

EVALUATION OF EXTENSION COMMUNICATION STRATEGIES USED FOR
DISSEMINATION OF AGRICULTURAL MESSAGES IN SOLWEZI DISTRICT OF
NORTH-WESTERN PROVINCE OF ZAMBIA

BY
SAKUWAHA EDWARD

THESIS
M.C.D.
SAK
2007

SUBMITTED IN PARTIAL FULFILMENT OF THE DEGREE OF MASTERS OF
COMMUNICATION FOR DEVELOPMENT-DEPARTMENT OF MASS
COMMUNICATION, UNIVERSITY OF ZAMBIA

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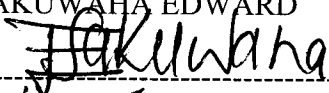
DECLARATION

I declare that this Practical Attachment Report has not been submitted for a degree in this or any other University.

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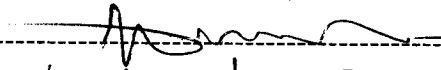
Date:-----


4th July, 2007

Supervisor: MR. BILLY NKUNIKA

Signature:-----

Date:-----


4th July 2007

Dedication

The document is dedicated in memory of my late father Musumali Sakuwaha Mukuma and his intimate young brother late Kamboyi Mukuma for their wise advice given to me at all stages of my growth until maturity. I still love and remember their kind words even when they are dead. May their souls rest in peace.

ACKNOWLEDGEMENT

I wish to acknowledge and register my sincere gratitude to my supervisor Mr. Billy Nkunika, for his concerted efforts in instructing and directing me throughout the preparation of the manuscript. His friendly attitude, critical analysis of the manuscript and kind advice encouraged me to prepare the document with much care and accuracy.

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I'm also indebted to Mr. Charles Sondashi and Mr. Edwin Ching'embu for their efforts to facilitate financial and transport support, Mr. Shadreck Mubanga for provision of relevant information and advice on agricultural extension services Mr. Muyinda Patrick Mbashila and Mr. Atanasius Hamwaka for their academic criticisms.

Special thanks are also due to all the lecturers of the Department of Mass Communication for their academic contributions which shaped the body of knowledge of the manuscript to high standard for public consumption and utilization.

Finally, I wish to thank all respondents for furnishing the research with the relevant information. To all I say, may the almighty God grant you grace to keep on rendering such precious services for the development of our mother Zambia.

LIST OF TABLES

Table	Page
1 Rainfall and temperature Distribution in some major towns of Zambia-----	7
2 Production statistics of some major staple foods in Zambia-----	14
3 Growth in livestock population in Zambia-----	15
4 Distribution of livestock in the different provinces of Zambia in 1994-----	16
5 Population distribution by age and sex in Zambia-----	18
6 Staff level of Solwezi district-----	38
7 Total number of farmers in Solwezi-----	44
8 Break down of administration of instruments and number of respondents-----	44
9 Research coverage in Solwezi district-----	45
10 Development of work programmes/ farmers' visit schedule -----	79
11 Frequency of communicating with farmers-----	80
12 Extension Communication Approaches-----	80
13 Sex Distributions-----	87
14 Professional qualifications of Block officers-----	87
15 Training in communication skills-----	88
16 Management of Camps-----	88
17 Working ratio of extension officers to farmers-----	89
18 a Distribution of institutional farms-----	90
18 b Category of institutional farms-----	90
19 Average hectares for institutional farms-----	91

20 Managers for institutional farm -----92

21 Institutional farms need for extension services-----95

22 Blocks and camps where focus group discussion sessions were conducted----- 97

23 Farmers’ Knowledge about extension service-----98

24 Presence of extension workers in camps-----98

25 Frequency of extension workers visits farmers -----99

26 Development of farmers' visit schedule----- --99

27 Relevance of agricultural messages to solving farmers’ socio-economic
Problems----- -100

28 Sources of agricultural information -----100

29 Reliability of sources of information----- --101

30 Appropriate extension communication strategies----- --103

LIST OF FIGURES

Figure	page
1 Area composition of Zambia by water and land-----	2
2 The map of Zambia and its Neighbouring Countries-----	3
3 Map of Zambia showing the nine administrative provinces-----	4
4 Distribution of Zambia's natural vegetation-----	5
5 Agro-Ecological regions of Zambia-----	7
6 Proportionate Distribution of Zambia's population between the rich and the poor-----	9
7 Categories of farmers in Zambia-----	12
8 Land utilization in Zambia-----	13
9 Zambia National Maize production, 1983-2003-----	15
10 Rural/ Urban population Distribution in Zambia-----	19
11 Population of Zambia by provinces-----	20
12 Labour Distribution by economic activities-----	21
13 Map of Northwestern province showing Districts-----	25
14 Provincial Areas of Zambia in square kilometers-----	26
15 Area Distribution of Northwestern province by Districts (km2) -----	27
16 Land utilisation in Northwestern province-----	28
17 Population distribution of Northwestern province by age-----	30
18 Population distribution of North western province by Districts-----	30
19 Trend of the Maize purchases by FRA in Northwestern province-----	31

20	Population distribution of Northwestern province by Economic Activities-----	32
21	Cattle population in Northwestern province-----	32
22 a	Language distribution in Northwestern province-----	34
22 b	Population distribution of solwezi district-----	35
23	District structural organization-----	37
24	Farmers' exposure to agricultural information-----	43
25	Rogers Adoption / Innovation Curve-----	55
26	Sex distribution of Respondents (extension workers) -----	72
27	Age distribution of Respondents (extension workers) -----	73
28	Professional Qualifications of Extension workers-----	74
29	Staff Training in Communication Skills-----	74
30	Effectiveness of Present Communication Skills for persuading farmers-----	75
31	Procedure for measuring effectiveness of communication strategies-----	76
32	Levels of effectiveness of communication strategies-----	77
33	Procedure for development of communication strategies-----	77
34	Types of communication media / channels-----	78
35	Farmers' exposure to Agricultural information (primary data) -----	81
36	The rate of farmers' adoption of innovations/ practices-----	82
37	Category of farmers that respond quickly to agricultural messages-----	83
38	<i>Does level of education relate to farmers' adoption of innovations?</i> -----	84
39	Sources of agricultural information-----	85
40	Institutional farms' sources of agricultural information-----	91

41	Fields of specialization of the part time institutional farm managers-----	93
42	Frequency of extension workers' visits to institutional farms-----	94
43	Communication strategies used for dissemination of agricultural information to Institutional farms-----	94
44	Respondents at Focus Group Discussions-----	97
45	Common communication strategies used by extension workers for dissemination of agricultural messages-----	102

LIST OF ABBREVIATIONS AND ACRONYMS

APFS-----	African Peasant Farming
BEO-----	Block Extension Officer
BSCo-----	British South African Company
CBPP-----	Contagious Bovine Pleural Pneumonia
CEO-----	Camp Extension Officer
CEW-----	Camp Extension Worker
CSO-----	Central Statistics Office
DACO-----	District Agricultural Coordinator
DMCO-----	District Marketing and Cooperatives Officer
DRC-----	Democratic Republic of Congo
DSA-----	District Situational Assessment
DSC-----	Development Support Communication
EEC-----	European Economic Community
FAO-----	Food and Agriculture Organisation
FGD-----	Focus Group Discussion
FRA-----	Food Reserve Agency
FTC-----	Farmer Training Centre
GDP-----	Gross Domestic Product
KAP-----	Knowledge, Attitude and Practice
L.D.T-----	Livestock Development Trust
MACO-----	Ministry of Agriculture and cooperatives
MOFNP-----	Ministry of Finance and National Planning
NEAP-----	National Extension Action Programme
NFSP-----	National Fertiliser Support Programme
NGO-----	Non Governmental Organisation
NW-----	Networking
PACO-----	Provincial Agricultural Coordinator

PAM-----	Programme Against Malnutrition
PEA-----	Participatory Extension Approach
PSAD-----	Provincial Situational Assessment Document
PU-----	Production Unit
SAO-----	Senior Agricultural Officer
SAP-----	Structural Adjustment Programme
T&V-----	Training and Visit
TOT -----	Transfer of Technology
UNECA-----	United Nations Economic Commission for Africa
VEGs-----	Village Extension Groups
VO-----	Veterinary Officer
VP-----	Voluntary Participation
WFO-----	World Food Organisation
ZNS-----	Zambia National Service

ABSTRACT

There have been increasing challenges regarding the decline in the economic standards of the country and subsequent increase in poverty levels, food insecurity and underdevelopment of rural areas. The challenges have been associated to the ineffectiveness of agricultural sector. It is believed that the agricultural sector has the capacity to revamp and resuscitate the economy through its extension service. The extension service is the communicative section of the Ministry of Agriculture and Cooperatives. It is responsible for dissemination of agricultural information for change of farmers' attitudes and behaviour to shift from their traditional and uneconomic farming practices to the adoption of improved practices that increase production, income levels, food security, and thus improved standard of living of the rural people.

However, there have been several critics about agricultural extension services, and one of the critics is that agricultural extension is a very costly and largely ineffective department and that its personnel are essentially welfare recipients. The claims emanate from the fact that there are few if any positive results to justify for the enormous investment made by the government on extension services. It is noted that the continuity use of traditional farming practices, prevalence of food insecurity and increased poverty levels among the rural people has made the farming communities question about the effectiveness of the extension service as a developmental sector.

To respond to those challenges the research focused at the evaluation of the extension communication strategies in use, as major tools for effective extension service provision.

In an effort to establish the causal factors associated with the ineffectiveness of the extension service, the researcher used "cross section survey" research methodology. It involved the application of random and none random sampling procedures for selection of agricultural camps, blocks and the experts. Questionnaires, interview schedules for focus group discussions and observation checklist were designed for the purpose of collecting both quantitative and qualitative data. The data collected was analysed by use of the statistical package of social sciences (SPSS).

The findings reflected that though there are several criticisms, but there is unmet demand for extension service provision. This means that the need for provision of extension services to the farming community is relevant. However, the major factors associated with the ineffectiveness of the extension services were the inadequacy or lack of Knowledge by the extension workers on "communication and social skills" to enable them develop effective and challenging communication strategies that could break the ties of cultural values, and the use of Training and Visit (T&V) extension approach.

The development, application and performance of communication strategies in use, and the Training and Visit (T&V) system have been ineffective, inefficient, and unsustainable to promote farmers' learning processes and adoption of innovations for improved farming

practices. Other factors associated with the ineffectiveness of agricultural extension services include the following;

- (i) There is negative attitude developed by extension workers towards extension service provision resulting in poor outreach and interaction between extension workers and farmers;
- (ii) The extension service has been bias in its message dissemination in the sense that the focus has been much on crop production while neglecting the other agricultural farm enterprises;
- (iii) Most extension workers (75%) have been operating haphazardly without work programmes and visit schedules, and the few (25%) had outdated and unrevised schedules which could not provide proof of their utilisation;
- (iv) It was noted that communication strategies appeared only on paper but there was no application;
- (v) Poor supervision on extension service;
- (vi) Poor research-extension linkages;
- (vii) There has been poor or no visits to institutional farms for agricultural advice;
- (viii) Lack of extension material support.

TABLE OF CONTENT

Content	Page
CHAPTER ONE-----	1
1.0 INTRODUCTION-----	1
1.2.0 BACK GROUND INFORMATION-----	2
1.2.1 GEOGRAPHICAL INFORMATION OF ZAMBIA-----	2
1.2.2 INFORMATION ON ECONOMIC SITUATION OF ZAMBIA-----	8
1.2.3 AGRICULTURAL INFORMATION OF ZAMBIA-----	10
1.2.4 LAND UTILISATION IN ZAMBIA-----	12
1.2.4.1 Crop production in Zambia-----	14
1.2.4.2 Livestock Production in Zambia-----	15
1.2.4.3. Characterization of livestock production sectors-----	16
1.2.4.5. Measures for improving productivity and economic viability of Zambian cattle -----	17
1.2.5 DEMOGRAPHIC AND ETHNICITY SITUATION OF ZAMBIA-----	18
1.2.6 POPULATION ACTIVITY ENGAGEMENT-----	20
1.2.7 HISTORY OF AGRICULTURAL EXTENSION SERVICE-----	22
1.2.8 GENERAL INFORMATION OF NORTH-WESTERN PROVINCE-----	25
1.2.8.1 Geographical Information-----	25
1.2.8.2 Area Proportion of Provinces of Zambia in Square Kilometers-----	26
1.2.8.3. Area Proportion of Districts of Northwestern Province (km2) -----	26
1.2.8.4 Land Analysis-----	27

1.2.8.5 Soil Type-----	28
1.2.8.6 Climatic condition of Northwestern-----	29
1.2.8.7 Demographic Situation of Northwestern Province-----	29
1.2.8.8 Economic Situation of Northwestern Province-----	31
1.2.8.9 Predominant Languages of North-Western Province-----	33
1.2.8.10 Agricultural Extension System of Northwestern Province-----	34
1.2.9 GENERAL INFORMATION OF SOLWEZI DISTRICT-----	35
1.2.9.1 Geographical Information-----	35
1.2.9.2 Demographic Situation of Solwezi District-----	35
1.2.9.3 Economic Situation of Solwezi District-----	36
1.2.9.4 Agricultural Position of Solwezi-----	36
1.2.9.5 Agricultural Extension communication Networking-channel-----	36
1.2.9.6 Agricultural Extension Communication Strategies in Use-----	38
1.3.0 STATEMENT OF THE PROBLEM-----	39
1.4.0 THE RATIONALE-----	39
1.5.0 OBJECTIVES OF THE RESEARCH-----	40
1.5.1 General Objective-----	40
1.5.2 Specific Objectives-----	40
CHAPTER TWO	
2.0 RESEARCH METHODOLOGIES-----	41
2.1INTRODUCTION-----	41
2.2 RESEARCH QUESTIONS-----	41
2.3 RESEARCH METHODS-----	42

2.4	SAMPLING PROCEDURE-----	42
2.5	RESEARCH POPULATION-----	43
2.6	SAMPLE SIZE AND DATA GATHERING PROCEDURE-----	44
2.7	DATA PROCESSING AND ANALYSIS-----	45
2.8	LIMITATIONS-----	45
CHAPTER THREE-----		46
3.0	CONCEPTUAL AND THEORETICAL FRAMEWORK-----	46
3.1	INTRODUCTION-----	46
3.2	CONCEPTUAL AND OPERATIONAL DEFINITION OF CONCEPTS-----	47
3.2.1	Communication in Agricultural Extension-----	47
3.2.2	Adoption Process in Agricultural Extension Services-----	47
3.2.3	Innovation in Agricultural Extension Services-----	48
3.2.4	“Psychology of Learning and Perception” in Agricultural Extension-----	48
3.2.5	Subsistence/ Peasant Farmers-----	49
3.2.6	Small-scale Farmers-----	49
3.2.7	Emergent Farmers-----	49
3.2.8	Medium Farmers-----	49
3.2.9	Large Scale Farmers-----	50
3.2.10	Food Security-----	50
3.2.11	Food Insecurity-----	50
3.2.12	Standard of Living-----	50
3.2.13	Participatory Extension Approach (PEA) -----	50
3.2.14	Agricultural Extension-----	50
3.2.15	Household-----	50

3.2.16 Head of Household-----	51
3.3.0 MAIN THEORIES AND HOW THEY APPLY TO AGRICULTURAL EXTENSION-----	51
3.3.1 Diffusion of innovation and adoption theory-----	51
3.3.2 Innovation-----	51
3.3.2.1 Relative Advantage-----	51
3.3.2.2 Compatibility of innovation-----	52
3.3.2.3 Complexity of innovation-----	52
3.3.2.4 Trialability-----	53
3.3.2.5 Observability-----	53
3.3.3. Communication channel-----	53
3.3.4. Time-----	54
3.3.4.1. Innovators-----	55
3.3.4.2. Early adopters-----	56
3.3.4.3. Early majority-----	56
3.3.4.4. Late majority-----	56
3.3.4.5 Laggards-----	57
3.3.5. Social system-----	57
3.4. Group communication (discussion) theory-----	58
CHAPTER FOUR-----	61
4.0 LITERATURE REVIEW-----	61
4.1Trend of Agricultural Extension in Zambia-----	65
4.1.1 Technical and social skills:-----	67
4.1.2. Economic factors-----	68
4.1.3. Personal constraint and cultural values-----	68
4.2 Communication Strategies at the Centre of Change of Attitude and Behaviour of Farmers for Adoption of Innovations-----	68

CHAPTER FIVE -----	71
5.0 DATA ANALYSIS AND FINDINGS-----	71
5.1 INTRODUCTION-----	71
5.2 PART A: FINDINGS FROM AGRICULTURAL EXTENSION OFFICERS-----	71
5.2.1 Findings from Extension workers -----	72
5.2.1.1 Constraints experienced by extension workers that render communication strategies ineffective-----	85
5.2.1.2 Possible solutions to barriers of effective communication (extension workers)-----	86
5.2.2 Findings from Extension Methodologist and Block Officers-----	87
5.3. PART B: FINDINGS FROM INSTITUTIONAL FARMS-----	89
5.3.1 Recommendations to improve on extension services to institutional farms-----	96
5.4. PART C: FINDINGS FROM FOCUS GROUP DISCUSSIONS (FGDs) ---	96
5.4.1. Farmers' constraints-----	103
5.5. PROPOSED SOLUTIONS (farmers)-----	104
 CHAPTER SIX -----	 105
6.0 INTERPRETATION AND DISCUSSION OF FINDINGS-----	105
6.1 INTRODUCTION-----	105
6.2 GENDER IMBALANCES IN AGRICULTURE-----	105
6.3 INADEQUATE COMMUNICATION SKILLS AND COMMUNICATION INCOMPETENCE OF EXTENSION WORKERS-----	106
6.4 INEFFECTIVENESS OF EXTENSION SERVICE PROVISION-----	109
6.4.1 Relevance and reliability of agricultural extension messages-----	110
6.4.2 Single enterprise concentration-----	110
6.4.3 Extension communication approach-----	111
6.4.4 Lack of data bank-----	113

6.5	COMMUNICATION STRATEGIES IN USE-----	113
6.6	IMPACT OF EXTENSION COMMUNICATION STRATEGIES ON FARMING COMMUNITIES-----	114
6.6.1	Rate of adoption of innovations-----	115
6.6.2	Applicability (frequency) of the extension communication strategies -----	116
CHAPTER SEVEN (7) -----		117
7.0	CONCLUSION AND RECOMMENDATIONS-----	117
7.1	RECOMMENDATION FOR IMPROVEMENT OF EXTENSION SERVICES-----	118
7.1.1	Capacity building-----	118
7.1.2	Client focus-----	119
7.1.3	Intensification of extension operation in groups-----	120
7.1.4	Information systems-----	120
7.1.5	<i>Intensive supervision</i> -----	120
7.1.6	Staff recruitment-----	120
7.1.7	Staff Incentives-----	121
REFERENCE	-----	122
APPENDICES		
I	-----	125
II	-----	135
III	-----	140
IV	-----	148
V	-----	152
VI	-----	155
VII	-----	157

CHAPTER ONE

1.0 INTRODUCTION

The development of agricultural sector is viewed as a strategy for economic growth, food security, employment creation, poverty reduction and rural development. Wolf (1995), and Benor, et al (1984), state that few countries if any have experienced sustainable economic growth and development without the growth of agricultural sector. Agricultural sector has the capacity to create manufacturing industries and thereby bring direct and beneficial effect on the overall economic development of a nation. The problems of rural poverty, street children, illness and premature deaths through malnutrition currently on the increase among african countries, have their origin from poor agricultural policies that do not support agricultural development. The neglect of agriculture by most African countries has plunged them into absolute poverty and serious food shortage. The situation is worse among rural communities of Africa. The concern over the seriousness of such problems and recognizing the pivotal role performed by the agricultural sector, the Zambian Government has taken responsibility to create and maintain the infrastructures required for agricultural development. The infrastructures recognized are basically focused at development of information technology, creation of Communication network and dissemination of the information to ensure a systematic and continuous flow of information. The infrastructures are; Agricultural Extension Service Branch, Research Branch, Marketing and Co-operatives, and Animal health and production.

The research focuses on Agricultural Extension Service Branch as the component concerned with the dissemination of agricultural information process. Agricultural extension service branch is directly involved in the dissemination and diffusion of agricultural information and innovations to farmers {it is the communication centre, or also referred to as Development Support Communication (DSC). Therefore, the development of the agricultural sector is dependent on the organization, functioning, effectiveness, and efficiency of the extension service branch.

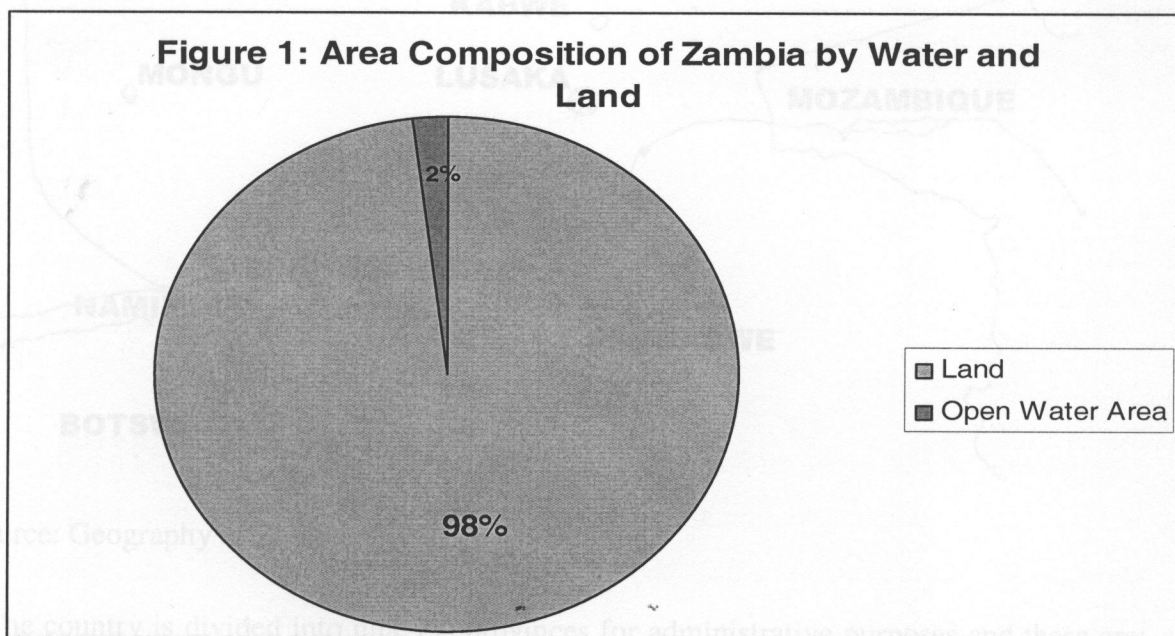
The effectiveness of the extension branch is related to the communication strategies developed and their application to bring about social transformation.

It is the communication strategies used that are being re-assessed, evaluated or reviewed to determine their applicability, relevance, effectiveness and impact on the farming communities with regard to information dissemination and innovation adoption for agricultural development. The research was carried out in Solwezi District of North-Western Province.

1.2.0 BACKGROUND INFORMATION OF ZAMBIA

1.2.1 GEOGRAPHICAL – INFORMATION OF ZAMBIA:

Zambia is a landlocked country situated in Central Africa with total area of 752,614 km² out of which 740,724 km² are land and 11,890 km² water [World Fact book, 2006, Central Statistics Office (C.S.O- 2000), Central Statistics Office (C.S.O-2001-2002), Akayombokwa, et al (1990)] see figure 1.



Source: World Fact book, 2006

It lies between latitudes 10° and 18° south and longitudes 22° and 33° east. The Country borders the Democratic Republic of Congo to the North, Tanzania on the North-East, Malawi on the east, Mozambique, Zimbabwe, Botswana and Namibia to the south, and

Angola on the west. The protruding south-eastern area of the Democratic Republic of Congo (DRC) nearly bisects Zambia into two major geographical areas (figure 2-below).

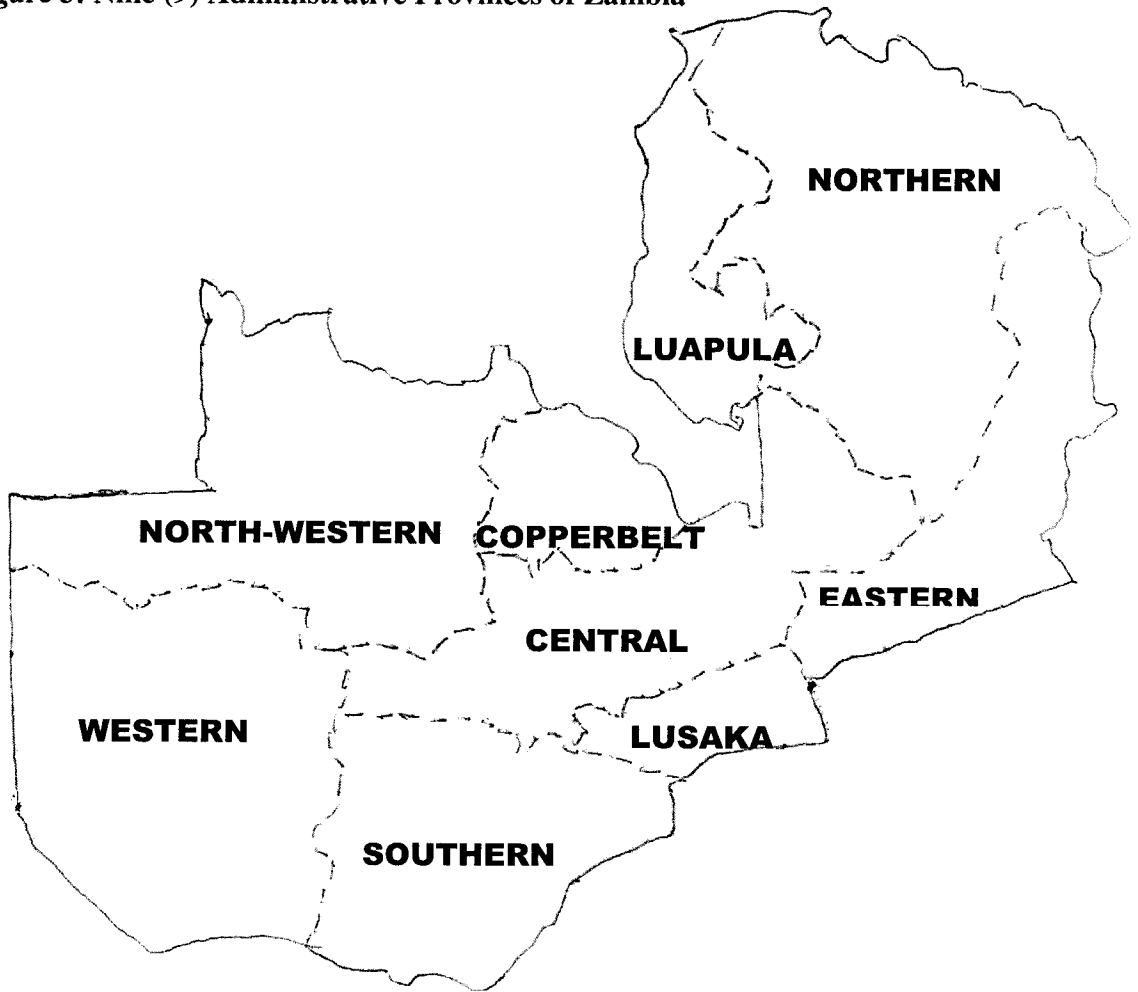
Figure 2: Map of Zambia showing Its Provincial towns and Neighbouring Countries:



Source: Geography of Zambia

The country is divided into nine (9) provinces for administrative purposes and these are; North-Western, Western, Copper Belt, Luapula, Northern, Central, Eastern, Southern and Lusaka (Figures 3 shows Provincial demarcations).

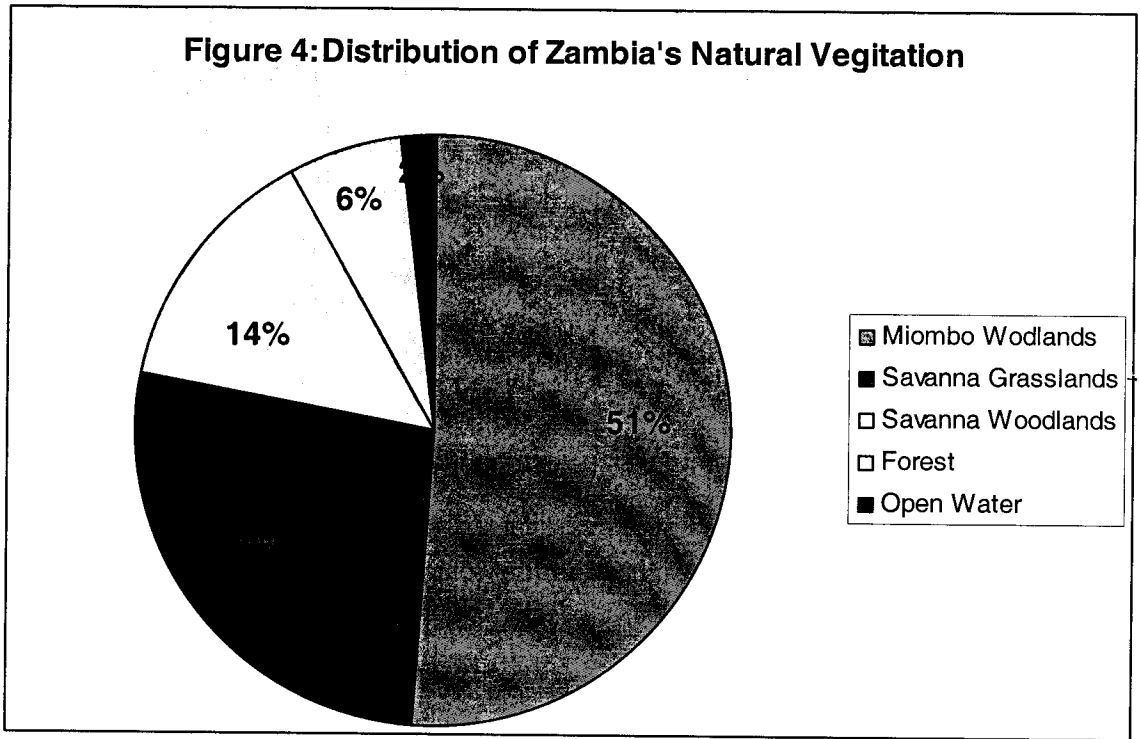
Figure 3: Nine (9) Administrative Provinces of Zambia



Source: Maps of Zambia

It has tropical type of climate and consists of high plateau with some hills and mountains, valleys, escarpments, dambos, and swamps. The natural vegetation is of savanna woodlands that occupy approximately 14 percent, miombo woodlands 51 percent, grassland 27 percent, forest 6 percent, and "open water" 2 percent (figure 4- shown below);

Figure 4: Distribution of Zambia's Natural Vegetation

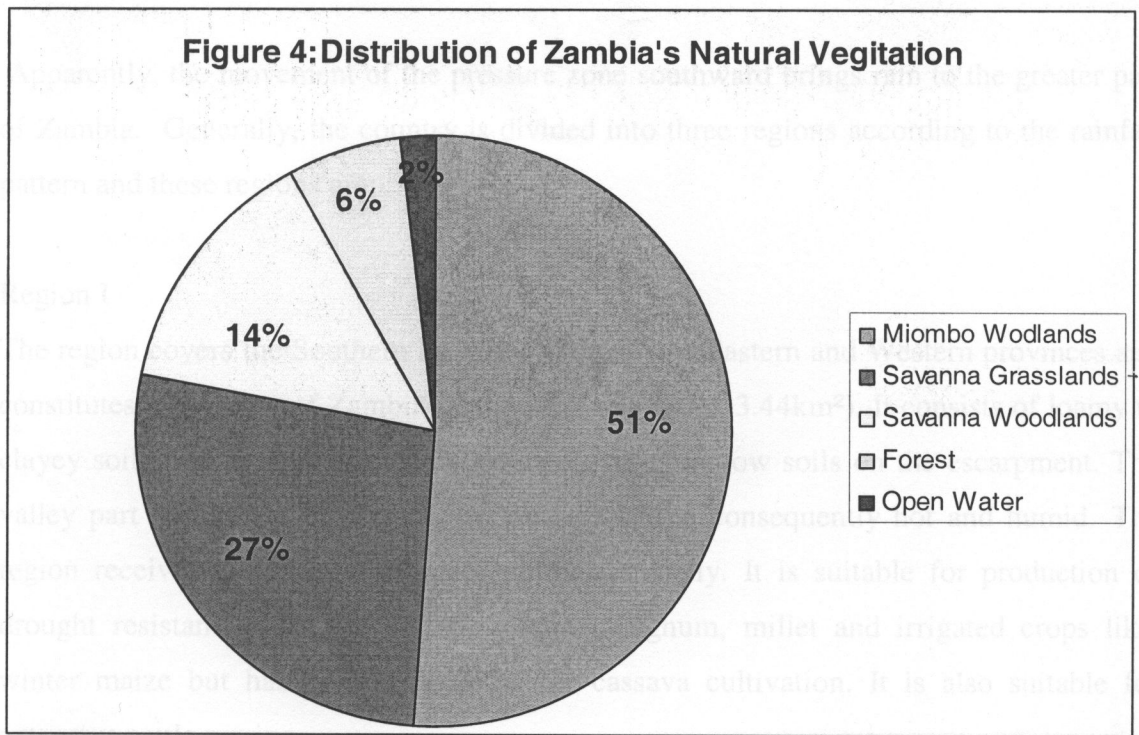


SOURCE: Macmillan High School Atlas for Zambia (2005):

Four (4) main rivers run through Zambia and these are; Zambezi, Kafue, Luangwa and Luapula. Besides the major rivers, there are other rivers that run through the country. These rivers have formed several water bodies such as; lakes, waterfalls, dams, swamps, and lagoons. These water bodies are valuable for use for various economic purposes including for agriculture.

The general altitude of the land gives Zambia a more pleasant climate than that experienced in most other tropical countries. There are three major climatic seasons at play and these are; the cool and dry (May-August), the hot and dry (September-November) and the warm and wet (December-April). The rainfall pattern over the whole country is similar though the amount of rainfall varies considerably according to rainfall regional division. The movement of the inter-tropical convergence zone affects the climate of Zambia.

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Apparently, the movement of the pressure zone southward brings rain to the greater part of Zambia. Generally, the country is divided into three regions according to the rainfall pattern and these regions are;

Region I

The region covers the Southern Province and parts of Eastern and Western provinces and constitutes 12 percent of Zambia's total land area (90,313.44km²). It consists of loamy to clayey soils on the valley floor and coarse to fine shallow soils on the escarpment. The valley part of the region is on a low altitude and is consequently hot and humid. The region receives less than 800mm of rainfall annually. It is suitable for production of drought resistant crops like cotton, sesame, sorghum, millet and irrigated crops like, winter maize but has limited potential for cassava cultivation. It is also suitable for extensive cattle rearing.

Region II

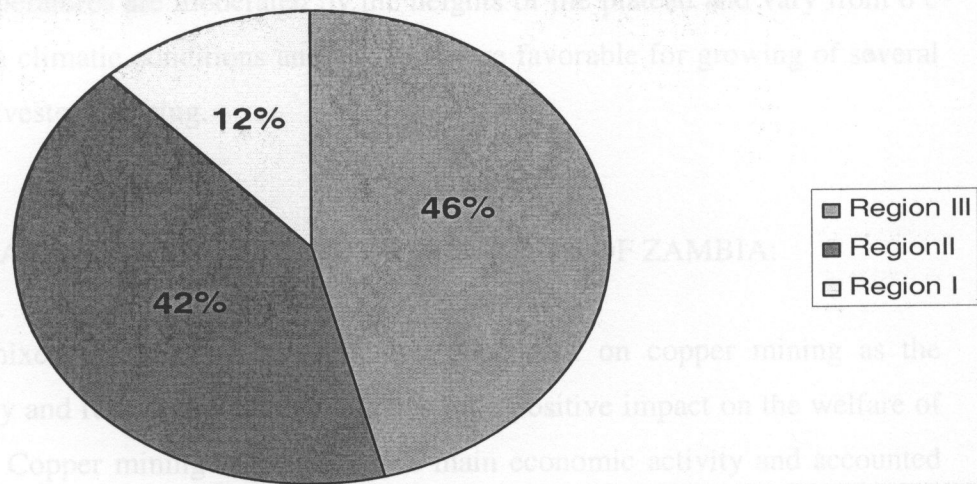
This serves two sub regions "a" and "b" and constitutes 42 percent of the total land area of the country (316,097.04km²). It receives between 800mm and 1000mm of annual rainfall.

Sub-Region II a: covers the Central, Lusaka, parts of Southern and Eastern plateaus of the country and generally contain inherit fertile soils. Varieties of crops are grown in this region and these include maize, cotton, tobacco, sunflower, soya beans, irrigated wheat, groundnuts, and other arable crops.

Sub-Region II b: this covers Western province and consists of sandy soils. It is suitable for production of cashew nuts, rice, and millet, including vegetables and timber. The region is also highly suitable for cattle rearing.

Region III: this covers Copper belt, Luapula, Northern and Northwestern provinces. It constitutes 46 percent of the total land area of the country (346,201.52km²). The Region receives more than 1000-1500mm of rainfall annually (see figure 5).

Figure 5: Agro-Ecological Regions of Zambia



Source: Mukutu (1995). Zambia seed technology handbook

The table 1-shown below gives reflection of the mean annual rainfall and temperatures of some major towns of Zambia representing the ecological regions.

Table 1: Rainfall and temperature Distribution in some major towns of Zambia

Station	Altitude metres	Annual rainfall. mm	Mean Max Oct °C	Mean Min June °C
Mbala	1,633	1,140	28.2	10.6
Kasama	1,380	1,240	31.9	10.1
Mpika	1,393	1,110	30	10.1
Mansa	1,178	1,050	32.6	6.8
Mwinilunga	1,354	1,320	30.6	6.8
Ndola	1,262	1,150	32.3	6.2
Kabwe	1,200	900	32.1	9.9
Lusaka	1,272	800	31.6	10.1
Petauke	1,030	950	33.1	12.3
Chipata	1,024	1,000	32.6	12.3
Mongu	1,047	950	34.2	8.7
Livingstone	981	740	34.8	7.1
Solwezi	1,333	1,368	27	11.7

Source: Physical geography of Zambia:
<http://www.zambiatourism.com/travel/hisgeopeop/geograph.htm>

The average temperatures are moderated by the heights of the plateau and vary from 6°C to 35°C. Zambia's climatic conditions and soil types are favorable for growing of several crops including livestock rearing.

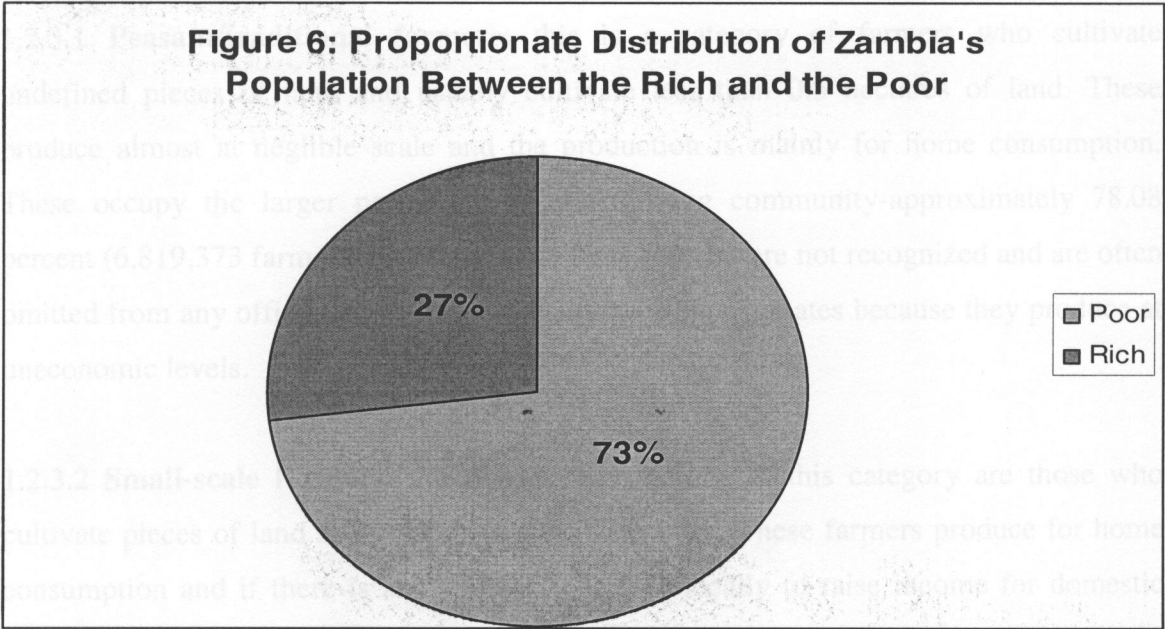
1.2.2 INFORMATION ON THE ECONOMIC SITUATION OF ZAMBIA:

Zambia has a mixed economy which is highly dependent on copper mining as the dominant industry and rural agriculture which has little positive impact on the welfare of the rural people. Copper mining is the country's main economic activity and accounted for about 95 percent of the export earnings and contributed 45 percent of government's revenue during the decade following the attainment of political independence (1965-1975). This situation changed drastically with the decline in the price of copper in late 1974 and 1975. The prices rose in 1978 but later dropped between 1981 and 1982 [Central Statistics Office (C.S.O-2000), Central Statistics Office (C.S.O-2001-2002), Central Statistics Office (C.S.O- 1996), and Pollock (1971)].

The drop in copper prices and increase in oil prices had negative effects on the Zambian economy. Because of the economic pressure, attempts were made to minimize dependency on copper by diversifying the economy through the creation of import substitution parastatals. This did not achieve the desired results. March, 1992 marked the start of the first phase of implementation of Structural Adjustment Programmes (SAP). However, the structural Adjustment Programmes (S.A.P) failed to substantially alter the economy but instead increased poverty of the majority Zambians especially among women. The flash-points created by the structural adjustment programme were related to widespread retrenchment of workers, high cost of social services and goods, low wages of workers and increased corruption. It also created the phenomena of "brain drain" whereby the poor countries educate some of their population to key jobs such as medical areas and other professions only to find that some rich countries try to attract them away. Another criticism made against the SAPs by the United Nations Economic Commission for Africa (UNECA) is that SAPs are too narrow, rely mainly on fiscal and monetary instruments and have little relevance to long term development goals (<http://www.globalissues.org/TradeRelated/SAP.asp>).

In the agricultural sector, the Structural Adjustment Programme (SAP) had disabled the food production adversely by affecting interest rates and the high prices of inputs. The main idea of the developed nations had been to maintain dependency and promote poverty among developing nations like Zambia (Anup Shah-2005).

Currently about 73 percent (7,508,511) of the Zambians are poor and only 27 percent (2,777,120) of the population is rich. Poverty is more prevalent among the rural people where about 83 percent of the population is affected than in urban areas that recorded about 56 percent of the population (MOFNP-2002). The economic crisis in Zambia has affected the health status of the Zambian population adversely. The deepening poverty across the country has created fertile ground for the spread of HIV/AIDS and other diseases because of poor living conditions and reduced accessibility to basic needs. These conditions weaken the immune systems and increase the susceptibility of people to diseases. This inevitably means that the structural adjustment programme created a situation whereby the poor suffer, while the rich get richer and more corrupt. However, agriculture is the main source of income for the rural population, especially women, who constitute a high proportion of the population and agricultural labour force (DFID, 2002). With the unemployment rate of around 73 percent (estimates, Ministry of Finance & National Planning-2002) and agriculture is often the major source of livelihood or income within the informal sector.



Source: MOFNP-2002

1.2.3 AGRICULTURAL INFORMATION OF ZAMBIA:

Zambia has vast land of about 752,614km² (75million hectares), that is about 2.5 percent of the total area of Africa. It is endowed with potential fertile land and large bodies of water and yet is among the African countries whose Agricultural sector is static. The economy of Zambia is staggering and dominated by the copper mining industry whose mineral deposits are wasting assets. Because of the failing economy and increasing pressure emanating from the problems of rising poverty created by Structural Adjustment Programmes and other factors, the government diversified its economic activities to agriculture rather than mining only.

Farming in Zambia is identified as a poverty reduction and development strategy which is aimed at improving income levels for the people through provision of agricultural extension services [Akayombokwa et al (2000) and Ministry of Finance and National Planning (MOFP-2004)].

Farming is categorized into five farmer groups based on land size cultivated by respective farmers:

1.2.3.1 Peasant/traditional farmers: this is a category of farmers who cultivate undefined pieces of land and usually cultivate less than 0.5 hectares of land. These produce almost at negligible scale and the production is mainly for home consumption. These occupy the larger percentage of the farming community-approximately 78.08 percent (6,819,373 farmers). In most cases, these farmers are not recognized and are often omitted from any official crop production enumeration estimates because they produce at uneconomic levels.

1.2.3.2 Small-scale farmers: the farmers who belong to this category are those who cultivate pieces of land in the range of 0.5-10 hectares. These farmers produce for home consumption and if there is any surplus, it is sold locally to raise income for domestic purposes. As at 2003, there were about 1,311,418 small scale farmers (approximately 15 percent of the farming population).

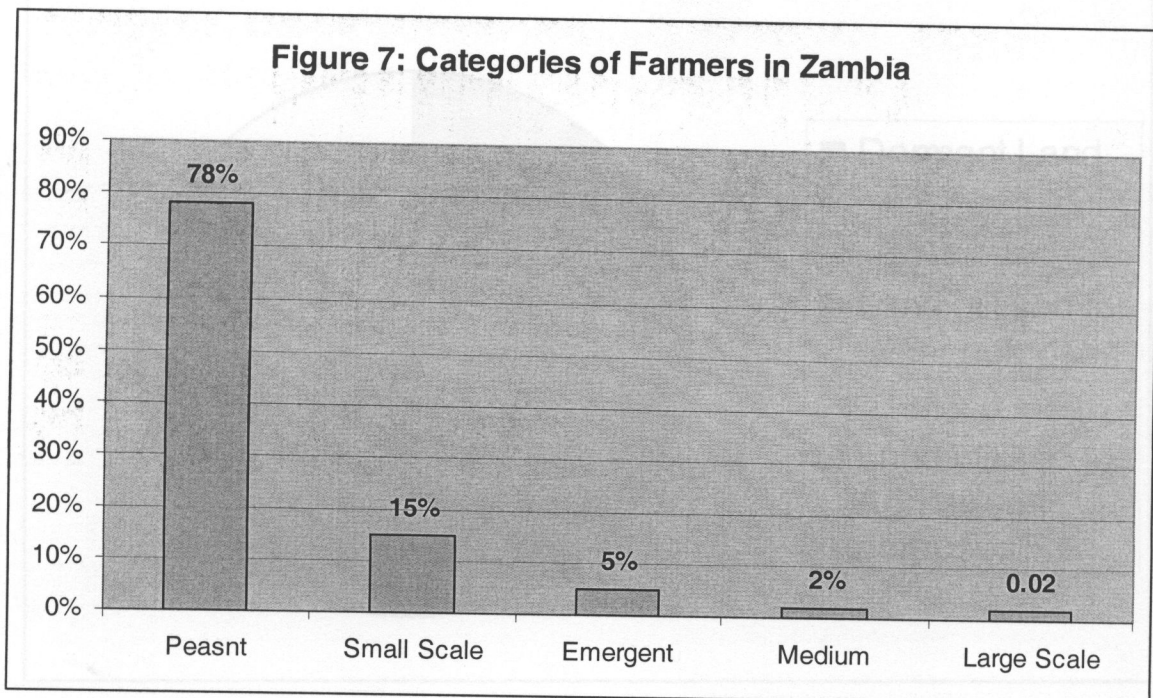
1.2.3.3 Emergent farmers: the farmers who belong to this category are those who cultivate pieces of land in the range of 10-20 hectares. These produce both for home consumption and for cash sale. As at 2003, there were about 437,140 emergent farmers (approximately 5 percent of the farming population).

1.2.3.4 Medium scale farmers: the farmers who belong to this category are those who cultivate pieces of land in the range of 20-60 hectares. These farmers produce for cash sale except that they don't score the level of commercial production standards. As at 2003, there were about 174,855 medium scale farmers (approximately 2 percent of the farming population).

1.2.3.5 Large-scale or Commercial farmers; the farmers who belong to this category are those who cultivate pieces of land that are more than 60 hectares. These farmers primarily produce cash crops. As at 2003, there were about 1748 large scale farmers (approximately 0.02 percent of the farming population).

The data shows that there is low participation rate of the Zambian population in economic agriculture activities-approximately 6.9 percent. The percentage of farmers is so low that it could not manage to produce sufficient food to sustain the population, ensure food security and reduce poverty levels among Zambians. It is for this reason that occurrence and persistence of hunger and starvation, malnutrition and poverty levels are high. Therefore, issues of poverty and starvation could only be resolved if the Zambian government adjusted its policies and focused with seriousness on Agricultural sector. The figure 7 below shows the categories of farmers in Zambia.

Figure 8: Land Utilisation in Zambia:



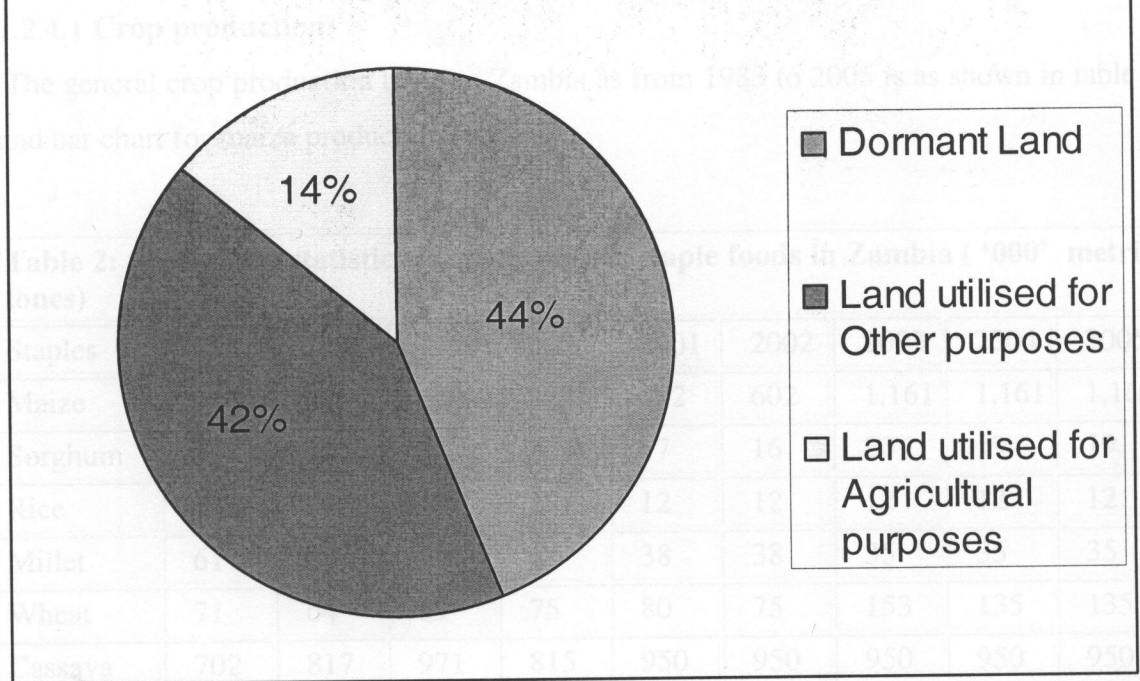
Source: F. A. O (2003) (2004) National Agriculture Policy

1.2.4 LAND UTILIZATION:

The statistical data shown in the figure 8 on land utilization for farming purposes is clear. Despite the fact that Zambia has vast land, its utilization for agriculture purpose is very low and this explains why there is low food production. Besides that, traditional and small-scale farmers whose production are low and meant for domestic use and occasionally for sale handle the biggest land. For instance out of the total land of 752,614 km², which is about 75 million hectares, 58 percent (42 million hectares) ranges from medium to high potential land for agricultural production. However, it is estimated that 14 percent of the total agricultural potential land is currently being utilized, while the 44 percent; potential land remains dormant (figure 8 below).

The main agricultural activities carried out in Zambia are crop production, Livestock, fruit production and fish farming. However, crop production has been the largest undertaking followed by livestock sector. Fruit production was recorded to have been high in the early to middle 1980s with growth of fruit processing industries and later dropped in late 1980s. Fish farming has been from natural water bodies until of recent but fish farms and fish farming are slowly gaining momentum.

Figure 8: Land Utilisation in Zambia:



Source: Sikatana F (2004). National Agriculture Policy.

The statistical data shown in the figure 8 on land utilization for farming purposes is clear evidence to prove that the government's policies are not supportive to the agricultural development, thus prevalence of staggering economy.

Land in Zambia is held in trust for the nation by the President and people get it on lease for a period of ninety-nine (99) years through the Ministry of Lands. Few small holders have land with title deeds; the majority has customary use rights; they access land through the customary tenure system by getting the approval of traditional rulers such as chiefs and headmen (MOFED-2002).

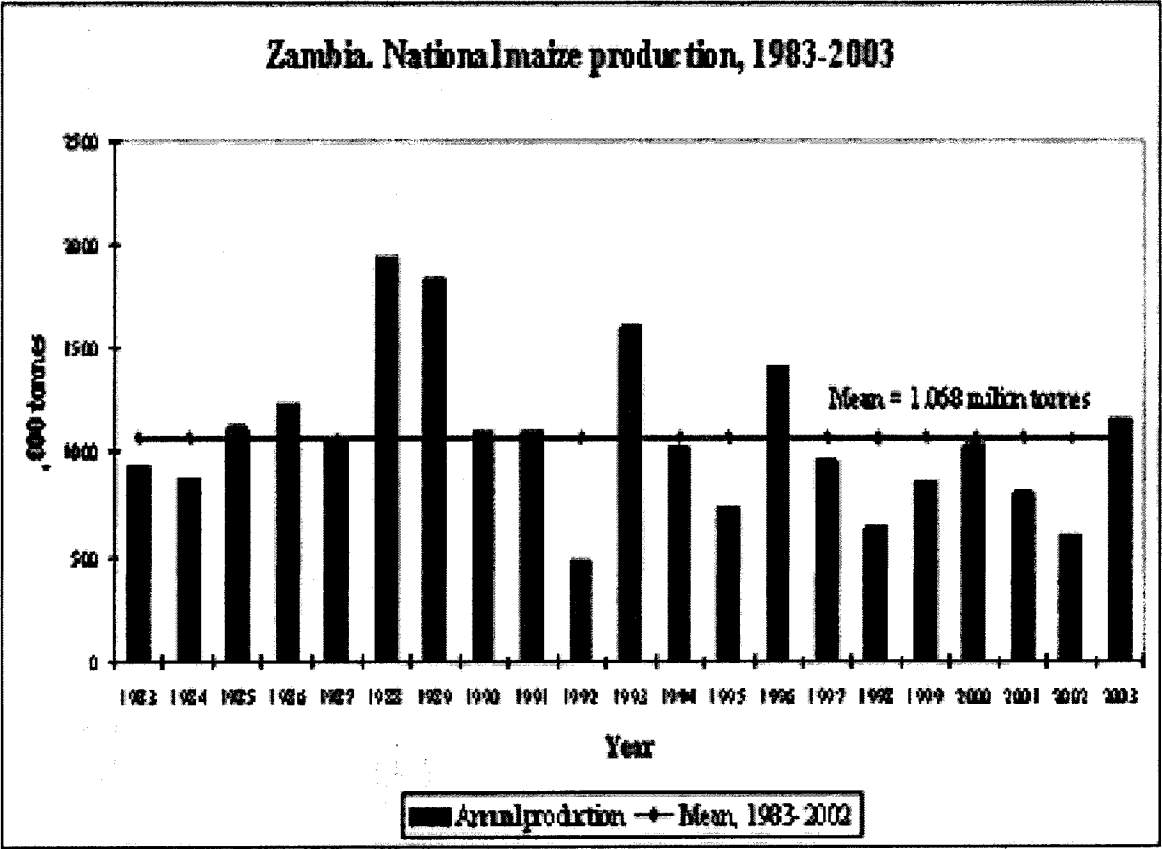
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1.2.4.1 Crop production:

The general crop production trend in Zambia as from 1983 to 2005 is as shown in table 2 and bar chart for maize production below:

Table 2: production statistics of some major staple foods in Zambia ('000' metric tones)									
Staples	1997	1998	1999	2000	2001	2002	2003	2004	2005
Maize	960	638	882	882	602	602	1,161	1,161	1,161
Sorghum	31	25	25	30	17	16	20	19	19
Rice	12.5	6	14	13	12	12	12	12	12
Millet	61	62	69	47	38	38	35	35	35
Wheat	71	64	69	75	80	75	153	135	135
Cassava	702	817	971	815	950	950	950	950	950
Others									
Soybean	29	12	27	28	2	16	15	15	15
Sunflowers	7	8	6	19	9	10	10	10	10
Sugarcane	1,500	1,550	1,650	1,600	2,000	2,000	1,800	1,800	1,800
Tobacco	3	3	9	4	5	5	5	5	5
Coffee	2	3	4	5	6	6.5	4	4	4
Source: FAO- statistical data 2006 (Accessed January 28, 2006).									

Figures 9: Zambia National Maize Production, 1983-2003



Source: FAOSTAT (2002)

1.2.4.1 LIVESTOCK PRODUCTION:

The Agricultural sector in Zambia also supports Livestock production besides Crop, Fish and Fruit production (see tables 3 and 4 shown below):

Table 3 Livestock population in zambia (000s)				
Type of livestock	1991	1992	1993	1994
Cattle	2984	3095	3204	2426
Pigs	296	290	293	-
Sheep	52	53	57	52
Goats	556	560	500	614

Source: FAO (1993)/Aregheore (1994)

Table 4: Distribution of livestock(000) in different provinces of Zambia in 1994			
Provinces	Cattle	Goats	Sheep
Central	363	195	3
Copperbelt	57	6	3
Eastern	251	125	6
Luapula	11	19	8
Lusaka	75	16	1
Northern	11	15	10
North-Western	58	10	10
Southern	1100	224	11
Western	500	4	
Source: Aregheore (1994)			

Livestock production is considered as the second major source of food security and income generation for farmers besides crop production. About 60 percent of the Zambian population lives in towns. It is the most urbanized country in sub-saharan Africa. The demand for milk, meat and related products outweighs domestic supply in all the provinces. The gap between demand and supply is narrowed by import and donations mainly from the European Economic Community (EEC). The EEC is currently drastically reducing its milk output. On the other hand, importation alone is a drain on foreign exchange earnings which the country needs to service its people and foreign debts. Cattle also contribute well over 12 percent to the total gross domestic product accrued from agriculture (FAO-1993). It also provides draught power to eliminate labour constraints and improve on timely tillage operations.

1.2.4.3. Characterization of livestock production sectors:

Zambia inherited a colonial pattern of development, which has also influenced cattle husbandry. It is characterized by three sectors namely: the state, the commercial and small scale sector.

(i) State sector:

With liberazation of the economy, the state sector of cattle management has phased out. However, it included large cattle ranches which were operated by the government through parastatal organizations with an intended but unrealisable objective of increasing beef output, but because of inefficiency the output was low. They were characterized by large inputs channelled to them through government subsidies. This sector did not fulfill its intended objectives and was phased out. It is not discussed in this document though reference to it has been necessary.

(ii) Commercial sector:

The commercial farms are large commercial undertakings which run both beef ranches and dairy farms. They require large investment capital but also have large economic returns. Unlike the state ranches, commercial ranches are private enterprises and are highly efficient. The takeoff from this sector for milk and beef are 60 percent and 90 percent respectively of the total domestic produce.

The commercial sector uses exotic breeds such as Afrikander, Boran, Hereford, Friesian and Jersey. They are mainly located along the railway line and around major cities with some isolated farms elsewhere. The main commercial livestock areas are Southern, Central, Lusaka, Copper Belt and Eastern Provinces.

(iii) Small scale sector:

The small scale cattle farmers are small family holdings characterized by low input and low output. Large numbers of cattle can however also be found under this sector particularly in the southern and western provinces. Productivity per animal in this sector is of minor importance, perhaps because traditionally farmers believe in numbers of animals and only producing enough for their families rather than for sale. It is noted that small scale farmers rear indigenous cattle like Zebu, Sanga, Tonga, Ngoni and Barotse because they are easy to manage and adaptable to hard conditions unlike exotic breeds (Livestock Research for Rural Development-vol 7 N^o 2, December 1995).

1.2.4.5. Measures for improving productivity and economic viability of Zambian cattle:

Because of the pivotal role livestock sector (especially cattle- According to the FAO Trade Year Book (1993) well over 90 percent of the gross domestic product attributed to

livestock comes from cattle products) plays in the socio-economic development of the country, the Zambian Government has formulated a policy of cattle restocking and vaccination campaigns to control Contagious Bovine Pleural Pneumonia (CBPP), Newcastle and Corridor diseases that have affected the cattle production.

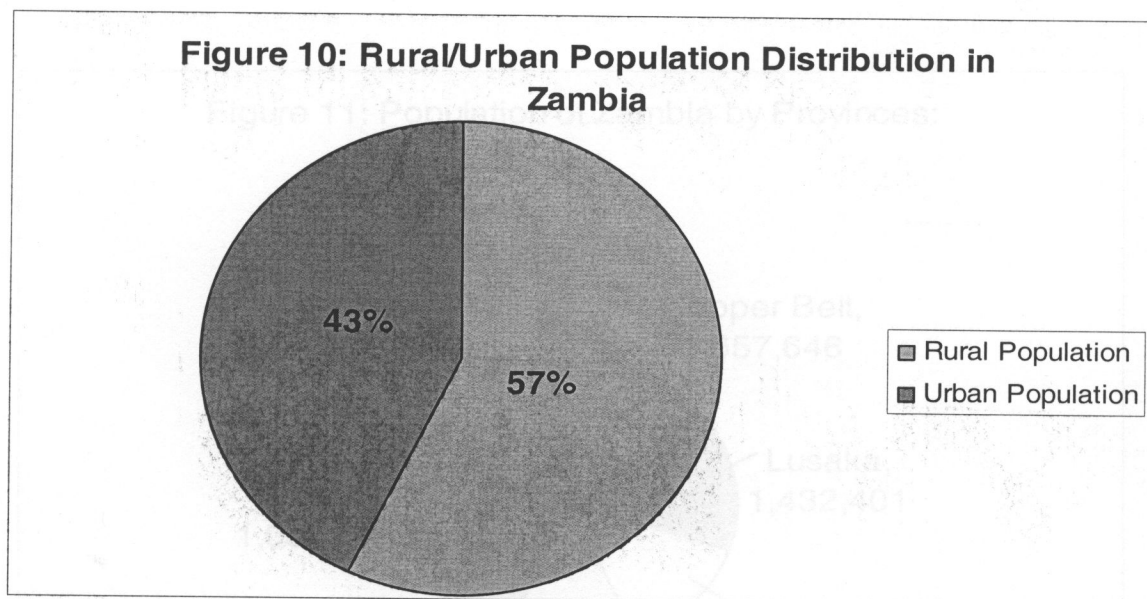
1.2.5 DEMOGRAPHIC AND ETHNICITY SITUATION OF ZAMBIA:

The population is estimated at 10,285,631 by C.S.O (2000). However, according to The World Factbook (July, 2006 estimates), the population of Zambia is estimated to be 11,502,000. The population estimates take into account the effects of mortality due to AIDS. Zambia has a population growth rate of 2.11 percent (2006 estimate-by the World Factbook, 2006). The population distribution is as shown in table 5 below;

Table 5: shows population distribution by age and sex in Zambia:				
Age group	Males	Females	Total	Percentage
0-14	2,673,891	2,656,268	5,330,159	46.3%
15-64	2,925,910	2,969,324	5,895,234	51.4%
65 and above	117,877	158,740	276,617	2.4%
Total	5,717,678	5,784,332	11,502,010	
Percentage	49.71%	50.28%		100%

Source: <https://www.cia.gov/publications/factbook/print/za.html> (2006)

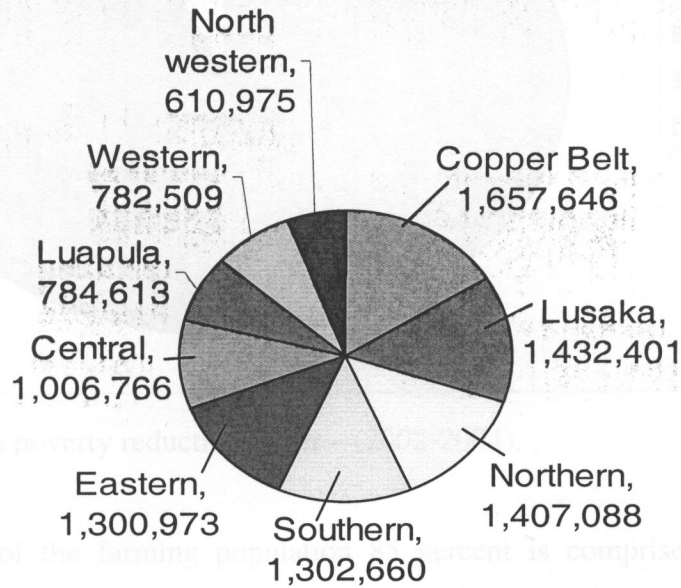
There exists strong migration from rural to urban areas where families go looking for employment. With 43 percent of the population living in cities, Zambia has the highest ratio of urban population in Southern Africa. Those living in the rural areas face a life of mainly low-yielding subsistence farming, which contributes to the high migration from rural to urban areas (figure 10 for population settlement -below).



SOURCE: Macmillan High School Atlas for Zambia (2005):

Zambia's population comprises about 72 recognized indigenous languages, mostly Bantu speaking ethnic groups, but almost 90 percent of the Zambians belong to seven main ethno linguistic groups as; Bemba, Nyanja, Lunda, Tonga, Kaonde, Lozi and Luvale. These seven (7) languages are taught in schools and broadcast on national radio and television. English is considered as the official language used to conduct official business and is the medium of instruction in schools. In the rural areas, each ethnic group is concentrated in a particular geographical region of the country and many groups are very small and not as well known. However, in urban areas like Lusaka and the Copper Belt, all the ethnic groups can be found in good proportion though have altered quite dramatically during the process of urbanisation and have assimilated words from other indigenous languages and English (<http://en.wikipedia.org/wiki/Zambia>). The population is distributed among nine (9) provinces of Zambia as shown in the (figure 11- below):

Figure 11: Population of Zambia by Provinces:

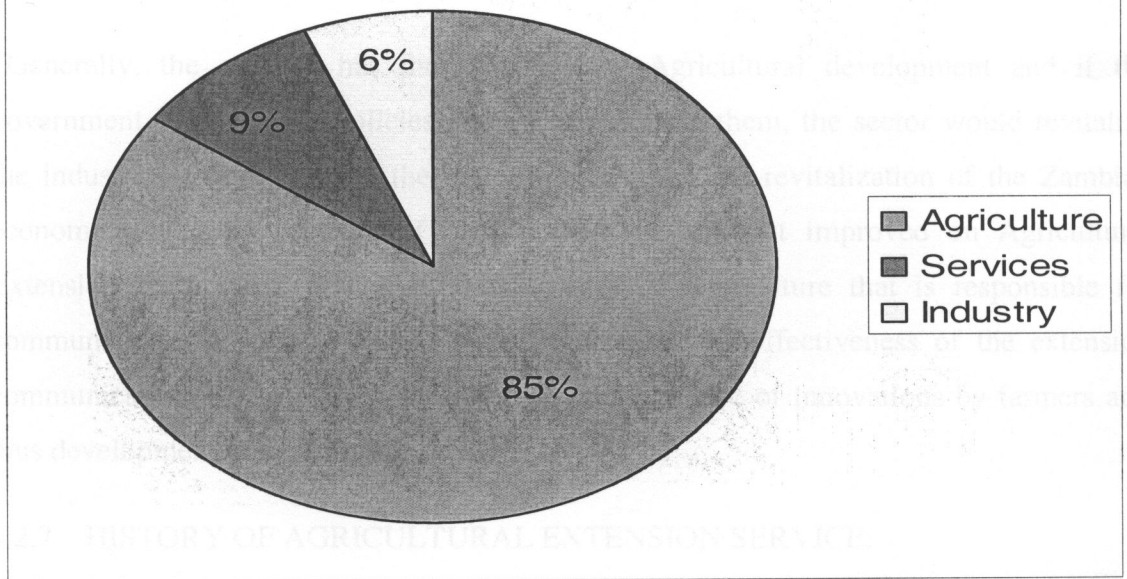


Source: Central statistic office (2000).

1.2.6 POPULATION ACTIVITY ENGAGEMENT:

Research statistics have reflected that about 85 percent of the Zambian population is engaged in the agricultural sector. Meaning that a larger proportion of the population earns it's living on the agricultural sector than on the other sectors. These range from subsistence or peasant, small scale, emergent, medium, and fewer large scale farmers. The smaller population is engaged in other sectors – (see figure 12-below):

Figure 12: Labour Distribution by Economic Activities:



Source: Zambia poverty reduction paper – (2002-2004).

The large part of the farming population 85 percent is comprised of subsistence or traditional and small scale farmers whose farming activities remain vulnerable to weather fluctuations. Zambia has registered high levels of poverty about 72.9 percent of its population (CSO-1998- living conditions monitoring survey). This is due to neglect of the agricultural sector by the government. However, of late the government has attempted to direct its efforts to improvement of small scale farming through subsidizing agricultural inputs (fertilizers and seeds) for small scale farmers, the promotion of out-grower schemes in crops like tobacco, paprika, coffee, vegetables and cotton for export purposes, vaccination programmes for control of cattle diseases and introduction of cattle restocking. While this has helped to reduce food insecurity and poverty levels in rural areas, other poverty reduction programmes which are key to long-term sustainable productivity of small scale agriculture remain largely unfunded.

These include extension services, adoption of appropriate technologies, and rural infrastructure development like feeder roads, marketing structures, construction of dams for irrigation and construction of dip tanks.

Currently the agricultural sector generates between 18-20 percent of the gross domestic product (GDP) and provides livelihood for more than 50 percent of the population (Sikatana-2004).

Generally, the country has the potential for Agricultural development and if the government evaluated its policies and improved upon them, the sector would revitalize the industries and resuscitate the national economy. The revitalization of the Zambian economy would be achieved if the Zambian government improved on Agricultural Extension sector as a branch of the Ministry of Agriculture that is responsible for communication process. It is the extent and degree of effectiveness of the extension communication process that determines the adoption rate of innovations by farmers and thus development of agricultural sector.

1.2.7 HISTORY OF AGRICULTURAL EXTENSION SERVICE:

The history of Extension service in the world has its origin in Britain in the 1840s when "William Sewell" made submission suggesting for the extension of the University and College of Oxford Educational services. However, the first practical steps were taken in 1867-1868 when "James Stuart," fellow of Trinity College-Cambridge gave a lecture to women's associations and working men's clubs in the north of England on extension development services. Therefore, Stuart is considered as the founding father of University Extension. By 1880s, the word "Extension Movement" was adopted and used in other sectors other than universities and among the sectors had been agriculture.

Agricultural extension began from the industrialized countries of West Europe. However, America had taken an active role to expand the growth and development of agricultural extension. The term agricultural extension came into common use in United States of America early the 18th century when Co-operative extension services were formed in each state in association with the Land Grant Colleges. Each state had been granted land by the federal government on which the development of agricultural experimental stations had been initiated and built associated educational institutions or agricultural colleges.

The term extension in agriculture has been associated to the process of the transfer and dissemination of agricultural information and knowledge from research to farmers and vice-versa.

The purpose was to teach farmers new techniques of farming and learn how to solve their own problems. It was believed that the development of agricultural sector would improve the economy of the country in a more sustainable way. The assumption had been that the development of agricultural sector would provide raw materials for development of manufacturing industries, increase income for rural people whose livelihood had depended on agriculture, and ensure food security. The Americans had forceful drive to create industries for finished products from agricultural products. It was that perception and drive which improved the American economy. Agricultural extension began to assume its current form with the rise of scientific agriculture in the industrialized countries and gained momentum after Second World War [Evenson (1986), Howell (1989), and Van den and Hawkins (1988)].

Currently the term extension is used widely and associated with different disciplines. The term bears different names and meanings in different countries; for example the Dutch use the term “Voorlichting” meaning “Lighting the pathway ahead to help people find their way.” The Germans use extension for advisory work or “enlightenment.” The French use the term “Vulgarization” to mean Simplify the message for the “Common Man.” The Spanish use “Capacitacion” to mean, “improve people’s abilities (training or capacity building). However, the ultimate goal is to transfer messages to farmers, change attitude and behavior towards adoption of innovations for improvement of farmers’ practices for food security and improve their income to cope with the changing world economy and standard of living.

Extension services in Zambia has evolved over a period of time from a ‘Military Approach,’ ‘Individual Farm Visits Approach,’ ‘Training and Visit System Approach (T&V),’ all these approaches were characterized to greater or lesser extent, by a “top down” planning system to a more people focused, bottom up Participatory Extension Approach (PEA).

In the early 1980s, it was recognized that the extension system of visiting farmers individually was very costly and the coverage was poor as the demand for extension services increased. In 1991, the National Extension Action Plan was adopted to address the shortcomings of the extension service and the absence of a national approach.

The National Extension Action Programme adopted a modified Training and Visit (T & V) system for the management of the agricultural extension service. This system was to use KAP (Knowledge, Attitudes, and Practice) surveys, which have in-built active farmer participation. The system offered a unified extension service with a single line of command, systematic and appropriate work programmes for farm visits, extension worker training, identification of key seasonal messages for different areas which reflected differing recommendation domains, and the use of contact groups to diffuse the messages to the wider agricultural community.

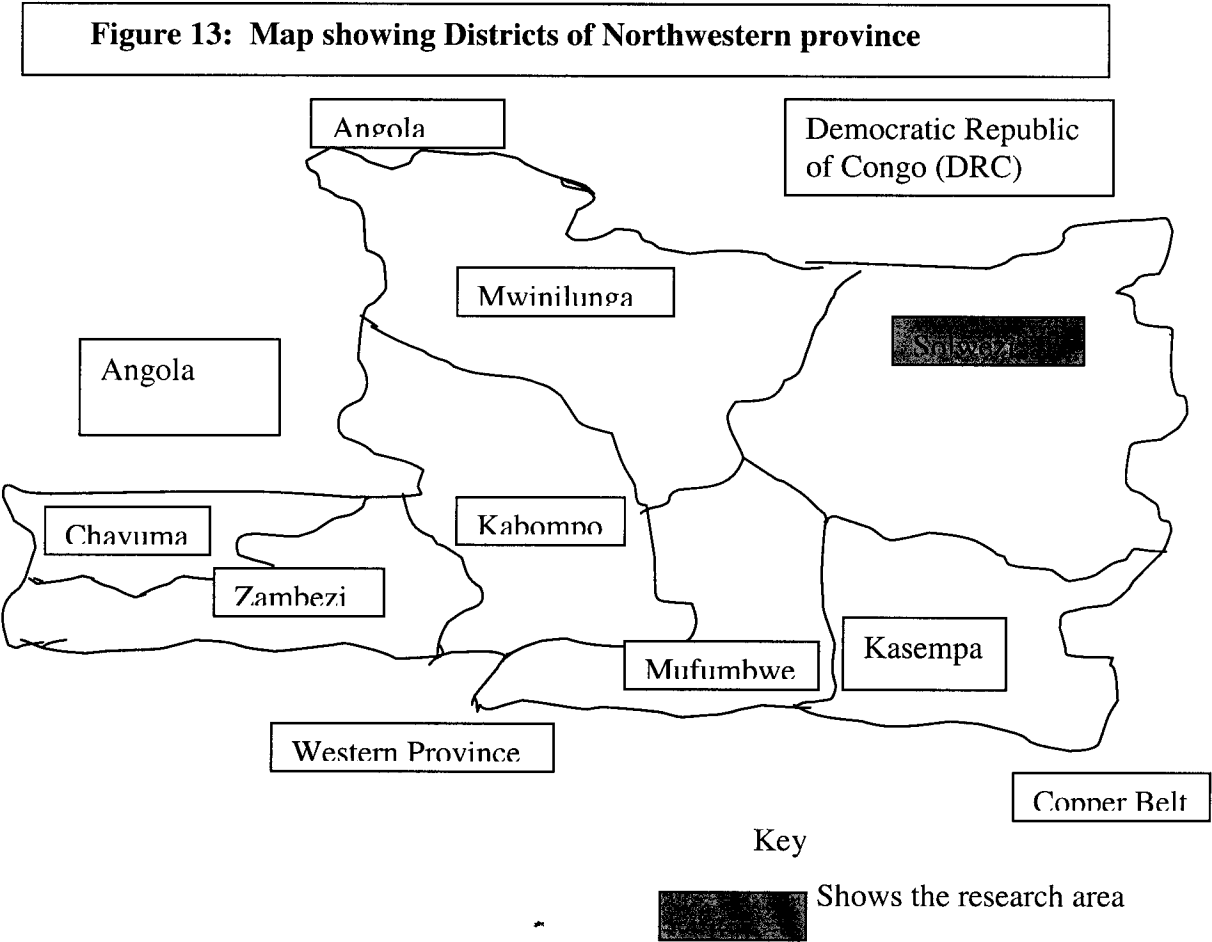
The T and V system, later in the 1990s, became unpopular amongst donors and NGOs. The system was said to be top down, technical messages were too narrow and the extension services could not be effective. In the year 2000, the Ministry of Agriculture, Food and Fisheries adopted the Participatory Extension Approaches (PEA) to replace the T and V. The PEA was adopted as the official extension approach to allow for the mobilization, diagnosis, planning and implementation of interventions in an integrated manner. This extension strategy is based on dissemination of key messages that reflect the priority needs of farmers and respects and builds on their indigenous knowledge.

The PEA works through trying to address the specific technical and socio-economic needs of individual members of households, farmer interest groups, whole communities and farmer associations. Farmer-to-Farmer extension is promoted through the use of community auxiliary farmers and group leaders. Priority is given to technologies with highest potential to improve farm incomes and household food security and build capacity in rural farmers to operate farming as a business. A number of provinces in Zambia have already adopted some form of Participatory extension system for example; Southern, Luapula, Lusaka and other provinces, and Northwestern province inclusive.

1.2.8 GENERAL INFORMATION OF NORTH-WESTERN PROVINCE:

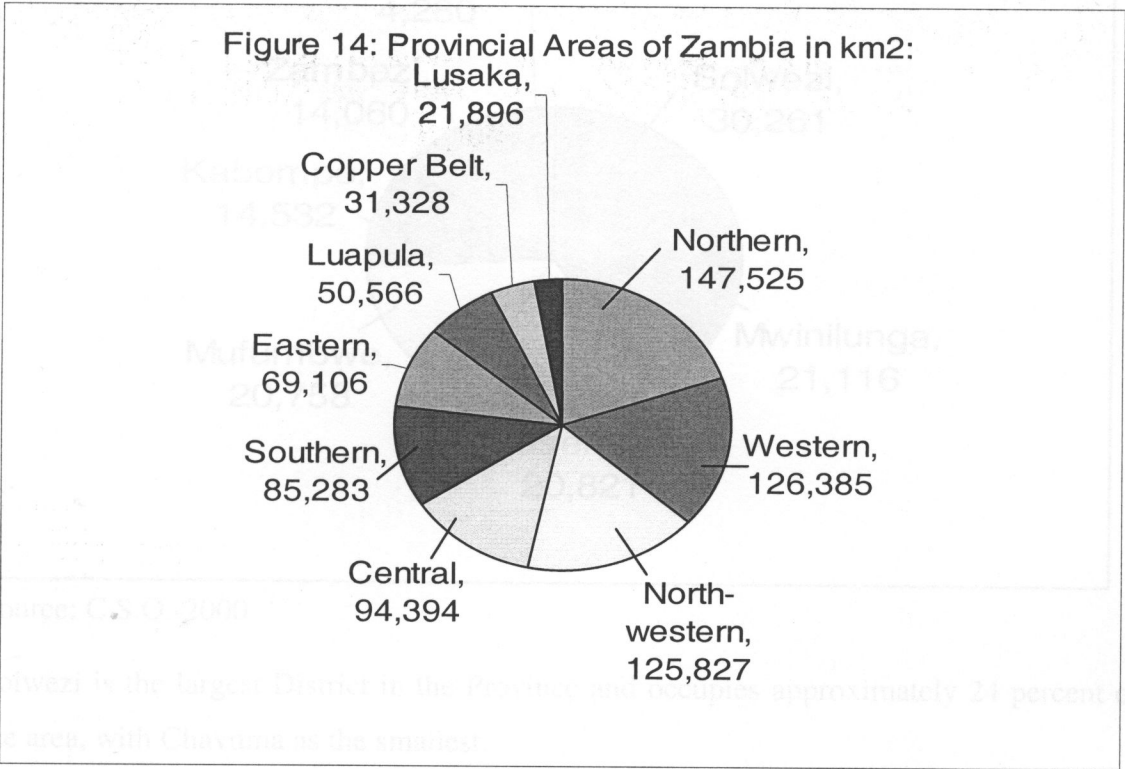
1.2.8.1 Geographical Information

The Province is the third largest in the Country after Northern and Western Provinces. It covers an area of 125, 827km²; representing about 16.8 percent or approximately 17 percent of the country's area. The Province lies between 22 and 27 degrees East and 11 and 14.6 degrees south. It borders Angola to the west, Democratic Republic of Congo (DRC) to the north, Copper Belt Province to the east, Central Province to the South, and Western Province to the south west. It comprises of seven districts (Solwezi, Mwinilunga, Kasempa, Mufumbwe, Kabompo, Zambezi and Chavuma) see map13 shown below:



1.2.8.2 Area Proportion of Provinces of Zambia in Square Kilometers

The figure 14; shown below illustrates the sizes of Provinces of Zambia in square kilometers for purposes of ranking them according to sizes (Northwestern Province being the third largest).

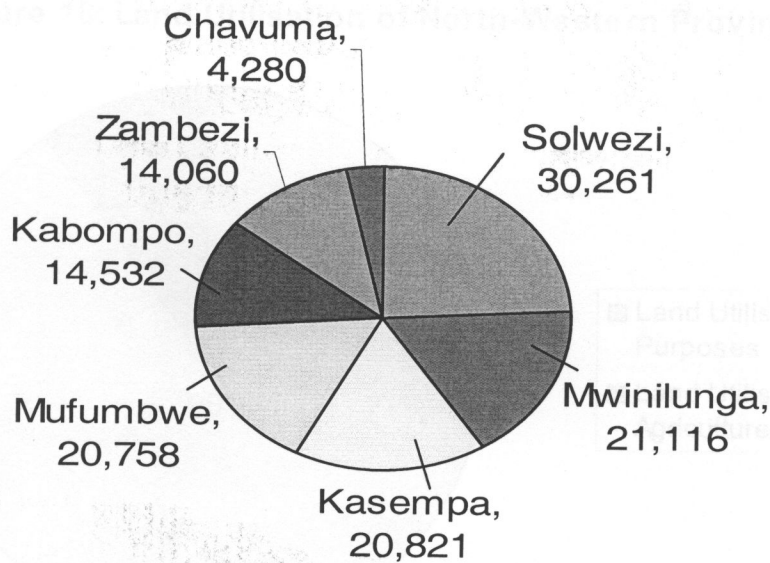


SOURCE: Macmillan High School Atlas for Zambia (2005), and C.S.O (2000):

1.2.8.3. Area Proportion of Districts of Northwestern Province in Square Kilometers

The figure 15 shown below reflects the area proportions of the Districts of Northwestern Province in square kilometers for identification of the sizes of the districts in the Province.

Figure 15: Area Distribution of Northwestern Province by Districts in km2:



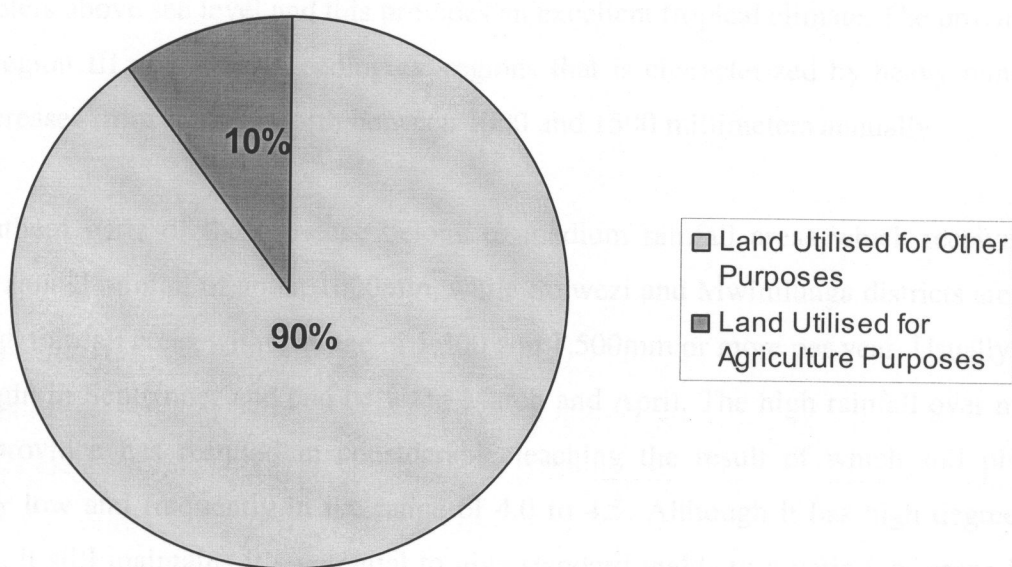
Source: C.S.O.-2000

Solwezi is the largest District in the Province and occupies approximately 24 percent of the area, with Chavuma as the smallest.

1.2.8.4 Land Analysis

The Province has vast forests covered by miombo woodlands and vast areas of grassland (dambos) accounting for over 10 percent of the area. About 47 percent of the area is gazetted as forest woodlands and game management areas. It is estimated that 10 percent is suitable for farmland utilization. However, about 1 percent of the land is estimated to be under cultivation annually, mostly using traditional methods and technologies (Provincial Situational Analysis Assessment Document (2003).

Figure 16: Land Utilisation of North-Western Province



SOURCE: Provincial Situational Assessment Document (2003).

The figure 16 shows that 10 percent of the land of Northwestern Province is suitable for farmland utilization and the other 90 percent is suitable for other purposes.

1.2.8.5 Soil Type

The province has two types of soils i.e. the Barotse sands (these are very sandy and acidic) and usually found in the southwest parts of the Province. The other type of soil is the sand veldts (loamy sands), usually found in the eastern and the northern parts of the Province. Although the identified soils are generally classified as low potential for crop production, but there are pockets with fairly good or even very good potential soils which are assumed to support high production of a variety of crops. Numerous varieties of fruit tree crops can be grown in nearly all areas of the province.

1.2.8.6 Climatic Conditions of Northwestern Province

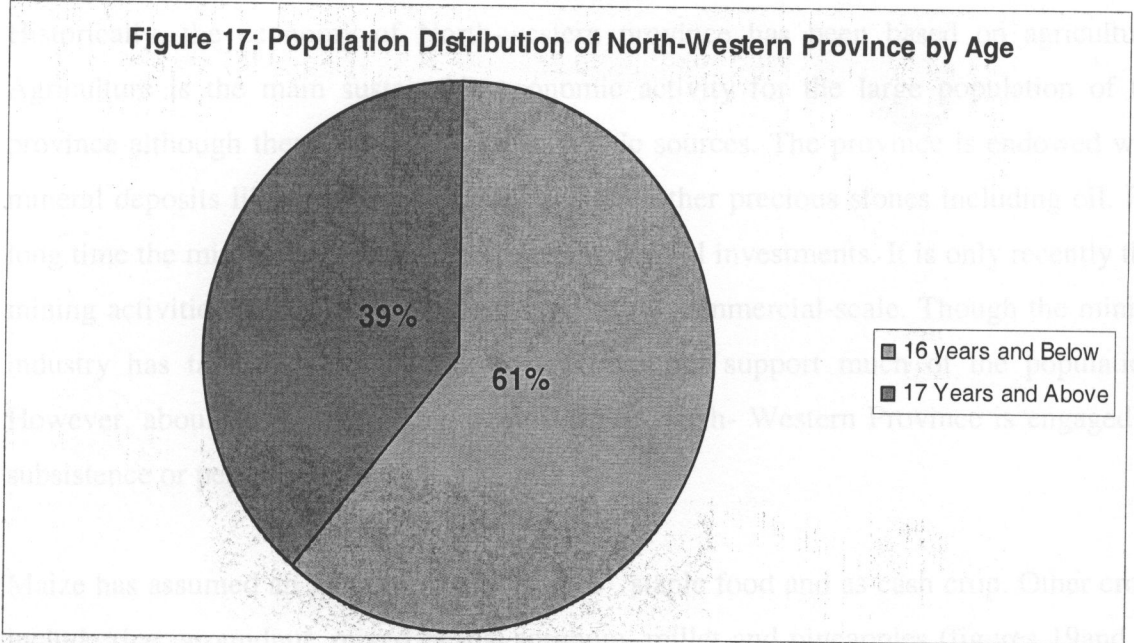
The topography of the province is mostly undulating and varies between 1075 meters and 1300 meters above sea level and this provides an excellent tropical climate. The province lies in region III of the agro- ecological regions that is characterized by heavy rainfall. Rain increases from south to north between 1000 and 1500 millimeters annually.

The southern parts of the province belong to medium rainfall areas which receive an average annual rainfall of about 1000mm, while Solwezi and Mwinilunga districts are the most high rainfall areas with average of 1,300 and 1,500mm or more per year. Usually the rains begin in September and end between March and April. The high rainfall over most of the province has resulted in considerable leaching the result of which soil pH is generally low and frequently in the range of 4.0 to 4.5. Although it has high degree of leaching, it still maintains it's potential to give standard yields to a variety of crops like beans, groundnuts, pineapples as well as coffee and other crops (Muliokela, (ed) 1995).

The climate of the province is also characterized by hot months in September and October during which the mean maximum temperatures range between 28°C and 30°C. The average temperatures in winter are around 15°C to 17°C. Frost risks also occur during June/July months.

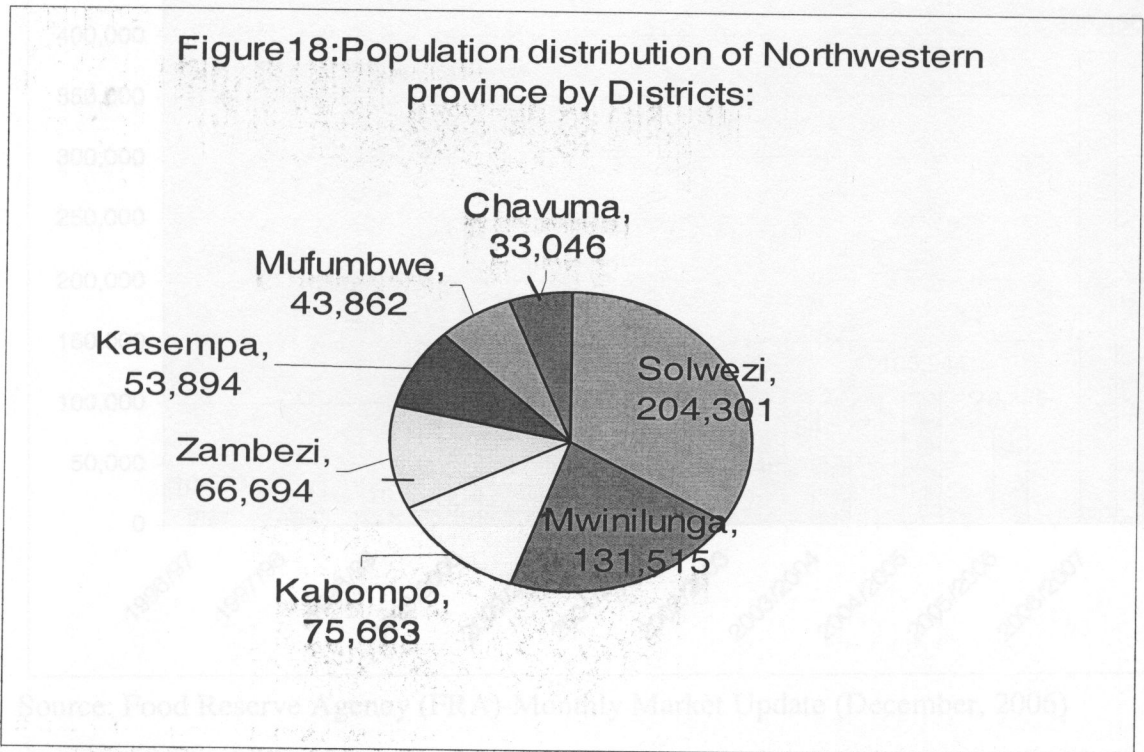
1.2.8.7 Demographic Situation of Northwestern Province

North-Western Province is one of the least populated Provinces in Zambia with the population of about 610,975 which represents approximately 6 percent of the Zambian population. The province constitutes a young population, which takes a large proportion of about 61.4 percent for those aged 16 years and below. The remainder of the population 38.6 percent is for those aged 17 years and above (figure 17- below).



SOURCE: C.S.O (2000)

This means that the population of the province comprises of a young working age capable of providing the much-needed labour force to facilitate development in any sector. It has an average annual population growth rate of 4 percent (C.S.O.-2000).

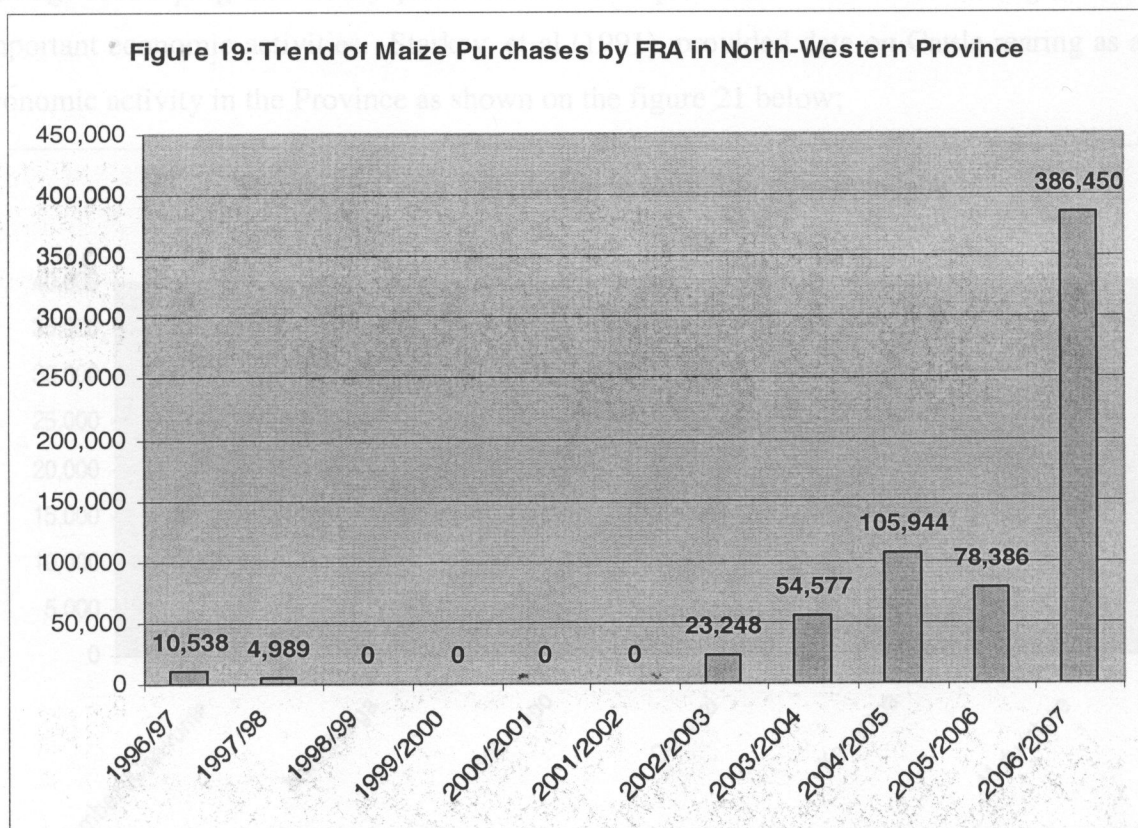


Source CSO 2000.

1.2.8.8 Economic Situation of Northwestern Province

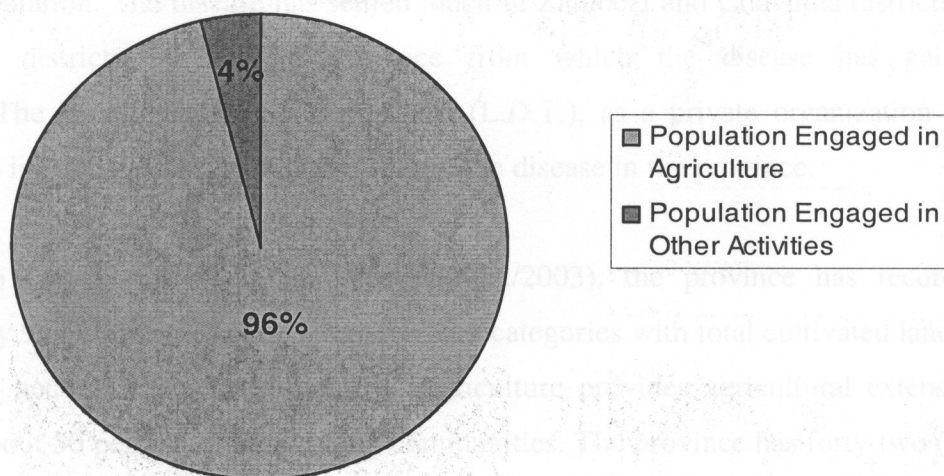
Historically, the economy of North-western province has been based on agriculture. Agriculture is the main sustainable economic activity for the large population of the province although there are also other economic sources. The province is endowed with mineral deposits like copper, emerald, gold, and other precious stones including oil. For long time the mining sector did not attract meaningful investments. It is only recently that mining activities are beginning to take place on a commercial-scale. Though the mining industry has taken a significant role, but does not support much of the population. However, about 96 percent of the population in North- Western Province is engaged in subsistence or peasant farming.

Maize has assumed an increasing role both as staple food and as cash crop. Other crops include rice, groundnut, mixed beans, sorghum, millet and pineapples (figures 19 and 20 below show the trend of maize production and population engaged in agriculture as main economic activity).



Source: Food Reserve Agency (FRA)-Monthly Market Update (December, 2006)

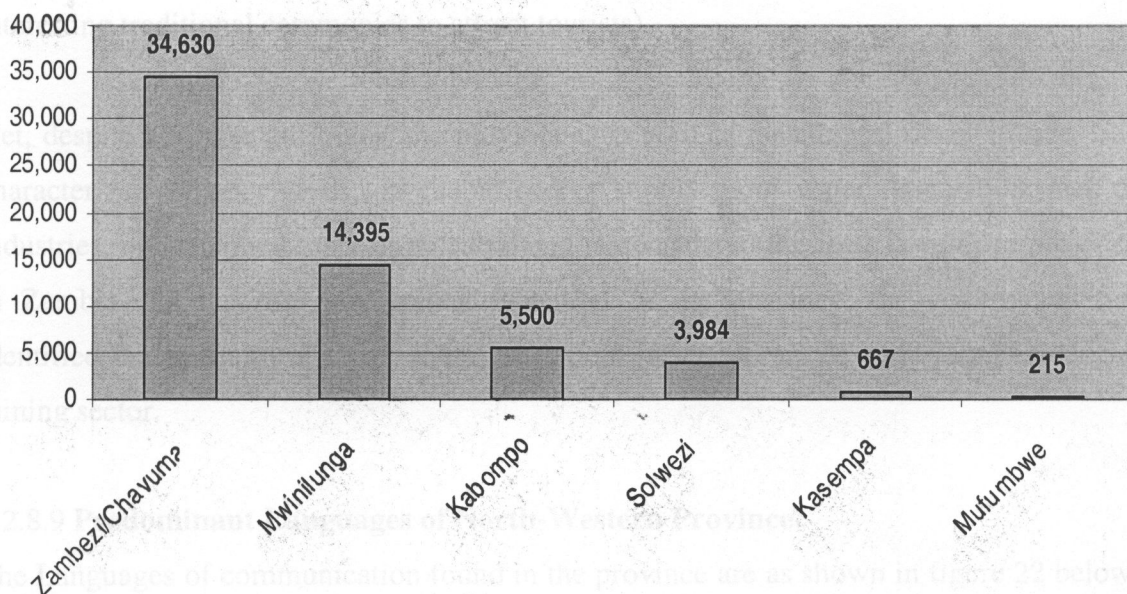
Figure 20 :Population Distribution of North-Western Province by Economic Activity



SOURCE: Provincial situational Assessment Document (2003)

Besides crop farming as the main economic activity, the population is also engaged in fishing; beekeeping and honey production; timber production and cattle rearing as other important economic activities. Starkey, et al (1991), provided data on Cattle rearing as an economic activity in the Province as shown on the figure 21 below;

Figure 21: Cattle Population in North-Western Province



Source: Animal traction in Zambia: status, progress and trends (1991)

However, the Contagious Bovine Pleural Pneumonia (CBPP) disease has killed most of the cattle population. The disease has settled much in Zambezi and Chavuma districts as neighbouring districts to Western Province from which the disease has gained momentum. The Livestock Development Trust (L.D.T.), as a private organization has been engaged in vaccination campaign to control the disease in the province.

According to the provincial annual report (2002/2003), the province has recorded approximately 99,000 farmers of different farming categories with total cultivated land of about 52,342 hectares. The Department of Agriculture provides agricultural extension services to about 50 percent of the farming communities. The province has forty-two (42) agricultural blocks and two hundred and fourteen (214) agricultural camps.

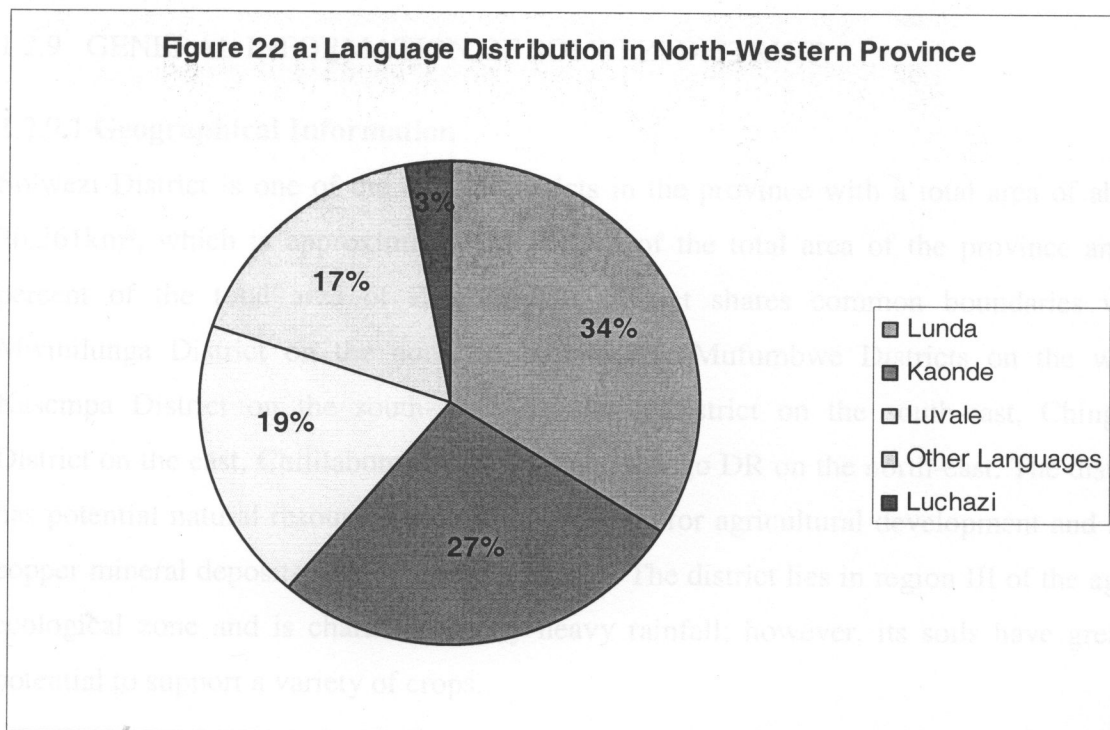
The Province is the source of major rivers of Zambia mainly the Zambezi, Kafue and Kabompo. The rivers have set a net of suitable rivers, which could be dammed for Irrigation to promote the agricultural industry. The rivers also have the potential for construction of mini hydro plants for power to support the existing development potential, though not utilised. The Province also has tourism potential with some national parks (the Northern part of the Kafue National Park and the Lunga National Park to the west. It has one of the most amazing land scape, rich animal and bird species and a number of interesting traditional ceremonies to attract tourists).

Yet, despite all these attributes, the province is devoid of meaningful development. It is characterized by poor roads, unreliable energy supply, poor water reticulation, lack of industries, undeveloped tourism potential and is considered the least developed province in Zambia. To tap the development potential in the province, the government has identified the agricultural sector as an instrument for economic development besides the mining sector.

1.2.8.9 Predominant Languages of North-Western Province

The Languages of communication found in the province are as shown in figure 22 below. However, "Lunda" is the most predominant. The language is widely spoken in Mwinilunga and Kabompo districts and mixed in Zambezi, Chavuma, Mufumbwe, and

Solwezi districts. The Lunda language has its origin from the Democratic Republic of Congo (D.R.C).



Source: C.S.O-2000

1.2.8.10 Agricultural Extension System of Northwestern Province:

The agricultural extension system in the province functions in a similar way as at national level though its structure is narrowed as compared to the national structure. The extension communication system has gone through a series of reformative processes from the traditional approach of “Military”, “Individual Farm Visit”, the “Training and Visit (T&V)” system to the current approach of “Participatory Extension Approach (PEA).” However, the PEA system has not taken great dimension in the province. It therefore means that some parts of the province are still in use of the traditional methods of the T&V system and the Individual Farm Visit with exception of the Military Approach.

The Provincial Report (2nd quarter- June-2005), reported seven (7) districts constituting of forty two (42) agricultural blocks, two hundred and fourteen (214) agricultural camps and one hundred and twenty one (121) extension workers at field level. However, the province should have had two hundred and fourteen (214) extension workers and forty

two (42) Block officers in equivalency to the number of camps and blocks in the Province. At time of the research, there were no recognized block officers by official establishment (appointment).

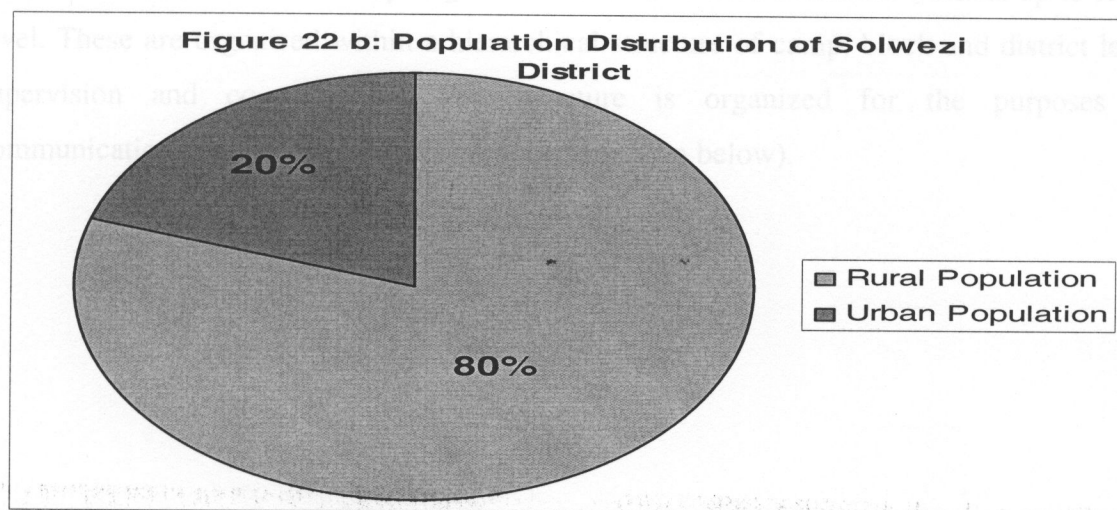
1.2.9 GENERAL INFORMATION OF SOLWEZI DISTRICT:

1.2.9.1 Geographical Information

Solwezi District is one of the largest districts in the province with a total area of about 30,261km², which is approximately 24 percent of the total area of the province and 4 percent of the total area of Zambia. The district shares common boundaries with Mwinilunga District on the north, Kabompo and Mufumbwe Districts on the west, Kasempa District on the south-west, Kalulushi District on the south-east, Chingola District on the east, Chililabombwe District and Congo DR on the north-east. The district has potential natural resources such as fertile soils for agricultural development and rich copper mineral deposits for the mining industry. The district lies in region III of the agro-ecological zone and is characterized by heavy rainfall; however, its soils have greater potential to support a variety of crops.

1.2.9.2 Demographic Situation of Solwezi District

The district is the most densely populated in the province with total population of approximately 204,301 people that is about 33.4 percent or roughly 34 percent of the population in the province. About 80 percent of its population is found in rural places of the district (figure 22 b showing population distribution percentages i.e. rural versus urban areas).



SOURCE: C.S.O (2000)

The population is growing at a fast rate with an annual average of 4 percent. The larger proportion of the population comprises of young aged group.

1.2.9.3 Economic Situation of Solwezi District

The district of recent has registered a fast growing economy as result of the booming mining industry. However, agriculture is the main sustainable economic activity for the larger population of the district. The mining industry supports a small fraction of the population, but the majority depends on farming as source of livelihood.

1.2.9.4 Agricultural Position of Solwezi

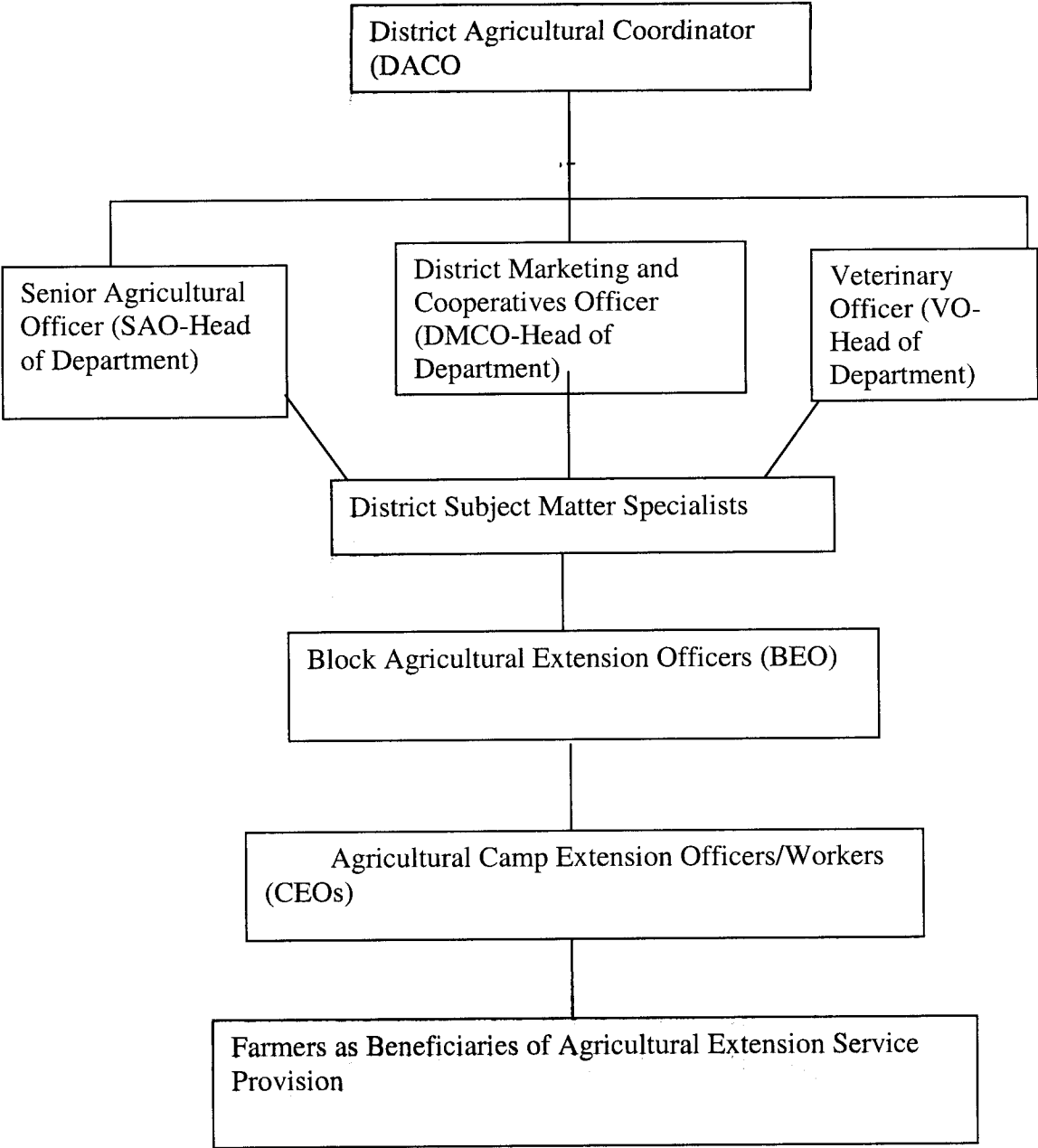
Agriculture as the main economic activity takes a large population of the district. The farming season 2005/2006 recorded 7189 small-scale farmers, 227 medium scale farmers and 3 institutional farms belonging to Zambia National Services (ZNS) (Katandano, Kamitote and Mumbeki), with a total cultivated area of approximately 12,062 hectares.

The recorded numbers of farmers considered in the report are those that received agricultural extension information services. This means that the traditional farmers are not catered in the data captured, and usually they are the majority. The major crops grown in the district are; maize, beans, groundnuts, sorghum, and finger millet.

1.2.9.5 Agricultural Extension Communication Networking Channel:

The extension service has a very large establishment of field extension workers up to camp level. These are organised within a hierarchical structure of camp, block and district level supervision and co-ordination. The structure is organized for the purposes of communication networking (see structural organization below).

Figure 23 District Structural Organisation and Communication Networking Channel



Source District Annual Report 2006

Table 6: Staff Levels of Solwezi District					
Category of staff	Establishment	Positions filled	Percent	Vacant positions	Percent
District specialists					
Block Extension Officers	8	8	100	-----	-----
Camp Extension Workers	52	31	59.6	21	40.4
Total					

Source: Extension Methodologist-Solwezi district (2007).

1.2.9.6 Agricultural Extension Communication Strategies in Use

The District uses several communication strategies for dissemination of agricultural information to its farmers. These communication strategies are also referred to as “Extension Methods” and some of the methods are as follows;

- (i) Group Discussions;
- (ii) Individual Farm visits;
- (iii) Field days and shows;
- (iv) Adoption plots;
- (v) Demonstrations;
- (vi) Field trips;
- (vii) Workshops;
- (viii) Seminars;
- (ix) Lecture methods and
- (x) Radio farm forum groups.

These are the communication strategies or methods in use that the research takes keen interest to evaluate and determine their applicability and effectiveness with regard to information dissemination and adoption of innovations for development of the agricultural sector.

1.3.0 STATEMENT OF THE PROBLEM:

The statement of the problem for the research has arisen from the fact that there have been increased challenges regarding the decline in the economic standards of the country and subsequent increase in poverty levels, food insecurity and underdevelopment of rural places. The challenges were because the Department of Agricultural Extension Services has been perceived as the fulcrum to revamp and resuscitate the economy through its communicative process of agricultural information for change in attitude and behavior of farmers towards adoption of innovations. However, it has been observed that despite the department's efforts to communicate and disseminate information, the farmers have continued using their traditional farming practices.

The continuity use of traditional farming practices has made the farming community question the effectiveness of the department to bring about change and accused it of being responsible for the stagnation of agricultural development and economic standards of the country.

To respond to those challenges, the research focused on the agricultural extension communication strategies being used. It is evident that communication strategies for information delivery systems are related to high poverty levels and food insecurity incidences of the nation. The poverty prevalence among farmers is as result of low incomes, which is related to low crop production. It is strongly believed that low productivity in farming is attributed to poor extension communication systems resulting in inadequate information and knowledge flow about farming practices to farmers. It is for this reason that the research was considered significant to assess the degree and extent of effectiveness of the communication strategies used and determine how best to improve upon them for agricultural development.

1.4.0 THE RATIONALE:

Merriam (1995), states that in any research, the rationale must be made clear to provide understanding of the basis of the research. In this context, the research was undertaken because of the decline of the Zambian economy and the rising poverty levels as result of poor performance of the agricultural sector (National Agricultural Annual report-2005). This is undesirable since more than 80 percent of the Zambian population depends

directly on agriculture. The agricultural extension service holds key to the attainment of full potential of agricultural development and economic resuscitation through its communication process. It influences change in knowledge, attitudes, and behaviour of farmers with regard to innovation adoption for improved farming practices. It is for this reason that the research sought to evaluate the extension communication strategies being used in Solwezi district of North-Western province. It highlights some areas of concern where the extension service branch would maximize its effort to contribute to increased food security, increased income levels and create wealth for the rural communities through agricultural development.

1.5.0 OBJECTIVES OF THE RESEARCH:

1.5.1 General Objective

To evaluate the Agricultural extension communication strategies used and determine their applicability, relevance, effectiveness, and impact on the farming communities with regard to adoption of agricultural innovations that contribute to improved farming practices, improved productivity, increased farmers' incomes and wealth creation in order to contribute significantly to the overall national goal of poverty reduction.

1.5.2 Specific Objectives

To determine:

- (i) extension communication methodologies or strategies in use;
- (ii) the relevance and effectiveness of those extension communication strategies;
- (iii) the farmers' source of agricultural information;
- (iv) the rate of farmers' adoption of innovations for improved farming practices;
- (v) the impact of the extension communication strategies or methodologies on the farming communities with regard to improvement on the farmers' productive capacity and development.

CHAPTER TWO

2.0 RESEARCH METHODOLOGIES:

2.1 INTRODUCTION:

The research methodology used was “*cross section-survey*” by design. The concern of the research was to develop a set of findings from several sources with regard to effectiveness of agricultural extension in information dissemination for development of agricultural sector. Because of the need for search of the causal factors that affect information dissemination and adoption of innovations, the research obtained information from agricultural extension experts, literature review and most important from the farmers themselves who are the major information targets. The research has utilized information obtained from both primary and secondary sources. The information obtained primarily complemented each other and provided an insight into the factors that affected farmers’ adoption of agricultural innovations. As regards this approach, it meant that several methods were used in order to establish consolidated data that would be reliable for future consultation. Triangulation method was used because of its capacity to capture both quantitative and qualitative information that reviewed facts, feelings, emotions and opinions of respondents about extension communication effectiveness.

2.2 RESEARCH QUESTIONS:

Merriam and Simpson (1995), state that any research to be focused and reliable must be guided by either a research question or hypothesis. The term “research question” means that the research has to establish the relationship between two or more variables that relate to the problem being researched. The relationship between the variables in a research question will not be susceptible to being testable, but has to create the direction and extent of the problem upon which the research is founded or based. It is usually applicable to none experimental research designs. On the other hand, the term “hypothesis” is used to refer to a research that establishes the relationship between two or more variables that are related to the problem being researched, but these variables have to be testable and predictive.

The research questions are as outlined below:

- (i) Do agricultural extension communication strategies affect farmers' adoption of innovations for improvement of farming practices and development of the agricultural sector?"
- (ii) What extension communication strategies are in use that facilitate farmers' adoption of innovations for improved farming practices?
- (iii) What is the relevance and impact of the extension communication strategies with regard to the adoption of innovations and change in attitude of farmers towards improved farming practices and development of agriculture?
- (iv) What are the sources of farmers' information for agricultural development?
- (v) What is the farmers' adoption rate of innovations by use of the current communication strategies?

2.3 RESEARCH METHODS:

The research methods employed for collection of data incorporated the use of the following:

- (i) Focus group discussions (FGD).

The method was used for collection of qualitative information that revealed the perceptions, views, feelings, beliefs, emotions and attitudes of the respondents about the agricultural extension communication strategies and their impact on the farming communities.

- (ii) Questionnaires were used to obtain numerical or statistical information that was more objective and allowed direct comparisons about the extension communication strategies and their influence on information dissemination and farmers' adoption of innovations.

2.4 SAMPLING PROCEDURE:

The sampling procedure employed in the research involved the use of "random" and "non-random" sampling methods.

The random sampling method involved the application of lottery method for selection of farmers, agricultural blocks and agricultural camps in which the research was carried out.

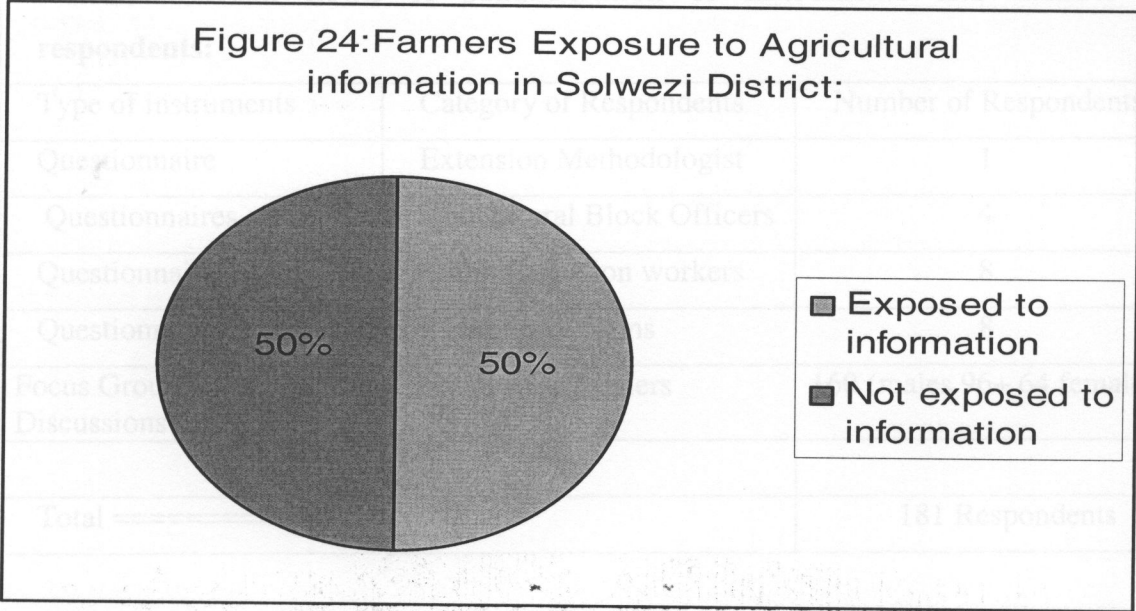
The non-random also referred to as purposive sampling method was used for selection of experts like the District Agricultural Extension Methodologist, Block Agricultural Officers and the Extension workers who are responsible for formulation of agricultural extension communication strategies for dissemination of information.

2.5 RESEARCH POPULATION:

The district recorded 7419 farmers during the farming season of 2005/2006. Among the farmers, 50 percent (3,710 farmers) was exposed to agricultural information from the agricultural extension service provision while the other proportion (3,710 farmers) was not exposed due to inadequate staffing levels (table7- below).

Table 7: Total number of farmers in Solwezi district:		
Farmers in district	Farmers exposed to agricultural information (50%)	Reasons for poor farmers' exposure
7,419	3,710	Lack of adequate staffing

Source: District Annual Report 2005/2006



Source: District Annual Report 2005/2006

Therefore the population for the research comprised of the total number of 3,710 farmers exposed to agricultural extension information services. However the estimated sample was 100 farmers, but because of the high response and willingness of farmers' to

participate at Focus Group Discussions (FGD) to provide information on the communication networking of the extension services, the number of actual respondents rose to 181

2.6 SAMPLE SIZE AND DATA GATHERING PROCEDURE:

The data collection was carried out over a period of two months (2) which started from March to April (2007). The data was collected from four (4) agricultural block areas and eight (8) agricultural camp areas by use of the following instruments:

- (i) Semi structured questionnaires were administered to obtain both quantitative and qualitative data.
- (ii) Focus Group Discussions were directed to farmers at group sessions to obtain qualitative information that revealed the perceptions, views, feelings, beliefs, emotions and attitudes of farmers about the agricultural extension communication strategies and their impact on farming communities. The instruments were administered as shown in table 8 below:

Table 8: Break down of administration of instruments and number of respondents:		
Type of instruments	Category of Respondents	Number of Respondents
Questionnaire	Extension Methodologist	1
Questionnaires	Agricultural Block Officers	4
Questionnaires	Camp Extension workers	8
Questionnaires	Institutional farms	8
Focus Group Discussions(16)	Small scale farmers	160 (males 96+ 64 females)
Total =====		181 Respondents

- (iii) Data was also collected through documentary review-such as reading of essential documents like; monthly, quarterly and annual reports, policy action plans and other relevant documents. The table 9 below shows areas that were sampled for data collection.

Table 9 Research area coverage of Solwezi district			
Names of Blocks	Total number of Camps in District	Names of Blocks sampled for research	Names of Camps sampled for research
Central		Central	Kyafukuma west
St. Francis			Kyafukuma East
Lunga		St. Francis	St. Francis
Mushindamo			Kampinjimpanga
Maheba		Maheba	Maheba Zone A
Mutanda			Maheba Zone B
Mukumbi		Mutanda	Mutanda
Musele			Kayonge
8	52	4 (50% sampled)	8(16% of the camps)

2.7 DATA PROCESSING AND ANALYSIS:

The data analysis began with the sorting out of instruments according to numbers as they were collected from the field. After the instruments were sorted out, they were cross-checked for information completeness and consistency in order to allow for quality control and facilitate procession. The procession of data involved the use of manual and computer through the utilization of the Statistical Package of Social Sciences (SPSS). The data was categorized according to relevant variables and coded with regard to responses. However, the data was further analyzed and interpreted by use of frequency tables, pie charts, and bar charts.

2.8 LIMITATIONS:

The conduction of the research was not easy but encountered a lot of problems with the office of the Provincial Agricultural Coordinator with regard to logistical support and this delayed the process of data collection.* The problems of logistical support, made it difficult to extend the research coverage to all camps and blocks or even 50 percent of the district coverage.

3.0 CONCEPTUAL AND THEORETICAL FRAMEWORK

3.1 INTRODUCTION:

Van Den Ban and Hawkins (1988), state that extension is an applied science which is educational in character. Its basic area of focus is to influence human behaviour. Several areas and disciplines in social sciences have made significant contributions to the development of extension and extension education. These disciplines include decision-making, communication, psychology of learning and perception, and the diffusion and adoption of innovations. These disciplines have made the theoretical framework of extension. Therefore, to discuss the theoretical framework of extension is also to discuss the disciplines that support it. The term extension is loose and does not exist independently but has to be tied to some field of discipline in order for it to be meaningful. In this context, the term is married to agriculture as a field of human development.

Agricultural extension is an educational approach adopted by the Ministry of Agriculture and Cooperatives to influence change in farmers' behavior to shift from the traditional ways of farming to modern methods. The traditional methods are considered unproductive, unprofitable, uneconomical, and not necessary for modern society. The modern methods are profitable, productive, and cost effective and match with modern technology and economic demands.

The fulcrum of extension and extension education are embedded in the model of diffusion and adoption of innovations process. The theoretical framework of extension helps people engaged in extension service in any field, to understand how to achieve objectives and recognize some limitations or constraints of different extension methods and strategies for influencing human behaviour.

3. 2 CONCEPTUAL AND OPERATIONAL DEFINITION OF CONCEPTS:

3.2.1 Communication in Agricultural Extension

According to [http://clwebjournal.lib.purdue.edu/library/definition\(communication studies-page2\)](http://clwebjournal.lib.purdue.edu/library/definition(communication%20studies-page2)), although the word communication is frequently used, it has no consensus or agreeable definition reached among the scholars yet.

It therefore means that it takes different definitions at different times and places. Different theorists define the term differently according to the theoretical frame of reference employed and the stress placed upon certain aspects of the total process of the subject of concern. Though the term communication is loose, slippery or not carefully organized in its definition, it forms the framework of human interaction and relationship. It is deeply rooted in human behaviours and the structures of society that it is difficult to think of social or behavioural events that are absent of communication.

The primary purpose of communication is centered on the core understanding that it is a process that involves the transfer, exchange, transmission, and dissemination of information from the source. In agricultural extension, the concept is the framework or anchor of agricultural extension work that facilitates the dissemination and the drive for change of human behaviour. Communication messages from extension workers are intended to promote farmers' learning processes and adoption of innovation for improved farming practices. Understanding and being understood or being misunderstood, acceptance and rejection of innovations are dependent upon the communication competence. The clearer and convincing the information presented is, the more chances the innovation gains acceptance. The poorer the information presented is, the more chances the innovation gains rejection. Therefore, agricultural extension and education, diffusion and adoption of innovations are rooted in communication strategies.

3.2.2 Adoption Process in Agricultural Extension Services

Adoption is the process that involves the acceptance of an idea, practice, method, and technology (innovation) and becomes part of the individual or the innovation that is absorbed and integrated into his/her pattern of farming culture.

It is not a snap process, but involves several stages or phases of decision making such as awareness, interest (information seeking-stage), evaluation of the innovation (mental conviction) and decision making, trial of the innovation, innovation evaluation after trial, and adoption. (Vanzetti-1972, Van Den Ban and Hawkins-1988).

The concept is applied to agricultural extension by helping the extension worker as information communicator understand the pattern of farmers' adoption rate of innovations, and determine factors that influence the adoption of agricultural information among his/her farmers in the camp. It also assists the extension agent categorize the farmers according to the rate of innovation adoption and identifies the innovators or early adopters for use as model farmers. Through categorizing, he/she will also know the late adopters and laggards, and thereby develop strategies to assist them improve on their practices.

3.2.3 Innovation in Agricultural Extension Services

An innovation in this research is considered as an idea, practice, method, or technology which is regarded as new, unknown or sometimes known but never appreciated in the past by farmer/s and which when enlightened by the extension worker and tried can improve and increase the farming productive capacity of farmers in a specified area. The idea or practice may not necessarily need to have come from research branch through the extension worker to farmers or imported from other places (new), but may have even been developed from among the local farmers themselves (old) as result of modification of their traditional methods. The specification of a place is necessary because no idea is considered new and beneficial to all places and farmers.

3.2.4 "Psychology of Learning and Perception" in Agricultural Extension

Although people live in the same environment and receive similar impressions or messages through their senses, they interpret their experiences and learning differently. Perception is the process of which people receive information from their environment and transform it into psychological awareness. In fact actual learning takes place in the psychological domain as a result of perception.

Extension workers should learn to appreciate why people interpret their surroundings differently, and how these different perceptions influence their communication behaviours (Van Den and Hawkins 1988).

Extension workers will plan their communication messages, audio-visual media such as video clips, films, field demonstrations, shows, and other communication techniques successfully in their programmes if they understand human perception and interpretation of messages as farmers observe, learn and practice. Understanding human perception helps extension workers to make better decisions about alternative communication strategies to use in extension programmes.

Psychology of learning is complex; it may involve learning by operant conditioning which is reinforced by rewards leading to acceptance of innovation or punishment thus rejection of innovation. Learning may be as result of classical conditioning in which case it may be driven by conditional demands of life which have to be met without fail. For example people are forced to farm because they need food or driven by economic demands and other factors. People may also learn driven by social influences or psychological factors within their environment. Extension workers have to know the factors that underlie learning of innovations (why people learn?).

3.2.5 Subsistence/ Peasant Farmers

These are farmers who cultivate at traditional scale and usually produce for home consumption. They are the majority of the farmers and in most cases their production does not sustain the families throughout the year.

3.2.6 Small-scale Farmers

These are an improvement of the traditional farmers. However, their production is sufficient for home consumption with little surplus for sale to marketing organizations.

3.2.7 Emergent Farmers

These are advancement of small scale farmers and usually produce both for home consumption and for sale though not at large scale.

3.2.8 Medium Farmers:

These are the advancement of the emergent farmers and produce for sale.

3.2.9 Large Scale Farmers

These are also known as Commercial farmers and produce at large scale for sale. In most cases, they do not grow staple food crops, but cash crops only, which attract commercial business both locally and internationally. These farmers use technical equipment and application of scientific methods and practices.

3.2.10 Food Security

It is a package of conditions or situation that is created resulting in availability and accessibility of food stocks at household, community or national level.

3.2.11 Food Insecurity

A situation or condition that is created resulting in none or insufficient availability and accessibility of food stocks at household, community or national level.

3.2.12 Standard of Living

This refers to matters that affect human livelihood and development in the aspects of economical, social, cultural and political situations.

3.2.13 Participatory Extension Approach (PEA)

An agricultural extension approach or method that involves the active participation of farmers at every level of agricultural development. It involves the identification of farming problems, analyzing their situation, decision making for planning of actions, design of programmes, implementation of the agricultural activities aimed at improving their productive capacity, monitoring and evaluation of programmes for the purposes of improving food security, income levels, and standard of living.

3.2.14 Agricultural Extension

The process through which agricultural development communication messages are disseminated to the farmers to provide consciousness of information for decision making to facilitate acceptance or rejection of innovations.

3.2.15 Household

Consists of members of a family who normally live together in one house or closely related premises and take their meals from the same kitchen (draw their food from one basket or storage shade). It may also consist of one member.

3.2.16 Head of Household

Is a person considered to be the head by the members of the household or family. Normally a husband or a wife in the absence of the two or any person considered to be elderly, mature and assumes responsibility of head of the household.

3.3.0 MAIN THEORIES AND HOW THEY APPLY TO AGRICULTURAL EXTENSION:

3.3.1 Diffusion of innovation and adoption theory

The theory of diffusion of innovation was originally born from research work of the French Sociologist Gabriel Tarde in 1903 and later proposed and formalized to be used in agriculture and other sectors by Rogers Everett in 1983.

It was used by rural sociologists to study the diffusion of agricultural technologies or innovations in the social system. The theory is embedded in the field of Sociology, Psychology and Communications

(<http://www.ciadvertising.org/studies/student/98fall/theory/hornor/paper1.html>).

Rogers defines Diffusion as the process by which an innovation or new idea is communicated from its source of invention or creation to its ultimate users or adopters through certain channels over time among the members of a social system. Diffusion occurs within society as a group process. The definition contains four main elements that are present in the diffusion of innovation process and these are as follows;

3.3.2 Innovation

The characteristics of an innovation, as perceived by members of a social system, determine its rate of adoption. Some innovations diffuse relatively slowly, while other innovations diffuse rapidly. The characteristics that determine an innovation's rate of adoption are its relative advantage, compatibility, complexity, trialability, and observability.

3.3.2.1 Relative Advantage

The relative advantage of an innovation reflects the degree to which an idea or innovation is perceived as better or more superior to the one it supersedes (Rodgers 1983). The

degree of relative advantage may be measured in economic terms, social prestige, convenience, and satisfaction as important factors. It does not matter so much if an innovation has a great deal of objective advantage. What does matter is whether individuals perceive the innovation as advantageous.

The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be. For example as in the agricultural sector, relative advantage may reflect aspects like; does the innovation enable the farmer to achieve his/her goals better or at lower cost than he could previously? This advantage can be influenced by giving incentives to farmers, such as providing farm inputs at subsidised rates. However, the emphasis on relative advantage of the innovation should be aimed at sustainability to ensure continuity application of the innovation. Circumstances have occurred whereby innovations have been adopted and latter rejected. Such innovations probably contained a short-term package of relative advantage. For instance the current situation in Zambia, in which the government introduced subsidised input programme to small scale farmers in 2002 is short term relative advantage, because as soon as the government changes its policies, farmers will stop farming because they can not afford to purchase the inputs at high cost.

3.3.2.2 Compatibility of innovation

Van and Hawkins (1988) state that compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential uses. Compatibility ensures greater security to the potential adopter and makes the new idea more meaningful to him. An idea that is incompatible with the values and norms of a social system will not diffuse as rapidly as an innovation that is compatible. For example; an innovation that is compatible with the socio-cultural values and beliefs, with previously introduced ideas or with farmers' felt needs, will rapidly diffuse and adopted. Clearly, it is difficult to introduce pig husbandry among Muslims or Seventh Day Adventists even if it is a very profitable enterprise because piggery undertakings conflict their social cultural values.

3.3.2.3 Complexity of innovation

Complexity refers to the degree to which an innovation is perceived as difficult to understand and use. Some innovations are readily understood by most members of a

social system while others are more complicated and diffuse more slowly. New ideas that are simpler to understand diffuse and get adopted more rapidly than innovations that require people to develop new skills and understandings.

3.3.2.4 Trialability

Trialability is the degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on an instalment plan will generally diffuse more quickly than innovations that are not divisible. An innovation that is trialable represents less uncertainty to the individual considering using it and who can learn by doing.

3.3.2.5 Observability

Observability is the degree to which the results of an innovation are visible. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Such visibility stimulates peer discussion of a new idea, as friends and neighbours of a user of a product often request information about it.

3.3.3. Communication channel

Communication channel is the means by which messages get from one individual to another. Mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more effective in forming and changing attitudes toward a new idea, and thus in influencing the decision to adopt or reject a new idea.

It is perceived that communication messages from extension workers are intended to promote farmers' learning processes, diffusion and adoption of innovation for improved farming practices. Understanding and being understood or being misunderstood, acceptance and rejection of innovations are dependent upon the communication strategies used. Because of the assumed perception of the influence of the concept, the research uses it as the basis for assessment and determination of the degree of influence on the dissemination and adoption of agricultural information for change in behaviour ([http://clwebjournal.lib.purdue.ed/library/definition\(communication_studies-page2\).](http://clwebjournal.lib.purdue.ed/library/definition(communication_studies-page2).))

3.3.4. Time

Time is involved in the innovation-decision process. This concerns the length of time it takes an individual to make a decision for acceptance or rejection of an innovation. It is the mental process through which an individual (or other decision-making unit) passes from first knowledge of an innovation to forming an attitude toward the innovation; then to a decision to adopt or reject it; then to implementation of the new idea; and finally to confirmation of the decision to adopt the innovation.

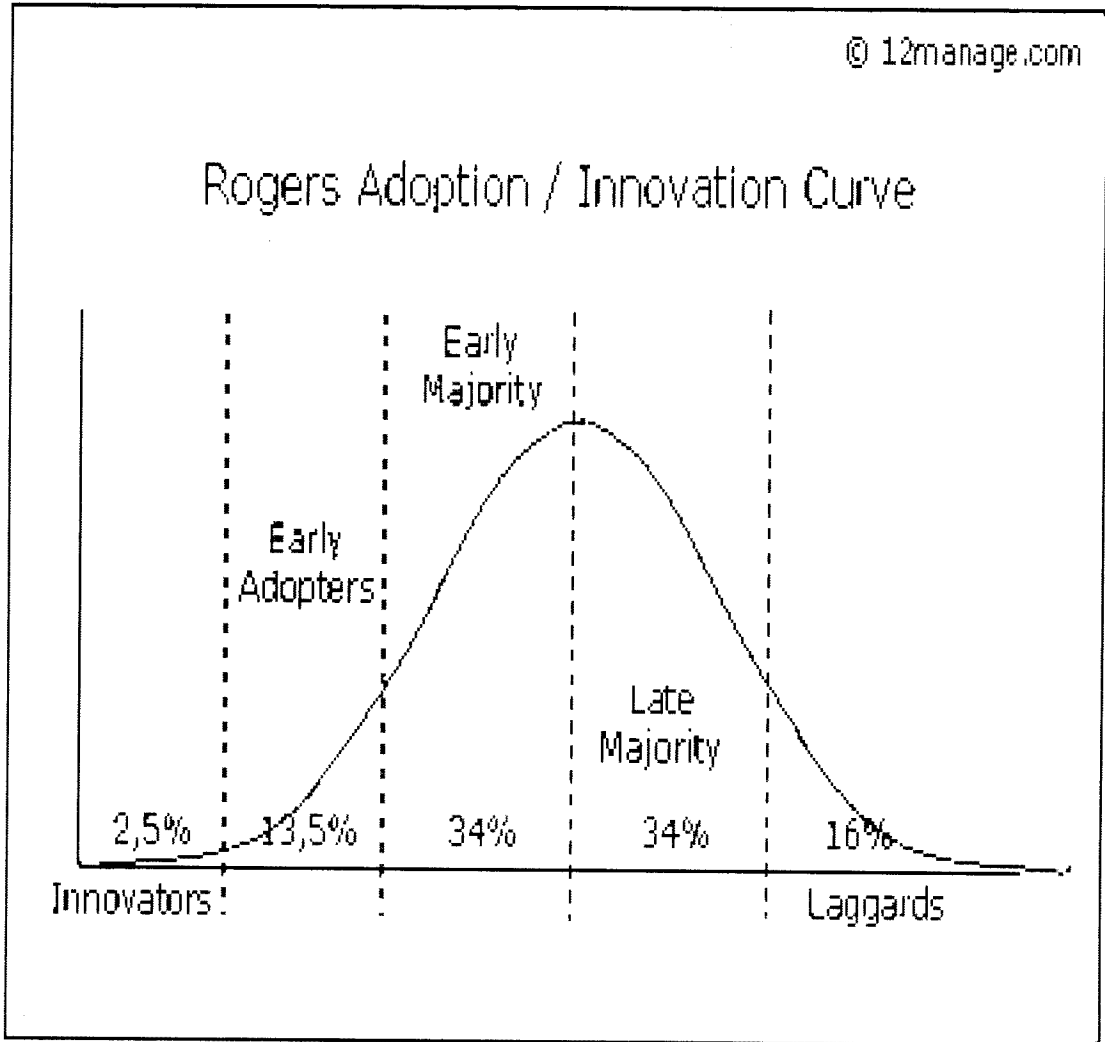
An individual seeks information at various stages in the innovation-decision process in order to decrease uncertainty about an innovation's expected consequences.

Rogers proposed a five stage model for the diffusion of innovation:

- (a) Knowledge- learning about the existence and function of the innovation;
- (b) Persuasion- becoming convinced of the value of the innovation;
- (c) Decision- committing to the adoption of the innovation;
- (d) Implementation- putting it to use;
- (e) Confirmation- the ultimate acceptance (or rejection) of the innovation;

Time is involved in diffusion in the innovativeness of an individual or other unit of adoption. According to Barnet (1953) for a successful innovation, the adopters' distributions follow a bell-shaped curve, the derivative of the S-shaped diffusion curve, over time and approach normality. Diffusion scholars divide this bell-shaped curve to characterize five categories of system member innovativeness, where innovativeness is defined as the degree to which an individual is relatively earlier in adopting new ideas than other members of a social system. These groups are: 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards as shown in the Innovation Adoption Curve below.

Figure 25: Roger's Adoption / Innovation Curve:



The personal characteristics and interaction of these groups illuminates the aforementioned domino effect:

3.3.4.1. *Innovators*: These are defined as brave and change pulling agents of a social system. They represent 2.5 percent of the individuals in a society to adopt an innovation. Venturesome ness is almost an obsession with innovators. This interest in new ideas leads them out of a local circle of peer networks and into more cosmopolitan social relationships. They are enterprising, desire for rash, daring, have control of substantial financial resources to absorb possible loss from unprofitable innovations, have the ability to understand and apply complex technical knowledge, and cope with a high degree of uncertainty about an innovation at the time of adoption. While the other members of a

social system may not always respect an innovator, the innovator plays an important role in the diffusion process.

3.3.4.2. *Early adopters*: These are the next 13.5 percent of the individuals in a social system to adopt an innovation. Early adopters are a more integrated part of a social system than are innovators. Whereas innovators are cosmopolites, early adopters are localites. These use the data provided by the innovators' implementation and confirmation of the innovation to make their own adoption decisions. This adopter category, more than any other, has the greatest degree of opinion leadership in most social systems. These observe that the innovation has been effective for the innovators, and then they will be encouraged to adopt. Potential adopters look to early adopters for advice and information about an innovation. Early adopters are the embodiment of the successful use of new ideas, and they know that to continue to earn the esteem of colleagues and to maintain a central position as an opinion leader they must make judicious innovation decisions. Much of the social system does not have the inclination or capability to remain abreast of the most recent information about innovations, so they instead trust the decisions made by opinion leaders. Additionally, much of the social system merely wants to stay in step with the rest. Since opinion leader adoption is a good indicator that an innovation is going to be adopted by many others, these conformity-loving members are encouraged to adopt.

3.3.4.3. *Early majority*: These are pragmatists, comfortable with moderate environmental ideas, but will not act without solid proof of benefits. They are influenced by other pragmatists and by mainstream fashions and fads. They have no time for risks, but will accept simple, proven, better ways of doing what they already do. The category contains 34 percent of individuals in a social system to adopt innovations. These adopt new ideas just before the average member of a system. They interact frequently with their peers, but seldom hold positions of opinion leadership in a system. The early majority's unique position between the very early and the relatively late to adopt makes them an important link in the diffusion process.

3.3.4.4. *Late majority*: These are environmentally conservative pragmatists, uncomfortable with new ideas.

They hate risks but do not want to be left behind; hence they will follow the mainstream and established standards. They are often influenced by skeptics. These comprise of 34 percent of the individuals in a social system to adopt an innovation. The late majority adopt new ideas just after the average member of a system. Like the early majority, the late majority make up one-third of the members of a social system. Adoption may be the result of increasing network pressures from peers. Innovations are approached with a skeptical and cautious attitude for fear of risks. The late majority do not adopt until others in their social system have done so. The weight of social system norms must definitely favour an innovation before the late majority are convinced. The pressure of peers is necessary to motivate adoption.

3.3.4.5 Laggards: These are the last adopters and usually they are either very traditional or may be isolates in their social system. If they are traditional, they are suspicious of innovations and often interact with others who also have traditional values. If they are isolates, their lack of social interaction decreases their awareness of an innovation's demonstrated benefits (Rogers 1962). The category comprises of 16 percent of the individuals in a social system to adopt innovations. They possess almost no opinion leadership. Laggards are the most local in their outlook of all adopter categories; many are near isolates in the social networks of their system.

3.3.5. Social system

Van Den Ban and Hawkins (1988), state that the spread of information is facilitated by several factors at play but the major diffusion agents are the members of social groups. This means that when some members of the social group have adopted an innovation, others will often follow. Farmers are keen observers of how other farmers work. They spend much time discussing their farm experiences with their friends and neighbours. Farmers learn more in this way because they know who gets good yields in the village and who experiments with new methods. Some of the progressive farmers are willing to share their experiences with other farmers. In this way the successful farmers become opinion leaders in the village because they help other farmers solve their problems.

Therefore knowing the concept of the diffusion process is significant because the extension worker will be able to identify and make use of the social groups in the area for dissemination of the agricultural messages. For fast reach and persuasion of farmers and

dissemination of agricultural messages, the extension worker has to identify the progressive farmers and works to convince them. Once the progressive farmers are persuaded and have adopted the innovations, it will be easy for them to convince the other farmers in the community. The concept is applied in the research for a purpose of determining how agricultural information diffuses through the social system to influence change in farmers' behaviour

3.4. Group communication (discussion) theory:

Nanavatty (1960) defines Group Discussion as an educational aid that allows members to engage in a process of self-expression and development through active participation in decision making over issues that concern them. It helps members to socialize individual participants develop their reasoning faculty. It is an essential aid for sharing knowledge, information, opinions and ideas to facilitate dissemination of messages about innovations. Group discussion as an educational aid demonstrates a frame of democratic society where there should be justice, social, economic and political liberty of thought expression for equality of status.

Group discussion acts as a social education aid in that as farmers meet and share ideas, there are those other farmers who do not have an idea about a particular practice, but because of the interaction and exchange of views and ideas, they also learn and apply the practice on their fields. It is said to be social education because human welfare is influenced by the standards of the society or groups to provide self-satisfaction. Adjustments in patterns of farming practices are influenced by the code of farming behaviour of the group or community. In other words, groups create social environment for behavioural change of individual members of the group to act in accordance with the group standards or norms.

Allowing farmers to work in groups provides the process of establishment of confidence, trust and encouragement among themselves and consolidation of agricultural messages for adoption of innovations that have been tried by others and have been successful.

This is achieved through the process of sharing of experiences with one another. Sharing involves the process of communication and willingness to give and take information.

Group discussions and sharing of ideas, influences the other person's ideas through the process of realization of the wrongs and thereby take corrective measures for solution to the farming problems.

It is established in agricultural extension that group discussion is a vital tool for communication of extension messages, because it is believed that social intelligence involves the process of sharing experiences and blending of learning of different people to speed the process of diffusion and adoption of innovations. Different individuals bring diverse ingredients of knowledge and ideas to group discussion on farming experiences.

It is argued that group discussion stimulates three kinds of simultaneous learning processes and these are;

(i) *Primary learning*; this involves the process of learning specific matters of information and acquisition of knowledge and skills from the extension worker or other farmers with sound agricultural knowledge.

(ii) *Associate learning*; this involves the process of learning through suggestive ideas as farmers discuss and analyze the allied subject or topic of concern that affects them. It involves encouraging farmers to extend their interest to seek further information and knowledge with a view to widen their horizon on modern farming practices.

(iii) *Attendant learning*; This involves learning through the development of insight in the various ingredients of a given situation and changing one's opinion through realization as farmers meet. The attendant learning process is stimulated through participation in farming activities woven around common interest. The individual farmer who participates in the discussion is encouraged to understand the implication of attitudes, dispositions and experiences of one's self and others in the activities of the group, thereby providing opportunities of self realization and re-direction of one's personality.

The educative process in group-discussion is generated in encouraging farmers having common interest to come together to share their ideas, to articulate their expressions and to search for practical solutions.

Group discussion usually involves examining the situation, taking stock of various interests, securing of further information and endeavouring to arrive at some solution that satisfies the interests and needs of all concerned farmers. It is in-group discussion that farmers appraise their ideas, absorb ideas of other farmers and adjust their own where necessary. It also allows acceptance of responsibility and implementation of joint decisions arrived at in the group.

The general overview of group discussion as an educational aid is that it offers opportunities of;

- (i) Meeting around a subject of common interest,
- (ii) Sharing of ideas and feelings on the subject,
- (iii) Gathering information,
- (iv) Clarifying misunderstanding,
- (v) Bringing out hidden or implied meaning on the subject,
- (vi) Giving new insight and new experiences,
- (vii) Member participation in decision making,
- (viii) Allows member commitment and implementation of group activities, and
- (ix) It facilitates easy mobilization and organization of farmers, and saves time for information dissemination to a large group of farmers at the same time as opposed to individual visit.

Agricultural extension service Unity of the Ministry of Agriculture and Cooperatives, utilizes more of group discussion for dissemination of its information because it has advantages of ease mobilization and organization of farmers, allows interactive means of communication, equality and freedom of expression, it encourages participatory involvement and speeds the process of diffusion and adoption of innovations. It is for this reason that there is need to incorporate Focus Group Discussion (FGD) in the evaluation of communication strategies in research.

4.0 LITERATURE REVIEW

The problem of rural poverty, food insecurity and underdevelopment in Zambia has reached a critical stage. The most affected are the rural people whose basis of livelihood is rooted in agricultural activities. The problem has been longstanding since the colonial era. Kalapula (1984), states that the problem of poverty and underdevelopment of rural places in Zambia has been perpetuated by the colonial government. These problems were created by virtue of non diversification of sustainable economic industries or base that could support the livelihood of the majority of the population on sustainable standards.

Sheffield (1956), states that the error the colonial regime made was to have centered the Zambian economy on mining industries and forgot the development of agriculture. The growth of agriculture at rural level has been hampered by the introduction of the mining industry and the pressure of tax charges slapped on rural Africans. The tax charges compelled the rural people to abandon agricultural development in rural places for urban places in search of employment opportunities in the mines to afford them the tax pay.

Bates (1976), states that the consequences of rural/urban drift was devastating such that there was biased development distribution, a situation that has continued to this day. The mining industries strengthened the development of urban places while ignoring the socio-economic development of rural places. The situation plunged rural places into absolute poverty.

During British South African Company (BSCo) administration, there was no policy formulated for development of African agriculture. Its main focus was the development of the mining industry. The Department of Agriculture in Zambia (the then Northern Rhodesia) was set up by the British Colonial government in 1925 and its first head quarter was Mazabuka. Other agricultural centres were Chipata (Fort Jameson) and Mbala (Abercorn).

However, official interest in native agriculture was not started until 1930 as result of the pressure that mounted for need of food supply due to increased population on the Copper

Belt Province because of the mining industry. Even though the interest for agriculture was registered in 1930s, little was done to improve the native agriculture, but had restricted most of the department's action to European farming. The European farming was meant for production of cash crops for export to Europe. It is stated that the deviation of the colonial government to focus attention to rural agriculture programmes was as a result of the influence of;

(i) The directives by the Secretary of State of Colonies to devise programmes for improvement of native subsistence agriculture as way to improve rural areas and increase the scope of tax collection.

(ii) The pressure that was built up in urban places due to overcrowding, food shortages, and unemployment. Because of those factors, the colonial government initiated an "Agricultural development policy statement" in 1945 which aimed at improving the agricultural indigenous farming system to service the Africans.

Kay (1969), states that the "Agriculture Policy Statement" of 1945 was implemented in 1946 and this marked the birth of agricultural extension services. The colonial government employed African Agricultural Kapasus to affect the "Agricultural statement policy" and ensure that every rural citizen got engaged in farming of some kind. The basic objective was to increase tax revenue collection for the administration of the colonial government. The african agricultural Kapasus were trained at the missionary trades' schools to provide agricultural advice to farmers on farming practices. The communication strategy engaged as an agricultural approach was the "*Military type*" in which case the subsistence farmers received instructions on individual basis. The system worked successfully because farmers worked under close supervision and fearing being punished by the colonial government. The type of punishment that was instituted was the "*corporal type*." Farmers that were subjected to that kind of punishment were sorrowful. However, work performed in fear did not motivate them to develop a vision for continuity (Kay (1969)).

The drift of people from rural to urban areas to work in the mines was the urbanization of Zambia and the deviation of the people's perception from focusing attention on agriculture to mining as an economic base for livelihood.

After independence, the Zambian people and its government despised agriculture. Agriculture was considered the work of the poor rural, illiterate and retired people. School leavers who had taken jobs in agricultural sector by then were considered the least in society. The government together with its people did not believe that copper was a wasting asset whose deposits could get exhausted. This was perhaps due to the attitude the colonial masters indoctrinated into Africans not to appreciate farming (Sutton-1977). The negative attitude developed by Zambians towards agriculture coupled with the withdrawal of the white farmers after independence, resulted in the collapse of the agricultural industry, with its subsequent problems of increased poverty and food insecurity.

The resuscitation of agriculture was influenced by the pressures of economic collapse as result of the drop in copper prices on the international market in the middle 1970's. The situation was coupled with mass redundancies in the mining sector, food insecurity, increased poverty and increased crime in the nation. These problems mounted pressure on the Zambian government and the then president Dr Kaunda was compelled to revamp agricultural sector on a very serious programme as an alternative economic recovery besides copper industry.

The Ministry of Agriculture and Rural development at that time was established with its department of Agriculture Extension service being responsible for agricultural information dissemination and assisting farmers in improved farming practices. The primary objectives of the Ministry were:

- (i) Ensure food security in the nation;
- (ii) Improve standards of living of the people through increased food production and income levels;
- (iii) Source of employment creation for the rural people;
- (iv) Develop rural places by creation of agricultural processing industries and provision of other social facilities so as to make rural places habitable.

Meller (1966) states that the problem of agricultural development is not merely the meeting of food requirement to combat food crises, but also that of creation of industries and jobs for increasing rural income, and improve the standard of living of the rural people.

Traditional agriculture based on maximization of domestic food security was necessary within the context of the traditional societies, but it is inappropriate for human survival in modern society. Because of the complexity of modern society, the government must aim at creating an agricultural environment that enables individuals to maximize production and income earnings. It is not just a matter of policy formulation on the part of the government and hard work on the part of the farmers, but policy implementation and also the farmers' participation and adoption of the improved practices of modern farming.

Vanzetti (1972), states that the objectives of agriculture could not be achieved without the existence of the Extension Service Department. His claim was that the extension service is the mouth piece of the Ministry of Agriculture to interpret and disseminate the scientific research information into simple language for farmers' utilization and vice-versa.

Kayoya (2005), states that the Zambian Agricultural sector is performing below par. This is undesirable since more than 80 percent of the Zambian population depends directly on agriculture. The extension service holds key to the attainment of full potential of the agricultural sector.

The overall goal of the Ministry of Agriculture and Co-operatives is to provide efficient and effective agricultural extension service system that contributes to improved productivity, increased farmers incomes and wealth creation in the agricultural sector by facilitating the utilization of available information, knowledge and technology by farmer communities through its communicative strategic measures. As a consequence, significantly contribute to the overall national goal of poverty reduction.

The public extension establishment provides a direct interface with farmer communities through the field extension staff. The staffs are found in a network of over 1500 agricultural camps throughout the country. Their main target group is resource poor small-scale farmers who account for over 80 percent of the farming population. However, the extension system has time and again received criticism for not meeting farmers' demands.

This criticism to a large extent has largely attributed to the old extension approaches which have weak communication linkages between the extension workers and farmers- (Ministry of Agriculture and Cooperatives Annual-Report-2006).

4.1 Trends of Agricultural Extension in Zambia

Meller (1966) states that the current trend in agricultural extension development has received criticisms from the farming communities because of the way extension education is designed. Agricultural extension education has over a long time been perceived and conceptualized as a pedagogical educational approach that is centred on transfer of information, knowledge, skills and practices from the extension workers to farmers as passive learners. The perception led to design of communication strategies that were based on pedagogical information dissemination. The approach had the core assumption that farmers have no or little agricultural knowledge and as such need to be taught and given the knowledge by the extension workers who possess it. The perception over-ruled the practical knowledge and experience of the farmers. The scientists ignored the fact that change of attitude and behaviour of farmers is basically rooted in the concept of “*voluntary participation*” (VP) and not necessarily the frequency of teaching offered or force applied.

Wilfred (1970), states that agricultural extension sits at the centre of agricultural information network. It is the component of a system that focuses on information dissemination. As such, it is the information representative to farmers and farmers’ representative and advocate to the system (ministry and the government). Extension is not a passive conduit, rather it is an active and directed system that seeks out and organizes information and the channels or communication strategies through which the information can be transmitted.

Therefore the function of extension education can no longer be conceptualized as the transfer of information but be seen as “facilitating the identification, mobilization and integration of different relevant types of knowledge from the farmers, extension workers, the research and other agencies so that new, sustainable practices may emerge locally.

The facilitation and improvement of social learning process should be the focus of Extensionists and not transfer.

The aspect of “*Net-Working (NW)*” is put forward as the major extension communication practice that is bound to play an increasing important role in rural extension development and the general public would appreciate the services of agricultural extension. The farmers themselves become the educational key players at every level of agricultural extension education. Therefore agricultural extension education must be viewed as “potential networking organ through its communication methodologies and techniques that involve social learning process and farmer participation for development.”

Engel (1995), states that for extension services to function effectively, the design of extension messages and communication techniques or strategies must not be “*source syndrome*” based, but be integrative and embraces other sources of knowledge and participation of the local members in the design. The “source syndrome,” is the systematic over-rating of technical or scientific and research based knowledge, compared to the other types of knowledge that are relevant to agricultural production and development (no regard for farmers’ knowledge).

Most extension programmes reflect “source syndrome” and still echo the transfer of technology (T.O.T) in both message and communication strategy design. Communication strategies that are technically designed (TOT) without farmer participation currently prove to be unsuccessful and biased to serve the interest of the extension workers thus continued criticism from the farming communities regarding the performance of agricultural extension services.

To overcome the “source syndrome” effect, he (Engel) proposes that the function of extension services must no longer be conceptualized as aiming at transfer of knowledge, technology, and practices. It is to be seen as facilitating the identification, retrieval and integration of community elements so that new, locally embedded and sustainable practices may emerge.

This implies mobilization of variety of social actors of relevant knowledge; experiences, information and help the farming communities focus at problems in specific situations. The key aspect of effective extension service operation must be aimed at the identification of the "*core communication strategies*" that receive the blessings of the local people and break the cultural values and attitudes. The hindrance to agricultural extension service lies on how to effectively communicate with the farming communities and cage them to capture the concept of independence, self reliance and personal involvement into solving their own problems as the strength to self development. This means that extension workers besides being in possession of technical knowledge must also exposes social knowledge so that they develop skills of communication competency and identification of community needs and talents of individuals that can be utilized for community benefits.

Roling (1990), states that extension communication is considered as the agricultural development leverage instrument to induce positive change in farmers' attitudes and behaviour for agricultural development. Extension derives its leverage from the communication strategies it develops and how these strategies influence the content of communication (messages) to create meaning and cause change in farmers' behaviour. Vanzetti (1972) identified main constraints to agricultural development that prevent farmers from adopting improved agricultural practices as;

4.1.1. Technical and social skills:

He states that this factor is complex because it involves three major concerns. The concern for the Agricultural extension workers' possession of full technical knowledge about agriculture, the possession of communication skills as a social factor and skills to identify and design appropriate communication strategies to facilitate effective communication are of great significance to the contribution of agricultural development. However, the aspect of technical knowledge could not be emphasized because all agricultural extension workers are well acquitted with the agricultural knowledge.

Nevertheless, most extension workers lack social skills especially in the field of communication. There has been neglect to train extension workers in communication skills and this has rendered the extension services being accused of inefficiency.

The application of ineffective communication strategies and inaccuracy interpretation of technical knowledge due to lack of communication skills has rendered agricultural messages not being challenging, persuasive, and convincing to motivate farmers adopt modern farming practices. Therefore if agricultural extension services were to be improved, there must be focus to intensify the development of communication skills and practices on design of communication strategies.

4.1.2. Economic factors:

This constraint is concerned with the aspect of financial support which requires the action of the government through its policies for support of the agricultural sector and therefore not the concern of this research.

4.1.3. Personal constraint and cultural values:

Apart from the constraints to the improvement of farming caused by economic and technical considerations, there are the personal and cultural constraints within the individual himself. Because of these personal constraints, individual farmers must be persuaded and made to understand the need to adopt modern innovations. This is the most critical concern of agricultural extension services to work toward persuading and breaking the cultural values, and change the attitude and behavior of the farmers to adopt the practices of agricultural development. This requires the use of highly communicative skills in the presentation of messages and the development of effective communication strategies that break through the cultural barriers.

4.2 Communication Strategies at the Centre of Change of Attitude and Behaviour of Farmers for Adoption of Innovations

Patch (1966), states that the concept of adoption of innovations works on the principles of freedom of choice for acceptance or rejection on the side of an individual. Because of the principles of acceptance and rejection at work in human beings, messages meant to influence changes in attitudes and behavior of farmers for acceptance of innovations

must be carefully designed and channeled through appropriate communication strategies that weaken the strengths of the cultural barriers of beliefs.

The message must be communicated through an effective channel or media to cause the message have great impact upon the farmer and influence him to develop trust and confidence for acceptance of an innovation. Human behaviour in society is often dominated by the aspirations to earn favourable image in the eyes of others, and values of the community. Therefore, content of communication for change of attitude must be directed towards the achievement of the farmers' aspirations. In order for the message to gain strength and work towards change, it must be channeled through communication strategy or network that involves the active participation of the farmers in taking critical analysis to diagnose the message with conviction. It is the degree of conviction toward anticipated rewards about the innovation that drives the farmer to adopt the practice. This is a very challenging task which is dependent on the message effect upon the individual. The phrase "what one says does not matter, but how it is said and through what channel, and with what effect?" is what matters in agricultural information dissemination and adoption.

Hunter (1969), states that the change in improvement of farming practices among small-scale farmers who hardly understand the need and significance of change in farming practices from their traditional to the modern practices, is a difficult task. It is difficult because the communicator has to design his message to be aimed at causing transformation of the farmers' thinking holistically. This requires a thorough study of the farmers in the community with regard to identification of barriers at play, including local communication methods (communication strategies) in use.

Many sectors (ministry of agriculture inclusive) have applied several extension methods and approaches of communication for change of farmers' attitudes, but unfortunately things have not worked. It is not a matter of application of many extension approaches that matter, but the degree of integration of the local knowledge, communication competency of the extension workers and extent to which the extension communication methods and approaches are utilized to effect change. It is a known fact that some people

are controlled by the community through social groupings, and in such situations the messages designed must aim at bringing change to the entire social group through the use of the accepted communication methods the local people use.

Jones (1967), states that the failure of effective information dissemination for change of farmers attitudes has been due to ineffectiveness of the extension workers to effectively communicate with farmers.

Farmers' knowledge of farming has either been communicated to them effectively or not. The creation of communication gap has affected farmers' decision making with regard to change in attitude for adoption of innovations. He (Jones) also emphasises that some ineffectiveness has been contributed by the rate of extension service coverage. In most developing countries Zambia included have poor extension coverage rate usually between 1500-2000 farmers per extension worker. The wider coverage rate has lowered performance of extension workers with regard to communication of information.

5.0 DATA ANALYSIS AND FINDINGS

5.1 INTRODUCTION

The aim of the research was to evaluate the agricultural extension communication strategies used in Solwezi District and determine their applicability, relevance, effectiveness, and impact on the farming communities with regard to adoption of agricultural innovations that contribute to improved farming practices, improved productivity, increased incomes and wealth creation in the overall national goal of poverty reduction.

5.2 CATEGORY OF DATA ANALYSIS AND FINDINGS

The findings have been presented in three (3) parts, namely;

5.2.1 PART A: FINDINGS FROM AGRICULTURAL EXTENSION OFFICERS

Findings from questionnaires administered to the agricultural officers are split into three (3) parts as follows;

- (i) Camp extension workers,
- (ii) Block extension officers and
- (iii) Extension methodologist).

These were aimed at obtaining views and concerns regarding development and application of communication strategies, formulation and dissemination of agricultural messages, communication media or channels in use, the type of communication extension approach in use, degree of staff competency in communication skills, communication constraints and other related issues. The aim was to determine the effectiveness and impact of communication strategies on the farming communities.

5.2.2 PART B: FINDINGS FROM INSTITUTIONAL FARMS

Findings from questionnaires directed to institutional farms such as schools, churches, cooperatives and women organizations were aimed at obtaining views regarding sources of agricultural information, service provision from the extension services, extension communication strategies used by extension workers for information dissemination and

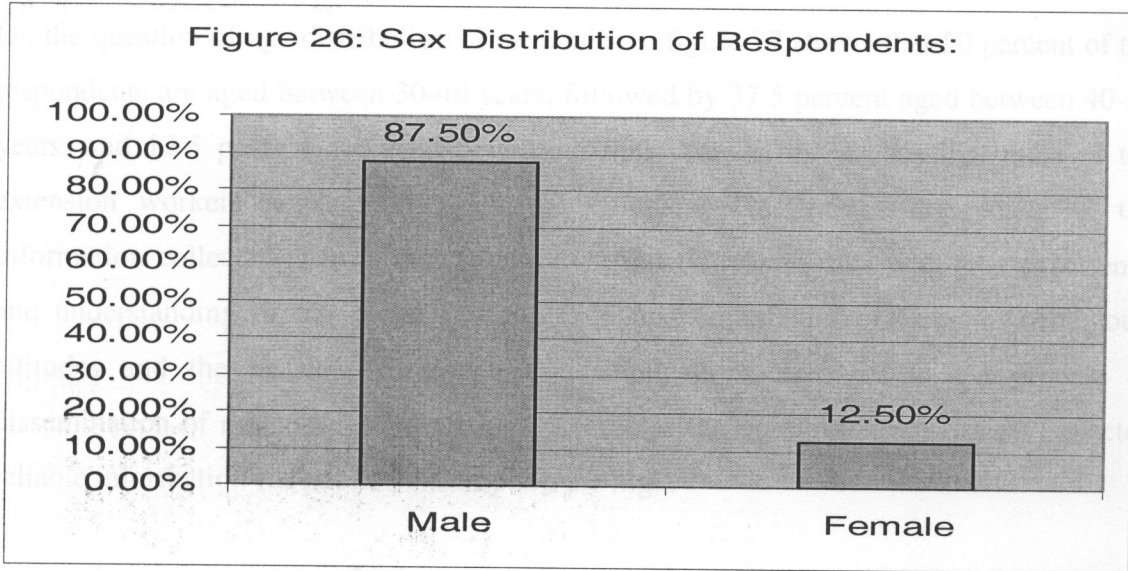
their effectiveness with regard to persuasion and adoption of innovations for development of institutional farms, the nature of manpower of institutional farms with regard to agricultural knowledge competency (expertise or qualifications) and experiences in development of institutional production units.

5.2.3 PART C: FINDINGS FROM SMALL SCALE FARMERS AT FOCUS GROUP DISCUSSIONS

Interview schedules were administered at focus group discussions to obtain qualitative information that revealed the perceptions, views, feelings, emotions and attitudes of the small scale farmers about the agricultural extension service provision, relevance of extension messages, communication strategies used by extension workers for information dissemination and their effectiveness to bring about change for innovation adoption, and farmers constraints with regard to extension information dissemination.

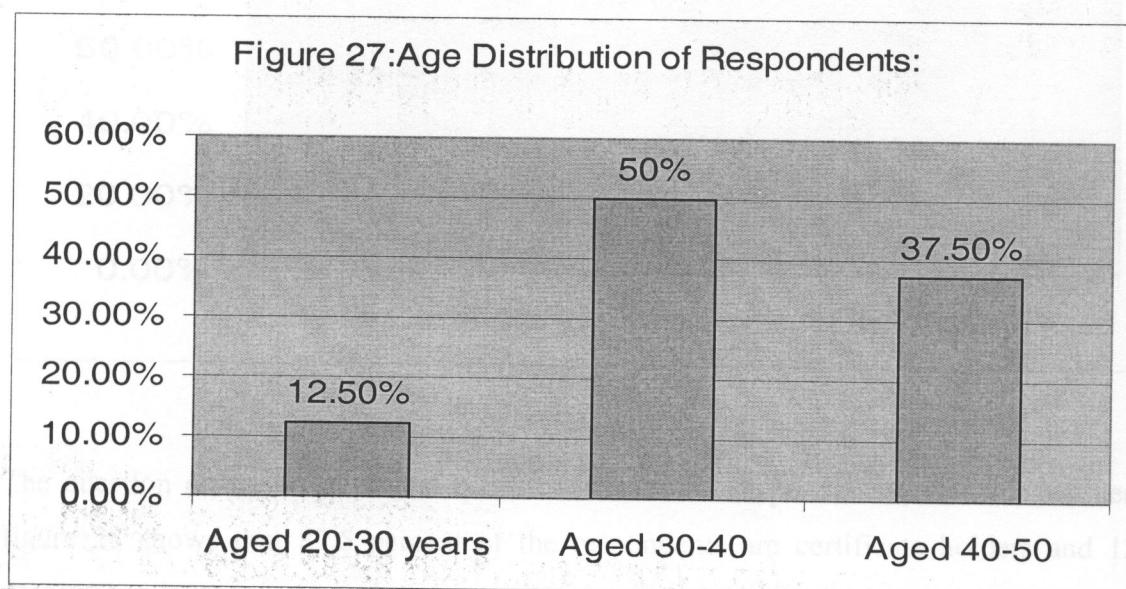
5.2.1 Findings from extension workers

The findings from the Extension workers are as follows;

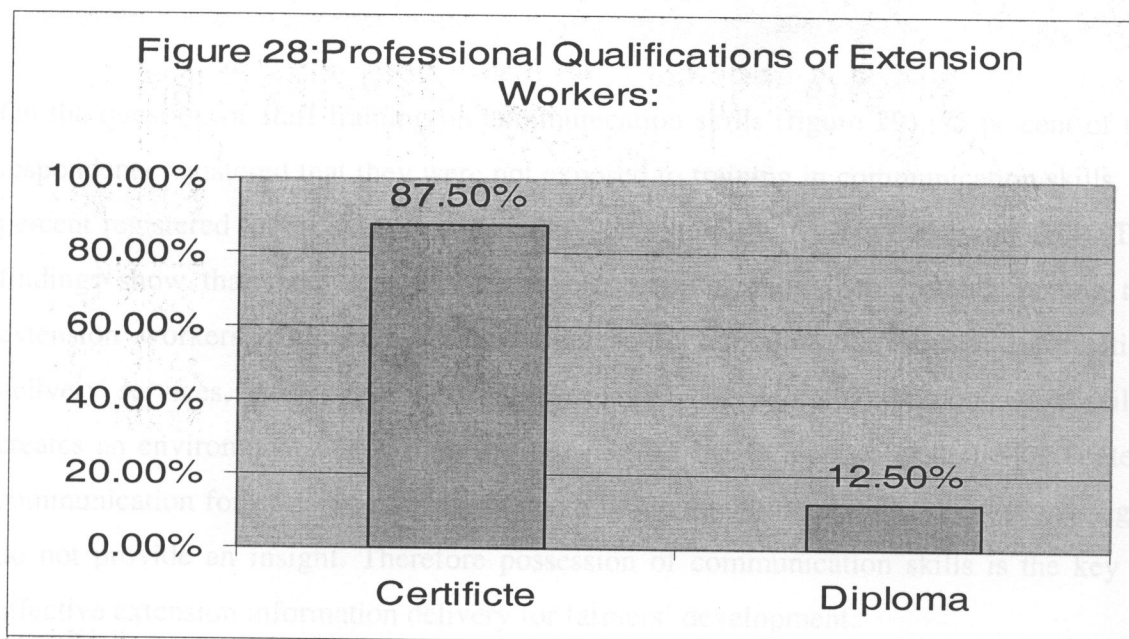


On the question of the sex distribution of respondents, 87.50 percent are males and 12.50 percent are females. This illustrates that there is gender imbalance on staffing at field level in the agricultural sector. It means that the key roles of women in decision making positions in agricultural sector have not been acknowledged. The situation is not conducive for encouraging female farmers to participate in agricultural development. It is a clear fact that women contribute a large proportion of farm labour and are also

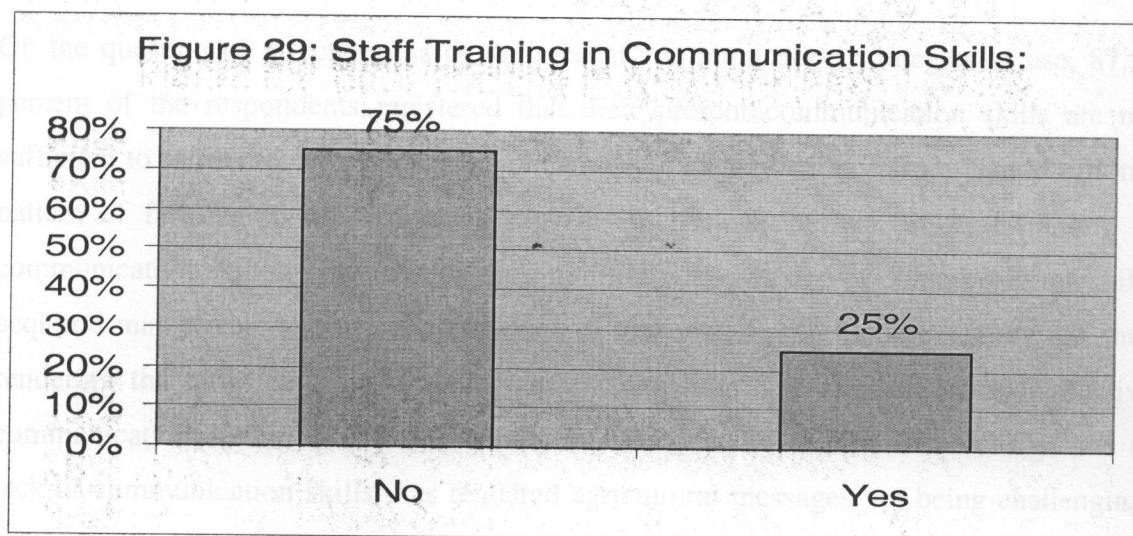
economically exploited or vulnerable. Therefore giving recognition to the importance of women in the agricultural sector by engaging female extension workers at field level would act as model to encourage female farmers participate in agricultural activities and improve their economic status.



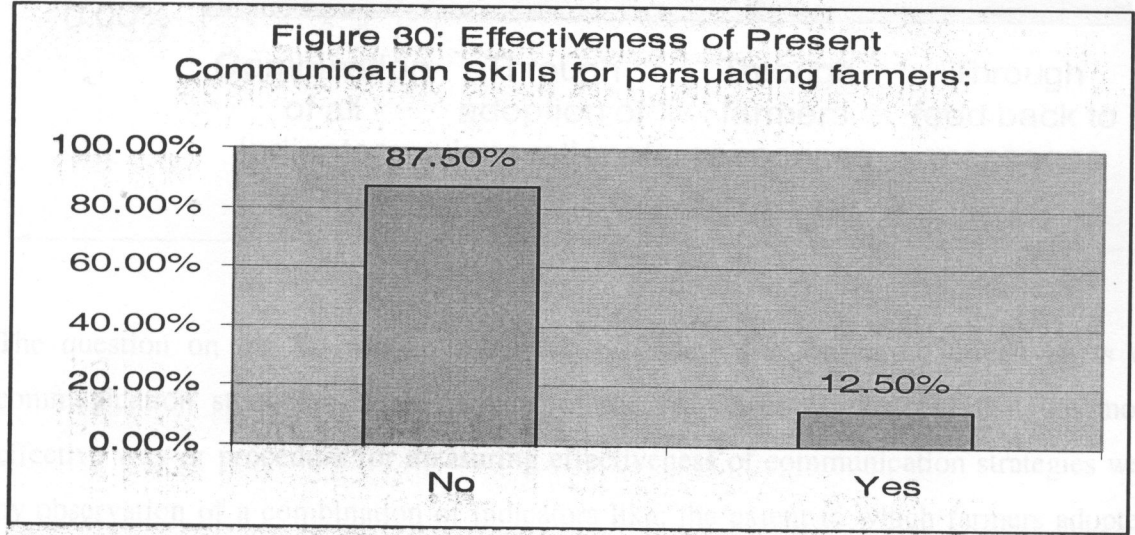
On the question of age distribution of respondents, figure 27 shows that 50 percent of the respondents are aged between 30-40 years, followed by 37.5 percent aged between 40-50 years, and 12.5 percent are aged between 20-30 years. This implies that most of the extension workers are aged between 30-50 years. This means that much of the information collected is from mature and experienced respondents with vast experience and understanding of the social and psychological complexity of farmers' behaviour, attitudes and the possible communication implications involved in the process of dissemination of agricultural innovations. Therefore the possibilities of having collected reliable information for public consumption are high.



The question on the Professional qualifications of the respondents (extension workers), figure 28 shows that 87.5 percent of the respondents are certificate holders and 12.5 percent are in possession of diplomas. However, knowledge is power and therefore to limit staff to possession of certificates only is retrogressive in the sector because it narrows their knowledge and potential to perform qualitatively. Education is a crucial type of investment for exploitation of modern technology and therefore should be given priority and considered as a productive investment for any growing sector. When extension workers are exposed to higher professional standards, their performance is likely to be of high quality service delivery to the community.

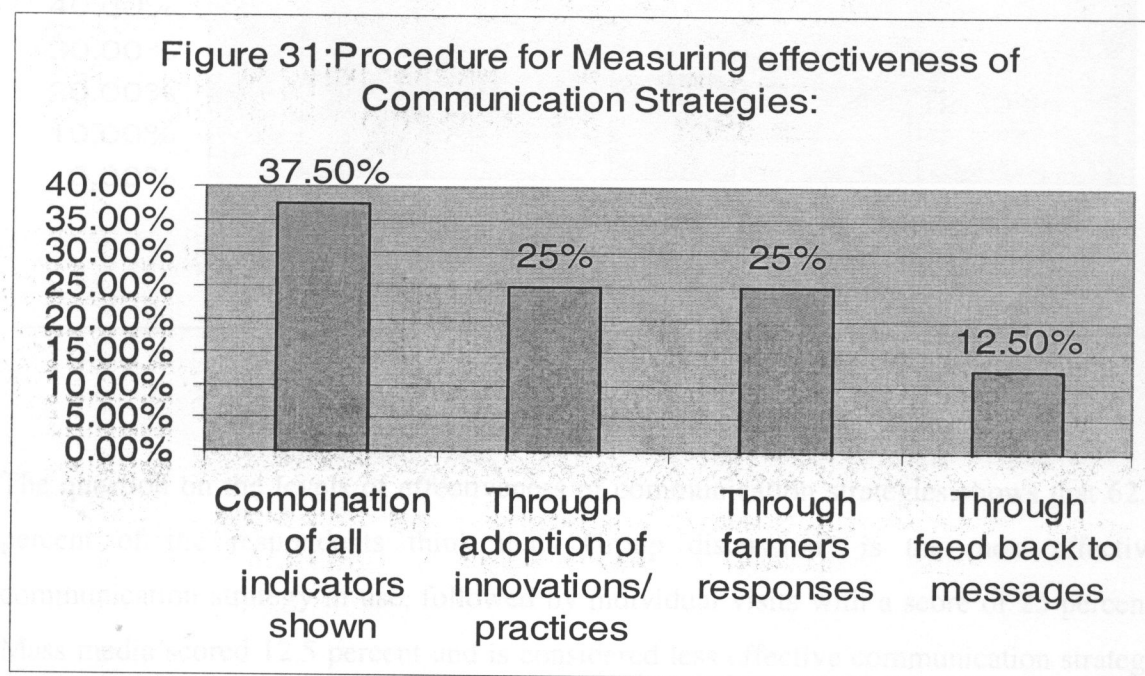


On the question of staff training on communication skills (figure 29), 75 percent of the respondents registered that they were not exposed to training in communication skills. 25 percent registered that they were exposed to some training in communication skills. The findings show that there are high levels of communication incompetence among the extension workers. This is a major hindrance to agricultural extension information delivery services. An extension worker, who is competent in communication skills, creates an environment which makes it possible for the farmers to examine the content communication for decision making. Farmers fail to adopt innovations because messages do not provide an insight. Therefore possession of communication skills is the key to effective extension information delivery for farmers' development.



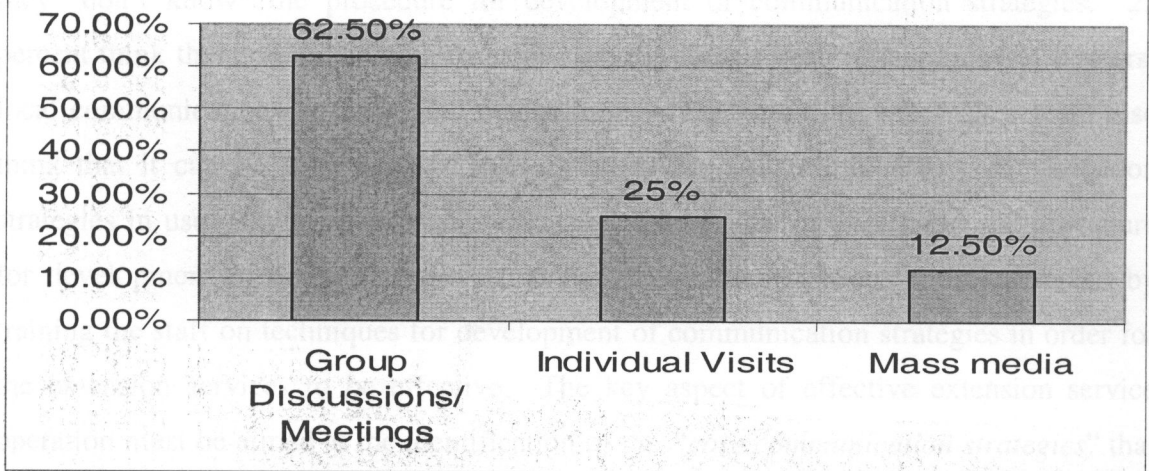
On the question of effectiveness of the present communication strategies in use, 87.50 percent of the respondents registered that their present communication skills are not sufficient to cause effective persuasion of farmers to change attitude from their traditional pattern of farming to modern practices. This is because of lack of staff training in communication skills to improve on their traditional knowledge of communication skills acquired many years ago at colleges which do not match with modern society and thus rendering the knowledge obsolete for current situation. The application of ineffective communication strategies and inaccuracy interpretation of technical knowledge due to lack of communication skills has rendered agricultural messages not being challenging, persuasive, and convincing to motivate farmers adopt modern farming practices. This is

clear evidence to justify the fact that despite great efforts applied by the agricultural extension service department, the degree of change of farmers' attitudes from traditional farming practices to modern technologies has been negligible. In other words there has been less impact of agricultural extension services on the farming communities (figure 30 above).



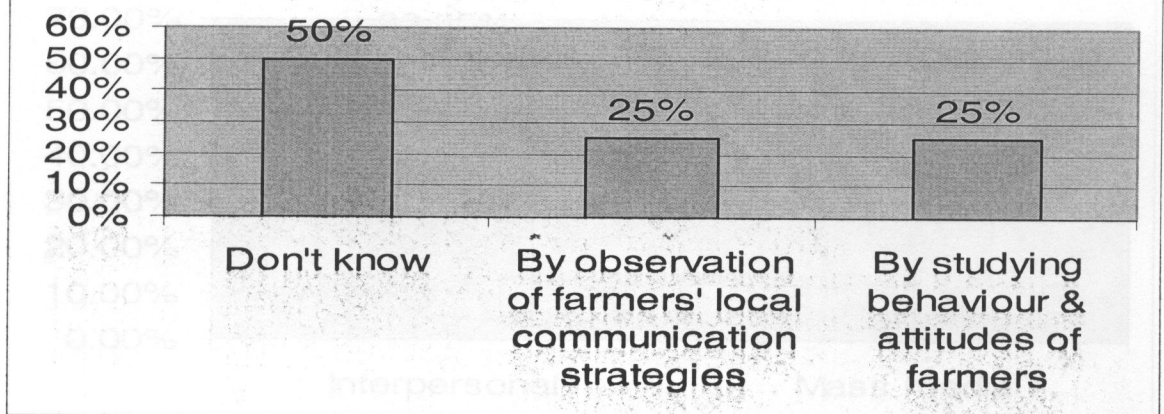
The question on the knowledge about the procedure for measuring effectiveness of communication strategies, 37.50 percent of the respondents registered that the most effective way or procedure for measuring effectiveness of communication strategies was by observation of a combination of indicators like; the extent to which farmers adopted the innovations and practices introduced, responses to messages and the degree of feed back to messages the farmers provide. The fact that 62.50 percent of the respondents registered part or single indicator responses implies that most extension workers do not know the procedures for measuring effectiveness of communication strategies. The situation shows the greatest weakness in the development and evaluation of communication strategies to determine their effectiveness and impact on the farming communities. The weakness is attributed to inadequate or lack of communication skills (figure 31).

Figure 32: Levels of Effectiveness of Communication Strategies:



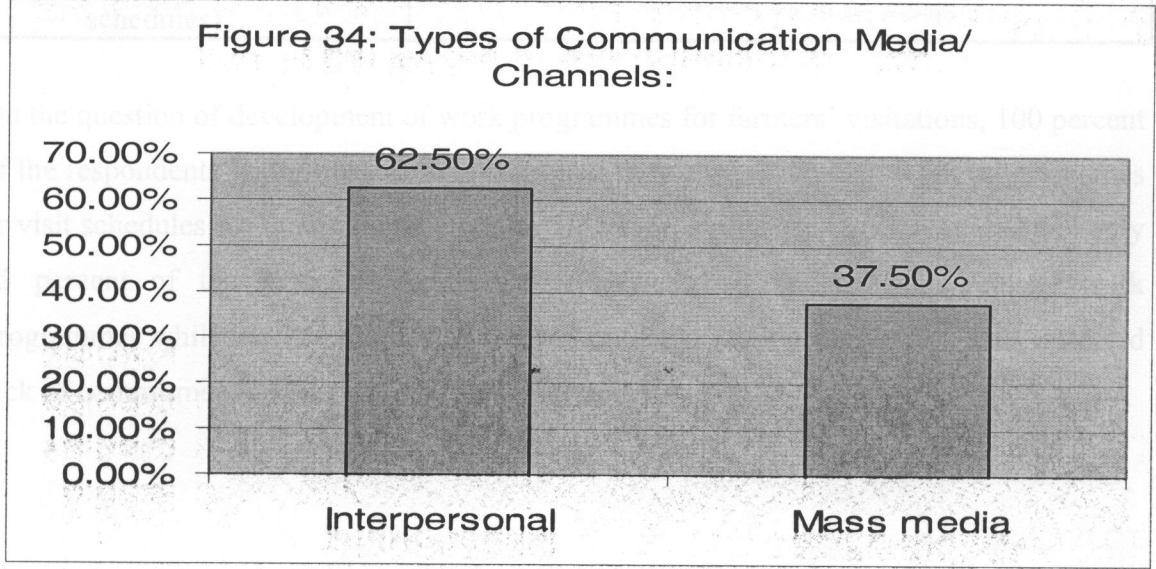
The question on the levels of effectiveness of communication strategies shows that 62.5 percent of the respondents think that “Group discussion” is the most effective communication strategy in use, followed by individual visits with a score of 25 percent. Mass media scored 12.5 percent and is considered less effective communication strategy as compared to the other two. Group discussion is considered the most effective because of its characteristics of wide coverage and that it assumes fast rate of diffusion of messages among farmers (figure 32).

Figure 33: Procedure for Development of Communication strategies:



On the question of knowledge about the procedures for development of communication strategies for extension services, shows that 50 percent of the respondents registered that they “don’t know” the procedure for development of communication strategies. 25 percent think that communication strategies are developed from observations of farmers’ local communication strategies and manipulating over them. The other 25 percent also think that it can be by studying farmers’ behaviour and reactions to communication strategies in use. However, facts show that the respondents did not know the procedure for development of communication strategies. The situation needs to be corrected by training the staff on techniques for development of communication strategies in order for the extension services to be effective. The key aspect of effective extension service operation must be aimed at the identification of the “*core communication strategies*” that receive the blessings of the local people and break the cultural values and attitudes.

The hindrance to agricultural extension service lies on how to develop effective communication strategies that capture the concept of independence, self reliance and personal involvement into solving farmers’ problems as the strength to self development. This means that extension workers besides being in possession of technical knowledge must also be exposed to communication and social skills to enable them identify potential factors upon which to base the development of communication strategies that benefit the farming communities (figure 33 above).



On the question of the types of communication media or channels used for dissemination of agricultural messages, shows that 62.5 percent of the respondents said that “Interpersonal or Face to face”, is the most common communication channel used followed by “Mass media”. It also shows that interpersonal communication is the most effective means for dissemination of agricultural extension messages because it involves physical interaction and easy for clarification of details which could have not been understood during the process of communication. It facilitates quick formation and change of farmers’ attitudes for adoption of innovations through peer groups in a social system. 37.5 percent said that mass media ranked second and was a necessary channel for fast spreading of messages especially at creation of awareness of innovations. (figure 34 above).

Therefore since the process of diffusion and adoption of innovations is essentially social in nature, driven by individuals talking to others and giving meaning to an innovation through the process of social construction, the interpersonal communication channel is the most appropriate for extension service delivery.

TABLE 10-Development of work programmes or farmers' visit schedules:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Work programmes are developed (visit schedules)	8	100.0	100.0	100.0

On the question of development of work programmes for farmers’ visitations, 100 percent of the respondents (extension workers) said that they always develop work programmes or visit schedules for their daily operations. However, a physical check revealed that only 25 percent of the extension workers interviewed had updated and revised work programmes while the 75 percent had old and outdated work programmes. This reflected lack of commitment and seriousness to work (table10).

Table 11- Frequency of communicating with farmers:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once/week	1	12.5	12.5	12.5
	Twice/week	5	62.5	62.5	75.0
	Thrice/week	1	12.5	12.5	87.5
	Four times/week	1	12.5	12.5	100.0
	Total	8	100.0	100.0	

On the question of frequency of communicating with farmers, shows that 62.5 percent of extension workers meet or interact with farmers in groups for information dissemination twice per week. The other three groups of extension workers registered that they meet farmers once per week, thrice per week, and four times per week, respectively. However, the frequency of interaction with farmers could not be judged to ascertain effective communication and persuasion of farmers' for change of attitudes.

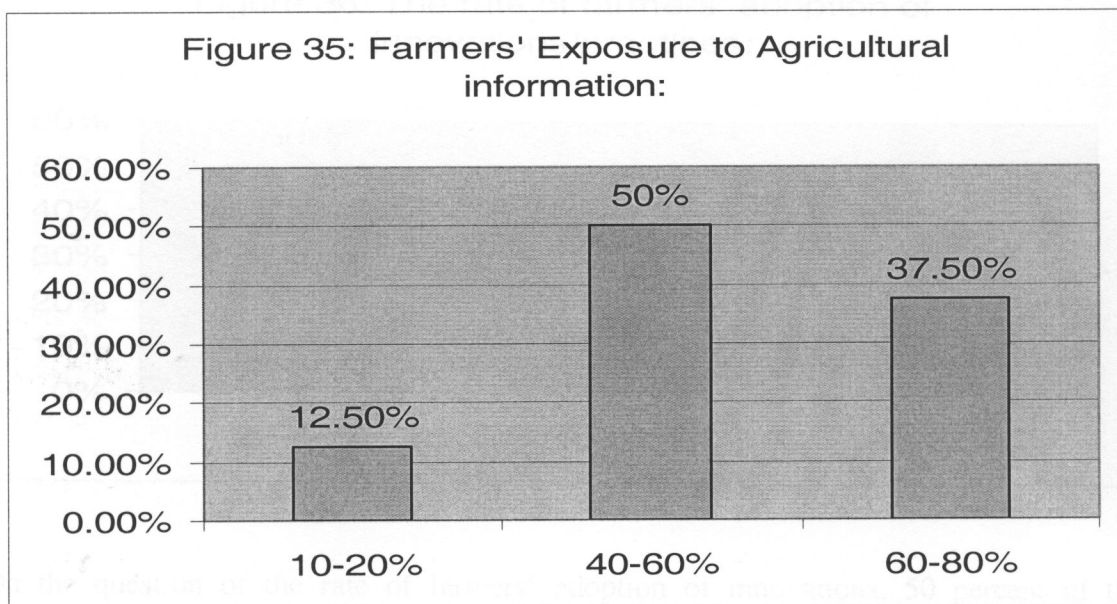
Table 12: showing the type of extension communication approaches:

Valid		Frequency	Percent	Valid percent	Cumulative percent
	Training & Visit	8	100	100	100
	Participatory Extension Approach	-----	----	-----	-----

On the question of the type of extension communication approach in use in solwezi district, 100 percent of the respondents said they use the Training and visit (T&V) Approach. The Training and Visit Approach of extension communication was adopted in 1981 by the National Extension Action Programme (NEAP). However, in 1990, the Approach (T&V) became unpopular because of several weaknesses. Among the main weaknesses, identified was the "top down" approach of operational system which bred the syndrome of dependence among extension workers and farmers. The essence of extension service provision is to promote the culture of self reliance and independence for self wealth creation with no or little assistance and be founded on basis of sustainability. In 1991 the NEAP addressed the shortcomings of the T&V approach and thereby adopted the Participatory Extension Approach (PEA). The Approach was considered appropriate for agricultural extension service provision because it promoted self reliance,

independence, farmer-to-farmer extension, utilization of local knowledge, community based learning process, planning and implementation of extension activities in an integrated manner (with farmer participation). In 2000, the agricultural extension services were oriented to the functions of the approach. Evidence shows that solwezi district was included.

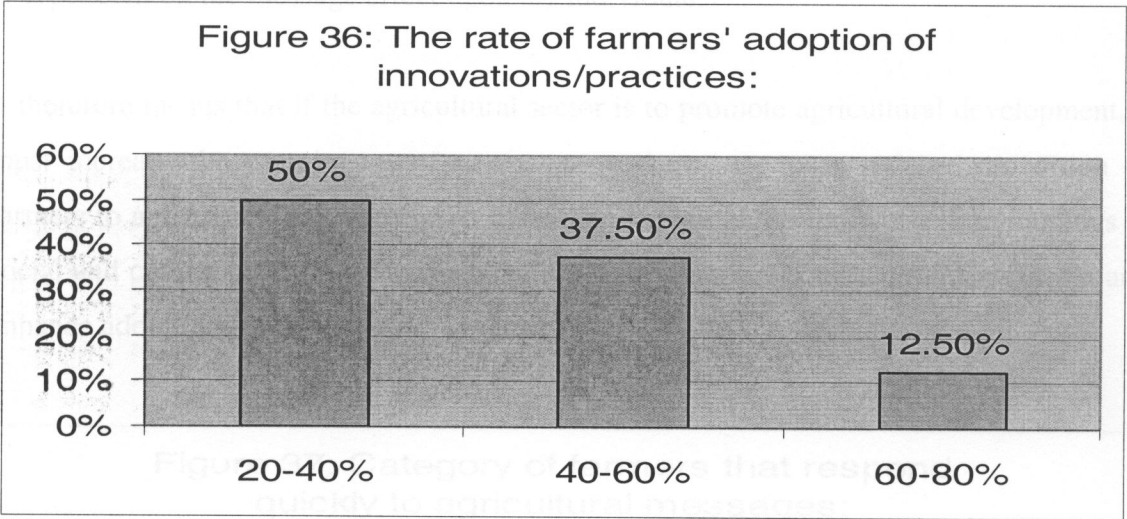
Therefore the continuity use of the Training and Visit approach would have not been necessary for solwezi district, given the earlier orientation courses for implementation of PEA. Otherwise the use of T&V has contributed significantly to the ineffectiveness of extension services in solwezi (table 12).



On the question of farmers' exposure to agricultural information, 50 percent of the respondents said that a range of 40-60 percent of the farmers is exposed to agriculture information. The situation shows that almost less or half of the farmers in solwezi district are exposed to agricultural information. The other proportionate of half or more farmers in the district are not exposed to agricultural information. There is possibility that farmers exposed to agricultural information have improved food security, economic levels and standard of living unlike those not exposed, though this could not be established conclusively with the available data. But the fact that they are exposed to agricultural information means that they carry out farming operations within the context of modern technology, thus improved productivity and increased income. This enables them to meet the economic and environmental challenges with less difficulty. As for those not exposed to information, means that their farm operations are still carried out within the traditional set

up thus unproductive, suffer food insecurity and poor economic levels which could not meet the challenges of the modern world.

The situation requires urgent attention to recruit more extension workers and utilize the local community radio station for dissemination of agricultural information for the purpose of exposing more farmers to agricultural knowledge aimed at improving the standard of living of the rural people.



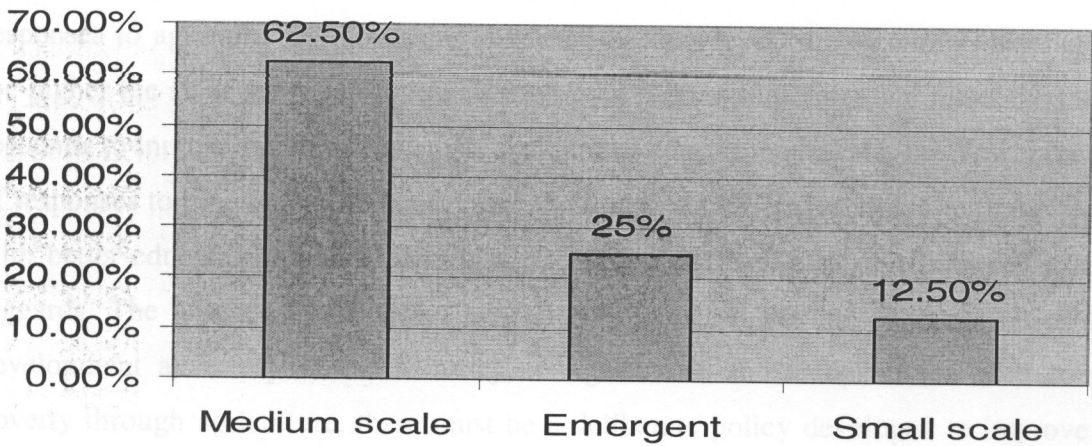
On the question of the rate of farmers' adoption of innovations, 50 percent of the respondents said that the rate of farmers' adoption to innovations ranges between 20-40 percent. This shows that the rate of farmers' adoption of innovations is very low. This could be attributed to the following factors;

(i) Low rate of farmers' exposure to agricultural information (figure 35). This means that when few farmers are exposed to agricultural information, there will be a much lower rate of farmers' adoption of innovations. The evidence shows that the rate of farmers' adoption of innovations is related to the extent and degree of farmers' exposure to information. The higher the rate of farmers' exposure to information, the higher could be the rate of innovation adoption and the higher the likelihood of increased production and thus standard of living of the people. The reverse is the case in situations where there is low rate of farmers' exposure to information.

(ii) Inadequate or lack of communication skills by extension workers. The fact that most extension workers are not exposed to regular trainings in communication skills (figure 29 above), means that there are high levels of communication incompetence among the extension workers to effectively deliver extension messages that influence change of attitude and behavior of farmers to make positive decisions for adoption of innovations. The skills of communication empowers the extension workers develop messages of conviction with regard to anticipated rewards about the innovations that drive farmers to adopt the practice. This means that adoption to messages is a very challenging task which is dependent on the message effect upon the individual.

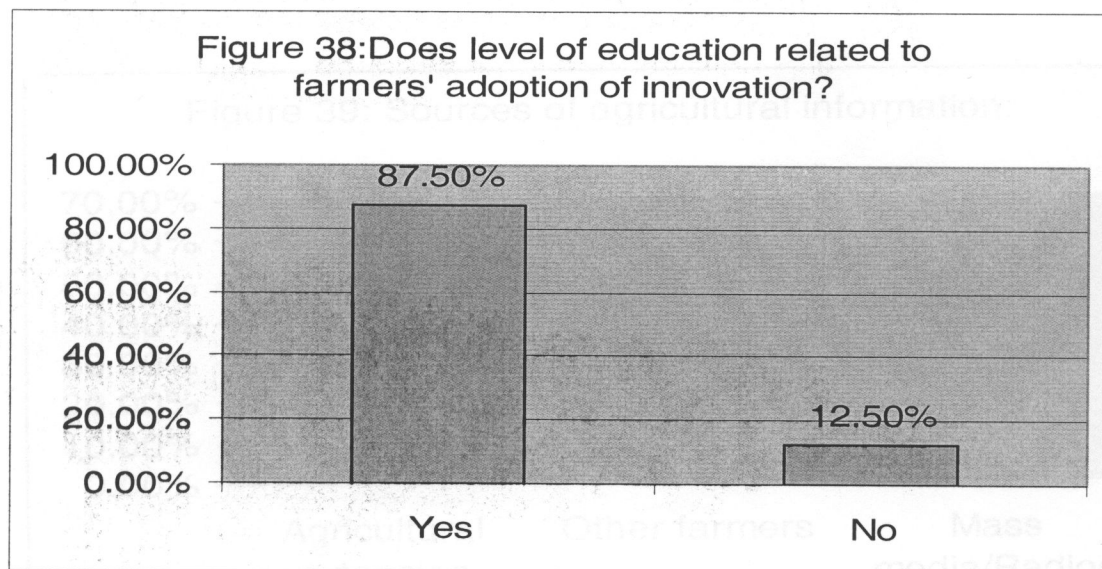
It therefore means that if the agricultural sector is to promote agricultural development, it must increase the recruitment of extension workers to expose a large proportion of farmers to agricultural information. It must also expose extension workers to trainings in social and communication skills for effective dissemination of agricultural messages and enhance adoption of innovations.

Figure 37: Category of farmers that respond quickly to agricultural messages:



On the question of farmers’ responses to agricultural messages, 62.50 percent said that medium farmers respond quickly to agricultural messages because they have the attitude of directing their efforts towards profit maximization and commercialization of farm undertaking. The medium scale is followed by emergent scale farmers (25%). The bar

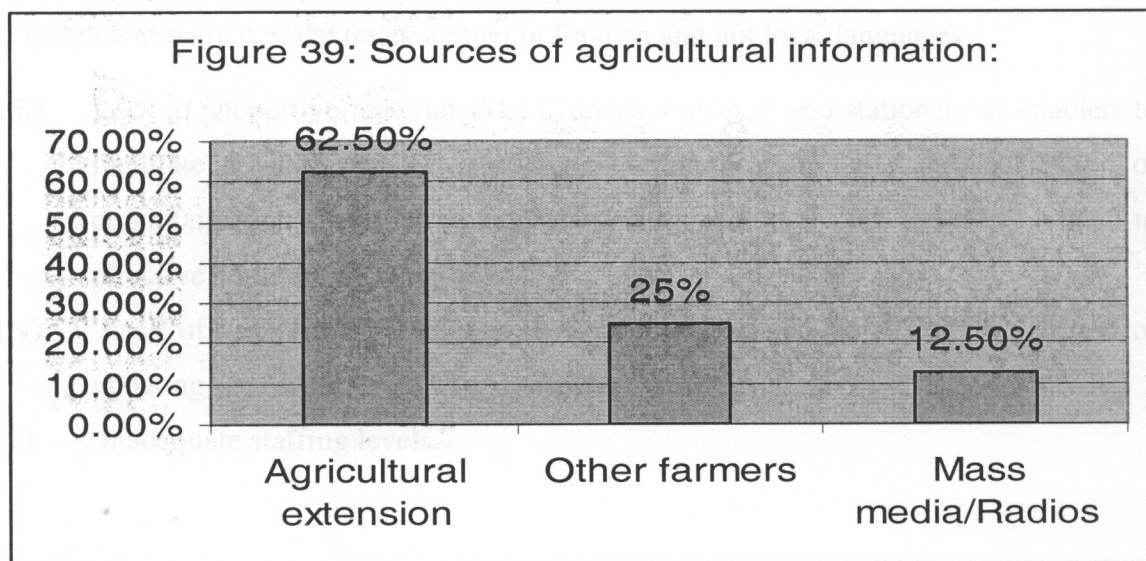
chart (figure 37) also shows that the smallest category of farmers to respond quickly to agricultural messages is the small scale farmers who registered 12.5 percent. It is believed that small scale farmers are late adopters because of traditional attitudes, values, fear of risks and lack of exposure to world information that relates to human development. Their attitude is based on maximization of domestic food security.



On the question of the relationship of levels of education to farmers' adoption of innovations (Figure 38) shows that 87.50 percent of extension workers said that farmers' responses to agricultural innovations is related to their level of education. Meaning that the higher the standard of education attained by a farmer, the easier and faster the farmer responds to innovations. The lower the standard of education attained, the slower the rate of responses to innovations. In most cases the illiterate farmers respond after the majority with better educational standard has done so. These farmers are sometimes regarded as laggards. The aspect of inadequate education among farmers has affected agricultural development adversely. If the Ministry of Agriculture and Cooperatives is to combat poverty through agriculture, there must be a deliberate policy developed to improve the educational standards of the farmers through introduction of;

- (i) working literacy campaigns, a task that could be conducted through the Ministry of Community Development and Social welfare in collaboration with the Ministry of Agriculture and Cooperatives.
- (ii) Agricultural extension education in the curriculum of the Ministry of Education at all levels of study as compulsory and not optional course. Agricultural extension

education course must be designed to suit field situation and not necessarily academic oriented. The practical agricultural knowledge obtained during school life by the pupils would be utilised in future at adulthood after they have left school. The strategy will lead to increase in the proportion of literate farmers who would easily learn, understand and adopt agricultural innovations for improvement of their welfare.



On the question of the farmers' sources of agricultural information (Figure 39), shows that 62.5 percent of the respondents said that the main source of agriculture information is agricultural extension services, followed by other farmers and mass media as minor source.

5.2.1.1 Constraints experienced by extension workers that render communication strategies ineffective:

On the question of constraints experienced by extension workers that render communication strategies ineffective, 37.50 percent responded that the major constraint is the lack of communication and social skills. This is because agriculture extension profession operates within a circle of inter-related factors at different levels. These include "communicator's personal competence or skill to communicate perceptions and attitudes of their clients; be able to develop effective communication strategies that pursue farmers' aspirations; and to be able to interpret the complexity of content communication messages into simpler terms for the ordinary farmers to relate and apply

the messages to the social and economic situations. These are cardinal factors for effective communication. Therefore in the absence of such attributes due to lack of training in communication skills, renders extension workers incompetent to perform to farmers' satisfaction and be appreciated. This has contributed to the situation in which extension service is regularly being criticized for being ineffective. The other constraints include the following;

(ii) Language barriers

(iii) Publication materials/ tracts written in English and not local languages

(iii) Lack of supportive materials like finances, transport and stationery as enablers to facilitate development of appropriate communication tools and application of communication strategies (though these are not directly but indirectly related to effective communication process).

(iv) Lack of regular staff trainings in agricultural related fields for the purpose of updating staff with recent knowledge developments.

(v) Inadequate staffing levels.

5.2.1.2 Possible solutions to barriers of effective communication

The question on the possible solutions to the barriers of effective communication, are as follows;

(i) 50 percent of the respondents said that the major solution is by introduction of training programmes (staff capacity building) in social and communication skills, formulation for communication strategies and update staff with recent knowledge development in other related fields. The other possible solutions of importance are;

(ii) The production of agricultural publications and print materials in local languages,

(iii) Encourage need of extension workers to learn local languages in their environment in order to communicate with the local farmers effectively.

(iv) The Ministry of Agriculture and Cooperatives must increase staff recruitment levels in order for the extension services to impact positively on the farming communities.

(v) Support extension services with enablers to extension communication such as transport, financial and other physical material resources

5.2.2 Findings from Agricultural Extension Methodologist and Block officers

Table 13-Sex Distribution:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	4	100.0	100.0	100.0

On the question of sex distribution, 100 percent of the respondents at block level were males. This situation registers high levels of gender imbalance, a situation that has contributed to inactive female participation in agricultural development and requires to be addressed with seriousness or else the situation may revert to traditional pattern.

Historically it is women who have tended to be disadvantaged, their roles not recognised and appreciated, and that a number of inequalities remain unattended. Therefore the fact that extension service in solwezi has not engaged female extension block officers, threaten a return to the traditional situation. This may lead to development of gender-blind policies and programmes which do not address the needs of female farmers and thereby impoverishing them. However, if the extension service is to improve the welfare of female farmers of rural areas, they need to involve female officers to work in collaboration with male officers in development of projects and programmes that are gender balanced(table 13).

Table 14-Professional qualifications of Block officers:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Certificate	3	75.0	75.0	75.0
	Diploma	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

On the question of professional qualification of Block Officers (table 14), 75 percent of the Block officers possess certificates and only 25% possess diplomas. The situation needs to be corrected if agriculture has to develop. The position of Block officers demands that they have to be knowledgeable, competent to have initiative to develop a vision for agriculture development in their areas. They need to develop professional

standards higher and vested with wide experiences of extension development than the officers they supervise.

Table 15 -Training in communication skills:

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	1	25	25	25
	No	3	75	75	100
	Total	4	100	100	

On the question of training in communication skills for Block officers (table 15), 75 percent of Block officers had no trainings in communication skills except for the little knowledge they acquired at colleges. Only 25 percent stated having acquired communication skills in 2000 at Kasempa Farmer Training Centre (FTC) which was initiated by Mrs. Elizabeth Chuma by then the senior agricultural coordinator for Northwestern Province. However, registered that though relevant but needed continuous trainings of that nature to keep officers updated with latest skills. It is noted that the effectiveness of extension personnel largely depends upon the quality of communication skills they possess (Van Den Ban and Hawkins 1988). It is this attribute which becomes a tool for effective translation and interpretation of technical messages convincingly to agitate farmers make constructive decisions based on the messages for change of attitude.

Table 16-Management of Camps and Blocks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	100.0	100.0	100.0

On the question of whether Block Officers manage both camps and blocks, 100 percent of the responses were that they manage both camps and blocks. The situation is due to inadequate staffing in the field. This reduces the level of effectiveness of Block officers with regard to camp supervision because they have to share time and efforts for operations of both camps and blocks. Since Agriculture is the major economic recovery sector of Zambia and if issues of staffing levels are not improved, it will be difficult to combat poverty levels among the larger proportion of the population which earns its

livelihood through agriculture. The situation needs to be corrected by increasing staffing levels or else the ministry will be looked upon as the most unproductive, ineffective and inefficient sector (table 16).

Table 17-Working ratio of extension workers to farmers:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1:250	1	25.0	25.0	25.0
1:1,500	2	50.0	50.0	75.0
1:2,500	1	25.0	25.0	100.0
Total	4	100.0	100.0	

On the question of the working ratio of extension workers to farmers, 50 percent of Block officers stated that the working ratio of camp officers to farmers is 1:1,500 which is a realistic ratio though other developing countries uphold the ratio of 1:3000 (www.fao.org/docrep/007/y5537e/y5537e09.htm), and in developed countries the ratio is 1:800. However, observations made during the research show that though the extension worker to farmer contact ratio is half of the recommended ratio for developing countries, extension workers have difficulties in exercising effective communication in the delivery of extension messages. The situation is attributed to the following factors;

- (i) lack of communication skills,
- (ii) lack of knowledge on procedures for development of extension communication strategies and
- (iii) lack of supportive materials as enablers (finances, transport and stationery).

5.3. PART B: FINDINGS FROM INSTITUTIONAL FARMS

Findings from questionnaires that were administered to Institutional farms were aimed at obtaining views and concerns about the following issues;

- (i) Networking system and communication strategies used for dissemination of agricultural information to institutional farms and their appropriateness;
- (ii) The nature of expertise of the managers that manage the institutional farms with regard to knowledge, skills and experience (qualifications) in relation to development of Institutional production units;

- (iii) Frequency of extension visits to institutional farms for provision of agricultural advice;
- (iv) The need for extension services to be extended to institutional farms.

The institutional farms sampled for administration of questionnaires are as shown in table 18 a below;

Table 18 a –showing the institutional farms researched:		
Name of Block area	Name of Camp	Name of institution
St. Francis	St. Francis	Nazareth Home craft training centre
	Kampinjimpanga	Kabulobe Basic school
Maheba	Maheba A	Kananga primary school
	Maheba B	Bukomo multi purpose cooperative society
Mutanda	Mutanda	Mwanjimambwe Basic school
	Kayonge	Kayonge Basic school
Central	Kyafukuma West	Kyafukuma Basic school
	Kyafukuma East	Katandano basic school
4	8	8

Table 18 b category of institutional farms

TYPE OF INSTITUTION	FREQUENCY	PERCENTAGE PARTICIPATION IN AGRICULTURE
Schools	6	75%
Cooperative organization	1	12.5%
Church organizations	1	12.5%
Total	8	100%

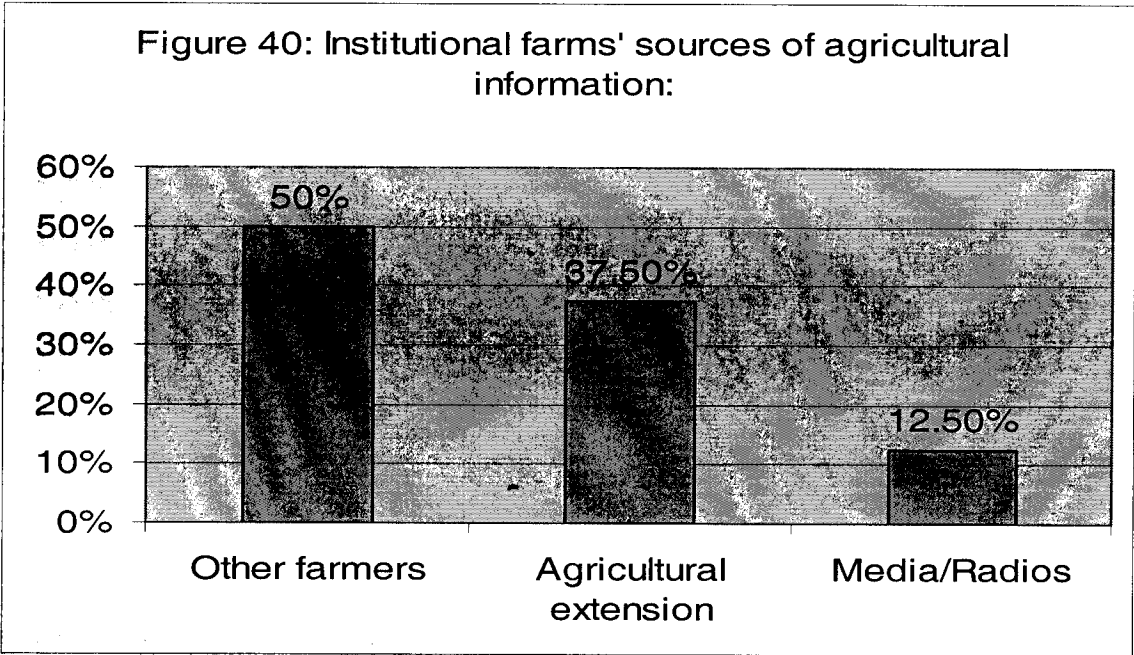
Following the sampling of institutions for research, it shows that 75 percent of the institutional farms found at both Block and Camp levels are school farms, 12.5 percent church institutions and another 12.5 percent cooperative institutions. This shows that the largest category of institutions that has great impetus to participate in agricultural

activities is the school. This is could be due to the high economic demands that arise from the institutions and in their effort to complement on their regular budgets; they take an active role to participate in agriculture as a source of income generation. However, the efforts of the institutional farms need to be recognized and appreciated because they contribute to food security and economic development of their local areas Table 18 b).

Table 19-Average hectarage for institutional farms

	Hectares	Frequency	Percent	Valid percent	Cumulative percent
Valid	0-1	6	75.0	75.0	75.0
	2-5	2	25.0	25.0	100
	Total	8	100.0	100.0	

On the question of the average cultivated hectares for institutional farms (table 19), 75 percent of the institutional farms cultivate between 0-1 hectares, and 25 percent cultivate between 2-5 hectares. This shows that institutions need to be encouraged to shift from cultivation of smaller hectares to improved level if they are to contribute to food security, economic development and improvement of the welfare of their members and in their local environment.



On the question of sources of agricultural information for institutional farms, 50 percent of the respondents said that institutions receive agricultural information from other

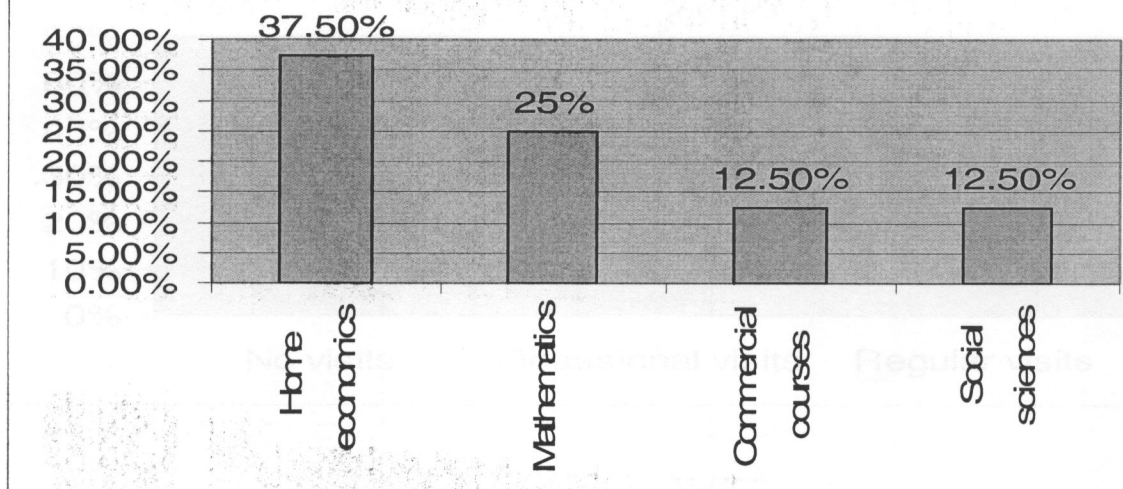
farmers, 37.5 percent responded that they receive information from agricultural extension services occasionally and 12.5 percent stated that they receive information from mass media through radio broadcasts. This shows that the main source of agricultural information for institutional farms is from other farmers and occasionally from the agriculture extension services only when consulted. A special situation only occurs in St. Francis Nazareth training institution which highly commended the services of the extension worker. The findings show that there is neglect of institutional farms in the provision of agricultural extension services. The situation has resulted in the decline of active participation in agricultural activities by institutions hence the collapse of production units (figure 40 above).

Table 20-Full time manager for the farm:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	8	100.0	100.0	100.0

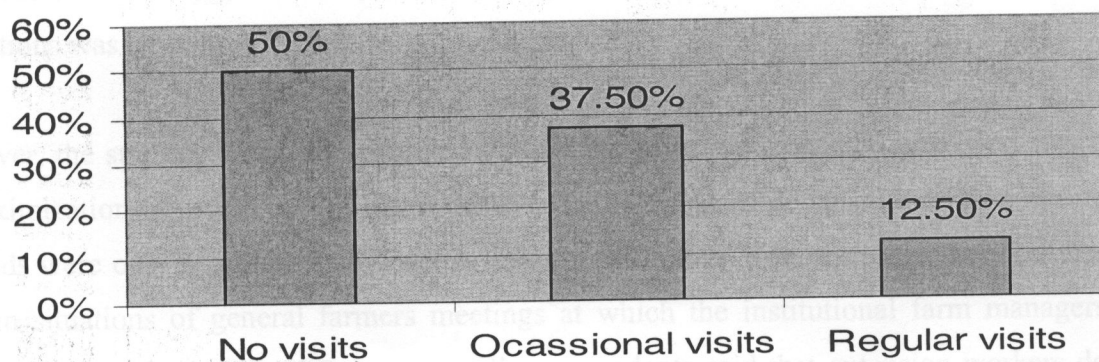
On the question of whether the managers for institutional farms are full time or part time engaged, 100 percent of the respondents said that they are not fulltime but part time. This could be the reason for cultivation of small hectares of land (0-1hectare-ref table 19 above) because the managers spend little time to focus at the management of the farms, but spend much of the time on the activities of their main source of income generation. The situation could also affect farm production negatively if no careful measures of providing equal services are made. However, they could be encouraged to integrate farm activities into their normal programmes and maximize production through provision of extension services (table 20).

Figure 41: Fields of specialisation of the part time institutional farm managers:



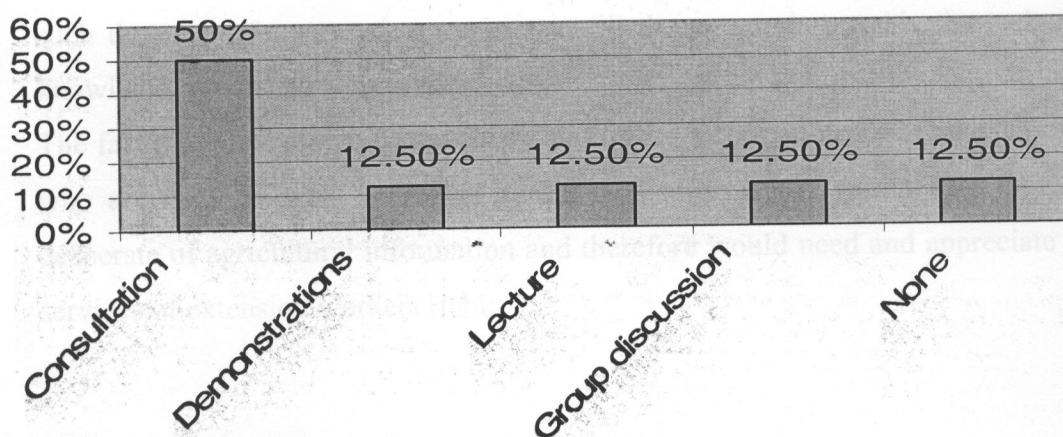
On the question of the fields of specialization of the managers of institutional farms, 37.5 percent of the institutional farms are managed by officers specialized in home economics, followed by 25 percent by those specialized in Mathematics and 12.5 percent respectively by those either specialized in commercial courses, social sciences or without any field of specialization. The situation is retrogressive to agricultural development because the courses the managers possess have no relevance to agricultural knowledge. Because of this situation, the development of the institutional farms can be attained if there be provision of extension services to guide and provide technical knowledge to the managers on the farm operations. It is through the provision of extension services that the institutional farms will be able to contribute heavily to agricultural development and poverty reduction of rural areas.

Figure 42: Frequency of extension workers' visits to institutional farms:



On the question of frequency of extension workers visits to institutional farms, 50 percent of the respondents said that extension workers did not visit them to provide agricultural education or advisory roles on farming practices. However, 37.5 percent registered that extension workers do visit them occasionally and usually by consultation. Only 12.5 percent registered that the extension workers regularly visit to provide advisory knowledge to the institution (St. Francis mission station). The overall finding is that extension workers do not visit institutional farms for advisory roles on agriculture. The situation need to be corrected by encouraging extension workers to extend extension services to the institutional farms (figure 42).

Figure 43: Communication strategies used for dissemination of agricultural messages to institutional farms:



On the question of communication strategies used by extension workers for dissemination of extension messages, 50 percent of the respondents registered that the most common communication strategy used by the extension workers to provide services to the institutions was by consultation.

However, the strategy was not considered suitable for effective extension provision aimed at maximization of production of institutional farms. The use of demonstration and lecture methods were only recorded at St. Francis training institution. The discussion method was used in situations of general farmers meetings at which the institutional farm managers could attend. Nevertheless 12.5 percent of the respondents said that extension workers do not provide any support to the institutions.

Table 21- Do institutional farms need services of extension workers?

		Frequency	Percent	Valid Percent	Cumulative Percent
Val	Yes	8	100.0	100.0	100.0
id					

On the question of whether the institutional farms needed the services of extension workers or not, 100 percent of the respondents said that institutions needed the services of extension workers to provide advisory roles on agricultural information. The demand for extension service is justified by the following reasons;

- (i) The fact that the fields of specialization of the farm managers have no relevance to agricultural knowledge, means that there is a gap in agricultural knowledge and as such the need for extension workers to fill the gap and provide the technical knowledge is of great significance;
- (ii) The fact that institutional farms obtain and utilise information from other farmers who are not a reliable source of agricultural information, means that they are desperate of agricultural information and therefore would need and appreciate the services of extension workers (table 21).

5.3.1 Recommendation to improve on extension services to institutional farms:

The main recommendation made by the managers to improve on extension services to institutional farms was that extension workers should prepare visit schedules within their areas for provision of technical knowledge and skills on farming technologies.

5.4. PART C: FINDINGS FROM FOCUS GROUP DISCUSSIONS (FGDs)

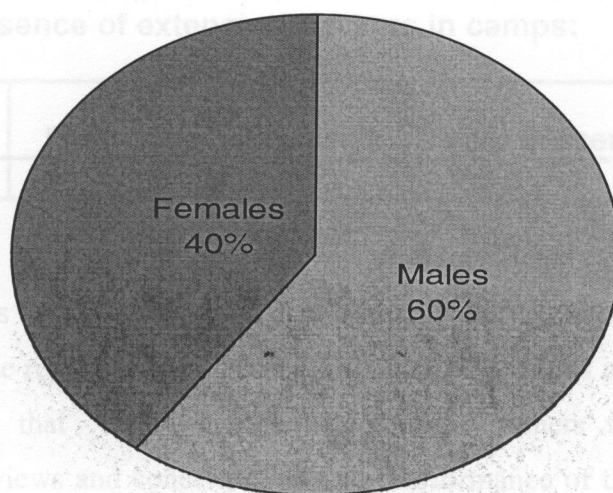
Findings from Focus Group Discussions (FGDs) were aimed at obtaining views and concerns of small scale farmers as major beneficiaries of the extension services with regard to the following;

- (a) Determine relevance of extension messages to solving farmers' socio-economic problems,
- (b) Determination of the effectiveness of communication strategies used by extension workers and their impact on the farming communities,
- (c) Determine farmers knowledge of extension services and frequency of agricultural extension educational interaction with extension workers,
- (d) Determine knowledge about visit schedule of extension workers in their areas,
- (e) Determine sources of agricultural information and reliability of those sources,
- (f) Determine whether there is communication discrimination,
- (g) Determine farmers' constraints in relation to information reception,
- (h) Possible solutions to the communicative problems as proposed by farmers,
- (i) Determine the major sector or agricultural enterprise of extension service concentration and many others as shall be discussed.

Table 22 –Showing Camps and Blocks for Focus Group Discussions:		
Name of Block area	Name of Camp	Number of focus group discussions:
St. Francis	St. Francis	2
	Kampinjimpanga	2
Maheba	Maheba A	2
	Maheba B	2
Mutanda	Mutanda	2
	Kayonge	2
Central	Kyafukuma West	2
	Kyafukuma East	2
4	8	16(96 males + 64 females)

The Focus Group Discussions (FGDs) were conducted at different places in the Block and Camp areas to collect views and perceptions of the operations of extension workers. The main objective was to determine the effectiveness of extension communication strategies and their impact on the farming communities (table 22).

Figure 44: Respondents at Focus Group Discussions:



In the focus group sessions conducted during the research period, the largest group of farmers was for males who were 96 (60%) and the females were the minority which was 64 (40%). The situation shows that although women are the largest group in the contribution to farm labour, they have not taken up an active role of participation at farmer group meetings for decision making. Despite the advocacy for gender balance in agricultural sector, women still play a low profile.

Table 23-Farmers’ Knowledge about extension service:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid knowledgeable	16	100.0	100.0	100.0

On the question of farmers’ knowledge about the extension service, 100 percent of the farmers affirmed that they had knowledge of the functions and services performed and rendered by extension workers. This means that the presence of extension workers in societies create an image of anticipated extension service delivery in the minds of farmers, and any failure to deliver the anticipated services result in loss of trust and confidence in the extension worker by farmers resulting in confronting the extension service with several criticisms of ineffectiveness and inefficiency (table 23).

Table 24-Presence of extension workers in camps:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	16	100.0	100.0	100.0

On the question of the presence of extension workers in the researched camps, 100 percent of the groups (FGDs) responded that extension workers were present in the camp areas researched. The responses of presence of extension workers in the researched areas offers an assurance that information collected from farmers was a result of their reactions, feelings, views and concerns about the performance of the extension workers, effectiveness of the communication strategies and the impact of extension service on farming communities.

Table 25-Frequency of extension workers meeting farmers:

Table 25: Frequency of extension workers meeting farmers:					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Regular visits	2	12.5	12.5	12.5
	Occasional visits	6	37.5	37.5	37.5
	Not visited	8	50	50	50

On the question of frequency of extension workers meeting farmers, 50 percent of the groups (FGDs) responded that they were not visited by extension workers in their areas. 37.5 percent responded that they were occasionally visited by the extension workers and usually the visits were made when there were either visitors from the Boma or there were special messages from the Boma requiring urgent action and feed back. The 12.5 percent responded that they were regularly visited by their extension workers though the schedule was not on daily basis. The situation portrays that extension service delivery to the farming communities is poor. Therefore the overall policies of poverty reduction through agriculture are not strategically implemented (table 25).

Table 26: Development of farmers' visit schedule:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No schedule is displayed for farmers knowledge	16	100.0	100.0	100.0

The question on development of farmers' visit schedule, 100 percent of the groups responded that there were no visit schedules drawn by extension workers which were displayed for attention of farmers to observe the visit schedule of the extension workers.

It was stated that extension workers operational programmes were haphazardly such that if they made visits to meet farmers, the meetings were either unorganized or organized through other farmers to announce about the visit of the extension worker. The visits were reported to have been at short notice and usually occasional. Farmers complained that

such operational arrangements by the extension workers had disadvantaged many farmers by being left out from attending such important educational meetings. The findings were true though the extension workers claimed that they develop visit schedules as in table 10, but physical check and observation had shown that 75 percent keep old, outdated and unrevised visit schedules.

Table 27-Relevance of agricultural messages to solving farmers' socio-economic problems:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Relevant	16	100.0	100.0	100.0

The question of the relevance of agricultural messages to solving farmers' socio-economic problems, 100 percent of the groups responded that the agricultural messages delivered were relevant and important for solving the farmers' socio-economic problems except they were not consistent. The inconsistency in the delivery of extension messages result in farmers losing interest and direction thus poor adoption of innovations even when they are exposed to information. Agriculture as an art and science is tied to periods after which the messages become obsolete. Therefore agricultural messages must be aimed at being delivered consistently within the time frame or else they do not serve any purpose (table 27).

Table 28-Sources of agricultural information:

Table 28: Sources of agricultural information:					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Agricultural extension services	5	31.25	31.25	31.25
	Other farmers	9	56.25	56.25	56.25
	Mass media	2	12.5	12.5	12.5

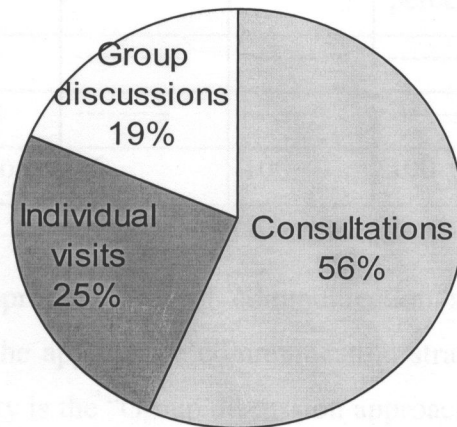
On the question of the farmers' sources of information, 56.25 percent of the groups responded that the main source of agricultural information was obtained from other farmers. The 31.25 percent registered that they obtain agricultural information from agricultural extension services, and 12.5 percent responded that they receive agricultural

information from mass media (radios). However, the overall findings reflect that farmers receive much of the information from other farmers than from the extension workers. Similar responses were issued by institutional farms. The views are contrary to the views of extension workers which state that the main source of information is from the agricultural services. This shows that the extension workers had either not been sure of themselves or alternatively had wanted to protect their positions (see figure 35). However, the situation provides evidence for justification of the continuity use of traditional farming practices by most small scale farmers (table 28).

Table 29: Reliability of Sources of agricultural information:					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Agricultural extension services	12	75	75	75
	Other farmers	3	18.75	18.75	18.75
	Mass media	1	6.25	6.25	6.25

On the question of the reliability of the farmers’ source of information, 75 percent of the groups responded that agricultural information obtained from extension workers was more reliable than from the other sources. It was argued that the information was reliable because the extension workers have established relationship of trustworthy with farmers which make them tell the truth and avoid loss of trust and confidence should the practice be proven wrong. Extension workers also present messages that have been scientifically proven and recommended for farmers’ use. Therefore the views of the farmers at focus group discussions confirmed that farmers have the confidence and trust that information obtained from agricultural extension services supersedes that from other sources.

Figure 45: Common communication strategies used by extension workers for dissemination of agricultural messages:



On the question of common communication strategies used by extension workers for dissemination of agricultural messages, 56 percent of the groups responded that the commonly used communication strategy by extension workers is the “consultation”. This meant that extension workers needed to be consulted by farmers at their homes in order to provide agricultural extension education. The 25 percent of the groups responded that extension workers occasionally visited farmers as individuals and provided agricultural education.

The 19 percent responded that extension workers occasionally conducted group discussions with farmers to provide agricultural education and if so it could have been driven by external forces of either visitors from Boma or requiring urgent messages to be brought to attention of farmers. However, the overall findings revealed that the most common communication strategy used by extension workers for dissemination of agricultural messages is the consultative approach.

Table 30: Appropriateness of communication strategies					
		Frequency	Percent	Valid percent	Cumulative percent
Valid	Consultation	-----	-----	-----	-----
	Individual visit	-----	-----	-----	-----
	Group discussions	16	100	100	100

On the question of appropriateness of communication strategies, 100 percent of the groups responded that the appropriate communication strategy that benefits farmers in a large farming community is the “Group discussion approach”. It is considered appropriate because many farmers gather, allows for interactive means of communication, equality and freedom of expression, it encourages participatory involvement and speeds the process of diffusion and adoption of innovations. Therefore group discussion is an essential aid for sharing knowledge, information, opinions and ideas to facilitate dissemination of messages and adoption of innovations.

5.4.1. Farmers’ constraints

At all focus group discussions conducted 100 percent responded that the major constraint being faced by farmers was the “Poor extension service provision to farming communities”. Farmers registered that the situation was attributed to lack of commitment by extension workers to comply with their responsibilities and duties to provide extension education to the farmers because of the following reasons:

- (i) Keeping extension workers at one station for long time such that they assume roles and responsibilities of local leadership and abandon their initial responsibilities of offering extension education services to the community. Because of the assumed roles and responsibilities, the community tends to serve them as their local leaders and could not develop the courage to confront them to offer agricultural extension education to the community.

(ii) Ineffective or lack of supervision of extension workers by their supervisors. The situation makes farmers suffer loss of knowledge for improvement of farming practices and economic gains.

(iii) Negative attitude of extension workers towards their jobs.

(iv) Language barriers. Some extension workers would not want to speak the local languages of the communities to facilitate communication for delivery of agricultural messages and as such farmers react negatively towards them.

5.5. PROPOSED SOLUTIONS

The general proposed solutions to the problem of "Poor extension service provision" were as follows:

(i) Regular exposure or trainings of extension workers in communication skills and agricultural technical knowledge to keep them well updated to avoid incompetence.

(ii) Initiate a programme of regular transfers of extension workers before they become long over due to forget their responsibilities.

(iii) There is need for effective supervision, monitoring and evaluation of extension workers out put, influence and impact on the farming communities to ensure accountability of extension service responsibilities.

(iv) Extension workers need to be encouraged to learn local languages to avoid creation of communication barriers.

(v) Publications or print materials be written in local languages

(vi) Extension workers be supported with extension support materials as enablers to facilitate the development and application of communication strategies for agricultural development.

CHAPTER SIX

6.0 INTERPRETATION AND DISCUSSION OF FINDINGS

6.1 INTRODUCTION:

The research sought to determine the effectiveness of agricultural extension communication strategies in use, their applicability, relevance and their impact on reinforcing the agricultural extension services to influence farmers' adoption of agricultural innovations and improve the development of rural agriculture. The evaluation was based on a mixture of qualitative and quantitative methodologies. Therefore the discussions are based on the views, opinions and experiences of the respondents as they presented them. Other issues discussed in the research such as sources of agricultural information, rates of farmers' adoption of innovations and other related information were meant to provide baseline for establishment of the effectiveness of extension communication strategies in use and their impact.

6.2 GENDER IMBALANCES IN AGRICULTURE:

The findings have shown that there are gender imbalances in the agricultural sector at both sectorial staffing and farmer participation levels. This is shown by the imbalances given from the responses of the sampled respondents at both camp and block staffing levels including farmers' participation at focus group discussions. The fact that 87.5 percent of the respondents were males and 12.5 percent were females at camp level; 100 percent males at block level; 96 (60%) males and 64 (40%) females out of 160 respondents at focus group discussions is clear evidence that there is gender imbalance in the agricultural sector in solwezi district.

The situation is not conducive for promotion of gender mainstreaming which is the current international approach to advancing gender equality and equity at all levels of activity participation in society. The concern for gender mainstreaming is to allow for advancement of gender equality and equity regardless of sex. Women have always played an important role in agriculture, undertaking a wide range of activities relating to food production, processing and marketing. They have been responsible for the growth of rural

agriculture, which is now recognized as being vital to food security and wealth creation for a rural household.

The low participation of women farmers in group training and extension meetings is attributed to the low deployment of female extension workers at field level and the cultural bias which prevails in societies. According to the Food and Agricultural Organization (FAO-1999), there is wide spread of gender imbalances in developing countries with regard to recruitment of female extension workers. The (FAO, 1999) and (World Bank, 2000) reported 15 percent of female extension workers had been in the extension services as against 85 percent male extension workers and these tended to direct their services to male farmers.

If the trend of women participation in agriculture is to be reversed, there must be a deliberate policy of directing efforts to recruitment of more female extension workers into the sector. The cultural bias subjects women farmers not to have freedom of expression before male extension workers in the presence of male farmers who are their husbands. In order that women farmers are given the opportunity to exploit their potential and challenge the male farmers, there must be the facilitation of their fellow female extension workers. Therefore the empowerment of women farmers engaged in farming in solwezi district must begin with increasing the deployment of female extension workers in the field.

6.3 INADEQUATE COMMUNICATION SKILLS AND COMMUNICATION INCOMPETENCE OF EXTENSION WORKERS:

The findings show that 75 percent of the responses from respondents at both Camp and Block levels recorded having had “no training in communication skills” (page 74, figure 29-camp and page 88, table 15 block findings). The situation has negative impact on development and application of effective extension communication strategies for dissemination of agricultural messages to farmers.

The negative impact has affected extension workers at field level to such an extent that about 50 percent of the extension workers do not know the procedure for development of communication strategies (page 76, figure 31-camp findings). The inadequate or lack of

communication skills has rendered the extension workers incompetent to persuade farmers adopt the modern farming technologies. The level of incompetence of extension workers was acknowledged by the responses obtained as shown on page 75, figure 30 (camp findings). The bar chart shows that 87.5 percent of the responses registered that the current communication skills the extension workers possessed were not effective enough to persuade farmers' adopt modern practices.

Further interviews with extension workers and block officers on the nature and extent of inadequacy of communication skills, revealed that since they graduated from colleges, most officers had not been exposed to training in communication skills. Regular exposure of staff to some form of training resuscitates knowledge and improves performance. Refresher courses also help the extension workers be up to date in knowledge or else their knowledge may be rendered obsolete. The responses were justifiable with regard to the prevailing situation in which the small scale farmers are seen to continue using their traditional way of farming despite heavy spending on extension services.

It is noted that extension workers use the conventional agricultural extension communication strategies just because the strategies have been there on paper over years immemorial and are traditionally accepted as tools for agricultural information dissemination. The fact is that they do not understand the principles under which the communication strategies in use were developed. It must be understood that no communication strategies are the same and therefore applicable to all circumstances and situations. Different communication strategies are developed depending upon the prevailing situation. It therefore means that extension workers have to re-examine the communication process at play from time to time while at same time observing the behaviour of their clients in response to the content communication, thereby change the communication strategy to suit the situation.

Effective communication strategies must be designed to have objectives of creating awareness, change of attitude or behaviour and knowledge of farmers. This means that strategies should be developed on the basis of being both persuasive and educational in character. A persuasive communication strategy directs its efforts to creation of awareness and influences farmers accept innovations even when they have no knowledge about the innovation.

This approach in agricultural extension has been described as “extension social marketing and propaganda”. Usually such approach of communication strategy design has short term adoption effect because they are not rooted on knowledge to qualify as educational content communication for consolidated decision making. However, in some cases the strategies have worked successfully by impacting positively on change of farmers’ attitude to adoption of innovations. But the possibilities of long term adoption effect are narrow. Most extension workers with little or no knowledge of communication skills have tended to use this approach to design communication strategies for extension service delivery. The situation applies even to the extension workers who use communication strategies for which they have no knowledge of the basis and purpose for which the specific communication strategy was designed. The situation has resulted in creation of an environment in which extension workers apply great effort in the dissemination of agricultural messages but the output of their effort is not realised, observed or appreciated by the farming communities. This is what has led to the current situation in Zambia where the extension service has received several criticisms.

There is a strong belief from the farming community, civil society and politicians that agricultural extension is costly and largely ineffective and its personnel are essentially welfare recipients. They claim there are few if any, results to show for the enormous investment made in extension services. The claims have arisen due to neglect to train extension workers in social and communication skills to empower them with knowledge on ways of designing effective communication strategies aimed at bringing long term innovation adoption impact.

The educational approach for development of communication strategies is aimed at directing its efforts towards meeting the needs of farmers as the situation dictates. In this context, then the purpose of agricultural extension is directed to farmers’ changing knowledge from their traditional practice to the modern practice. This knowledge helps farmers make their own decisions regarding farming practices. This approach to extension is closely related to *non-formal or adult education* and conscientization of farmers to utilize the available resources (material, financial, intellectual and or knowledge) available to improve their welfare.

This is the approach for development of effective communication strategies that impact the farming community positively and results of the efforts of extension workers are observable and appreciable. Extension workers can only reach the level of determining the procedure for development of effective communication strategies that carry the share of agricultural development when they have been exposed to skills of effective communication through some form of training.

The findings indicated that inadequate or lack of communication skills among the extension workers in Solwezi district is a major constraint to effective communication for agriculture development. This requires immediate action by the sector in order for the extension services gain its confidence from the farming community before it may be considered as an unproductive sector.

6.4 INEFFECTIVENESS OF EXTENSION SERVICE PROVISION:

The term effectiveness signifies a measure of the degree and extent of performance of something. It is relative and therefore can be discussed differently at different levels and situations of different disciplines. There is no formal foundation for formulating measure of effectiveness but dependent upon the indicators set to act as a measure for achievement.

In view of this and in an effort to establish the effectiveness of extension service provision in Solwezi district, the research presents its own framework for measure of effectiveness of extension service based on practical findings as obtained from the respondents in the field. This means that the standards or indicators for measuring effectiveness of extension service were not set by the researcher but by the respondents who included Farmers, Extension workers, Block officers, District extension methodologist and the institutional farms. In this context, the measure for effectiveness had been determined by several factors.

6.4.1 Relevance and reliability of agricultural extension messages:

The findings show that responses from farmers and institutional farms registered 75 percent indicating that agricultural messages from extension workers were relevant and reliable to solving their social and economic problems which have crippled them into poverty (page 101, table 29). However, despite the fact that agricultural messages were relevant and reliable, it lacked the implementation support of the messages from the extension wing. They contended that extension workers occasionally or not at all visited farmers to provide agricultural extension education. The subject of extension workers visits to provide agricultural education had been a very contentious issue with some group of farmers registering that extension workers do not visit them and that they desired to have them transferred to other places rather than keep them as development liabilities. Evidence for farmers' reactions are as shown in table 25, page 99 which shows that 50 percent of focus group discussions responded that extension workers do not visit farmers; 50 percent of responses from institutional farms also registered that extension workers do not visit them (figure 42, page 94). The other negative responses raised against extension workers ineffectiveness were based upon the fact that 100 percent of responses at focus group discussions indicated that there were no visit schedules drawn by extension workers which were displayed for attention of farmers (table 26, page 99). These circumstances have given farmers' general perception and conclusive view that extension workers are ineffective and not supportive to agricultural development.

6.4.2 Single enterprise concentration:

Although the extension service has been closely associated with the adoption of improved practices, and therefore with increased enterprise production, the level of production in most areas is still low and could not justify poverty alleviation for the majority of the small scale farmers. In fact the term production as defined by extension workers is vague and single enterprise directed. In most cases production refers to crop production and not other enterprises.

This has led to the perception that agriculture is all about crops and particularly maize production and does not involve other enterprises. The perception has been generated by

extension workers through their concentration on single enterprise production (crops-maize) while neglecting the other enterprises.

The perception has deepened among farmers claiming “no maize no agriculture”. The findings (100% responses) revealed that the concentration on teaching of same messages on production of crops, particularly maize year after year while ignoring the other farm enterprises like horticultural, livestock and fish undertakings has contributed to farmers’ low income generation especially that crop production (e.g. maize) usually is accompanied by heavy financial investments for inputs. The situation has resulted in farmers losing confidence in extension workers because of the perceived irrelevance of extension messages which are directed to crop enterprises only.

6.4.3 Extension communication approach:

Effectiveness of extension service provision is also determined by the type of communication approach in use. Different types of communication approaches have different effects with regard to information delivery to the target group. The communication approach used may take the roles of paternalism and dependence or participatory and independent.

In a series of interviews with the District extension methodologist, Block and Camp extension officers, revealed that the extension workers in solwezi district use the Training and Visit type of extension approach (T&V).

The information transmission model of communication for Training and Visit (T&V) approach is related to the idea that extension workers are the link (i.e. message carriers) between researchers as formulators and senders of agricultural messages and farmers as receivers. Extension programmes based on this model has been described as ‘paternalistic and dependent’. In other words, the actors in the communication process have an attitude of parent to child or teacher to student relationship which is not tolerated by farmers as adults. Other communication specialists have used the term ‘top-down’ to describe such communication approaches or as pedagogical form of education provision.

The approach has not been appropriate for sustenance of extension service provision to farmers should the source of information (research or subject matter specialists) be delinked from the extension worker. This means that the extension worker would have been disabled in the delivery of messages to farmers.

This has been the situation in the extension services. The extension officers were cultured to be dependent on receiving impact points from either the research branch or the District subject matter specialists for onward transmission to farmers.

The approach has detrimental effects such as; in the event of extension workers not receiving information from the source, renders them ineffective and dormant because they have no messages to deliver. The findings revealed that the current scenario is that the sector is crippled with extension support materials and this has contributed to delinkage of the extension service from the source of messages and supervision.

The situation indicates that extension workers do not have message packages to deliver to farmers hence their stay away from group meetings and use of the other communication strategies as situation may dictate, and resort to individual consultation. This has been because of the effect of the Training and Visit communication approach (T&V) which created the syndrome of dependence. Had the scenario been to train the extension staff to be independent and learnt to formulate their own messages related to their own environment the situation would have been different.

The approach also trained farmers the syndrome of dependence to believing that their knowledge and experiences in farming were irrelevant and could not contribute in any way to development of agriculture, but looked to the extension workers as the only source. With the current trend whereby the agricultural system has been disabled of support materials, the farmers still look to the extension workers to offer high quality agricultural education support as previously.

The training and visit approach also operates on basis of development of fixed visit schedules directed to village extension groups (VEGs) showing the days when extension workers could meet farmers for agricultural educational provision. However, findings at

focus group discussions and institutional farms revealed that extension workers do not develop visit schedules to meet farmers (table 26,page 99). Taking thorough analysis, it was discovered that 25 percent of the extension workers sampled for study drew work programmes while the 75 percent had not drawn.

The fact that 75 percent of extension workers did not draw work programmes was a reflection of incompetence and ineffectiveness. The T& V approach demands that extension workers operate within farmer groups, but 87.5 percent of the responses obtained at focus group discussion revealed that extension workers have not formed strategic farmer groups, but operate haphazardly.

Therefore it is concluded that the Training and Visit (T&V) communication approach with its emphasis on dependence has a part to play in the ineffectiveness of extension service provision. However, an alternative shift to utilization of participatory approach of extension service provision would be necessary for development of agricultural sector.

6.4.4 Lack of data bank:

The findings also revealed that agricultural extension workers have no organised data base to demonstrate the graph of progression or retardation rate for purposes of planning for strategic development measures. Lack of data is a sign for manifestation of ineffectiveness.

6.5 COMMUNICATION STRATEGIES IN USE

The responses obtained from focus group discussions and institutional farms revealed that the consultative approach is the most frequently used for dissemination of messages (44.5%), followed by individual visits (21%), group discussion (13.4%), lecture (7%), radio farm forum (6.5%), field days (3.5%), shows.(2.5%), and demonstrations (1.5%)

Further investigations revealed that though extension workers appreciated the effectiveness of group discussion for wide spread of agricultural information; they occasionally use it but have resorted to the frequent use of the “consultative and individual approaches”. However, responses from farmers at focus group discussions

(100%) showed that though the consultative and individual approaches have the advantage of close contact with extension workers, were not appropriate for effective outreach to a large group of farmers. They also registered that previously extension workers used to meet them at group meetings where farmers were taught and shared their farm experiences and views, but the current scenario of consulting extension workers for advice is not appropriate and could not be appreciated. The farmers claimed that “consultative and individual approaches” disadvantaged most farmers from accessing agricultural information.

Therefore the focus of extension workers to direct their operations to consultative and individual approaches of communication coupled with their negative attitude towards extension service provision has greatly affected the development of agricultural sector at village level. The situation has made farmers feel neglected and lost confidence in extension workers thereby declaring them ineffective and responsible for the increasing poverty levels.

6.6 IMPACT OF EXTENSION COMMUNICATION STRATEGIES ON FARMING COMMUNITIES:

Effecting change among people in a social system is very difficult task, because there are structures that strongly bond the people together and inhibit them from accepting new ideas. These structures are the cultural pattern of behaviour, norms, and values which hold the units of society. Therefore to effect change in society, requires the design and application of potential communication strategies that effectively address and loosen the strengths of the cultural bondages and influence adoption of innovation to bring about social change. Therefore to measure the impact of extension communication strategies is to relate them to the rate of farmers' adoption of innovations and how the innovations affect their livelihood. The higher the adoption rate of farmers to innovations by use of the type(s) of communication strategies, the more effective the communication strategy and the better the standard of living of the people. The measure of the impact can also be determined by the changes in farmers' level of farm productivity and the extent of farmers' appreciation.

In light of the indicators for measure of the impact of communication strategies, the research findings have shown that the current communication strategies adopted by the

extension workers have no positive impact on the farming communities. This is proved by the findings as discussed in the text below;

6.6.1 Rate of adoption of innovations

The fact that statistics of the findings show that the percentages of farmers' exposure to agricultural information is rated at 40-60 percent (figure 35), but the rate of adoption of farmers to agricultural innovation ranges between 20-40 percent (figure 36) is clear evidence to show that the adoption rate is low and therefore the communication strategies engaged in the dissemination of the innovations were at fault and could not impact positively on the farming communities. The situation could have been caused by any of the following factors;

- (i) The designed communication strategies could have not been appropriate for the situation. This happens in situations where the extension worker does not design the communication strategy to suit the prevailing situation. For instance the subject to be communicated to farmers is difficult for farmers to comprehend (complexity of subject) and demands the extension worker to stage a demonstration type of communication strategy to simplify the subject and provide a skill to farmers, but decides to use group discussion to teach farmers of the innovation. The farmers may not understand him/her and this result in low adoption of innovation.
- (ii) The category of farmers an extension worker is dealing with must be checked against communication strategy to be used. For instance when dealing with illiterate farmers, the extension worker decides to engage the use of a lecture method which involves writing of key topics with less explanation of the details of the subject or uses print materials and gives to farmers to read at their own time. This type of communication strategy is not suitable for the category of illiterate farmers and as such one would not expect a high rate of farmers adopting the practice.
- (iii) The extension worker could have misapplied the communication strategy and many other reasons.

Therefore no communication strategies are suitable for all situations. The choice of communication strategy may affect the farmers' adoption of innovations either positively or negatively.

6.6.2 Applicability (frequency) of the extension communication strategies

The impact of communication strategies can also be measured by the degree and extent of the frequency of use of the communication strategies. The more frequently the communication strategy is used, the more confidence the extension worker has in the strategy to influence change in behaviour, attitude and knowledge of the clients towards achievement of the target objectives.

However, the findings reveal that extension workers even though they have the communication strategies on paper, they do not apply them. The fact that extension workers occasionally or rarely visit farmers means that they do not apply the communication strategies and therefore to measure their impact on farming communities is just like making an attempt to measure something from nothing. Farmers have categorically stated that extension workers have become ineffective and therefore liabilities to agricultural development other than human development agents.

7.0 CONCLUSION AND RECOMMENDATIONS:

The rationale for providing extension services is still relevant, but the evidence suggests that the extension approach and communication strategies used by the extension workers were not effective and efficient. The performance of the Training and Visit (T&V) system as applied in solwezi district has not been to farmers' satisfaction. It has been ineffective, inefficient, and unsustainable. The research-extension linkages, extension worker and the supervisory wing, the communication skills of extension staff, the communication strategies used, the overall outreach and the quality of interaction between extension agents and farmers have been well below expectations. The evidence does not indicate a significant impact of the extension communication strategies on farmers' adoption of innovations and efficiency on rural agricultural development.

The findings revealed that there is unmet demand for extension service provision and farmers are willing to be assisted. It also revealed that there is negative attitude cultivated by the extension workers towards agricultural extension service provision. The tendency is retrogressive to development of agriculture and improvement of the welfare of rural farmers. The situation is explained by Lack of communication skills, inadequate knowledge on formulation of communication strategies, lack of extension support materials and negative attitude of the extension workers towards extension service provision.

The findings also revealed that the extension service has been bias in its message dissemination. It has focused much on crop production while neglecting the production of other farm enterprises. The shift from multi enterprise extension education to mono enterprise extension education is not appropriate for achievement of agricultural development goals and poverty eradication among small scale farmers. The approach has denied farmers of productive knowledge and skills in other enterprises other than crop enterprise.

It has also been revealed that institutional farms like school production units and those belonging to churches, women organizations and cooperative movements are not reached

for extension education. It must be understood that extension education directed to such organised groupings provides massive outreach. Provision of extension education to school production units would mean empowering the entire community with agricultural knowledge, because the members of production units are the school pupils who are future farmers of the community. It was also revealed that most extension workers (75%) operate haphazardly without work programmes and visit schedules.

However, the major constraint that has put the extension service under criticism of being ineffective and considered as a national development liability has been due to neglect to train extension workers in communication skills. The field of extension is dependent on the communication competence of extension workers to facilitate agricultural education programmes and influence farmers' adoption of innovations. Therefore the aspect of communication skills in information dissemination is critical in raising farmers' consciousness, reflective learning and change of attitude, values, beliefs, habits, life styles and traditional ties that hinder adoption of agricultural innovations. Lack of communication skills leads to inaccuracy interpretation of information, inability to develop effective communication strategies, poor database for decision making, poor information flow in terms of report writing, and has become a source of administrative conflicts due to misinterpretation. The main lessons that have emerged from the research and that should be recommended for adjustments are as follows:

7.1 RECOMMENDATION FOR IMPROVEMENT OF EXTENSION SERVICES:

7.1.1 Capacity building

Staff training on communication skills, the technical subject matter/technology packages and specific extension training tasks, should be an integral part of the extension programme preparatory activities. Systematic training needs assessment and tasks analysis for staff training programmes should be conducted regularly to determine which new training subjects are to be offered. Training on platform and analytical skills also seems to be lacking, such as on community and group organisation, leadership, participatory needs assessment methods, message design and multi-media strategy development.

The training interventions conducted at national level must be designed to respond to field experiences and changes in extension roles through modeling of training curriculum of agricultural training institutions to integrate intensive social sciences particularly communication skills and adult/agricultural education.

7.1.2 Client focus

The system's central focus should be to empower farmers by giving them a voice in the extension delivery system. This can be achieved in a number of ways, such as shifting from the use of Training and Visit (T&V) extension communication approach to Participatory Extension Approach (PEA). The reason is that the T&V has the attributes of dependence syndromes which make both the extension workers and farmers not productive. For instance the fact that the extension workers rely on impact points from the research and subject matter specialists for onward transmission to farmers has negative impact on their psychological domain. The concept of dependence makes extension workers feel they do not have the capacity to carry out diagnostic survey and formulate messages that suit the needs of local farmers. Also when impact messages are not made available, the extension worker has nothing to offer to the farming communities. Similarly farmers shall never learn to be self reliant or creative to exploit the resources available including their own knowledge for their sustenance.

The other way of empowering farmers with a voice is by exposing them to a system that allows them be sources of knowledge discoveries and provide platform for analysis of their knowledge and make recommendations for local farmers' utilization. Farming is a science and an art that is dictated by local conditions like weather, soil type, local market and other locally based factors. Therefore solutions to farmers' problems can not be provided by another person who does not know the prevailing conditions (as is the case with impact message formulation by subject matter specialists). In this context the researcher proposes decentralization of the process of formulation of impact points at camp and block levels. The local farmers are broad based in knowledge and experiences of local situations; therefore if given the opportunity to exploit their knowledge, formulate their own messages as long as they are given the technical advice, they would be great human resources for agricultural development.

7.1.3 Intensification of extension operation in groups

The fact that the findings have revealed that there is great desire from farmers demanding for more frequent visits from extension workers, means that there must be a shift of attention for extension provision from the consultative and individual approaches to group type of communication strategy. The group approach would give audience to a large group of farmers over a short time unlike the individual approach. It will also allow Farmer-to-farmer extension through the use of farmer groups and facilitates the process of innovation diffusion and adoption.

7.1.4 Information systems

Targeting calls for appropriate flows of timely and reliable information, and hence for monitoring and evaluation. Farmers' demands should be identified, and the extension service tailored to suit local technological and economic circumstances unlike the prevailing situation whereby the extension workers have to request for foreign designed impact points from the researchers or the subject matter specialists for their operations. Such formulated messages are irrelevant for agricultural development purposes. Extension workers need to be developed to formulate agricultural messages that apply to their environment and meet farmers' needs. Besides that the district office should utilise the local community radio station for dissemination of agricultural information to complement on the efforts of extension workers.

7.1.5 Intensive supervision

The findings revealed that for extension service provision to be effective; there must be the aspect of intensification of supervision of extension workers.

7.1.6 Staff recruitment

The findings revealed that the extension service is under staffed and could only afford to expose 50 percent or less of its farmers to agricultural information. It was revealed that the extension worker to farmer current working ratio was 1:1,500. The ratio is high in comparison to the recommended standards of 1:800 for developed nations. The lack of transport for extension operations coupled with under staffing have weakened the extension services. The other factor of significance revealed was the gender imbalances of extension staff and the low female participation in group meetings and at other agricultural educational activities. This problem can be resolved if there will be increased

recruitment of female extension workers to attend to female farmers problems especially on issues that relate to traditional values which hinder women from taking greater challenges in decision making roles for agricultural development.

7.1.7 Staff Incentives

The findings revealed that extension workers are denied incentives (e.g. allowances) and this has demoralised them leading to development of negative attitude towards extension services operations.

REFERENCE

- Akayombokwa et al (2000). *Food and Agriculture Organization: Land and Water Development Division: A case Study of Zambia-Paper*,. Lusaka: Zambia
- Battes, R.H. (1976). *Rural Response to Industrialization: A study of Village*. New Haven: York University.
- Benor, D. et al (1984). *Agricultural Extension: The training and Visit System (T&V)*. Washington: DC.
- Central Statistics Office, (1996). *Zambia Demographic Health Survey*. Lusaka: Central Board of Healthy
- Central Statistics Office, (2000). *Population and Census*. Lusaka: Zambia.
- Central Statistics Office, (2001). *Zambia Demographic Health Survey*. Lusaka: Central Board of Health.
- <http://clwebjournal.lib.purdue.ed/library/definition> (communication).
- Hunter, G. (1969). *Modernizing Peasant Socities: A Comparative Study of Asia and Africa*. London: Oxford University.
- Jones, G.E. (1967). *The Adoption and Diffusion of Agricultural Practices: World Agricultural Economics and Rural Sociology Abstract*. London: Temple Smith.
- Kalapula, E.S. (1984). *Back to the Land: Youth Based Agricultural Land Settlement, Centres For Development in Southern Zambia (thesis)*. Worcester: WorcesterUniversity.
- Kay, G. (1969). *Agricultural Progress in Zambia*. London: Metheun.

Meller, J.W. (1996). *The Economics of Agricultural Development*. Ithaca: Comwell University press.

Merriam, S. and Simpson, L.E. (1995). *Aguide Research for Educators and Trainers of Adults*. Florida: Krieger publ.

Ministry of Agriculture and Cooperatives: *Participatory Extension Approaches: Trainers Manual-2nd Ed.* (2002). Lusaka: Zamb

Ministry of Agriculture and Cooperatives: *National Annual Report (2005/2006)*. Lusaka: Zambia. Unpubl.

Ministry of Agriculture and Cooperatives: *North-Western Province 2nd Quarterly Report (2005/2006)*. Solwezi. Unpubl.

Ministry of Agriculture and Cooperatives: *District Annual Report (2005/2006)*. Solwezi: Zambia. Unpubl.

Ministry of Finance and Planning *Report (2002)*. Lusaka: Zambia. Unpubl.

Muliokela (ed) (1995). *Ministry of Agriculture and Fisheries: Zambia Seed Technology Handbook*. Berlins: Berlins University.

Nanavatty M.C. (1960) *Group Discussion: An Aid to Education for Citizenship*. New Delhi: Indian Adult Education Association.

Patch, R.W. (1996). *Freedom and Development: Land Tenure Centre No 22*. Mimeo: University of Wisconsin

Pollock, (1971). *Studies in Emerging America*. London: Butterworth.

Rogers, Everett. (1995). *Diffusion of innovations*. Fourth edition. New York:
The Free Press.

Rolling, N. (1990). *Extension Science: Information System in Agricultural
Development*. New York: Cambridge University.

Schultz, T.W. (1964). *Transforming Traditional Agriculture*. New Haven: Yale
University Press.

Sheffield, R. (ed) (1956). *Education, Employment and Rural Development*.
Kerico: East African Publ.

Sikatana, F. M. (2004). *National Agriculture Policy (2004/2005)*. Lusaka:
Zambia:

Starkey, P. et al (1991). *Animal Traction in Zambia: Status, Progress and
Trends* Wageningen.

Sutton, K. (1977). "Population Resettlement Traumatic Upheavals and the
Algerian Experience" in *Journal of Modern African Studies*.
Vol. 15-No.2

Vaden Ban and Hawkins (1988). *Agricultural Extension*. New York: John
Willey & sons,publ.

Vanzetti, N.R. (1972). *Education and Development of Farming in Two Areas of
Zambia*. Suttonbonington: University of Nottingham.

LIST APPENDICES

APPENDIX I

Questionnaire set No 1

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

QUESTIONNAIRE DIRECTED TO CAMP AGRICULTURAL EXTENSION OFFICER:

Dear Sir / Madam,

I'm conducting a research study to assess the effectiveness of Extension Communication strategies currently in use in the Extension Services. Your Camp is among the other selected Camps to furnish the study with the required information. Information obtained shall be kept confidential and strictly used for academic purposes and only where possible shall the information be used for future improvement on the Communication Strategies within the circles of the system (agriculture).

Kindly furnish me with the necessary information to the best of your knowledge.

Your cooperation will be highly appreciated,

Edward Sakuwaha.

INSTRUCTIONS ON HOW TO FILL THE QUESTIONNAIRE:

- ▶ Be brief, but to the point.
- ▶ Answer all questions.
- ▶ Tick (✓) where necessary.
- ▶ Write in the spaces provided.

QUESTIONNAIRE 02

QUESTION-1

SEX

1. Female []

2. Male []

QUESTION 2

AGE IN YEARS:

1. 20-30 []

2. 30-40 []

3. 40-50 []

4. 50-60 []

QUESTION 3

PROFESSIONAL QUALIFICATIONS

QUALIFICATIONS ATTAINED	FIELD OF SPECIALIZATION
1. Certificate	
2. Diploma	
3. Degree	
4. Master's degree	
5. Any other qualifications specify	

QUESTION 4

Other than the qualifications above, have you had any training/s in communication skills?

RESPONSE	Place Tick ✓
1. Yes	
2. No	

QUESTION 5

Provide information on the following.

Male farmers.	Female farmers.	Total number of farmers in the camp.

QUESTION 6

As Camp Extension officer, what communication strategies or methods do you use in communicating to farmers.

Type of communication strategy/method
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

QUESTION 7

What Communication channels / media do you use to communicate information to farmers?

1. -----
2. -----
3. -----
4. -----
5. -----
6. -----
7. -----

QUESTION 8

Which among the Communication Channels/ Media stated in question 7 above are most effective and why?

1. -----

2. -----

3. -----

4. -----

QUESTION 9

What could be the reason/s for the Communication Channels/Media considered to be ineffective?

- 1.-----

- 2.-----

- 3.-----

- 4.-----

QUESTION10

How do you develop the extension communication strategies or methods?-----

QUESTION11

Which of the extension communication strategies or methods stated in question 8 above are most effective? Rank them according to superiority.

Type of communication strategy	Rank according to order of superiority
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	

QUESTION 12

How do you measure effectiveness of extension communication strategies or methods?-----

QUESTION 13

Do you think the messages communicated to farmers of relevance to their economic, social and food security situations?

Yes	
No	

QUESTION 14

If the answer to question 13 is yes, how do you measure the relevance of your messages in relation to farmers' problem solving?-----

QUESTION 15

How often do you communicate with your farmers?

On daily basis	
Once/week	
Twice/week	
Thrice/week	
Four times/week	
Five times/week	

QUESTION 16

What percentages of farmers are exposed to agricultural information in your Camp?

Percentage rating	Place(√)
Nil	
10-20%	
20-40%	
40-60%	
60-80%	
80-100%	

QUESTION 17

Do farmers change their attitudes and behavior in farming practices after the agricultural messages have been communicated to them?

Yes	
No	

QUESTION 18

If the answer to question 17 is “yes,” state the percentage rate of adoption of farmers in your station with regard to the innovations introduced?

Farmers adoption rate of innovations in percentages (%)	Tick/ comment
0-20	
20-40	
40-60	
60- 80	
80-100	

QUESTION 19

In your own views, does the adoption of new farming practices by farmers result into yield improvement?

Yes	
No	

QUESTION 20

What categories of farmers respond to changes in farming practices as communicated (rank)?

CATEGORY OF FARMERS	RANK
Traditional/subsistence farmers	
Small-scale farmers	
Emergent farmers	
Medium farmers	
Large-scale/commercial farmers	

QUESTION 21

Does farmer participation in agricultural activities and response to farming practices or innovations related to level of education?

Yes	
No	

QUESTION 22

If the answer to question 18 is "yes," which farmers react to changes fast?

EDUCATIONAL STANDARD	RANK (1, 2, 3, and 4)
No educational background	
Primary/basic education	
Secondary education	
University education	

QUESTION 23

Do farmers receive agricultural information from other sources or absolutely depend on the Extension workers only?

Yes	
No	

QUESTION 24

If the answer to question 23 is “yes,” then state the sources of farming information and rank by ticking (✓).

Agricultural extension service	Commercial firms	From other farmers	From Mass Media
Highest ()	Highest ()	Highest ()	Highest ()
Fairly high ()	Fairly high ()	Fairly high ()	Fairly high ()
Good ()	Good ()	Good ()	Good ()
Bad ()	Bad ()	Bad ()	Bad ()
Poor ()	Poor ()	Poor ()	Poor ()

QUESTION 25

What is the impact of the current extension communication strategies or methods in use on influencing farmers for change in attitude and behaviour towards adoption of agricultural innovations and improvement of their standard of living?-----

QUESTION 26

If the impact of the current extension communication strategies is not effective to give positive results, what alternative plans would you make to contribute to the improvement of extension communication strategies to ensure effective delivery of messages in future?-----

QUESTION 27

What constraints do you experience in the process of dissemination of agricultural information that renders your communication strategies ineffective?-----

QUESTION 28

What possible solutions do you have which when implemented could reduce or remove the barriers to effective communication which has become a source of hindrance to progression and suspicion of the efficiency of the system (agricultural extension)?-----

QUESTION 29

With the current communication skills or knowledge you have, do you consider it sufficient to ensure effective persuasion of farmers and achievement of objectives?

Yes	
No	

QUESTION 30

What extension communication approach do you use for dissemination of extension messages?

Type of Extension Communication Approach	Space for answer (✓)
Training and Visit Extension Approach (T&V)	
Participatory Extension Approach (PEA)	

QUESTION 31

If the answer to question 26 is “no,” what do you think could be done to solve the problem of communication incompetence?-----

END

Thank you for your cooperation- God blesses you.

APPENDIX 11

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

QUESTIONNAIRE DIRECTED TO BLOCK AGRICULTURAL EXTENSION OFFICER (BEO):

Dear Sir / Madam,

I am conducting a research study to assess the effectiveness of Extension Communication strategies currently in use in the Extension Services. Your Block is among the other selected Blocks to furnish the study with the required information. Information obtained shall be kept confidential and strictly used for academic purposes and only where possible shall the information be used for future improvement on the Communication Strategies within the circles of the system (agriculture).

Kindly furnish me with the necessary information to the best of your knowledge.

Your cooperation will be highly appreciated,

Edward Sakuwaha.

INSTRUCTIONS ON HOW TO FILL THE QUESTIONNAIRE:

- ▶ Be brief, but to the point.
- ▶ Answer all questions.
- ▶ Tick (✓) where necessary.
- ▶ Write in the spaces provided.

QUESTIONNAIRE 2

QUESTION-1

SEX

1. Female []

2. Male []

QUESTION 2

AGE IN YEARS:

1. 20-30 []

2. 30-40 []

3. 40-50 []

4. 50-60 []

QUESTION 3

PROFESSIONAL QUALIFICATIONS

QUALIFICATIONS ATTAINED	FIELD OF SPECIALIZATION
1. Certificate	
2. Diploma	
3. <u>Degree</u>	
4. Master's degree	
5. Any other qualifications specify	

QUESTION 4

Other than the qualifications above, have you had any training/s in communication skills?

RESPONSE	Place Tick ✓
1. Yes	
2. No	

QUESTION 5

Provide information in the table below:

No of Camps	<u>No of Camp Extension officers</u>		No. of farmers in the Block
	Male	Females	

QUESTION 6

How often do you supervise the Camp Extension Officers in Block in a month?-----

QUESTION 7

During your supervision, what activities do you carry out?-----

QUESTION 8

What are the indicators of an effective Camp Extension Officer?-----

QUESTION 9

Do you manage a Camp?(✓) tick in the space provided

Yes	
No	

QUESTION 10

If the answer to question 9 above is "Yes," how do you manage to run both the Camp and the Block?-----

QUESTION 11

In your capacity as Block Supervisor, how do your Camp Extension Officers develop Extension Communication Strategies-----

QUESTION 12

What Communication Strategies/ methods do your Camp Extension Officers use to reach farmers?-----

QUESTION 13

Among the Communication Strategies/ methods mentioned in Question 12, which are most effective for information dissemination?-----

QUESTION 14

How do you measure effectiveness of Communication Strategies?-----

QUESTION 15

What Communication Media do your Camp Extension Officers use for Agricultural information dissemination?-----

QUESTION 16

Among the Communication Media mentioned in Question 15, which are mostly used and why?-----

QUESTION 17

What is the ratio of Extension Worker to No of farmers?-----

QUESTION 18

As a Block Officer, do you think the ratio mentioned in Question 17 above is appropriate for effective Extension information Delivery to farmers? (✓) place a tick in the space provided

Yes	
No	

QUESTION 19

If the answer to question 18 is No, what could be the appropriate ratio for effective information delivery services?-----

QUESTION 20

What is the average percentage of farmers exposed to Agricultural extension information services in your Block? (✓) tick in the space provided

Less than 20%	
20%-40%	
40%-60%	
60%-80%	
80%-100%	

QUESTION 21

Does being exposed to Agricultural information relate to adoption of innovations?
(✓) tick

Yes	
No	

QUESTION 22

If the answer to question 21 is No, why?-----

QUESTION 23

What do you recommend for improvement of extension communication system?-----

Thank you for the information.

Sakuwaha Edward

APPENDIX III

Questionnaire set No3

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

QUESTIONNAIRE - DIRECTED TO THE DISTRICT AGRICULTURAL EXTENSION
METHODOLOGIST:

Dear Sir,

I'm conducting a research study to assess the effectiveness of Extension Communication Strategies (extension methods) currently in use in the Extension Services. Solwezi District is selected on the basis that it has the highest staffing level in the province and therefore easy to make inference. Information obtained shall be kept confidential and strictly used for academic purposes and only where possible shall the information be used for future improvement on the Communication Strategies within the circles of the system (agriculture).

Kindly furnish me with the necessary information to the best of your knowledge.

Your cooperation will be highly appreciated,

Edward Sakuwaha.

INSTRUCTIONS ON HOW TO FILL THE QUESTIONNAIRE:

- ▶ Be brief, but to the point.
- ▶ Answer all questions.
- ▶ Tick (✓).
- ▶ Write in the spaces provided.

QUESTIONNAIRE 3

QUESTION 1

SEX

1. Male []

2 Female []

QUESTION 2

AGE IN YEARS

1. 20-30[]

2. 30-40 []

3. 40-50 []

4. 50-60 []

QUESTION 3

PROFESSIONAL QUALIFICATIONS

QUALIFICATIONS ATTAINED	FIELD OF SPECIALIZATION
1. Certificate []	
2. Diploma []	
3. Degree []	
4. Master's degree []	
5. Doctorate []	
Any other qualification specify	

QUESTION 4

Other than the qualifications above, have you had any training/s in communication skills?

RESPONSE	Place Tick
1. Yes	[]
2. No	[]

QUESTION 5

PROVIDE INFORMATION ON THE FOLLOWING:

No of Blocks in the district	No of Blocks occupied	No of Blocks vacant	No of Camps	No of Camps occupied	No of Camps vacant	No of farmers by gender	Any remarks

QUESTION 6

As Extension Methodologist, what communication strategies or methods are currently in use in the District?

Type of communication strategy/method	Comment/s on strength/ weaknesses

QUESTION 7

Which of the extension communication strategies or methods stated above in question 6 are most effective? Rank them according to superiority.

Type of communication strategy	Rank according to order of superiority
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

QUESTION 8

What Communication Channels/ Media are commonly used for agricultural extension information dissemination in your District?

1. -----
2. -----
3. -----
4. -----
5. -----
6. -----
7. -----

QUESTION 9

Which among the Communication Channels/ Media stated in question 8 above are considered most effective and why?

1. -----

2. -----

3. -----

4. -----

5. -----

6. -----

QUESTION 10

What could be the reason/s for the Communication Channels/Media considered to be ineffective?

1. -----

2. -----

3. -----

4. -----

QUESTION 11

How does the District measure effectiveness of extension communication strategies or methods?-----

-
-
-

QUESTION 12

How does the District design or formulate its extension communication strategies or methods?-----

QUESTION 13

In your capacity as Extension Methodologist, what is the percentage of farmers' exposure to agricultural extension information?

Percentage rating		Place(✓)
Nil		
1.	10-20%	
2.	20-40%	
3.	40-60%	
4.	60-80%	
5.	80-100%	

QUESTION 14

According to your experiences and observations of working with farmers, do you think farmers pay attention to the agricultural messages? [✓] tick

1. Yes	
2. No	

QUESTION 15

If the answer to question 14 is yes, does paying attention to agricultural messages related to adoption of agricultural innovations? [✓] tick

1. Yes	
2. No	

QUESTION 16

By use of the current extension communication strategies or methods, what is the average percentage of farmers' adoption rate of agricultural innovation in the district?

Farmers adoption rate of innovations in percentages (%)	Tick [√] and comment if any
1. 0-20	
2. 20-40	
3. 40-60	
4. 60- 80	
5. 80-100	

QUESTION 17

In your capacity as Extension Methodologist and basing on your analysis on behavioral change of farmers' attitudes with regard to agricultural information, what percentage of farmers have changed for better farming practices in the District? [√] tick.

1. Less than 20 %	
2. Greater than 20 %, but less than 40 %	
3. Greater than 40 %, but less than 60 %	
4. Greater than 60 %, but less than 80 %	
5. Greater than 80 %, but less than 100 %	

QUESTION 18

Do farmers appreciate that agricultural messages are relevant to provide solutions to their economic, social and food security problems? [√] tick.

1. Yes	
2. No	

QUESTION 19

If the answer to question 18 above is No, what could be the problem or constraints-----

QUESTION 20

Does your field staff experience problems in the dissemination of agricultural messages? If so what are these problems?-----

QUESTION 21

Do you think there are hindrances to effective information dissemination? And if so state. -

QUESTION 22

What do you recommend as be the best way to improve the communication network for dissemination of agricultural information services to ensure effective delivery of messages to the farming communities?-----

QUESTION 23

Any other relevant contribution-----

Thank you for your cooperation-God blesses you.

APPENDIX IV

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

QUESTIONNAIRES DIRECTED TO INSTITUTIONAL FARMING UNITS

Dear Sir / Madam,

I am conducting a research study to assess the effectiveness of Extension Communication strategies currently in use in the Extension Services. Your Institution is among the other selected Institutions to furnish the study with the required information. Information obtained shall be kept confidential and strictly used for academic purposes and only where possible shall the information be used for future improvement on the Communication Strategies within the circles of the system (agriculture) so as to respond to your problems.

Kindly furnish me with the necessary information to the best of your knowledge.

Your cooperation will be highly appreciated,

Edward Sakuwaha.

INSTRUCTIONS ON HOW TO FILL THE QUESTIONNAIRE:

- ▶ Be brief, but to the point.
- ▶ Answer all questions.
- ▶ Tick (✓) where necessary.
- ▶ Write in the spaces provided.

QUESTIONNAIRE 04

QUESTION-1

What is the name of the Institution?-----

QUESTION 2

How long has the institution been in farming business?-----

QUESTION 3

How much land (hectares) does the Institution have?-----

QUESTION 4

Where does the Institution receive advice on agricultural information? (✓) tick in the space provided.

Agricultural Extension service	Commercial firms	From other farmers	From Mass Media
Highest []	Highest []	Highest []	Highest []
Fairly high []	Fairly high []	Fairly high []	Fairly high []
Good []	Good []	Good []	Good []
Bad []	Bad []	Bad []	Bad []
Poor []	Poor []	Poor []	Poor []
None []	None []	None []	Non []

QUESTION 5

Has the Institution got a full time employed Manager who is a source of agricultural information? (✓) tick in space provided.

Yes	
No	

QUESTION 6

If the answer to Question 5 is Yes, what are the qualifications of the Manager?

QUALIFICATIONS	FIELD OF SPECIALIZATION
1. Certificate	
2. Diploma	
3. Degree	
4. Master's degree	
5. Any other qualifications specify	

QUESTION 7

If the answer to Question 5 above is No, does the Institution need the services for an Agricultural Extension staff? (✓) tick

Yes	
No	

QUESTION 8

If the Institution has been receiving Agricultural Extension Services, what communication strategy or methods has the Extension Officer been using to reach the Institution for information delivery?-----

QUESTION 9

Is the strategy or method of Agricultural Extension information dissemination to the Institution appropriate for enhancing the development of the Institution agriculturally?

Yes	
No	

QUESTION 10

If the answer to question 9 above is No, what should be done to improve the communication networking system between the Agricultural Service delivery providers and the Institutional Agents?-----

QUESTION 11

Provide any other relevant information that you feel can help to improve communication networking and thereby achieve the objectives of agriculture development-----

Thank you,

~
E. Sakuwaha.

APPENDIX V

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF MASS COMMUNICATION

INTERVIEW SCHEDULE FOR FARMERS AT FOCUS GROUP DISCUSSION:

BRIEF INTRODUCTION ABOUT THE PURPOSE OF THE STUDY:

Dear farmers,

The research study is purposed to assess the effectiveness of the extension communication networking between the extension service providers and the farmers as beneficiaries of agricultural extension packages. The basic concern is to establish the cohesion and gaps if any that exist in the extension communication system and thereby determine measures to improve the system and ensure an effective delivery service that benefits both parties (farmers and the extension providers).

The core of effective communication is rooted in the communication strategies or methods developed. The degree and extent of the strengths and weaknesses in the communication strategies used is what determines the degree of influence and effectiveness of the system. Therefore the methods used in the communication process need be examined closely and set in order to achieve our objectives as individual farmers and as a nation.

Therefore feel free to participate and make sincere contributions that will help shape and restructure the system for better and friendly future aimed at improving the agricultural extension delivery system for improved standard of living. It is evident that agriculture holds the key to poverty reduction and prosperity of farmers, but this can not be achieve unless the agricultural communication system that bridges the source of information packages and the farmers as consumers is completed.

Thank you.

Edward Sakuwaha.

QUESTIONS:

- 1 What do you know about agricultural extension services?
- 2 Do you have an Extension Worker in your area?
- 3 What work does he/she do?
- 4 How often do you meet your Extension Worker per week?
- 5 How do you organize yourselves to meet your Extension Worker?
- 6 How do you get to know that you are to meet the Extension Worker?
- 7 Who develops the plan/schedule for meeting with the Extension Worker at which he/she delivers information?
- 8 What messages are usually delivered to the community by the Extension Worker?
- 9 What communication processes/ methods/ strategy does the Extension Worker use to deliver messages to the farming community?
- 10 Do you think the communication methods used are appropriate and help you understand the messages very clearly?
- 11 Among the communication processes/ methods mentioned, which is the most effective and communicate information with much clarity?
- 12 To what extent has the communication process/method used helped you improve your farming practices?
- 13 Do you think the messages communicated to you are relevant to solve farming problems?
- 14 Do farmers attend to sessions at which the Extension Worker communicates his/her messages to the community?
- 15 Do farmers who attend meetings for dissemination of agricultural messages adopt the new practices?
- 16 If not, why do farmers not adopt?
- 17 What are the other sources of agricultural information other than the government Extension services?
- 18 How effective is the extension communication system to the farming community with regard to farmers' change of attitudes and behaviour to shift from traditional practices to modern?

- 19 Do you think the information sources are reliable for accuracy and consistent?
- 20 Do you think there is any communication discrimination?
- 21 what discrimination is this and how does it affect the farming community?
- 22 What do you think could be done to curtail such discrimination and improve for better?
- 23 What constraints does the farming community experience with regard to extension communication and information delivery?
- 24 What do you think could be done to solve the problem and improve on the communication approach?
- 25 Is the extension communication service throughout the year?
- 26 Which quarter of the year, does extension communication become more intensive and why?
- 27 Which farming sector do farmers receive much information (e.g. crops, livestock, horticulture, fish farming, women orgainsation, land husbandry, farm management, cooperatives and marketing, e.t.c.)?
- 28 what do you recommend for improvement of extension communication process?

END OF INTERVIEW

EDWARD SAKUWAHA.

APPENDIX VI

LIST OF NAMES OF CAMPS AND BLOCKS OF SOLWEZI DISTRICT

LIST OF AGRICULTURAL EXTENSION CAMPS AND BLOCKS IN SOLWEZI DISTRICTS		
SERIAL	NAMES OF BLOCKS	NAMES OF CAMPS
1	CENTRAL	Kyafukuma East
		Kyafukuma West
		Kimiteto
		Zang'amenu
		Mushitala
		Kapepa
		Mbonge
		Central
		Kimasala
	Sub total	9
2	ST.FRANCIS	St.Francis
		Kapinjimpanga
		Mujimanzovu
		Mapunga
	Sub total	4
3	MUTANDA	Mutanda
		Kayonge
		Sandang'ombe
		Kyabankaka
		Mumena
		Lukendo
		Muyashi
		Matebo
	Sub total	8
4	MUSHINDAMO	Mushindamo
		Kilumba
		Chikola
		Luafula
	Sub total	4
5	LUNGA	Kangwena
		Chingovwa
		Lamba
		Kasampa
		Luamala
		Kakombe
		Lunga
	Sub total	7

6	MAHEBA	Maheba A
		Maheba B1
		Maheba B2
		Maheba C
		Maheba D1
		Maheba D2
		Maheba F1
		Maheba F2
	Sub total	8
7	MUKUMBI	Mukumbi
		Mangala
		Lubinga
		Manyama
		Lumwana East
		Shilenda
		6
8	CHOVWE	Chovwe
		Kakozhi
		Chitungu
		Kisasa
		Jivundu
	Sub total	5
GRAND TOTAL		52

**MAP OF SOLWEZI DISTRICT -
SHOWING CAMP AND BLOCK BOUNDARIES**

