O. 1985. Information needs and information seeking involvement of farmers in six rural communities in Nigeria. *IAALD Quarterly Bulletin*, 30(2):35-40.
- Aina, L.O. 1986. An empirical analysis of the information component of agricultural extension services in Ibadan area. PhD thesis. Ibadan: University of Ibadan.
- Aina, L.O. 1989. Education and training of librarians for agricultural work in Africa. *IAALD Quarterly Bulletin*, 34(1):23-26.
- Aina, L.O. 1990. Informing African farmers: some obstacles to information flow. *Information Development*, 6(4):201-203.
- Aina, L.O. 1991. Provision of agricultural information to farmers and extension officers: a catalyst in agricultural production in Africa. *IAALD Quarterly Bulletin*, 30(2):30-40.
- Aina, L.O. 1991. Information for successful agriculture. *Third World Libraries*, 2(1):41-53.
- Aina, L.O. 1993. The challenges of the emerging market and the education and training of information professionals in Africa. *Journal of Librarianship and Information Science*, 24(4):197-201.

- Aina, L.O. 1995. Information and agriculture in Africa. In: Aina, L.O., A.M. Kaniki and J.B. Ojiambo (eds.). *Agricultural information in Africa*. Ibadan: Third World Information Services Ltd. pp.1-11.
- Aina, L.O. 1999. Decision makers and agricultural information in Africa: the potential role of the Internet. *IAALD Quarterly Bulletin*, 44(1/2):96-99.
- Aina, L.O. and Y.A. Adedigba, 1995. The development of Nigeria. In: Aina, L.O., A.M.Kaniki and J.B. Ojiambo (eds.). *Agricultural information in Africa*. Ibadan: Third World Information Services Ltd. pp. 83-103.
- Aiyepoku, W.O. 1982. Information utilization by policy makers in Nigeria: assessing degrees of information consciousness. *Journal of Information Science*, 4(5):203-211.
- Al-Sudeary, A.M. 1982. Role of information in agriculture. *Agora*, 2(3):24-25.
- Alemie, L. 1997. Development of the information sector in Africa. *Information Development*, 13(1):15-18.
- Alemie, L. 1998. How is information technology shaping the economy and the society? *Information Development*, 14 (4):181-183.
- Alemnna, A.A. 1995. Agricultural information services in West Africa. In: Aina, L.O., A.M. Kaniki and J.B. Ojiambo (eds.). *Agricultural information in Africa*. Ibadan: Third World Information Services Ltd. pp.67-81.
- Alemnna, A.A. 1998. Information in African society. *Information Development*, 14(2):69-72.
- Allen, T. and P.G. Gerstberger. 1967. *Criteria for selection of information sources*. Cambridge, Mass: Sloan School of Management.
- Anderson, D. 1987. *Universal bibliographic control: a long term policy: a plan of action*. München: Verlag Documentation.
- Arnold, Anna-Marie. 2000. A review of the role of library and information services in South Africa, with specific reference to the possible need for a National Information Policy. In: *Proceedings of the first biannual DISSANET Conference "Southern African LIS research progress" 26th-27th October 1999*. Pretoria: Department of Information Science. pp.65-84.
- Bailey, E.R. 1992. *The practice of social science*. 6th ed. Belmont, Calif.: Wadsworth.

- Ballais, P. 1993. *A critical guide to ESAP: seven questions about the economic structural adjustment programme in Zimbabwe*. Gweru: Mambo Press in Association with Silveira House.
- Banda, T.E. 2000. Agricultural policy formulation process in Tanzania. Unpublished paper presented at CTA Workshop on Agricultural Policy Networking, 6th-10th November, 2000, Entebbe, Uganda.
- Bank of Tanzania, 1986. *Economic and operations report*. Dar es Salaam: Government Printer.
- Bank of Tanzania, 2000. *Annual report 1999*. Dar es Salaam: Bank of Tanzania.
- Bellamy, M. 1988. Bridging the information gap in Africa: CABI's African agricultural literature service. *Interlending and Document Supply*, (2):46-50.
- Belian, E.S. 1982. *How to design, analyse and write doctoral research: the practical guide book*. Lanham State: University Press of America.
- Berelson, 1954. Content analysis. In: Lindzey, G. (ed.). *Handbook on social psychology theory and methodology*. Cambridge, Mass: Addison-Wesley, vol.1, pp.234-243.
- Berlyn, J. 1998. Multi-purpose community centres and dissemination of government information. *Meta-info Bulletin*, 7(4):28-39.
- Bernstein, H. 1993. Development and underdevelopment. In: Outhwaite, W. and T. Bottomore (eds). *Blackwells' dictionary of twentieth century social thought*. Oxford, Oxon: Blackwells. pp.151-154.
- Berry, L. 1997. Tanzania physical and social geography. In: *Africa South of the Sahara*. London: Europa. pp. 972-994.
- Boden, M.A. 1991. *The creative mind*. New York: Morrow.
- Boon, J.A. 1984. A national information policy and the South African Institute of Librarianship and Information Science. *South African Journal of Library and Information Science*, 51(1):15-22.
- Boon, J.A. 1990. Information management: an educational perspective. *South African Journal of Library and Information Science*, 58(4):319-327.
- Boon, J.A. 1992. Information and development: towards an understanding of the relationship. *South African Journal of Library and Information Science*, 60(2):63-74.

- Boon, J.A. 1992. Information policy in the new South Africa. *In*: Coetzer, A.G. (ed). *Proceedings of the Conference on Library and Information Services for the Development of Southern Africa, 6th-8th May 1992*. Pretoria. Info Africa Nova. pp.88-98.
- Bourne, C.P. 1974. *Tanzania: planning for a national research information centre*. Paris: UNESCO.
- Broadbent, M. and F. Koenig.1998. Information and information technology management. *In*: M.E. Williams (ed.) *Annual review of information science and technology*. Amsterdam: Elsevier Science Publishers. Vol.23:237-265
- Brohman, J. 1996. *Popular development: rethinking the theory and practice of development*. Oxford, Oxon: Blackwells.
- Bulmer, M. 1993. Sampling. *In*: Bulmer, M. and D.P. Warwick (eds). *Social research in developing countries: surveys and censuses in the Third World*. London: UCL Press.
- Burger, R.H. 1993. *Information policy: a framework for evaluation and policy research*. Norwood, N.J: Ablex Publishing Company.
- Burk, C.F. and F.W. Horton. 1988. *Informap: a complete guide to discovering corporate information resources*. Englewood Cliffs: Prentice Hall.
- Burton, P. F. 1992. *Information technology and society: implications for the information professionals*. London: Library Association.
- Busha, C.H. and S.P. Harter. 1980. *Research methods in librarianship: techniques and interpretations*. 2nd ed. New York: Academic Press.
- Chailla A.M. and D.S. Matovelo. 1999. Documentation and dissemination of agricultural research results in Tanzania: avenues and challenges. *Tanzania Journal of Agricultural Sciences*, 2(1):99-106.
- Chilcote, R.H. 1992. Development. *In*: Hawkesworth, M. and M. Kogan (eds). *Encyclopedia of government and politics*. London: Routledge. pp.616-637.
- Chisenga, J. 1995. The status of information technology in Zambian libraries. *African Journal of Librarianship, Archives and Information Science*, 5(1):19-24.
- Cilliers, I. 1994. The unique role of the public library as an information provider. *Cape Librarian*, 38(5):16-21.
- Collin, S.M. 1995. *Dictionary of multimedia*. London: Peter Collin Publishing Ltd.

- Collin, S.M. 1996. *Dictionary of information technology*. 2nd. ed. London: Peter Collin Publishing Ltd.
- Cooke, R.D. and T. Niang. 1997. Information partnership in a changing world: the role of the Technical Centre for Agricultural and Rural Co-operation (CTA) in Africa, the Caribbean and Pacific Countries (ACP). *IAALD Quarterly Bulletin*, 42(3/4):128-132.
- Creswell, J.W. 1994. *Research design: qualitative and quantitative approaches*. London: Sage.
- CTA. 1996. The role of information for rural development in ACP countries: review and perspectives. *Proceedings of an international seminar*, Montpellier: CTA. 12th-16th June 1995.
- CTA. 1999. Reducing poverty through agricultural sector strategies in Eastern and Southern Africa. Summary report of a workshop, 23rd-25th November 1998. Wageningen: CTA.
- Dahniya, M.T. 1992. Linking sciences and the farmer: pillars of the National Agricultural Research Systems in Sierra Leone. The Hague: ISNAR. (Small-Country Study Paper No. 10).
- De Bono, E. 1992. *Serious creativity*. New York: Harper Business.
- De Greene, K.B. 1993. Policy challenges in world of non-linearity and structural change. In: De Greene K.B. (ed.) *A system-based approach to policy making*. Boston: Kluwer Academic Publishers. pp.1- 43.
- Dempsey, J. 1996. Electronic FOIA Act adopted <<http://www.gwu.edu/~nsarchiv/>>
- De Vaus, D.A. 1986a. *Survey in social research*. London: George Allen and Unwin.
- De Vaus, D.A. 1986b. *Survey in social research*. Melbourne: Department of Sociology, La Trobe University.
- Diso, L.I. 1994. Information policies and government guidance in Nigeria: what hope for rural communities? *Resource Sharing and Information Networks*, 2:141-155.
- Dowling, M. 2001. Libraries, librarians and library associations in the United States in 2001: making a difference in the knowledge age. *IFLA Journal*, 27(3):133-142.
- Du Plooy, A.P. 1988. Community information for functionally illiterate in South Africa by means of audio cassettes. *Mousaion*, 6(1):2-20.

- Dulle, F.W. 1997. Dissemination of agricultural information to small scale dairy farmers in the Southern Highlands of Tanzania. MLS thesis. (Information Studies). Gaborone: University of Botswana.
- Dulle, F.W. *et.al.* 2001. Researchers' perspectives on agricultural libraries as information sources. *Library Review*, 50(4):187-192.
- Durrant, F. 1996. Information for policy formulation: Latin America and the Caribbean. <WWW.idrc.ca/books/focus/783/durrant.html> 5 October, 1998.
- Durrheim, K. 1999. Research design. *In:* Terre Blanche, M. and K. Durrheim (eds). *Research in practice: applied method for social sciences*. Cape Town: University of Cape Town Press. pp.29-53.
- Ekpenyong, G.D. 2001. Agricultural research in Nigeria: the role of institutional libraries. *Information Development*, 17(2):118-122.
- Emery, F. 1993. Policy: appearance and reality. *In:* De Greene, K.B. (ed.). *A system-based approach to policy making*. Boston: Kluwer Academic Publishers. pp.175-197.
- Faibisoff, A.S. and D.S. Elly 1978. Information and information needs. *In:* King, D.W. (ed.) *Key papers in the design and evaluation of information systems*. New York: Knowledge Industries Publications. pp. 270-289.
- Food and Agriculture Organization of the United Nations.1980. *Training for agriculture and rural development*. Rome: FAO. (FAO Economic and Social Development Series No. 19).
- Food and Agriculture Organization of the United Nations. 1990. *Food and Agricultural Organization of the United Nations production yearbook*. Rome: FAO.
- Flanagan, J.C. 1954. The critical incident techniques. *Psychological Bulletin*, 51(2):327-358.
- Ford, G. (ed.) 1977. User studies: an introductory guide and selected bibliography. London: British Library. (Occasional paper I).
- Frank, R.C. 1987. Agricultural information systems and services. *In:* *Annual review of information science and technology*. New York: Elsevier Science Publishers. pp. 112-117.
- Gaborone Declaration. 1994. Proceedings of a seminar held in Gaborone, Botswana 22nd - 25th June 1994. *In:* Johanssen, E. (ed.) *Seminar on Information Provision to Rural Communities in Africa*. Uppsala: University Library. pp.143-144.

- Garcha, R. and L.J. Buttlar. 1996. Profiling African libraries: automation in Ghana, Kenya and Nigeria. *Library Review*, 45(6):25-35.
- Gay, L.R. 1981. *Educational research: competencies for analysis and application*. 2nd. ed. New Delhi: Wiley Eastern Ltd.
- Gera, J.C. and S.S. Mbwana. 1988. Improving agricultural libraries and services in Tanzania. *In*: Mattee, A.Z. and J.M.Teri (eds). *Science and farmers in Tanzania*. Morogoro: Sokoine University of Agriculture. pp.175-178.
- Gessesse, K. and S.S. Mbwana. 1986. *Users of agricultural libraries and information services in Tanzania: their needs and provisions*. Morogoro: Research and Publications Committee, Sokoine University of Agriculture.
- Gessesse, K. 1992. International cooperation for developing agricultural information services in Sub-Sahara African. *Library Review*, 41(4):4-9.
- Gevers, W.R. 1999. The information specialist and the Internet: "the role of information specialist beyond 2000". <<http://www.sabinet.co.za>> 15th September 1999.
- Glazier, J.D. and R.R Powell. 1992. *Qualitative research in information management*. Englewood: Libraries Unlimited.
- Goldhor, H. 1972. An introduction to scientific research in librarianship. Urbana State: University of Illinois, Graduate School of Library Science. (Monograph no. 12).
- Gorman, G.E. 1983. Information components of development. *South African Journal of Library and Information Science*, 51(3-4):44-49.
- Gould, S. and W. Judy. 1998. International cooperation: the role of the IFLA offices for UAP and international lending. *Journal of Librarianship and Information Science*, 30(3):195-199.
- Haider, S.J. 1978. Some aspects of agricultural information in Pakistan. *Libri*, 35(1):41-61.
- Hailu, M. 1989. Information net-working in Africa: a framework for action. *In*: *Report of the CGIAR Documentation and Information Services Meeting, 16th-20th January 1989*. Patancheru, India: International Crops Research Institute for the Semi-Arid Tropic.
- Haravu, L. J. 1994 Library net-working and resource sharing in the NARS and possible role of IARCS. *IAALD Quarterly Bulletin*, 39(3):253-259.
- Harris, S.C. 1990. Agricultural information in developing countries. *Library Trends*, 38(3): 578-634.

- Holsti, O.R. 1969. *Content analysis for social sciences and humanities*. Reading, Mass: Addison-Wesley.
- Houten, R. 1984. National information policy: the South African situation. *South African Journal of Library and Information Science*, 52(1):10-14.
- Idachaba, F.S. 1997. Enhancing the role of research in agricultural development: the responsibility of policy makers. *In: Policy and Financing of Agricultural Research in Tanzania: Proceedings of Workshops, 2-3 September 1996 and 8-9 January 1997*. Dar es Salaam: MoAC. pp.3-21.
- Inganji, F. 1990. The role of appropriate information technology in Africa's development. *In: Development of a national information and documentation network for Uganda. Papers of the seminar held in Kampala, 1st-9th March 1990*. Bonn: DSE. pp. 27-37.
- International Development Research Centre (IDRC). 1989. *Sharing information for development: IDRC's information strategy for Africa*. Ottawa: IDRC.
- International Federation of Library Associations and Institutions (IFLA). 1994. Seminar on Information Provision to Rural Communities in Africa: Proceedings of the Seminar held in Gaborone, Botswana, 22nd-25th June, 1994. (Published).
- International Federation of Library Associations and Institutions (IFLA). 1998. Model curriculum for rural community information studies. Published final report by the Expert Meeting on Training for Rural Community Information Services in Africa held in Dakar, Senegal, May 1998.
- International Services for National Agricultural Research (ISNAR). 1989. The technology triangle: linking farmers, technology transfer agents and agricultural researchers. (Summary report for an international workshop held at ISNAR, The Hague, 20th-25th November 1989).
- International Services for National Agricultural Research (ISNAR). 1991. Highlights of a consultation on monitoring and evaluation in agricultural research held in The Hague, November 12th-24th.
- Kaaya, Janet E. *et al.* 1993. Study of the agricultural information needs of the countries of East Africa. Tanzania: Ministry of Agriculture.
- Kaaya, J. 2000. Role of information technology in agriculture. *In: Agriculture research challenges for 21st century: proceedings of the 4th Annual Research Conference of the Faculty of Agriculture, Sokoine University of Agriculture, Morogoro, Tanzania, 17th-19th November*, pp.315-322. Morogoro: Faculty of Agriculture.
- Kaniki, A.M. 1989. Agricultural information needs in Zambia: a study of two way information flow. PhD Thesis. Pittsburgh: University of Pittsburgh.

- Kaniki, A.M. 1992. Meeting the needs of agricultural researchers in Africa: the role of unpublished reports. *Information Development*, 8:(2):83-89.
- Kaniki, A.M. 1993. Problems of access to agricultural information in Southern Africa. In: Coetzer, T. (ed.) *Proceedings of the Info-Africa Nova Conference, Pretoria, 3rd-7th May 1993*. Pretoria. Info. Nova Committee pp. 562 - 572.
- Kaniki, A.M. 1994. Community resource centres and resource centre forums in the transformation and post transformation era in South Africa. *African Journal of Librarianship, Archives and information Science*, 2(1):33-38.
- Kaniki, A.M. 1994. Library and information education and training for information provision to rural communities in South Africa. Unpublished paper presented at the IFLA -PAN African seminar on "Information Provision to Rural Communities in Africa", Gaborone, Botswana, June 1994.
- Kaniki, A.M. 1995. Exploratory study of information needs in the KwaNgwanase (Natal) and Qumbu (Transkei) communities of South Africa. *South African Journal of Library and Information Science*, 63(1):9-16.
- Kaniki, A. 1996. Information for all: challenges for South African library information science education and training. Inaugural lecture given in Pietermaritzburg: University of Natal.[...]
- Kaniki, A M. 1999. Community profiling and needs assessment. In: Stilwell, C., A. Leach, and S. Burton (eds). *Knowledge, information and development: an African perspective*. Pietermaritzburg: School of Human and Social Studies, University of Natal. pp.187- 201.
- Kanwar, I.S. 1979. Technology for increasing food production. In: Proceedings of the 2nd FAO/SIDA Seminar on Field Crops in Africa and Near East, Lahore, September 1977.
- Kapange, B.W. 1996. The role of agricultural information in decision making: experience of the Tanzanian agricultural research information system. Paper presented at GBDL/IAALD/CTA Joint Conference on the Role of Agricultural Information in Decision Making in Research and Practice, Germany, 2nd-5th June 1998.
- Karelse, Cathy-Mae. 1994. Information users and their needs. *Cape Librarian*, 38 (5):22-25.
- Kart, B. 1990. *Continuing education of reference librarians*. London: Hamorth.
- Katani, B. 1997. Structural adjustment in Tanzania: the role of agriculture and agricultural support services in this process. In: *Policy and Financing of Agricultural Research in Tanzania: proceedings of workshops, 2nd-3rd September 1996 and 8th-9th January 1997*. Dar es Salaam: MoA. pp. 36-50.

- Katundu, D.R. 1998. The use and sustainability of information technology (IT) in academic and research libraries in Tanzania. Ph.D thesis. (Information Studies). Pietermaritzburg: University of Natal.
- Kawasaki, J.L. 1996. Communicating information to remote locations takes training. *IAALD Quarterly Bulletin*, 41(2):219-222.
- Kebede, G. 2000. Proposed approach to study information needs of users in electronic information environment. *In: Proceedings of the first biannual DISSAnet Conference "Southern African LIS research in progress", 26 - 27 October 2000*. Pretoria: Department of Information Science. pp.157-166.
- Keenan, S. 1996. *Concise dictionary for library and information science*. London: Bowker-Saur
- Kempson, E. 1990. Rural community information services: guidelines for researching need, setting up services and evaluating performance. *IFLA Journal*, 16(4):429-439.
- Kerlinger, F. 1978. *Foundations of behavioural research*. 2nd. ed. New York: Holt Rinehart.
- Kidder, L.H., C.M. Judd and E.R. Smith. 1986. *Research methods in social relations*. 5th. ed. New York: Holt, Rinehart and Winston.
- Kinabo, L. 1997. The role of universities in agricultural research and development. *In: Policy and Financing of Agricultural Research in Tanzania. Proceedings of workshops, 2nd-3rd September 1996 and 8th-9th January 1997*. Dar es Salaam: MoA. pp.135-144.
- Kiondo, E. 1994. Problems of inter-library lending in the Third World countries: experiences from the University of Dar es Salaam Library. *University of Dar es Salaam Library Journal*, 1(2):1-9.
- Kiondo, E. 1998. Access to gender and development information by rural women in the Tanga Region, Tanzania. PhD thesis (Information Studies). Pietermaritzburg: University of Natal.
- Kiplang'at, J. 1999. Analysis of opportunities of information technology in improving access transfer and use of agricultural information in the rural areas of Kenya. *IAALD Quarterly Bulletin*, 44(1/2):131-137.
- Kisil, M. 1997. Less developed countries and challenges in relationship between producers and user of information. *IAALD Quarterly Bulletin*, 42(3/4):115-127.
- Koenig, M. 1992. The importance of information services for productivity: "under-recognized" and "under-invested". *Special Libraries*, 83(4):199-210.

- Kothari, C.R. 1991. *Research methodology: methods and techniques*. 2nd ed. New Delhi: Wiley Eastern Ltd.
- Krippendorff, K. 1980. *Content analysis: an introduction to its methodology*. Beverly Hills, Calif.: Sage Publications.
- Kularatne, E.D.T. 1997. Information needs and information provision in developing countries. *Information Development*, 13(3):117-121.
- Kularatne, E.D.T. 1998. Towards a national information policy for Sri-Lanka. *Information Development*, 14(3):137-143.
- Kyomo, M.L. 1986. *Agricultural research in Eastern and Southern Africa: issues and priorities*. Gabarone: SACCAR.
- Lancaster, F.W. and J.W. Beecher 1981. Agricultural librarianship and documentation as a profession. *In: Agricultural information to hasten development: proceedings of the VI World Congress of the IAALD*. Los Banos: A.L.A.P. pp. 197-210.
- Lancaster, F.W. 1997. Artificial intelligence and expert system technologies: prospects. *In: Libraries for a new millennium: implication for managers*. London: Library Association. pp.19-37.
- Lavagnino, *et al.* 1998. Incorporating social informatics into the curricula of library and information science professionals. *Libri*, 48(2):13-25.
- Levin, P. 1997. *Making social policy: the mechanisms of government and politics and how to investigate them*. Buckingham: Open University Press.
- Line, M.B. 1982. *Library survey and introduction to their users: planning, procedure and presentation*. London: Bingley.
- Lupanga, I.J. 1986. Linking research and extension in Tanzania: some communication behaviours of research extension workers. Ph.D. thesis. United States: Cornell University.
- Leedy, P.D. 1980. *Practical research: planning and design*. New York: Macmillan.
- Made, S. 1994. Efforts in rural information provision in East and Central Africa. *In: Johanssen, E. (ed.). Seminar on "Information Provision to Rural Communities in Africa"*. Uppsala: University Library. pp. 47-57.
- MALDC. 1991. National Agricultural and Livestock Research Masterplan. Ministry of Agriculture, Livestock Development and Cooperatives, United Republic of Tanzania. The Hague: ISNAR.

- Mambo, H.L. 1998. An investigation into the development of a computer library network among institutions of higher learning in Tanzania. Ph.D. thesis (Information Studies). Pietermaritzburg: University of Natal.
- Mandel, M.J. 1994. The real truth about the economy. In: Business Week (Industrial Technology Edition), November 7th, pp.110-118.
- Marchand, D.A. and F.W. Horton. 1986. *Infotrends: profiting from your information resources*. New York: John Wiley and Sons.
- Marcus, H.C., J. Moulton, and J. Oliver. 1982. Guidelines for writing research reports. Pretoria: Human Sciences Research Council.
- Mattee, A.Z. 1988. Accessibility of agricultural extension services to small farmers in Tanzania. Unpublished paper presented at a national workshop on "Extension Methods for Effective Agricultural Technology Transfer", Morogoro, SUA, 28th November- 1st December.
- Mbeki, T. 1996. The information society and the developing world: a South African perspective. (Draft 5, version 5.1, April 1996) Address to the Information Society and Development Conference.
- Mbwana S.S. 1987. The role of agricultural information in research and training in Tanzania. *Journal of Library and Information Science*, 12(1):38-45.
- McClarren, R.R. 1981. Public library cooperation and cooperatives: an historical overviews. *Public Library Quarterly*, 2(3/4):5-16.
- Mchombu, K.J. 1985. Satisfying Tanzania information needs: problems and prospects. Unpublished Paper presented at Tanzania Library Association Workshop on "Meeting Users Information Needs", held in Dar es Salaam, 26 February, 1985.
- Mchombu, K. J. 1991. Which way Afrcan librarianship? *IFLA Journal*, 17(1):26-38.
- Mchombu, K.J. 1992. Information needs for rural development: the case study of Malawi. *African Journal of Librarianship, Archives and Information Science*, 2(1):7-32.
- Mchombu, K.J. 1993. Information needs and seeking patterns for rural peoples' development in Africa: a research report. Gaborone: Department of Library and Information Studies.
- Mchombu, K. J. 1996. A survey of information needs for rural development. *Resource Sharing and Information Networks*, 12(1):75-81.

- Mchombu, K. J. and K. Miti. 1992. Formulation of national information policies for Africa: some unlearnt lessons. *International Information Library Review*, 24:137-171.
- Mead, L.M. 1993. The interaction problem in policy analysis. *Policy Sciences*, 16(1):45-66.
- Meier, G.M. 1984. *Leading issues in economic development*. 4th ed. New York: Oxford University Press.
- Menou, M. (ed.) 1993. *Measuring the impact of information on development*. Ottawa: IDRC.
- Mgaya, K. 1994. Development of information in Tanzania. In: Drew, E.P. and G.F. Carter (eds.) *Information technology in selected developing countries*. Tokyo: United Nations University. [...]
- Middleton, M. 1997. Information policy and infrastructure in Australia. *Journal of Government Information*, 24(1):9-25.
- Mims, A.M. et al. 1992. Adjusting to computer technology changes in a cooperative extension service office. In: Watson, B. (ed). *Computers in agricultural extension programmes: proceedings of the 4th international conference 28th-31st January 1992, held in Orlando, Florida*. ASAE Publication.
- Ministry of Agriculture and Cooperatives. 1996. National Agricultural Research Programme NARP II. (Draft proposal). Dar es Salaam: MoA.
- Ministry of Agriculture, Livestock Development and Cooperatives. 1984. Tanzania National Food Strategies (1) and (2). Dar es Salaam: Tanzania.
- Mlaki, T. E. 1997. Issues related to the development of national information infrastructure (NII) and connectivity to the global information infrastructure (GII). Paper presented at a workshop on "The elaboration of an information policy for the Republic of Tanzania", Dar es Salaam, Tanzania, 12th -16th May 1997.
- Mlaki, T. E. 1999. Evolving a national information policy for Tanzania. Unpublished paper presented at a workshop on "The Tanzanian national socio-economic information policy", Dar es Salaam: Tanzania, 4th-6th.1999.
- Mlambo, A.S. 1993. The rich shall inherit the earth: towards an analysis of the role and impact of IMF Structural Adjustment Programmes in Sub-Saharan Africa. *Zambezia*, 20(1):53-76.
- Moahi, K. 1996. Training of African librarians for the new information age: progress in Botswana. *Information Development*, 12(2):91-95.

- Mohamed, O. 1988. *Formulating a national policy for library and information services: the Malaysian experience*. London: Maxwell.
- Mohammed, O. 1991. Formulating a national policy on library and information services in Malaysia. *Libri*, 41(2):132-144.
- Montviloff, N. 1990. *National information policies: a handbook on the formulation, approval, implementation and operations of a national policy on information*. Paris: UNISIST/UNESCO.
- Monu, E.D. 1995. The technology gap in agriculture, who is to blame? Professorial inaugural lecture series No. 10. National Institute of Development Research and Documentation, Gaborone: Botswana.
- Moore, N. 1983. *How to do research*. London. Library Association.
- Morgan, W.T. 1976. *East Africa: geographics for advanced study*. New York: Longman.
- Morton, S.I. and M.C. Barry. 1990. Information policies: strategies for the future. *Special Libraries*, 37(3):158-162.
- Moser, C.A. and G. Kalton. 1971. *Survey methods in social investigation*. London: Heinemann Education Books.
- Moshoeshe-Chadzingwa, M. (200-) Performance assessment of technical reports as a channel of information development: a Lesotho case study. (On-going PhD studies). (Information Studies), Pietermaritzburg: University of Natal.
- Muga, J.O. 1993. *Agricultural information needs of East African countries*. Nairobi: Kenya Research Institute.
- Mukangara, F. 2001. Information resources management for policy formulation, implementation and programme decision making in government ministries in Tanzania. Ph.D. thesis (Information Studies). Pietermaritzburg: University of Natal.
- Munn, R.F. 1976. *Improving agricultural library services in Tanzania*. Morganton: West Virginia University.
- Mwacalimba, H. 1974. The role and functions of Library Associations in developing countries. *Library review*, 3(2):6-9.
- Mwinyimbegu, R.M. 1989. Managing the union list of serials for the Tanzania academic librarians network: the search for a working package. M.L.I.S. thesis. London: University College of London.
- Namponya, C.R. and T. Niang. 1990. *Agricultural information services in SADC*. Gaborone: SACCAR.

- Namponya, C.R. 1995. Agricultural libraries and information services in the Southern African Development Community (SADC). *In: Aina, L.O., A.M. Kaniki and J.B. Ojiambo. Agricultural information in Africa.* Ibadan: Third World Information Services Ltd. pp. 40-56.
- Nawe, J. M. 1984. Tanzania libraries: library co-operation. *Libri*, 34(4):318-332.
- Nawe, J. M. 1988. The impact of dwindling budget on library services in Tanzania. *Library Review*, 37(2):28-32.
- Nawe, J. M. 1996. Human resources development and the development of library and information profession in Africa. *African Journal of Librarianship, Archives and Information Science*, 6(1):23-30.
- Nawe, J.M. 2000. Using information and communication technologies in Tanzania: responses of information professionals. *Information Development*, 16(1):24-28.
- Nawe, J. M. 2001. Leadership challenges in higher education libraries in East Africa. *Information Development*, 17(1):29-34.
- Newa, J.M. 1979. Cooperative acquisition in Tanzania: the role of the University of Dar es Salaam. *In: Vervleit, H.D.L. (ed.) Resource Sharing of Libraries in Developing Countries: proceedings of the IFLA/UNESCO. Pre-session Seminar for Librarians from Developing Countries, August 30th-4th September 1997.* New York: K.G. Saur Munchen. pp.62-71.
- Newa, J.M. 1993. The sustainability of information technology innovations: CD-ROM technology at the University of Dar es Salaam. *In: Proceedings of the workshop on "Survival Strategies in African University Libraries: New CD-ROM Technology in the Service of Information" organized by the University of Zimbabwe.* Harare: The American Association for the Advancement of Sciences, 2nd-5th August 1993. pp 77-83.
- Ndegwa, J. 1977. Cooperation storage and inter-lending in East Africa.(IFLA Publications No. 14), pp. 46-55.
- Ndunguru, B.J. 1997. Regional research and regional collaboration sustainability and the role of SACCAR. *In: Policy and Financing of Agricultural Research in Tanzania: proceedings of workshops, 2nd-3rd September 1996 and 8th-9th January 1997.* Dar-es Salaam: MoA.
- Nelson, M.A. and R.D. Singh. 1994. The deficit-growth connection: some recent evidence from developing countries. *Economic Development and Cultural Change*, 43(1):167-191.
- Neuman, F. and H. Franzen. 1994. National information policies for agricultural research in Africa. *IAALD Quarterly Bulletin*, 39(1-2):62-67.

New Bills Promote Transparency. January 28, 2000.

- Ngirwa, W. 1997. Agricultural growth: challenges, opportunities and the role of research. *In: Policy and Financing of Agricultural Research in Tanzania: proceedings of workshops*, 2nd-3rd September 1996 and 8th-9th January 1997. Dar es Salaam: MoA pp. 29-35.
- Niang, T. 1996. The role of CTA in disseminating agricultural information in ACP countries. Paper presented at IAALD 11th World Congress. *IAALD Quarterly Bulletin*, 19:(1):96-102.
- Niang, T. and R. Cooke. 1997. The information frontier: linking people and resources. *IAALD Quarterly Bulletin*, 42(3/4):128-132.
- Nickel, J. L. 1997. A global agricultural research system for the 21st century. *In: Bonte-Friedheim C. and K. Sheridan (eds). The place of agricultural research*. The Hague: International Service for National Agricultural Research (ISNAR). pp.139 -155.
- Ogbourne, C.P. and T. Ison. 1996. International partnerships for improving access to agricultural information in the Third World: the role of CAB International. *IAALD Quarterly Bulletin*, 41(1):18-26.
- Ojiambo, J. B. 1989. Communication of agricultural information among research scientists, extension personnel and farmers in Kenya. Ph.D thesis. Pittsburgh: University of Pittsburgh.
- Olsen, J.K. 1989. Strategic issue in information with special reference to developing countries. *IAALD Quarterly Bulletin*, 34 (3):119-125.
- Oruma, B.O. 1984. The problem of information management in agriculture. *IAALD Quarterly Bulletin*, 49(4):91-94.
- Otiike, J. 1996. The provision of legal information needs for rural populations in Anglophone Africa. *Libri*, (46):226-231.
- Ouma-Onyango, R. 1997. *Information resources and technology transfer management in developing countries*. London: Routledge.
- Pakkiri, D. 1992. Regional net-working of women resource centres in Southern Africa. Paper presented at a conference on Library and Information Services for the Future Development of Southern Africa, Pretoria, South Africa, 6th-9th May 1992.
- Palmer, C.L. 1996. Information work at the boundaries of science: linking library services to research practices. *Library Trends*, 45(2):165-191.

- Pan-African Development and information system (PADIS), 1994. Concepts and working definitions. *Training workshops for University lecturers teaching library and information science in African Universities and Institutions of higher learning*. Gaborone: Botswana, 5th-12th December.
- Parker, D and C. Angelina. 1969. *Guide for agricultural library survey for developing countries*. Metuchen, N. J.: Scarecrow.
- Patton, M.J. 1980. *Qualitative research methods*. Beverly Hills, Calif.: Sage.
- Pillay, Y. 1999. Researching public policy. In: Terre Blanche, M. and K. Durrheim (eds). *Research in practice: applied method for social sciences*. Cape Town: University of Cape Town Press. pp.239-350.
- Poole, H. 1985. *Theories of middle range*. Norwood, N. J.: Ablex Publishing Corporation.
- Powell, R.R. 1992. *Basic research methods for librarians*. 2nd ed. New Jersey: Ablex Publishing Corporation.
- Price, J. 1992. Who determines needs?: a case study of rural community in Northern India. *IDS Bulletin*, 23(1):50-57.
- Priestley, C. 1993. SAREC library support programme: evaluation and review; Ethiopia, Mozambique and Tanzania. Stockholm: Gotab. (SAREC Documentation series 1, 1993).
- Rada, J.F. 1994. The information gap between North and South. *IFLA Journal*, 20 (1):13-15.
- Ramjaun, I. 1997. The library profession in Mauritius: improving its status and image. *Information Development*, 13(3):135-141.
- Repo, A.J. 1989. An approach to the value of information: effectiveness and productivity of information use in research work. (Technical Research Centre of Finland Publication 51). Espoo, Finland: The Centre.
- Republic of South Africa. 2000. Promotion of Access to Information. Parliamentary Act No. 2 of 2000.
- Rhode, N.F. 1986. Information needs: advances in librarianship, vol. 14:49-73
- Rist, G. 1999. *The history of development from Western origins to global faith*. London: Zed.
- Roberts, A. 1999. Working paper: Access to government information: an overview of issues. <<http://www.transparency.de/documents/work-papers/roberts.html>>

- Robertson, S. 1999. An African gold rush. *Time Magazine* July 12: pp. 44-45.
- Rosenberg, D. 1993. Resource sharing: is it the answer for Africa? *African Journal of Librarianship, Archives and Information Science*, 3(2):107-112.
- Rosenberg, D. 1994. Can libraries in Africa ever be sustainable?. *Information Development*, 10(4):247-251.
- Rosenberg, D. 1996. African university libraries : a review of their present status and future potential. (3 volumes). London: International African Institute.
- Rosenberg, D. 1996. Repackaging scientific and technical information for illiterate and semi- literate users: a case study of Southern Sudan. Paper read at the 7th Standing Conference for Eastern, Central and Southern African Librarians' pre-conference seminar held in Gaborone, Botswana, 31st July to 2nd August 1996.
- Rowland, I.1996. Understanding information policy; concepts, frameworks and research tools. *Journal of Information Science*, 22(1):13-25.
- Rowley, J. 1996. *The basic of information system*. 2nd. ed. London: Library Association.
- Russell, K.W. 1997. The value of information in agricultural research. *IAALD Quarterly Bulletin*, 42(3/4):219-222.
- Rustein, J.S. 1985. National and local resource sharing: issues in co-operative collection development. *Collection Management*, 7(2):1-16.
- Sam. J. 1998. Information support in the formulation of policies by agricultural policy makers and managers in Ghana. *African Journal of Librarianship, Archives and Information Science*, 8(2):113-125.
- Sam, J. 1999. An overview of the Ghana agricultural information network system (GAINS). *IAALD Quarterly Bulletin*, 44(1/2):107-112.
- Samaha, E. 1978. A study on the application of scientific and technical information in development: a field study in Tanzania. Paris: UNESCO.
- Samaha, E.K. 1985. Information management in agricultural research. *Information Development*, 1(4):210-216.
- Sekimang'a, D.A. 1992. A national policy on information systems and services in Tanzania: formulation and strategy for implementation. M.Sc. thesis. Addis Ababa: SISA
- Selltiz, C., L.J. Wrightman and S.W.Cook. 1976. *Research methods in social relations*. 3rd ed. New York: Holt, Rinehalt and Winston.

- Shao, F. 1997. Agricultural research in Tanzania: challenges, constraints and opportunities. *In: Policy and Financing of Agricultural Research in Tanzania. Proceedings of workshop held on 2nd-3rd September 1996 and 8th-9th January 1997.* Dar es Salaam: MoA. pp. 51-67.
- Sharp, K. 2001. Internet librarianship: traditional roles in a new environment. *IFLA Journal*, 27(2):78-81
- Sheba, M.K. 1998. Information for development in Africa. *Information Development*, 14(3): 152-153.
- Shibanda, G.G. 1995. Agricultural information net-working in Africa: status and prospects. *Third World Libraries*, 6(1):24-28.
- Shillinglaw, N. 1988. Information development in South African society: *In: Shillinglaw, N. and T. Wanda (eds.) The information society.* Parklands: AD. Donker (Pty) Ltd. pp. 46-76.
- Shillinglaw, N. and Thomas W. 1988. *The information society.* Parklands: Donker (Pty) Ltd.
- Silverman, D. 2000. *Doing qualitative research: a practical handbook.* London: Sage.
- Singer, H.W. 1964. Education and economic development. *In: Livingstone, I. (ed.) Economic policy for development: (selected readings).* London: Penguin. pp. 53-63.
- Smit, G.J. 1995. *Research guidelines for planning and documentation.* Pretoria: Southern Book Publishers Ltd.
- Smith, M. 2000. The changing role of the traditional players in the new information age: the future of document delivery services. *In: Inter-lending and document supply. Proceedings of the 6th inter-lending and document supply conference held in Pretoria, 25th-29th October.* pp.9-14
- Sokoine National Agricultural Library. 1997. List of periodicals holdings in agricultural libraries and documentation centres in Tanzania. Sokoine University of Agriculture Morogoro. (A database of periodicals in agricultural libraries and documentation centres in Tanzania.).
- Sokoine National Agricultural Library (SNAL) 1998. An inventory of agricultural libraries and documentation centres in Tanzania. Morogoro: Sokoine University of Agriculture.
- Sproull, N.L. 1995. *Handbook of research methods: guide for practitioner and students in social sciences.* 2nd. ed. Metuchen, N.J.: Scarecrow.

- Stilwell, C., A. Leach, and S. Burton (eds). 1999. Information, knowledge and development: an African perspective. Pietermaritzburg: School of Human and Social Studies, University of Natal.
- Stolper, W.F. 1966. *Planning without facts: lessons in resource allocation from Nigeria's development*. Cambridge, Mass: Harvard University Press.
- Sturges, P. 1985. What librarians feel about their careers: a survey of diploma and certificate holders. *Botswana Library Association Journal*, 7(1):9-21.
- Sturges, P. and G. Chimseu, 1996. The Chain of Information Provision in the villages of Malawi; a rapid rural appraisal. *International Information and Library Review*, 28: 135-156.
- Sturges, P and R. Neill, 1990. *The quiet struggle: information and libraries for the people of Africa*. 2nd. ed. London: Mansell.
- Sweeney, R.T. 1997. Creating library services with WOW: staying slightly ahead of the curve. *Library Trends*, 46(1): 129-151.
- Tanzania Commission for Science and Technology (COSTECH) 1996. Objectives, functions, structures and programme for work activities. Dar es Salaam: COSTECH.
- Tawete, F.K. 1985. Information resource sharing in Tanzania. Unpublished paper read at UNESCO/PGI conference on "Information Resource Sharing in Southern and Central Africa". Institute of Finance Management (IFM): 16th-19th December. Dar es Salaam, Tanzania.
- Technical Centre for Agricultural and Rural Co-operation (CTA). 1995. The role of information for rural development in ACP countries: review and perspectives. In: *Proceedings of International Seminar on the Role of Information for Rural Development in ACP countries*. Montpellier, France: 12th-16th June 1995.
- Terre Blanche, M. and K. Durrheim. (eds). 1999. *Research in practice: applied method for social sciences*. Cape Town: University of Cape Town.
- Tesch, R. 1990. *Qualitative research: analysis types and software tools*. New York: Falmer.
- Thapisa, A.P.N. 1997. A quest for an agricultural information programme for Southern Africa. *Library Management*, 18(4):1-10.
- Thomas, G. 1999. The information specialist and the challenge of Internet: a marathon with no finish line! < <http://www.sabinet.co.za> > 15th September, 1999.
- Thorpe, P. 1980. Agricultural information services for the Third World: problems, developments and prospects. *IAALD Quarterly Bulletin*, 25(2): 29-37.

- Tollini, H. 1995. The economic contribution of agricultural research. *In: Proceedings of the Round Table on Research Policy and Financing in an Era of Adjustment*. International Service for National Agricultural Research (ISNAR).
- Ton, I.A. 1991. Addressing the information needs of farmers and the extension services: the Malaysian experience. *IAALD Quarterly Bulletin*, 36(1-2):36-39.
- Turner, M. and D. Hulmer. 1997. *Governance, administration and development: making the state work*. London: MacMillan.
- Umbima, W. 1993. Regional approach to information sharing: an agricultural information network for Africa. *IAALD Quarterly Bulletin*, 38(2-3):110-113.
- UNESCO. 1990. *National information policies: a handbook on the formulation, approval, implementation and operation*. Paris: UNESCO.
- UNESCO. 1996. *Statistical year book*. Paris: UNESCO.
- United Republic of Tanzania, 1975. Tanzania Library Services Board Act No. 6. Government Printers.
- United Republic of Tanzania, 1984. Sokoine University of Agriculture (SUA) Parliamentary Act No. 6. Dar es Salaam: Government Printers.
- United Republic of Tanzania, 1986. Tanzania Commission for Science and Technology (COSTECH) Parliamentary Act No. 7. Dar es Salaam: Government Printer
- United Republic of Tanzania. 1991. The Sokoine National Agricultural Library Act No. 21. Dar es Salaam: Government Printers.
- United Republic of Tanzania. 1999. Report of the special advisory committee on agricultural development in Tanzania: issues and recommendations. Dar es Salaam: Prime Minister's Office. Vol. 1. December: pp. 1-86.
- United Republic of Tanzania. 1996. The national science and technology policy for Tanzania. Dar es Salaam: Ministry of Science, Technology and Higher Education.
- Van de Ban, A.W. 1990. Improving research/extension liaison at the Uyole Agricultural Centre, Mbeya Tanzania. *In: Mattee, A.Z. et.al. (eds). Proceedings of the workshop on the role of agricultural institutions in the advancement of small farmers in developing countries*. Morogoro: Sokoine University of Agriculture. 7th-12th May: pp. 77-84.
- Van Niekerk, R.V. 1985. Marketing agricultural information: the value of a planned public relations approach in a special library with particular reference to Cedara Library. M.Bibl. thesis. Pietermaritzburg: University of Natal.

- Van Niekerk, R. 1986. Marketing as a means of enhancing the role of information services in agriculture. *South African Journal of Library and Information Science*, 54(3):122-127.
- Van Niekerk, R.V. 1992. The role of information services and agricultural training in support of developing agriculture in Southern Africa. Cedara College of Agriculture and Research station: CED publications.
- Van Vuuren and A. Maree. 1999. Survey methods in market and media research. In: Terre Blanche, M. and K. Durrheim (eds). *Research in practice: applied method for social sciences*. Cape Town: University of Cape Town Press. pp. 269-286
- Vernon, R. 1999. The information needs of agricultural research management. *IAALD Quarterly Bulletin*, 44(1/2):45-55.
- Walters, T. 1997. Beyond structural adjustment: state and market in a rural Tanzanian village. *African Studies Review*, 40(2):59-89.
- Wambura, R.M. 1988. An assessment of the transfer and utilization of agricultural innovation in Musoma District, Tanzania. M.Sc. thesis. (Agriculture) Morogoro: SUA.
- Weingarten, F.W. 1989. Federal information policy development: the congressional perspective. In: McClure, C. *et al.* (eds). *United States government information policies*. Norwood: Ablex Publishing Company.
- Willcocks, L. 1996. *Investing in information systems: evaluation and management*. London: Chapman Hall.
- Woods, B. 1993. Communication, technology and the development of people. London: Routledge.
- Woolston, J.E. 1983. The future of agricultural information transfers: human and institutional aspects. *IAALD Quarterly Bulletin*, 2(1): 34-39.
- Word, S.E. 1985. Communications: the challenge for the information manager. *Journal of Information Science*, 11(3):131-137.
- World Bank, 1981. . Adoption of agricultural innovations in developing countries. Washington D.C. (working paper no.444).
- Younis, A.R. 1986. Resource sharing networks in developing countries. In: Kent, A. (ed.) *Encyclopedia of Library and Information Science*.1. New York: Marcel Dekker, vol. 41 pp.304-320.
- Yumba, D. 1997. Short communications: Internet in the library: potentials. *African Journal of Librarianship, Archives and Information Science*, 7(2):163-168.

Zell, H. M. 1991. Africa: the neglected continent. In: Philip, M. (ed.) *Publishing and development in Third World*. New Delhi: Vistaar Publications.

Zulu, S.F.C. 1994. Africa's survival plan for meeting the challenges of information technology in the 1990s and beyond. *Libri*, 44(1):77-94.

APPENDIX A: LETTERS OF INTRODUCTION

- A1: Letter from programme co-ordinator
- A2: Letter from Director, Sokoine National Agricultural Library
- A3: Letter from researcher

Appendix A1

A Letter from the Programme Co-ordinator

8 December 1999



UNIVERSITY OF NATAL

Pietermaritzburg

Information Studies

Private Bag X01 Scottsville
Pietermaritzburg 3209 South Africa
Telephone (0331) 2605007 Fax (0331) 2605092
E-Mail Holtz @ info.unp.ac.za

TO WHOM IT MAY CONCERN

This is to introduce Mrs. Angella M. CHAILLA an employee of the Sokoine National Agricultural Library, Sokoine University of Agriculture, Tanzania. She is currently pursuing doctoral studies in Information Studies at the University of Natal, Pietermaritzburg, South Africa.

As part of the requirements for the award of the Doctor of Philosophy (PhD) in Information Studies, a candidate is expected to submit a doctoral dissertation based on original research. The title of Mrs. Chaila's anticipated dissertation is: **The Implementation of policies and strategies for agricultural information access and use in Tanzania**. She is currently in the country to collect the necessary data and information for her study. I would therefore, be most grateful if you can assist her in any way possible.

Yours sincerely,

Professor Andrew M. Kaniki (PhD)
Director, Information Studies/Major Supervisor

Appendix A2

A Letter from the Director, Sokoine National Agricultural Library



SOKOINE UNIVERSITY OF AGRICULTURE

Sokoine National Agricultural Library

P. O. BOX 3022 MOROGORO TANZANIA

Tel. Direct 4639 General 3511 Ext 211. Telex: 5508 UNIVMOG TZ "UNIAGRIC" MOROGORO

Email: library @ sua. ac. tz

Our Ref... **SNAL/PF/L.1/1**

Your Ref.....

Date **31/1/2000**

TO WHOM IT MAY CONCERN

RE: ANGELA M. CHAILLA (MRS)

The above mentioned is an employee of the Sokoine University of Agriculture. She is currently on study leave doing her PhD in Agricultural Information at the University of Natal, South Africa.

On behalf of the Sokoine University of Agriculture I am requesting you to assist her in her data collection.

Thank you.

yours Sincerely,

A handwritten signature in dark ink, appearing to read 'R.T. Mulimila', is written over a light blue circular stamp.

R.T. Mulimila

For: DIRECTOR

Sokoine National Agricultural Library

Appendix A3

A proforma Letter from the researcher

Sokoine University of Agriculture
P O Box 3022
SUA-Morogoro
1st February 2000

Dear Sir/Madam

**RE: REQUEST FOR INFORMATION ON AGRICULTURAL LIBRARIES AND
DOCUMENTATION UNITS**

I am a Ph.D student at the University of Natal (RSA) in the Department of Information Studies, Faculty of Human Sciences. (Please see the attached introductory letters).

Currently I am in Tanzania conducting a research on the agricultural libraries and documentation units. Your institution library/documentation unit is one of the study subject.

I kindly request your assistance in filling in the enclosed questionnaire. The questionnaire is to be filled in by the librarian, documentalist or library officer in charge of the library or documentation unit. The questionnaire will be collected in person by the researcher who intends to visit your institution for interviews.

Thank you for your anticipated co-operation.

Yours sincerely



Angela M. Chailla

APPENDIX B: RESEARCH INSTRUMENTS

- B1: Survey Questionnaire
- B2: Interview Schedule
- B3: Observation Schedule

APPENDIX B1

SURVEY QUESTIONNAIRE

SURVEY QUESTIONNAIRE
FOR
HEADS OR DEPUTIES OF AGRICULTURAL LIBRARIES &
DOCUMENTATION CENTRES IN TANZANIA
ON
THE IMPLEMENTATION OF POLICIES AND STRATEGIES FOR
AGRICULTURAL INFORMATION ACCESS AND USE IN TANZANIA

INTRODUCTION

The Questionnaire aims at finding out the extent to which Tanzania has implemented the policies and strategies which have been advanced by international organizations and scholars in agricultural information on how to improve access to and use of agricultural libraries in the Third World countries.

You are kindly requested to fill in the Questionnaire in order for me to be able to obtain relevant information for the research topic. The survey is part of my research as a PhD student, registered with the Department of Information Studies, University of Natal, South Africa.

Your cooperation and frankness in all responses to the questions will be highly appreciated for they will assist me in arriving at useful conclusions and recommendations. Confidentiality of Information provided, names and qualifications of individuals will be respected.

(Please fill in the questionnaire and return it to the researcher at either of the addresses below:)

Angela M. Chailla
Department of Information Studies
School of Human and Social Studies
University of Natal
Private Bag X01
Scottsville 3209
RSA

Sokoine University of Agriculture
PO Box 3022
CHUO KIKUU
MOROGORO
TANZANIA

SURVEY QUESTIONNAIRE

IMPLEMENTATION OF POLICIES AND STRATEGIES FOR AGRICULTURAL INFORMATION ACCESS AND USE IN TANZANIA

This Questionnaire is to be completed by Heads and/or Deputy Heads of agricultural libraries/documentation centres in Tanzania. Please attach any relevant documents available. Circle the letters against the appropriate answers, in cases where these choices, a, b, c, d are provided. In cases where space is provided, write your answer in that space. Should the space not be adequate, continue the answer at the back page, but make sure that you indicate the number of the question.

PART I: INSTITUTIONAL INFORMATION

1. Name of library/documentation centre

2. Postal Address

3. Name of the parent ministry/institution/organization (Please write out the name(s) in appropriate space(s) provided below)

Ministry

University

College

Institute

Research station

Any other (specify)

4. When was your library/documentation centre established? (Give exact date or approximate date). Please attach any document relevant concerning its establishment.

5. Please indicate clearly, by circling the appropriate zone below in which you are located:

- a) Eastern Zone
- b) Southern Zone
- c) Southern Highland Zone
- d) Western Zone
- e) Central Zone
- f) Lake Zone
- g) Northern Zone

6. State the number of established posts which your library/documentation centre has in the space provided.

- | | | | |
|----|-------------------|-------|---------------------------|
| a) | Professionals | _____ | (Please go to Question 7) |
| b) | Non-Professionals | _____ | (Please go to Question 7) |
| c) | IT Technicians | _____ | (Please go to Question 7) |
| d) | Don't know | _____ | (Please go to Question 9) |

7. Indicate by a tick whether you have full-time and part-time staff in each category. Please indicate also the number of filled and unfilled posts in each case.

<u>Full Time</u>	<input type="checkbox"/>	<u>Filled Posts</u>	<u>Not Filled Posts</u>
a)	Professionals	_____	_____
b)	Non-Professionals	_____	_____
c)	IT Technicians	_____	_____

<u>Part Time</u>	<input type="checkbox"/>		
a)	Professionals	_____	_____
b)	Non-professionals	_____	_____
c)	IT Technicians	_____	_____

- 8 If you have unfilled posts in either case (full or part time), please briefly explain why this is so

- 9 Please indicate the official title and qualifications of the head of the library/documentation centre.

Title _____

10. Please list in the table below the official titles (TI) qualifications (QUAL) and specialisation (SP) if any of the staff in your library or documentation centre.

TITLE	QUALIFICATION	SPECIALISATION

11. Does your library/documentation centre have a training programme. (Please circle the letter against the appropriate answer).
- a) YES (Please go to Question 12)
 - b) NO (Please go to Question 13)
 - c) Don't know (Please go to Question 14)

12. What do you think are the priority training areas for your library staff at the moment? Please rate the following training areas in the order of priority from 1-15, with 1 being the most important and 15 being the least important.

TRAINING AREAS

RATING

- a) Basic Computing (Generally) ()
- b) Communication Technology ()
- c) Electronic publishing ()
- d) Cataloguing and classification ()
- e) Abstracting and indexing ()
- f) Management of Agricultural Information System ()
- g) Information searching ()
- h) Systems analysis and design ()
- i) Use of Audio Visual Aids in training users, extension
officers and farmers ()
- j) Database construction and management ()
- k) Repackaging information for extension officers and farmers ()
- l) Scientific editing ()
- m) Information marketing ()
- n) Management of research reports ()
- o) Others (please specify) below ()

13. If your answer in question 11 is No, please explain briefly why the library/documentation centre does not have a training programme.

14. As part of your library training programme and possibly to enhance your skills and knowledge, do you and your staff have the opportunity to attend conferences, workshop,/seminars and even study tours nationally, regionally or internationally?

- a) **YES** (Please go to Question 15)
- b) **NO** (Please go to Question 17)
- c) **Don't know** (Please go to Question 17)

15. State the number of conferences/workshops/seminars attended by the library staff in the past four years. (Please note that if more than one staff member attended the same seminar/workshop, that it must be counted as one).

	1995/96	1996/97	1997/98	1998/99
National	_____	_____	_____	_____
Regional	_____	_____	_____	_____
International	_____	_____	_____	_____

16. How were the conferences/workshops/seminars/study tour financed? (Circle as many answers as applicable to you if funding came from more than one source).

- a) Library vote for conferences
- b) Donor funding
- c) Institutional central code for conferences, seminars, workshops and study tours
- d) Other (please specify)

17. In your opinion, do you think agricultural information handling such as information repackaging, information marketing, scientific editing, indexing and abstracting etc. should be taught in library schools in Tanzania?

- a) YES
- b) NO
- c) Don't know

18. Does your library prepare annual budget? Please circle the appropriate letter.

- a) YES (Please go to Question 19)
- b) NO (Please go to Question 20)
- c) Don't know (Please go to Question 24)

19. What was the total budget for your library in Tanzanian shillings for the past four years?

1995/96 Tshs _____

1996/97 Tshs _____

1997/98 Tshs _____

1998/99 Tshs _____

20. If your answer in Question 18 is no, please give reasons.

21. Kindly state approximately what percentage of your total budget was used for the following activities in each of the years in Question 19.

a)	Attending conferences, seminars, workshops and study tours	1995/96	1996/97	1997/98	1998/99
b)	Staff remunerations e.g. Salaries, overtime, annual leave allowances				
c)	Journal subscription				
d)	Book acquisition				
e)	Staff training				
f)	Interlibrary loans				
g)	Exchange of publications				
h)	Library user training				
i)	Acquisition of electronic materials, equipment and software				
j)	Audio visual materials				
k)	Research activities				
l)	In-house staff training				
m)	Others, specify				

22. Is your library supplemented by donor funds?

- a) YES (Please got to Question 23)
b) NO (Please got to Question 23)
c) Don't know (Please got to Question 23)

- 23 Please state approximately or exactly if you can, what percentage was the donor input in your budget for the four year period indicated below. (In case you don't know or you are not aware of the input, please indicate so).

1995/96 _____

1996/97 _____

1997/98 _____

1998/99 _____

- 24 What was/is the size of your collection in the period of four years indicated below?

		1995/96	1996/97	1997/98	1998/99
Books	Titles Volumes				
Periodicals	Titles				
Research reports	Titles				
Any others (e.g. Microforms, microfilms) please state and give details					

PART II: LIBRARY COOPERATION AND RESOURCE SHARING

25. Does your library or documentation centre carry out joint activities with other libraries and documentation centres, e.g. exchanging of publications, lending out materials to each other, providing each other with accessions lists, photocopies of research periodicals or journal articles etc. Please circle the appropriate letter.

- a) **YES** (Please go to Question 26)
- b) **NO** (Please go to Question 26)
- c) **Don't know** (Please go to Question 26)

26. There are a number of activities listed below in which agricultural libraries and documentation centres could cooperate. Indicate the activities in which your library is involved or engaged in the order of priority from 1-11 with 1 being the most important and 11 being the least important.

<u>ACTIVITIES</u>	<u>RATING</u>
a) Exchange of publications	()
b) Interlending of Books	()
c) Interlending of journals	()
d) Photocopying and sending each other research reports	()
e) Staff exchange	()
f) Union Catalogue of Periodicals	()
g) Union Catalogue of Books	()
h) Cooperative acquisition	()
i) Cooperative cataloguing	()
j) Training activities	()
k) Any other (Please specify)	()

- 27 Do the activities in which you cooperate have any guidelines which have been laid down on how you should operate?
- a) YES
 - b) NO
 - c) Don't know
- 28 Do you operate with the Sokione national Agricultural Library (SNAL)?
- (Respondents from SNAL, please go to Question 31)
- a) YES (Please go to Question 29)
 - b) NO (Please go to Question 30)
 - c) Don't know (Please go to Question 32)
- 29 Please explain the kind of materials and services you receive from Sokione Agricultural Library (SNAL) (Please circle as many answers as applicable to you in order of priority from 1-15 as the case may be.)

MATERIALS**RATING**

- a) Annual proceedings of Agricultural Associations
(E.g. Proceedings of Tanzania Veterinary Association etc.) ()
- b) Union List of agricultural periodicals in Tanzania ()
- c) SUA-Extension Services Newsletter ()
- d) SUA-Research Newsletter ()
- e) SNAL legal depository catalogue holdings ()
- f) SNAL's monthly accessions list ()
- g) Training in Information Technology ()
- h) Staff exchange ()
- i) Photocopies of research reports ()
- j) Photocopies of journal articles ()
- k) Invitation to agricultural related workshops ()

(Questions 29 continues on the next page)

- l) Publications from agricultural-related international organizations,
e.g. ISNAR, CTA, FAO ()
- m) References services ()
- n) Advisory services ()
- o) Others, please specify ()

30. If your answer in Question 28 is no, please briefly explain why. Circle as many answers below as may be the reasons why you do not carry out joint activities in order of priority as the case may be with your library: from 1-5 with 1 being the most important and 5 being the least important.

REASONS

RATING

- a) My library/documentation centre is too far from Morogoro ()
- b) My library/documentation centre has no contact with SNAL ()
- c) It is not necessary ()
- d) I don't know which activities we could do jointly ()
- e) Any other reasons, please explain in the space provided below ()

31. Which of the following problems and/pr difficulties do you encounter in cooperation, interlending and reference activities? (Please circle as many answers below as applicable to you in order of importance from 1-9 with 1 being the most important and 9 being the least important).

<u>PROBLEMS</u>	<u>RATING</u>
a) Inadequate staff	()
b) Inadequate financial resources	()
c) Inadequate materials and equipment	()
d) Poor communication	()
e) It is not mandatory	()
f) Unwillingness of other libraries to cooperate	()
g) It is not necessary	()
h) Lack of guidelines on how to carry out cooperative activities	()
i) Other (Please specify)	()

32. Is the library/documentation centre a recipient of agricultural publications from some of the International Organizations such as CTA, IDRC, CABI, FAO, ISNAR etc?

- a) **YES** (Please go to Question 33)
- b) **NO** (Please go to Question 34)
- c) **Don't know** (Please go to Question 35)

33. Please give examples of types of materials received (from the organizations) below, e.g. annual reports, research reports, conference proceedings etc.

34. If your answer in Question 32 is No, please give reasons.

USERS

a) Trainers (i.e. lecturers) ()

b) Trainees (i.e. students) ()

c) Extension officers ()

d) Farmers ()

e) Researchers ()

f) Businessmen ()

g) Policy makers ()

h) Economic planners ()

i) Agro-based industries ()

j) Agricultural institutions ()

k) Other (please specify) ()

[illegible]

36. What are your subject areas/fields of specialization or the focus of your Library Collection?

37. What are the main services and support activities of your library to the users? (Circle as many as necessary in order of priority from 1-7 with 1 being the most important and 7 the least important).

ACTIVITIES

RATING

- a) Acquisition and management of research reports ()
- b) Provision of training materials to trainers ()
- c) Provision of extension materials to Extension Personnel ()
- d) Information repackaging for farmers ()
- e) General information to users and potential users ()
- f) Referral services to users ()
- g) Any other (please specify) ()

38. Do you publicise the services of your library/documentation centre to users?

- a) YES (Please go to Question 39)
- b) NO (Please go to Question 40)
- c) Don't know (Please go to Question 41)

39. Which of the following services does your library do for awareness and publicity of your library services? (Please circle as many as applicable to your library or documentation centre in order priority from 1-12 as the case may be with your library).

SERVICES

RATING

- a) Indexing and abstracting ()
- b) Information research for users ()
- c) Production of monthly/quarterly acquisition lists of books, periodicals, theses and dissertations, research reports etc. ()
- d) Communication of relevant and current information to users ()
- e) Repackaging of technical research results for extension officers and farmers ()
- f) Printing of Newsletters for farmers ()
- g) Video shows on how to use the library facilities ()
- h) Participation in Farmers' day ()
- i) Workshops for users and potential users ()
- j) Joint meetings with researchers ()
- k) Joint meetings with extension officers ()
- l) Others (Please specify) ()

40. If your answer in Question 38 is No, circle below the reasons that hinder you from carrying out the awareness and publicity of the activities and services in order of priority from 1-9, with 1 being the critical one and 9 being the least important.

	<u>REASONS</u>	<u>RATING</u>
a)	Inadequate budget	()
b)	Inadequate number of qualified staff	()
c)	Lack of necessary facilities such as photocopiers	()
d)	Lack of skills in printing and editing	()
e)	Lack of electronic facilities to facilitate networking	()
f)	Lack of staff motivation	()
g)	Do not find it necessary	()
h)	Not required to do so by my parent institution	()
i)	Any other reasons (please specify below)	()

- 41 Do you have access to the internet through your parent organization?

- a) YES (Please go to Question 42)
- b) NO (Please go to Question 43)

42 What internet services do you use?

- Internet E-mail
- Listserv
- Newsgroups
- File Transfer Protocol (FTP)
- World Wide Web (www)
- Others (Please specify)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**PART IV: LIBRARIES AND DOCUMENTATION CENTRES
INFRASTRUCTURE**

43. What is the size of your library/documentation centre building? Please give the measurements in sq. metres

44. Does your library/documentation centre have adequate room for users, library staff and library collection?

- a) **YES** (Please go to Question 47)
b) **NO** (Please go to Question 45)

45. Is your parent institution aware of this inadequacy?

- a) **YES** (Please go to Question 46)
b) **NO** (Please go to Question 47)

46. If the answer is yes, what is/has been done about it? Please explain the situation briefly in the space provided below

47. Do you have any institutional policy or regulations concerning any of your library's operational activities?

- a) YES (Please go to Question 48)
- b) NO (Please go to Question 49)
- c) Don't know (Please go to Question 49)

48. Please briefly explain the policy or regulation that you have

49. Does your parent institution have a strategic plan on how, for instance, the institution or organization should be in future and how the library or documentation centre should be more effective such as recruitment of library staff, automation etc.

- a) YES (Please go to Question 50)
- b) NO (Please go to Question 52)
- c) Don't know (Please go to Question 53)

50. Did you participate in the working out of the strategic plan as a sub-unit of your institution?

- a) YES (Please go to Question 51)
- b) NO (Please go to Question 52)

51. What activities or plans does the strategic plan have for the library/ documentation centre? (Please circle as many answers below as may be applicable to you in order of priority from 1-9 with 1 being the critical one and 9 the least).

ACTIVITIES**RATING**

- a) Recruitment of adequate number of library staff ()
- b) Procurement of library equipment to facilitate
resource-sharing and networking ()
- c) Training of library staff in agricultural information handling
such as information repackaging, printing and editing ()
- d) Computerization of the library services to facilitate
computer-networks ()
- e) Expansion of the library or documentation centre ()
- f) Production and distribution of agricultural research
findings and desired formats to users ()
- g) Strategies for retention of information specialists and
technicians ()
- h) Specify plan for career advancement for library staff ()
- i) Any others (Please specify below) ()

52. If your answer in Question 49 is No, briefly explain the reasons why your library/documentation centre is not included in the parent organization's strategic plan.

53. Are you aware of any national, regional or international policy/policies or recommendations on improvement of agricultural library services?

- a) **YES** (Please go to Question 54)
b) **NO** (Please go to Question 55)

54. Has your library/documentation centre implemented any of the recommendations, some of which are outlined below. (Please circle against the appropriate letter in order of priority from 1-11 as you have implemented them).

	<u>RECOMMENDATIONS</u>	<u>RATING</u>
a)	Having adequate number of staff at each service point	()
b)	Training staff in agricultural information handling	()
c)	Adopting and adapting to agricultural information technology	()
d)	Working out strategies for marketing the services	()
e)	Motivating for and having an adequate budget annually	()
f)	Changing the professional image from a traditional one so as to be able to compete with other information providers like the internet	()
g)	Having an attractive scheme of service for library employees	()
h)	Working out networking modalities nationally and regionally	()

Question 54 continues on the next page

- i) carrying out cooperative activities such as inter library lending services ()
- j) Participation in national and regional workshops ()
- k) Making policy makers and planners aware of the specific strategies and recommendations ()

55. If your answer in Question 53 is No, explain why by putting a circle around the appropriate letter against the answers provided below. You may circle as many as applicable, in order of priority from 1-8, with 1 being the most important reason and 8 the least.

REASONS

RATING

- a) Don't know the recommendations ()
- b) Have no facilities for implementation ()
- c) My parent institution is not aware of the strategies and recommendations for improvement of the library/ documentation centre services ()
- d) My parent institution is not supportive ()
- e) Have no national machinery for guidance ()
- f) Have no national agricultural information policy for reference ()
- g) The Sokoine National Agricultural Library does not communicate with us ()
- h) Any others (Please specify) ()

56. In your opinion, what are the major problems facing agricultural libraries and documentation centres in Tanzania? Please rate them in order of priority 1-15 with 1 being the most critical and 15 the least important.

<u>PROBLEMS</u>	<u>RATING</u>
a) The Tanzania Agricultural Library Information Services is weak	()
b) Inadequate number of trained library staff	()
c) Lack of government support	()
d) Inadequate budget	()
e) Lack of cooperation among the libraries	()
f) Lack of recognition and appreciation of our services by the community	()
g) Lack of clear policies or regulations regarding dissemination of agricultural information to users	()
h) Low salaries for library staff compared to their counterparts in other sectors	()
i) Our own attitude towards our profession	()
j) A weak National Professional Association (TLA)	()
k) Lack of co-operation among the informal specialists, researchers and extension personnel	()
l) Lack of incentives to retain the trained library staff/technicians	()
m) Lack of joint forum of researchers, extension personnel and information specialists	()
n) Others (Please specify)	()

57. How do you think some of these problems can be addressed? Please be specific in terms of strategy rather than just more money?

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

g) _____

h) _____

58. In your opinion please indicate how well your library/documentation centre is used.
(Circle the appropriate answers).

- a) Highly used
- b) Moderately used
- c) Hardly used
- d) Do not know

Thank you very much for spending your time answering these questions.

Appendix B2

The Interview Schedule

INTERVIEW SCHEDULE

**TITLE: IMPLEMENTATION OF POLICIES AND STRATEGIES
FOR AGRICULTURAL INFORMATION ACCESS AND
USE IN TANZANIA**

INTRODUCTION

The purpose of this study is to find out the views, opinions and suggestions on how to improve access and use of agricultural libraries and documentation centres in Tanzania. The interview intends to find out the policy and decision makers' general views on: implementation or lack of implementation of the recommended policies and strategies for improvement of agricultural libraries and documentation centres in Tanzania, their awareness of such strategies and recommendations and their general views on the agricultural library information system as one of the key information providers in Tanzania.

SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE

1. Name of Institution: _____

2. Job Title: _____

3. Number of years in current position: _____

4. What is your level of awareness on the services of agricultural libraries and documentation centres:

<u>Very high</u>	<u>High</u>	<u>Average</u>	<u>Low</u>	<u>Zero</u>
_____	_____	_____	_____	_____

5. Please indicate the degree to which you are involved in each of the following activities in the agricultural sector:

Highly involved

Moderately involved

Initiating policy

Recommending policy

Approving policy

6. International agricultural organizations and scholars in agricultural information have alleged that the agricultural libraries and documentation centres in the Third World Countries are not given the priority in the National Plans, hence their ineffectiveness as agricultural information delivery system. What are your comments on this allegation regarding Tanzanian situation?

[illegible]

7. Given the whole range of problems affecting the libraries of MATIs and LITIs and other MoA documentation centres in Tanzania in terms of funding, number of staff, lack of training opportunities, and alleged lack of support from parent organizations/institutions, what do you think should be a solution to these problems.

8. Will instituting a National Information Policy (since Tanzania has none) be a solution to the problem?

Yes: _____

No: _____

9. Please give reasons to your answer in Question 8

10. Please could you kindly clarify as to how the development of agricultural libraries and documentation centres as providers of technical and non-technical information have been featured in the MoA's Medium Strategic Plan of 1999-2004?

11. In your opinion, how important are the agricultural libraries and documentation centres in agricultural information acquisition and provision in Tanzania?

Very important

Important

Not so important

12. Do you have any suggestions on the improvement of agricultural libraries and documentation centre's services?

Thank you very much for your valuable information

Appendix B3

The Observation Schedule

THE OBSERVATION

**TITLE: IMPLEMENTATION OF POLICIES AND STRATEGIES FOR
AGRICULTURAL INFORMATION ACCESS AND USE IN
TANZANIA**

INTRODUCTION

The observation method was chosen in the study for the purpose of filling in the gaps left by the survey questionnaire. It was adopted to validate the information given in the questionnaire. It was also intended to find out in-depth information on pertinent issues which proved difficult for open discussion and for questionnaire survey. Generally, the observation method was a supplement to both the questionnaire and the interview.

OBSERVATIONS

SECTION 1

OUTSIDE APPEARANCE OF THE BUILDING

- Location of the library documentation centre within the institution research station. Is it clearly visible?

- Size of the building. Is it a classroom or a store designated a library or a documentation centre?

- Is it run down needing maintenance and painting?

- Are there direction posters?

- Is the landscaping/upkeeping of the library outside inviting?

SECTION II

INSIDE THE LIBRARY OR DOCUMENTATION CENTRE

- What strikes you most as you enter the library?

- Are there posters for direction to different sections?

- Is there a notice board for important notices or circulars from MAC headquarters, management or other agricultural information centres?

- Are there guidelines for the use of the library/documentation centre?

- Does the library/documentation centre have furniture - reading tables, chairs and adequate lighting?

- Is there enough room for users, collection and storage?

SECTION III

LIBRARY/DOCUMENTATION CENTRES' SERVICES

- Is it a “self-service library, or is there staff at the enquiry desk?”

- What is the actual size of the collection in terms of books, periodicals, research reports, theses and dissertations and electronic materials?

- Is the collection/materials current or archive?

- Organizations of the material - is it for the users to find what she wants?

- Are there user statistics?

- Is there a “user opinion/suggestion box?”

SECTION IV

OTHER NECESSITIES

- Are there toilets/toilet?

- Is there a staff tea room?

- Is there a staff meeting room?

SECTION V

General comments of staff appearance and morale for work

APPENDIX C: ADDRESSES OF LIBRARIES

- C1: Addresses of libraries and documentation centres involved in the study
- C2: A list of interviewees

Appendix C1

The Addresses of all libraries and documentation centres involved in the Study

ADDRESSES OF AGRICULTURAL LIBRARIES AND DOCUMENTATION CENTRES WHICH WERE INVOLVED IN THE STUDY.

1. Pasiansi Wildlife Training Institute Library
(Lake Zone)
PO Box 1432
Mwanza
2. Ministry of Agriculture
Veterinary Investigation Centre (VIC) documentation unit
(Western Zone)
PO Box 73
Tabora
3. Selian Agricultural Research Institute (SARI) Library
(Eastern Zone)
PO Box 6024
Arusha
4. Ministry of Agriculture
Livestock Research Centre's documentation unit
(Eastern Zone)
PO Box 5016
Tanga
5. Ministry of Agriculture
Livestock Training Institute (LITI) library
(Central Zone)
PO Box 51
Mpwapwa, Dodoma
6. Ministry of Agriculture
Veterinary Investigation Centre (VIC) documentation unit
(Central Zone)
PO Box 159
Mpwapwa, Dodoma
7. Ministry of Agriculture
Livestock Training Institute (LITI) library
(Eastern Zone)
PO Box 603
Morogoro
8. Moshi Co-operative College library
(Northern Zone)
PO Box 474
Moshi

9. Ministry of Agriculture
Research Institute's documentation unit
Mlingano.
(Eastern Zone)
PO Box 5088
Tanga
10. Ministry of Agriculture
Research Institute's documentation centre
(Southern Zone)
PO Box 509
Mtwara
11. Ministry of Agriculture
Research Station's documentation unit
Hombolo
(Western Zone)
PO Box 299
Dodoma
12. Ministry of Agriculture
Livestock Training Institute (LITI) library
(Eastern Zone)
PO Box 1483
Tanga
13. Ministry of Agriculture Training Institute (MATI) library
Mlingano
(Eastern Zone)
PO Box 5051
Tanga
14. Ministry of Agriculture
Ukiriguru Agricultural Research Centre's documentation Unit
(Lake Zone)
PO Box 1433
Mwanza
15. Beekeeping Training Institute's Library
(Western Zone)
PO Box 62
Tabora
16. Makutupora Viticultural Research Centre's documentation Unit
(Central Zone)
PO Box 1670
Dodoma

17. Tsetse and Trypanasomiasis Research Institute (TTRI) documentation centre
(Eastern Zone)
PO Box 1026
Tanga
18. College of African Wildlife Management Library
(Northern Zone)
PO Box 3031
Moshi
19. Ministry of Agriculture
Livestock Production Research Institute's library
(Central Zone)
PO Box 203
Mpwapwa
20. Ministry of Agriculture
Veterinary Investigation Centre (VIC)'s documentation unit
(Southern Highland Zone)
PO Box 290
Iringa
21. Tanzania Pesticide Research Institute (TPRI) library
(Northern Zone)
PO Box 3024
Arusha
22. Ministry of Agriculture Training Institute (MATI) library
(Northern Zone)
PO Box 3101
Arusha
23. Science and Technology Library
PO Box 4302
Dar es Salaam
24. Ministry of Agriculture
Horticulture Research Centre's documentation unit
(Northern Zone)
PO Box 1253
Arusha
25. Tanzania Forestry Research Institute (TAFORI)'s documentation unit
(Eastern Zone)
PO Box 1854
Morogoro

26. Tanzania Bureau of Standards' documentation unit
(Eastern Zone)
PO Box 9524
Dar es Salaam
27. Ministry of Agriculture
Lyamungu Agricultural Research Centre's documentation unit
(Northern Zone)
PO Box 1017
Moshi
28. National Environmental Management Council (NEMC) library
PO Box 20671
Dar es Salaam
29. Kunduchi Fisheries Research and Training Institute's Library
(Eastern Zone)
PO Box 60091
Dar es Salaam
30. Ministry of Agriculture
Division of Research and Development (DRD) library
(Eastern Zone)
PO Box 2066
Dar es Salaam
31. Mbegani Fisheries Development Centre library
(Eastern Zone)
PO Box 83
Bagamoyo
32. Ministry of Agriculture Training Institute (MATI, Ukiriguru) library
(Lake Zone)
PO Box 1434
Mwanza
33. Ministry of Agriculture
Uyole Research and Training Institute
(Southern Highland)
PO Box 400
Mbeya
34. Sokoine National Agricultural Library
(Eastern Zone)
PO Box 3022
SUA, Morogoro

Appendix C2

A List of Interviewees

LIST OF INTERVIEWEES

A. Heads/deputy heads of the following institutions

1. Kunduchi Fisheries Research and Training Institute
2. Ministry of Agriculture Training Institute (MATI), Mlingano, Tanga
3. Sokoine University of Agriculture (SUA), Morogoro
4. Selian Agricultural Research Institute (SARI), Arusha
5. Tanzania Pesticide Research Institute (TPRI), Arusha
6. Horticulture Research Centre, Tengeru, Arusha

B. Heads of libraries and documentation centres of the following institutions

7. Commission for Science and Technology (COSTECH), Dar es Salaam
8. Moshi Co-operative College
9. Sokoine National Agricultural Library (SNAL)
10. College of Wildlife Management
11. National Environmental Management Council (NEMC)
12. Livestock Training Institute (LITI) Tanga

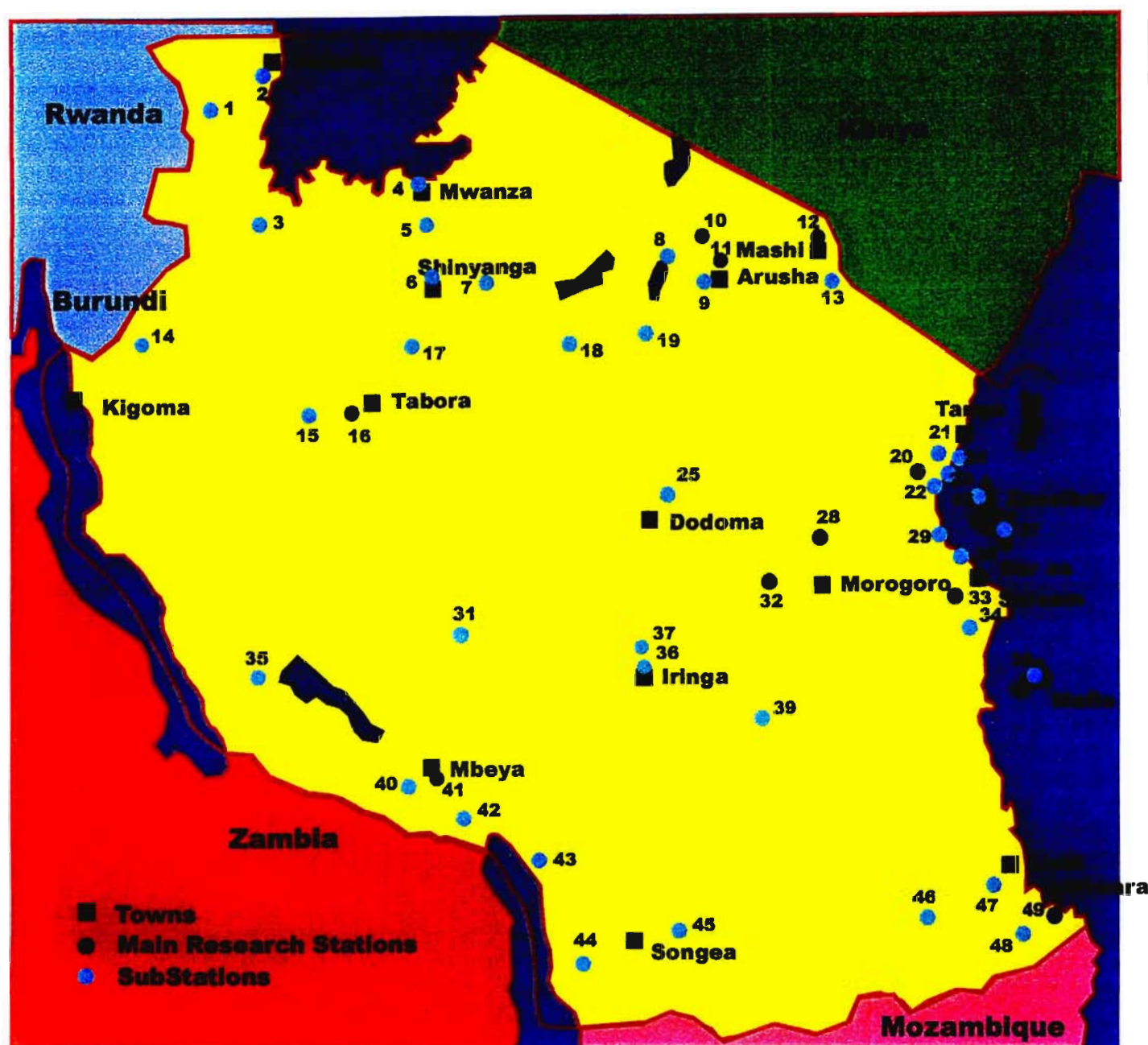
C. Directors/heads of Ministry of Agriculture's directorates and divisions/units

13. Human Resources, Planning and Training Unit
14. Policy and Planning Division
15. Co-operatives and Institutions Development Division
16. MoA, Zonal Research and Training Director, Lake Zone
17. MoA, Zonal Research and Training Director, Central Zone
18. Extension Services Division

APPENDIX D: MAP OF TANZANIA

D1: Map of Tanzania/main and sub-research stations

Tanzania : Map showing the distribution of research stations and substations.



1. Kituntu
2. Maruku
3. Bwanga
4. Ukiriguru
5. Mabuki
6. Lubaga
7. Mwamala
8. Mto wa mbu
9. Arusha
10. TPRI
11. Tengeru
12. Lyamungu
13. Miwaleni
14. Kasulu
15. Urambo Seed Farm
16. Tumbi

17. Mwanhala
18. Manang Complex
19. Magugu
20. Marikitinda
21. Maramba
22. Muheza
23. Mlingano
24. LBS Tanga
25. Mombolo
26. Selem
27. Bambi
28. Dakwa
29. Chambezi
30. Mpiji
31. Chunya
32. Ilonga

33. Kibaha
34. Mkuranga
35. Nkundi
36. Ismani
37. Iringa
38. Kilombero
39. Ifakara
40. Mbimba
41. Uyole
42. Mitalula
43. Igeri
44. Ndengo
45. Suluti
46. Nachingwea
47. Ng'apa
48. Mtopwa
49. Naliendele

APPENDIX E: ONE OF THE SECTORAL POLICIES

E1: Sokoine National Agricultural Library Act

ATTENTION: Mrs A. CHALLA
PHD STUDENT

ISSN 0856-0331JX

THE UNITED REPUBLIC OF TANZANIA

Acts Supplement

to the Gazette of the United Republic of Tanzania No. 18, Vol. 73, dated 1st May, 1992

No. 7

1st May, 1992

Printed by the Government Printer, Dar es Salaam, by Order of Government.

THE SOKOINE NATIONAL AGRICULTURAL LIBRARY ACT, 1991

ARRANGEMENTS OF SECTIONS

Section

Title

PART I

PRELIMINARY

1. Short title.
2. Commencement
3. Interpretation.

PART II

THE LIBRARY

4. Establishment, location and status of the library.
5. The National Agricultural Library System.
6. Functions of the Library.

PART III

ADMINISTRATIVE AND FINANCIAL PROVISIONS

7. Vesting of Management.
8. The Library Board.
9. The Director and other staff of the Library.
10. Financial resources of the library.

PART IV

MISCELLANEOUS PROVISIONS

11. Deposit of books.
12. By-Laws.
13. Regulations.

THE UNITED REPUBLIC OF TANZANIA



No. 21 OF 1991

I ASSENT,

A. H. MWINYI,
*President*9TH APRIL, 1992

An Act to establish the Sokoine National Agricultural Library within the Sokoine University of Agriculture and to provide other matters connected with or incidental to the establishment of that library and the operation of a national agricultural library system

[.....]

ENACTED by the Parliament of the United Republic of Tanzania.

PART 1

PRELIMINARY PROVISIONS

1.—(1) This Act may be cited as the Sokoine National Agricultural Library Act, 1991.

Short title
and Con-
struc-
tion

(2) This Act shall be read together with the Sokoine University of Agriculture Act, 1984, in this Act referred to as "the original Act"

Acts, 1984
No. 6

2. This Act shall come into operation on such date as the Minister may, by notice published in the *Gazette*, appoint.

Comme-
ncement

3.—(1) Subject to subsection (2), in this Act, unless the context requires otherwise—

"academic staff" means members of the staff of the library who are employees of the University described in section 25 of the original Act;

"administrative staff" means members of the staff of the library who are employees of the University described in section 28 of the original Act;

"the Board" means the Library Board established by section 8;

"book" includes every part or division of any book, document, periodical, magazine, newspaper, pamphlet, musicscore, gramophone record, picture point, engraving, etching, deed, photograph, map, chart, plan, film, filmstrip, microfilm, slide or manuscript, and any other article or thing of a like nature, provided for the use of the public in the library or in any other library of any kind, whether or not it is the property of the University;

"the Council" means the Council of the University established by section 13 of the original Act;

"the Director" means the Director of the library appointed under section 9;

"Institute" means an Institute of the University, established by or under the original Act;

(2) Except where the context requires otherwise words and expressions in this Act to which no specific meaning is assigned by this Act shall have the same meaning assigned to them in the original Act.

PART II

THE LIBRARY

Establishment, location and status of the

4.—(1) There is hereby established an agricultural library which shall be known as the Sokoine National Agricultural Library.

(2) The Library shall be within the University and shall be an Institute of the University.

(3) The Library shall be both the library of the University as well as a national agricultural library for the United Republic.

The National Agricultural Library System

5.—(1) The Minister shall make appropriate provision for the establishment, maintenance and operation of a national agricultural library system for the United Republic.

(2) The Library shall be an agricultural library within the national agricultural library system, and shall be developed as the centre of the national agricultural library network.

Functions of the Library

6.—(1) The primary object of the library shall be the development and maintenance at the University of a system of reference, lending and other library services in agricultural sciences and related disciplines for the benefit of the University community, the needs of agricultural scientists and of the people of Tanzania generally.

(2) In particular and without prejudice to the generality of subsection (1), subject to any special or general directions of the Minister or the Council, the Library shall have power to:

- (a) serve the library and information needs of agricultural researchers, teachers, students, extension workers, farmers and peasants as well as any other group in need of such information;
- (b) supervise, coordinate, advise and offer consultancy and liaison services to all cooperating agricultural libraries in the United Republic for the purpose of improving the services they provide;
- (c) provide services such as reference, bibliography and library loans in the field of agriculture and related subjects;
- (d) undertake centralised technical services such as the selecting, ordering and cataloguing of books and allied materials for the national agricultural library system;
- (e) act as national bibliographic and documentation centre involving being a repository of published and unpublished materials on agriculture and related fields, legal deposit right, indexing, abstracting and compilation of national agricultural bibliography;
- (f) establish and maintain Union catalogue for easy location of the material available in the system;
- (g) establish, maintain and promote cooperation with similar libraries and information centres at national and international levels for the purposes of maintaining a ready means of acquiring relevant literature;
- (h) collect and maintain records of agricultural research and development projects in progress or completed, so as for the Library to serve as a national clearing house for all agricultural materials;
- (i) finance, organize, and conduct or facilitate the conduct of in-service and professional training of its staff in order for the library to render efficient and effective services;
- (j) provide a national scientific literature services for current awareness and delivery of documents;
- (k) do anything or enter into any transaction which in the opinion of the Board is calculated to facilitate the proper and efficient carrying on of the activities of the Library and the proper exercise of its functions under this Act.

PART III

ADMINISTRATIVE AND FINANCIAL PROVISIONS

Vesting of
manage-
ment

7.—(1) Subject to this Act and to the original Act, the government, control and administration of the business of the Library is hereby vested in the Board, which shall be answerable to the Council through the Senate for the discharge of its functions.

(2) The Library shall, for the purposes of conducting its business within the University, be deemed to be an Institute of the University.

The Li-
brary
Board

8.—(1) There is hereby established a Board for the Library which shall be known as the Library Board.

(2) The Board shall consist of:—

(a) the Director who shall be Chairman of the Board; and

(b) not more than fifteen nor less than ten other members appointed by the respective Ministries, institutions or Institutes as follows:

- (i) One member representing the Ministry responsible for Agriculture, Livestock Development and Cooperatives;
- (ii) One member representing the Ministry responsible for Natural Resources;
- (iii) One member representing the Tanzania Library services;
- (iv) One member of Parliament;
- (v) One member representing the University of Dar es Salaam Library;
- (vi) One member representing each of the faculties of Sokoine University of Agriculture;
- (vii) One member representing the Institute of Continuing Education at Sokoine University of Agriculture;
- (viii) One member representing the Development Studies Institute at Sokoine University of Agriculture;
- (ix) One member representing the Development Studies Institute at Sokoine University of Agriculture;
- (x) One member representing the Basic Science Unit at Sokoine University of Agriculture;
- (xi) Bookshop Manager of Sokoine University of Agriculture;
- (xii) Two members representing the Library.

(xiii) One member representing the Computer Unit at Sokoine University of Agriculture.

(c) Such other member not more than three as the Board may wish to Co-opt from time to time.

9.—(1) There shall be a Director of the Library who shall be appointed by the Council in pursuance of section 26 of the original Act.

The Director and other staff of the Library

(2) The Director shall be the chief executive officer of the Library.

(3) There shall be such other offices on the academic and the administrative staff of the Library as the Council may from time to time determine, and appointments to those offices shall be made in accordance with this and the original Act.

10.—(1) The funds and resources of the Library shall consist of:—

Financial resources of the Library

(a) such sums as may be provided for the purposes of the Library by the University;

(b) such sums as the Board may from time to time, raise from clients of the Library,

(c) such sums as may be realised from donations, gifts, grants and bequests made to the Library or to the University for the purposes of the Library.

(2) The provisions of Part VIII of the original Act shall apply in relation to the management and administration of the funds and resources of the Library and otherwise for those purposes.

PART IV

MISCELLANEOUS PROVISIONS

11. For the purposes of section 3 of the Libraries (Deposit of Books) Act, 1962, the Library shall be a place to which there shall be delivered for deposit a copy of every book printed in the United Republic.

Deposit of books
Cap 497

12.—(1) The Board may make by-laws for all or any of the following purposes:—

By-laws

- (a) providing for the powers, duties and functions of the librarian;
- (b) fixing the hours during which the Library shall be open to the public;
- (c) regulating admission to the Library or to any of the facilities provided in it;
- (d) regulating the lending and borrowing of any of the books in the Library;

- (e) requiring a guarantee or security to be given by any person borrowing books from the Library;
- (f) prescribing fees, charges and penalties to be paid by any person in respect of books borrowed from the Library;
- (g) regulating the conduct of persons in the Library;
- (h) protecting the Library and the fittings, furniture, books and any other things in it from damage;
- (i) the assessment of the amount to be paid in respect of the repair or replacement of any book which has been lost, damaged or destroyed or by way of compensation for the loss or damage sustained by the University by reason of the fact that any book has been lost, damaged or destroyed and the recovery of any such amount;
- (j) enabling any person to be refused the use of the Library or any of the facilities provided in the Library and the removal from it of any person;
- (k) the terms on which articles may be deposited in the Library for safe-keeping while any person is in the Library.

(2) By-laws made under paragraph (i) of subsection (1) may provide that, in a case where one of the books forming a set of books in the Library has been lost, damaged or destroyed, the amount to be paid in respect of the book may be assessed by reference to the cost of replacing all the books in the set and may authorize the recovery, in addition to the amount to be paid in respect of the replacement of any book, of a surcharge not exceeding twenty percent of such amount.

(3) By-laws made under this section may provide that contravention of any of the provisions of those by-laws shall constitute an offence and may prescribe penalties for them not exceeding in each case a fine of one hundred thousand shillings.

(4) All by-laws made by the Board under this section shall be subject to prior approval of the Senate, and shall be published in the *Gazette*.

(5) By-laws made under this section may be applied to all or to any of the libraries within the national agricultural library system.

13. The Minister may, upon advice by the Council make appropriate regulations for the purposes of establishing, maintaining, operating or in any way promoting the development of the national agricultural library system.

Passed in the National Assembly on the 1st day of November, 1991.

M. MWINDADI,
Clerk of the National Assembly