

Institutional linkages between research, extension and farmers, a key factor for sustainable agricultural development: The Nyanga district perspective, Zimbabwe.

By

Nyamupangedengu Zuvarashe Sydney

Submitted in the partial fulfilment of the requirements for the degree of
MSc Agricultural Extension
In the

Department of Agricultural Economics, Extension and Rural Development
Faculty of Natural and Agricultural Sciences
University of Pretoria

Pretoria

Republic of South Africa

June 2015

DECLARATION

“I declare that this thesis I am submitting to the University of Pretoria for the Master of Science (MSc.) degree represents my own work and has never been submitted by me to any other institution for a degree”.

Nyamupangedengu Zuvarashe Sydney

June 2015

DEDICATION

To my dear wife Rejoyce and my son Tawana-Christian, my late father Remigius and my mother Maria.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my supervisor and promoter Dr S.E Terblanché for his support throughout my MSc programme. From University of Pretoria Department of Statistics, many thanks goes to Dr Mike van der Linde and Paul van Standen for their input in 'panel beating' my questionnaires. Dr van de Linde again and Mr Andries Masenge for their enormous assistance in data analysis, a special shout goes to you guys.

My team of enumerators, Tonderai Mudondisvika, Precious Gumbo and Tsitsi Mashapure, I salute you guys for the outstanding work which you offered me, may the Almighty richly bless you. My brother-in-law Elliot and my sister Anna, thumps up. Data collection was going to be impossible without your car for three months.

I would like to extend my heartfelt thanks to staff from Nyanga Experiment Station led by Officer-in-charge Mr Mbowera, team from AGRITEX Nyanga led by the District Agricultural Extension officer (DAEO) Mrs Rwambiwa, your participation in the survey was so much appreciated. It took a lot of time and patience to answer all those questions. All the farmer respondents from Sedze, Weaving and Manjoro, the interviews were done in the middle of the field preparation time but you spared your precious time for my cause, you are so great.

My brother Cuthbert and my sister-in-law Eunice I thank you in a special way for your moral support and staying with me throughout the duration of my studies. I am deeply indebted to my wife Rejoyce and my son Tawana for your unwavering support throughout my studies. For very long periods of time I was away from you guys because of my studies. To all my family members, my mother Maria your concern towards my studies really gave me some energy when the going gets tough.

ABSTRACT

Institutional linkages between research, extension and farmers, a key factor for sustainable agricultural development: The Nyanga district perspective, Zimbabwe.

Degree: MSc Agricultural Extension

Department: Agricultural Economics, Extension and Rural Development

Supervisor: Dr S.E Terblanché

Abstract

The purpose of the study was to establish the current state of public research-extension-farmers linkages in Nyanga district of Zimbabwe. Public agricultural research and extension are custodians of agricultural development. This is not to disregard other private and Non-Governmental Organisations (NGOs). The quantitative study had a target sample of 150 communal farmers (N=150) which were systematically sampled from the three clusters in Nyanga districts' wards 19 and 22 as well as 12 extension officers (N=12) and six research officers (N=6), all of the responded well to the questionnaires. The data from the completed questionnaires was analysed using SAS Enterprise Guide version: 43.

The study revealed that the frequency of communication and communication channels used by the three stakeholders does not suggest or support any proper structural linkages. However, farmers were satisfied with the frequency of communication and the overall work of extension officers in promoting farmer development. They also appreciated the practical and useful information they receive from the extension officers. However the same could not be said for the research officers. Farmers indicated that they are not satisfied at all by the services they receive from research officers from Nyanga Experiment Station (NES). All farmer respondents from Sedze cluster have never engaged with research officers from NES in any farming business yet they are only 30km away from NES. In other words, the farmer-research and research-extension contacts are almost non-existent while the farmer-extension contacts are relatively better. Throughout this study, there were some contrasting responses from both research and extension officers and the farmers. The public officers rated the services they offer to the farmers as very good but the farmers

never rated them that good. Other findings revealed that there are no organised farmer-research-extension linkages. Only low levels of informal networks exist between farmers and extension officers. There were reports of a research-extension steering committee but there were no indications of its functionality in this study. The decisions on research themes are done at the research head offices (top-down approach) robbing the farmers and even the frontline extension officers of the opportunity to contribute. There was great excitement shown by farmers from Manjoro and Weaving clusters who are working with research officers from NES on organic pesticides trials. This indicated that farmers are so much willing to engage researchers in activities that are aimed at improving farmer development.

The merger of Agricultural, Technical, and Extension Services (AGRITEX) and DR&SS did not improve technology generation and dissemination, rather it created confusion, overlaps and duplication of duties. This was reversed in 2010. The public research and extension officers are working under severely stressed budgets, a situation that could be a major contributing factor in job burnout being experienced by research officers. However, under these conditions both research and extension officers indicated that they are energetic and proud as well as hard working on their job. They further hold some pride in working for their departments where they foresee good future prospects. They have also accomplished worthwhile things in their lives as a result of their job. Both sets of officers also indicated that coordination problems are experienced in their work and that they require in-service training to deal with the ever changing environment under which they work.

TABLE OF CONTENTS

Declaration.....	I
Dedication.....	II
Acknowledgments.....	III
Abstract.....	IV
Table of contents	VI
List of tables.....	X
List of figures	XIII
Abbreviation and acronyms	XIV
CHAPTER 1: INTRODUCTION	1
1.1 Background to the study.....	1
1.2 Agricultural extension system in Zimbabwe	3
1.2.1 Agricultural extension in pre-independence Zimbabwe.....	3
1.2.2 Post-independence Agricultural Extension in Zimbabwe	3
1.3 Problem statement	5
1.4 Research objectives	6
1.5 Importance and benefits of the proposed study.....	7
CHAPTER 2: LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Community participation	9
2.2.1 Motivation to community participation	11
2.2.2 Principles of community participation.....	11
2.2.2 Importance of Extension agents in community participation	14
2.3 Farmer groups	16
2.3.1 Stages of group formation	16

2.3.2 Characteristics of an effective farmer group	17
2.4 Institutional linkages	23
2.4.1 Purpose of institutional linkages.....	24
2.4.2 Institutional linkage examples around the globe	25
2.4.3 Institutional linkages and informal networks in Zimbabwe	33
2.5 The study conceptual model.....	36
CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY	38
3.1 Introduction.....	38
3.2 The description of the study area	38
3.3 Sampling and data collection	40
3.3.1 Sampling.....	40
3.3.2 Data collection tools.....	40
3.3.3 Data collection procedures	41
3.4 Data processing and analysis.....	41
CHAPTER 4: DEMOGRAPHIC PROFILE OF THE RESPONDENTS	43
4.1 Introduction.....	43
4.2 Demographic characteristics of the farmers	43
4.2.1 Age and gender distribution.....	43
4.2.2 Household size	44
4.2.3 Labour	45
4.2.4 Employment status	46
4.2.5 Levels of education.....	47
4.2.6 Literacy levels	48
4.3 Farmer groups.....	51
4.3.1 Group sizes from the three clusters	51
4.3.2 Indicators of effectiveness of farmer groups	54
4.4 Demographic characteristics of the researchers and extensionists.....	60
4.4.1 Designations of researchers and extensionists	60

4.4.2 Gender distribution within research and extension officers.....	61
4.4.3 Levels of education and training	61
CHAPTER 5: THE SERVICES RENDERED BY RESEARCH AND EXTENSION OFFICERS AS PERCEIVED BY THE FARMERS	65
5.1 Introduction.....	65
5.2 Farmers' rating of research and extension officers' work	65
5.2.1 Farmer's knowledge of research and extension officers with whom they work.....	65
5.2.2 Meetings between farmers and research and extension officers.....	67
5.2.3 Communication channels used by farmers and the research and extension officers.....	70
5.2.5 Research and Extension officers' efforts towards setting, maintaining and supporting new farmer groups.....	82
5.2.6 Practical advice rendered to farmers by research and extension officers.....	85
5.2.7 Usefulness of information provided to the farmers by the research and extension officers	88
5.5 Summary and conclusions	90
CHAPTER 6: INSTITUTIONAL LINKAGES.....	95
6.1 Introduction.....	95
6.2 Importance of public research and extension organisations.....	95
6.3 Farmer-research-extension linkages	97
6.3.1 The current state of farmer-research-extension linkages as perceived by the farmers	97
6.3.2 The role played by research and extension officers in building and maintaining effective farmer-extension as well as farmer-research linkages.	109
6.3.3 Summary of farmer-research and farmer -extension linkages	116
6.3.4 The role played by research and extension officers in building effective research-extension linkages.....	118

6.3.5 The effort of research and extension officers in maintaining effective research-extension linkages	123
6.3.6 Institutional working relationship and the strength of linkages according to farmers, researchers and extension officers respondents	127
6.4 The services of agricultural research stations	133
6.5 Governments efforts to improve technology generation and dissemination	135
6.6 Research and extension officers' perceptions on burnout, job satisfaction and work situations.....	138
6.6.1 Extension and research officers' perceptions of burnout (negative stress or frustrations)	138
6.6.2 Extension and Research Officers' perceptions of Job Satisfaction	142
6.6.3 Extension and Research Officers' perception of the Work Situation.....	146
6.7 Summary and conclusions	150
CHAPTER 7: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	154
7.1 Introductions.....	154
7.2 Summary and conclusions	154
7.3 Recommendations	157
LIST OF REFERENCES.....	161
APPENDIX 1 FARMERS QUESTIONNAIRE.....	166
APPENDIX 2 RESEARCH AND EXTENSION OFFICERS QUESTIONNAIRE	175

LIST OF TABLES

Table 4.1:	Age and Gender distribution of the farmer respondents (N=150)	43
Table 4.2:	Household sizes of the farmers (N=150)	45
Table 4.3:	Labour distribution for the three sampled clusters of Nyanga district in Zimbabwe	46
Table 4.4:	Employment status of the farmers	47
Table 4.5:	Highest level of education attained by the farmers from the three cluster areas	48
Table 4.6:	The literacy levels of the farmers	49
Table 4.7:	Group size effect, against individual group member benefit	52
Table 4.8:	An evaluation of the effectiveness of the farmer groups	55
Table 4.8b:	An evaluation of cooperation between group members as an indicator of group effectiveness as perceived by farmer respondents	55
Table 4.9:	Farmers responses to the statement on rotation of meeting venues	56
Table 4.10:	Designations of research and extension officers	60
Table 4.11:	Gender distribution between extension and research officers	61
Table 4.12a:	Educational qualifications held by research and extension officers	62
Table 4.12b:	Professional qualifications held by research and extension officers	63
Table 5.1:	Frequency of farmers responses to the identity of research and extension officers with whom they work	66
Table 5.2a:	Farmers response to the frequency of meetings with the officers	68
Table 5.2b:	Research and extension officers' response to the frequency of meeting with the farmers	69
Table 5.3a:	Farmers response to the question on communication channels used	70
Table 5.3b:	Research and extension officers response to the question on communication channels used	72
Table 5.4a:	Farmers' rating on extension and research officers' efforts on setting up and maintaining new farmer groups	75
Table 5.4b:	Farmers' rating on extension and research officers' efforts on supporting new farmer group	78
Table 5.4c:	Farmers' rating on extension and research officers' efforts in	

	maintaining and supporting old or existing farmer groups	80
Table 5.5:	Extension and Research officers' own rating of efforts they are putting on promoting farmer groups	83
Table 5.6:	Farmers rating of practical advice rendered by research and extension officers	86
Table 5.7:	Farmer respondents rating the usefulness of information received from the research and extension officers	89
Table 6.1:	Farmers, research and extension officers respondents' responses on public agricultural research and extension organisations as engines for promoting agricultural development	96
Table 6.2a:	Farmers perception of coordination on linkage planning methods, agreement first before implementation of planned methods and follow through on planned activities as indicators of farmer-research-extension linkages	98
Table 6.2b:	Farmers perception of communication as a linkage indicator on the existence of farmer-research-extension linkages	103
Table 6.2c:	Farmers perception on agreement in setting goals and objectives as linkage indicators between them and research and extension officers	106
Table 6.2d:	Farmers perception of the existence of individual autonomy, autonomy of partners and sharing of resources, as linkage indicators between them and research and extension officers	108
Table 6.3a:	Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings, ensuring two-way information flow and satisfaction among farmer groups <u>in building</u> effective <i>farmer-extension</i> and <i>farmer-research</i> linkages	111
Table 6.3b:	Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings, ensuring two-way information flow and satisfaction among farmer groups <u>in maintaining</u> effective <i>farmer-extension</i> and <i>farmer-research</i> linkage	112

Tables 6.4a: Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings and ensuring two-way information flow <u>in building</u> effective <i>extension -research</i> linkages	120
Tables 6.4b: Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings and ensuring two-way information flow <u>in maintaining</u> effective <i>extension -research</i> linkages	124
Tables 6.5a: Farmers' rating of the overall institutional working relationship with NES researchers and AGRITEX officers	128
Tables 6.5b: Research and Extension officers rating of the overall institutional working relationship between themselves and the farmers	129
Table 6.6a: Farmers rating of the strength of the linkage between them and research and extension officers	130
Table 6.6b: Research and Extension officers rating of the overall strength of linkage between them and the farmers	132
Table 6.7: Farmers, researchers and extensionists perceived knowledge on how NES sets out its' research programmes	134
Table 6.8a: Farmers, researchers and extensionists response to the question on the merger of DR&SS and AGRITEX to form AREX	136
Table 6.8b: The improvement of service delivery from AREX as perceived by farmers, research and extension officers	137
Table 6.9a: The extent of burnout as experienced by District Extension officers	139
Table 6.9b: The extent of burnout as experienced by Nyanga experiment station research officers'	141
Table 6.10a: The extent of Job Satisfaction as perceived by District Extension officers' according to selected statements	143
Table 6.10b: The extent of Job Satisfaction as perceived by Nyanga experiment station research according to selected statements	145
Table 6.11a: The work situation as perceived by district extension officers' according to selected statements	147
Table 6.11 b: The work situation as perceived by NES research officers'	149

LIST OF FIGURES

Figure 1: The expanded situational leadership model (Hersey, 2001)	21
Figure 2: A conceptual schema for the functioning of research-extension linkage	36
Figure 3: The Map of Zimbabwe showing the location of Nyanga district and its' wards	38

ABBREVIATION AND ACRONYMS

AREX:	Agricultural Research and Extension Services
AA:	Agricultural Assistant
AARD:	Agency for Agricultural Research and Development
ADPs:	Agricultural Development Programmes
AEA:	Agricultural Extension Agents
AEC:	Agricultural Extension Centre
AEIC:	Agricultural Extension and Information Centre
AGRITEX	Agricultural Technical and Extension Services
AIAT:	Assessment Institute for Agricultural Technology
AR:	Agricultural Researchers
ARC:	Agricultural Research Council
ATAP:	Agricultural Technology Assessment Place
ATS:	Agricultural Technology systems
BAE:	Bureau for Agricultural Extension
BMTRM:	Bi-Monthly Technical Review Meetings
Conex:	Department of Conservation and Extension
CSO:	Central Statistics Office
DAEO:	District Agricultural Extension Officer
DDF:	District Development Fund
DDP:	Dairy Development Programme
Devag:	Department of Agricultural Development
DR&SS	Department of Research and Specialist Services
DS:	District Specialist
E&BS:	Economic and biometrical services
ES:	Extension Supervisors
EW:	Extension Workers
IP:	Intellectual Property
IPO:	Intellectual Property Office
LDT:	Livestock Development Trust
LPD:	Livestock production and development
MIS:	Management Information Systems

MOA:	Ministry of Agriculture
MOFA:	Ministry of Food and Agriculture
MTADP:	Medium Term Agricultural Development Programme
NAEP:	National Agricultural Extension Project
NAERLS:	National Agricultural Extension and Research Liaison Service
NARP:	National Agricultural Research Project
NES:	Nyanga Experiment Station
NGO:	Non-Governmental Organisations
OIC:	Officer-in-Charge
PRA:	Participatory Rural Appraisal
RRA:	Rapid Rural Appraisal
RELCs:	Research-Extension Linkage committees
RO:	Research Officer
RT:	Research Technicians
SAFIRE:	Southern Alliance for Indigenous Resources
SMS:	Subject Matter Specialist
T&S:	Travel and Subsistence
T&V:	Training and Visit
ToT:	Transfer of Technology
UN:	United Nations

CHAPTER 1

INTRODUCTION

1.1 Background to the study

The origins and early meanings of extension get back to as early as 1800 B.C. In Mesopotamia (Iraq), the first known example of extension is the inscribed clay tablets in which advice on watering of crops and getting rid of rats were given (Ashmed 1982 in Stevens, 2010). The concept of institutional linkages implies the communication and working relationship is established between two or more organisations pursuing commonly shared objectives in order to have regular contact and improved productivity (Düvel, 2005a).

Havelock (1986) contends that linkage is a term used to indicate that two systems are connected by messages so as to form a greater system. He argues that if the barriers between two systems are permeable enough for messages and responses to flow out of each to the other, then a link has been created between the two. From this viewpoint, agricultural research and extension services are two systems which are linked by information flow and feedback (Agbamu, 2000). Agricultural research and extension organisations in Zimbabwe and many other countries are established as instruments for promoting agricultural development, and that effective linkages between these organisations help them to achieve their goals. These institutions were strategically set up in different geographical areas to serve in identifying research problems and provide solutions that are well adapted to the local conditions.

The continuous flow of agro-technologies will definitely play important roles in identifying research problems, adapting the recommendations to local conditions and providing feedback to researchers about the innovations that have been developed. Effective communication links between researchers, extensionists and farmers are vital in the modification of technological recommendations and in initiating further research; such links enable new technologies and management practices to be suited to local ecological conditions (Agbamu, 2000). However, there always seems to be a lack of close working relationship between national agricultural research and extension organizations, with different categories of farmers and farm organizations (Swanson, 2004). Swanson (2004)

further postulated that research and extension organizations generally compete over the same scarce government resources and, frequently, leaders of these institutions do not see themselves as part of a broader system. Instead, they try to increase the flow of resources coming to their respective institutions and to solve day-to-day management problems, rather than ensuring that their respective organizations contribute to the broader goal of getting improved agricultural technology to all major categories of farmers, not as separate entities but through collaborative, participatory, inclusive, and sustainable means.

It is disheartening to note that some leaders and staff of many research and extension organizations do not appreciate the important roles that farmers and farmer organizations can play, both in disseminating technology and, through effective feedback mechanisms, that are useful in setting priorities and improving programme relevance (Swanson, 2004). Farmers are still regarded as mere consumers of already made packages which are made without their concern and input, with most researchers still regarding extension officers as agents for the transfers of their findings to users, this was also highlighted by Rolling (1995) who asserts that if someone asks any agricultural researcher how extension works, the likely response would be “extension transfers the findings of agricultural research to users”.

This study is based on the premise that public agricultural research and extension organisations are established as instruments for promoting agricultural development, and that research information should be a product of participative and collaborative efforts of research, extension officers and farmers and that effective linkages between these three role players should work as a tool to ensure that this is achieved. Farmers should equally participate in research and extension activities in order to improve on sustainable agricultural production and ultimately, their living standards. Research information should not only be for academic purposes where the researchers only made use of farmer fields and other resources for their own academic advancement and extension officers should not only be agents of technology transfer.

1.2 Agricultural extension system in Zimbabwe

1.2.1 Agricultural extension in pre-independence Zimbabwe

In the 1890s when the colonists entered Zimbabwe, the natives were farming extensively using a system of rotational cultivation. Land will be tilled continuously for up to four years, and then left idle for anything up to 15 years before being cultivated once again (Kramer, 1997). The pressure for land gradually increased as the Africans were continuously being pushed to poor non-arable land in the 'reserves' under various land acts which the ruling colonial leaders instituted. This among other forces brought out the need to assist the native Africans with some conservative farming techniques. This led to the appointment of Emory D. Alvord, an American missionary in 1927 at Mount Selinda Mission in Chipinge.

He had been selected to instruct the pupils there on so-called 'improved agricultural methods' (Kramer, 1997). Back then, the agricultural extension service was divided along racial lines with much bias towards providing good quality service to white farmers whilst black subsistence farmers were poorly serviced. The Department of Conservation and Extension (Conex) and the Department of Agricultural Development (Devag) were established. The former had the institutional mandate to provide advisory services to white large-scale commercial farmers, while the latter was meant to service native black subsistence farmers (Cobbett, 2000). The two departments were merged at the dawn of independence in 1980 to form Agricultural, Technical, and Extension Services (AGRITEX).

1.2.2 Post-independence Agricultural Extension in Zimbabwe

Cobbett (2000) pointed out that there are three fundamental changes to the agricultural extension services that took place after independence namely, the unification of Conex and Devag to AGRITEX, the migration from white (commercial) areas to black (communal) areas and the rapid Africanisation of the management personnel. The formation of AGRITEX according to Cobbett (2000), has firstly, permitted the rationalization of the service and encouraged greater efficiency in the use of limited resources and Labour.

Secondly, it has facilitated greater awareness and understanding of the huge gap between the commercial and communal sectors. Thirdly, it has resulted in improved co-ordination both between ministries and Non-Governmental Organisations (NGOS) involved in rural

development. Great deals of extension efforts are directed towards rural communal farmers were frontline Extension Workers (EW) live within the villages. On the other hand, the commercial farmers mainly receive service by visiting specialists from provincial or district offices. They even take them to their farms most of the times. They also make use of phone calls were they receive some assistance over the phone. According to Pazvakavabwa 2001, the greatest benefit from the merger of Conex and Devag was an accompanying directive which stated that the new extension department had to focus specifically on the communal areas and the resettlement areas. This meant that the research department (DS&SS) which was also created at the major of these two had to come up with some initiatives to meet this directive.

The early days of AGRITEX was also characterized by some challenges, chief among them was loss of qualified and experienced staff. Initial resignations were linked to racial considerations but later on dissatisfaction with the conditions of employment became the major cause. Saravanan 2008, citing the Herald newspaper of 14 March 2006 reported that most districts at the moment are being serviced by general and inexperienced extension workers who lack the requisite scientific expertise.

Even at the present moment, staff turnover in AGRITEX and many other public sector jobs is very high. Leaving many middle and senior management levels posts unfilled or presided over by very inexperienced staff. In 2001, the extension officer to farmer ratio was 1:800 (Pazvakavabwa, 2001) with Hanyani-Mlambo, 2002 reporting that Within, there is little information on how many farmers AGRITEX is actually reaching and servicing. However this ratio is probably higher than the 1:800 given the massive brain drain that the country has been undergoing.

Currently, AGRITEX uses a variety of extension approaches to service farmers. These include the use of the Master Farmer training approach, group development area, radio listening comprising general development interest groups, training and visit (T&V). Farming systems research and extension, commodity based approach and others. Master farmers training approach was more widely adopted since it was aimed at developing competent farmers (Chipika, 1985; Pazvakavambwa, 1994). The objective of master farmer training was to spread modern, scientific farming techniques in communal areas.

Master Farmer certificates and badges were awarded to communal farmers who adopted and practised improved methods. The T&V was aimed at upgrading the technical content of field extension activities, while making agents' activities more predictable and thus more accessible to farmers. The idea was to increase the effectiveness of agricultural extension services through comprehensively structured training, delivery and administrative systems

1.3 Problem statement

According to the government of Zimbabwe, the extension system's role is to link research, science and technology to the needs of the farmers and the agro-industry through development of effective linkages with its clientele and institutional partners and to involve them in the planning, execution of extension services (Zimbabwe Agriculture Policy Framework, 1995-2020). Work on extension approaches have also been documented with most of the results highlighting major deficiencies in some approaches such as Transfer of Technology (ToT) and the T&V approach (Stevens, 2010). On the other side, support for participatory extension approaches seems to be taking the centre stage. Pilot studies in some districts of Masvingo Province in Zimbabwe have shown the critical role played by effective farmer participation and well-coordinated institutional linkages among researchers, extensionists and the farmers.

Results from the pilot studies were extensively well published in the country with the department of AGRITEX adopting most of the recommendations and pledging to apply them in its' extension activities throughout the country (Hagman, Chuma, Murwira & Connolly, 1998), with establishment of strong linkages among all the role players in the agricultural sector and the promotion of participatory extension approaches topping the list. Despite all the recommendations and the pledges for adoption, the reality on the ground shows that there are no effective institutional linkages that are in existence in most parts of the country especially among public agricultural services providers and the rural subsistence farmers. In a few areas where there are some forms of linkages, the linkage structures are very informal and they tend to be personal rather than structural (Hanyani-Mlambo, 2002).

Does this imply that the public agricultural service providers in Zimbabwe cannot establish viable institutional linkage structures on their own without the involvement of other private players? The implication here is not to disregard the role played by private sector

organisations in agricultural development, in any case one would like to see a more pluralistic approach in extension service provision gaining momentum. In Zimbabwe, agricultural research and extension services provision is still so much reliant on the government and efficiency has to improve for better service delivery and ultimately for improvement on agricultural production. While acknowledging that fiscal crises, economy wide budget cutbacks which have led to structural adjustments programs have forced governments to make sharp reductions in the budgets of public extension programs (Umali-Deininger, 1997). However the least that is being done with those very little resources should be seen.

The researcher strongly feels that more has to be done to strengthen linkage networks among the public service agricultural role players and the resource poor subsistence farmers. It may be a far-fetched challenge for researchers to be actively involved in active farm based research in the whole catchment area due to reasons mentioned earlier on, however there should be some activity with farmers who are close to the research station. It is unacceptable that farmers who live within the 30 km radius from the research station are not even aware of the existence of such an important institution. Whose interests then will this institution be serving?

1.4 Research objectives

Broadly, the researcher would like to explore the linkage that exist among the following role players; public extension service providers and researchers from Nyanga Experiment Station (NES) as well as the subsistence farmers who live within the 30km radius from the research station.

Specific objectives are:

- To identify the existence, strengths and weakness if any, of institutional linkages among research, extension and farmers, (who live close to NES).
- To establish whether the merging of AGRITEX& Department of Research and Specialist Services (DR&SS) by the government improved collaboration between technology generation and dissemination.
- To determine the willingness of farmers, researchers and extension personnel in actively participating in coordinated research and extension activities.

- To establish an understanding of how research stations determine their research themes.

This study seeks to address the following research questions:

- What is the current state of institutional linkage structures, if any that exist among research, extension, and farmers?
- How strong or weak are the research-extension-farmers institutional linkage structures?
- What are the factors that determine the willingness of farmers, research and extension personnel in actively participating in coordinated research and extension activities?
- Did the merger of AGRITEX and DR&SS by the government improved collaboration between technology generation and dissemination.
- How do public research institutions determine its' research themes?

1.5 Importance and benefits of the proposed study.

Public research and extension institutions are custodians of agricultural development in many developing countries. There are also other very important players in the private sector including NGOs. However some of the programs and projects that these other players undertook may be on short to medium term basis but the public players are always available. In many cases the, private players usually hands over their projects to the public service providers when they leave.

It is therefore very important that there are proper linkage structures between public research and extension because it enables: other players to easily fit into the field and compliment or fill in the deficiency areas within the sector. It also becomes easier for new players to establish proper linkage structures with the public players if they themselves are linked there by eliminating duplication of roles, wastage of resources and confusion on the farmers side, among other shortfalls. Continuity of projects is also guaranteed in the event that the other private players leave.

The problem of individual interest between public service agricultural service providers and the farmers should also be addressed by this study as well as promoting relevant research

which is compatible with the needs of the target farmers, and not research which is only meant for individual academic enrichment. The study also seeks to explore sustainable avenues that would lead to the promotion of active farmer participation in every aspect of agricultural development, which is seen here as key not only to agricultural development but rural development and empowerment at large. This work seeks to provide sustainable ways of identifying problems, analysing them, proposing solutions, implementing as well as monitoring and continuously evaluating them all in an inclusive manner.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A streamlined, coordinated and formal way of working together of different but related institutions or individuals to achieve one or more goals defines, not inclusively what linkages entails. In recent times researchers have been calling for public and private non-profit and for profit organisations to work together in formally coordinated linkages to avoid among other issues duplication of duties, wastage of resources and mere confusion on the side of recipients/farmers. In the field of agricultural extension and rural development, community participation, institutional linkages and coordination are three central aspects that are critical to the realisation of any meaningful development (Düvel, 2005a). These three aspects are discussed in this chapter.

2.2 Community participation

According to Düvel (2005b), participation is by implication a process through which the community is mobilised to become involved in the whole development process. The degree of involvement by the communities is not always the same, there are different forms and purposes of participation, Düvel (2005b) outlined the following three forms of participation:

a) Participation as a means in development

Reid (2000) accentuates that participation is the heart that pumps the community's life blood, it is one of the key ingredients of an empowered community. In an ideal environment, people should not be driven or pushed into participation rather they should be motivated to take part in all the endeavours aimed at improving their lives. In most developing countries where most people are living in poverty, community participation is usually very low.

Poverty stricken communities often lack self-esteem and confidence to stand up and contribute to efforts that offers more livelihood options. In all agricultural development

programs, community mobilisation should be prioritised. Facilitators should identify where the community's priorities lie and figure out what it is that motivates them (Community participation, undated). The starting point in doing this may be through community leaders who may assist in establishing key contacts between concerned parties. Care must however be taken in doing this to ensure that all community members are represented. Community heterogeneity should be taken into consideration.

Communities are made up of different people of different backgrounds and characters, a motivation factor within the same community may motivate one group and leave out others (Community participation, undated). As an example, water harvesting within a community may motivate some people to participate whilst some personnel desires to score points in one's status or position in society may be the pushing factors for other community members.

b) Participation as a normative goal (as an end in itself).

Social and human rights as well as advocates for democracy and the emancipation of humans were the drivers of this theory. The realisation and acceptance by United Nations (UN) organisations has led to this theory becoming a primary goal of development. In this set up, farmers are seen as subjects of development (Düvel, 2005b). This is important given the high rate of failure of many innovations or technologies that are pushed to the farmers. Düvel (2005b) indicated that for people to have a strong tendency of resisting changes when they are told about their problems and what changes they should implement. Participation as a normative goal seeks to empower people to have a say and accept responsibility for their development programmes. In other words, participation as a normative goal advocates for 'local action' rather than 'local involvement' (Terblanché (2010).

c) Participation for partnership

Participation for partnership is seen as a compromise between participation as a means in development and participation as a normative goal or as a combination of the 'top-down and down up management approaches, (Terblanché ,2010). There should be significant inclusion of the people at every stage of the educational process that is identifying needs,

setting goals, determining subject content, and designing and carrying out the educational experiences.

2.2.1 Motivation to community participation

In a participating community, no conditions are drawn among various groups and types of personalities who offer themselves to community involvement (Reid, 2000). Communities in most developing countries should be encouraged to realise that past discrimination, colonial oppression, dirty politics, poverty and individual reluctance should not be allowed to continue hindering full community involvement. Everyone should assume active responsibility of reaching out to all citizens, inviting them to actively contribute to the betterment of their community. Proper community participation should take place during all of the following activities (Reid, 2000:177-178).

- Need Assessment- expressing opinions about desirable improvements priorities, goals and negotiating with agencies.
- Planning- formulating goals, settings goals and criticising plans.
- Mobilising- raising awareness in a community about needs, establishing, or supporting existing structures within the community.
- Training- participation in formal or informal training activities to enhance communication, construction, maintenance and financial management skills.
- Implementation- engaging in management activities, contributing directly to the construction, operation and maintenance with labour and materials, contributing cash towards costs, paying of services or membership fees of community organisations.
- Monitoring and Evaluation- participating in the appraisal of work done, noting down improvements that may be done and redefining the needs.

2.2.2 Principles of community participation

Reid (2000) highlighted the following principles of participation, which are key to development activities especially in resource poor farmers;

a) Large number of people

Depending on the population size, the first and most obvious principle of participation is that as many people as possible should be involved. The overall participation rate of 75% shall be considered very good for communities that are still upcoming. Most communal farmers in developing countries still do not participate in agricultural development projects in large numbers. The figures for developed communities are somehow better than those of developing communities. Leadership in community should be suitable in line with the maturity level of those specific groups. When the community is 'high task and low relationship', then the 'telling' style of leadership may be used, when 'high relationship and low task' prevails, then the delegation style of leadership may be employed (Hersey, Blanchard & Johnson, 2001).

b) Many people centred

Besides large number of people, participating communities are open to involvement by many groups. They divide up responsibilities in a way that draws on the special talents and interests of contributing organisations by assigning responsibility for independent action to these groups (Reid, 2000). Reid (2000) further postulates that under the overall umbrella a representative community board or leadership, power and responsibilities are decentralised in a participating community. The fruits of that being a community that has many centres of activity and that is capable of reaching deeply into the natural enthusiasm and talents of its' citizens. This sounds very much good but putting it into practice has not been easy in most communal farming communities of the developing world, Zimbabwe included. Of late researchers have been calling on all extension agents and other community development practitioners to be catalysts of community participation rather than being agents of technology transfer.

c) Open and advertised

The business of participation is open to all and widely publicized. Any means possible should be used to inform the community about opportunities that are available for them to contribute meaningfully. Poor communication elements that may lead to wrong information being passed or that select individual community

members may lead to suspicion, distrust, conflict and ultimately to the death of community involvement.

d) Open and to all ideas

There is no wrong or bad idea in participating communities. Each and everyone's idea is welcomed and treated with due respect. This builds confidence and true sense of belonging, not only to the contributing member but to everyone. It sets a welcoming tone for fresh ideas and inspirations that might otherwise be hidden due to fear or ridicule (Reid, 2000). Participating communities establish ways of screening out the best ideas from the merely 'interesting' ones but in a way that acknowledges the value of all ideas, no matter what their source. In doing so, they encourage all their citizens to bring forth their best ideas, all for the good of the community.

e) Inclusive and diverse

In a participating community, no distinctions are drawn among various groups and types of personalities who offer themselves to community involvement. All persons are actively welcomed into useful roles, regardless of their colour, age, race, prior community involvement, level of education, occupation, personal reputation, handicap, language, appearance, religion, or any other factor.

Participating communities know and recognize that, truly, we are all made equal, that we have an equal right to share in the work and benefits of community enhancement, as well as in its costs. The entire community is poorer when we fail to do so. Further, participating communities do not sit by passively, waiting for a diverse group of citizens to present themselves for involvement. They realize that past discrimination, inexperience, and individual reluctance can hinder full community involvement, and they actively reach out to all citizens to invite active contributions to the community's business.

f) Open mind and Open process

In principle, the operations of participating communities are very clear to everyone involved. They are not controlled by any one organisation, do not represent any

specific group of people and are not limited to any one philosophy or way of doing business. The leadership is there to facilitate discussion of a diversity of viewpoints rather than to push its own agenda. Reid (2000) explains that leaders are not ego-driven but focused on operating a high quality, open decision-making process. In short, they should be open, open in mind and open in the way they carry out community activities. The area of leadership in community participation is very critical since it is the nucleus of the community. Its' activities determines the functioning of the whole community.

2.2.2 Importance of Extension agents in community participation

The establishment of research-extension-farmers linkages relies on the contribution of all the three parties. However the current situation in Zimbabwe and most other developing nations with little or non-existent institutional linkages would require a unique approach from extension agents. As mentioned earlier on, they are expected to play more catalytic and facilitators' roles.

They should migrate from agents of technology transfer to charismatic, innovative individuals and this may require further training. Sustainable linkage structures will be difficult to establish and maintain if the target communities are disjointed. All stakeholders should recognise that previous development approaches, which through ignorance have undermined local self-reliance, must be replaced. Agricultural science and extension has poorly understood the nature of 'indigenous' and rural people's knowledge. For many, what rural people know is assumed to be 'primitive', 'unscientific' or overtaken by development, and so formal research and extension must transform what they know so as to 'develop' them (Stevens, 2010).

While we acknowledge that a lot of effort and research has been done and published to correct the above mentioned conceptions, many people especially in rural Zimbabwe still live under these retrogressive situations. Researchers have suggested three major lessons for extension to be learnt: First important thing is to make new things visible. An important role of extension is to make visible the state of the environment and the extent to which present farming practices are untenable. Furthermore, extension can demonstrate

the feasibility of sustainable practices. Of greater importance too is for extension to equip farmers with the knowledge that enables them to observe their own situation and be able to monitor it too.

The second lesson is the use of farmers' knowledge. The location-specific nature of sustainable agriculture implies that extension make use of farmers' knowledge and work together with farmers. Often, indigenous practices which have been ignored in favour of more formal research can be fruitfully revived. Promotion of indigenous technology development practices and farmer experimentation can be an important entry point for introducing sustainable farming practice (Brouwers & Roling, in press all quoted by Stevens, 2010).

The third lesson is an emphasis on facilitating learning. Instead of being agents for transfer of already made packages, extension workers must help farmers 'walk the learning path'. Extension workers should seek to understand the learning process, provide expert advice where required, convene and create learning groups, and help farmers overcome major hurdles in adapting their farms.

Fessler, in Terblanché (2010), highlighted some of the basic attitudes appropriate to the change agent in promoting participation.

- He accepts that life is so complex that there are always people in the community with more experience and knowledge, particularly about the local situation.
- As he gains mastery of his chosen field he is not delude that he knows enough. He always tries to broaden his horizon.
- He works hard to put himself in other people's shoes whenever he deals with them.
- He puts effective communication with others above entertaining or impressing them with his erudition and cleverness.
- He helps people to accept unpleasant situations that they cannot change, and helps others to look at elements of the situation that present new challenges to them.
- He accepts his own limitations and helps others to do the same. Declines to undertake the leadership responsibilities, but rather endeavours to develop the talents of community members.

- He resists the temptation to expect preferential acceptance of his ideas and in no case indulges in ‘throwing his weight around’.
- Help others to sub-ordinate their individual expectations to the common good by demonstrating that this is a dominant factor in his philosophy of life. He constantly raises the question of how he and his fellows can work for the common good even when this means giving up some of their own personal gratifications.
- He values other people’s time as highly as his own.

By his own increasing maturity of mind the change agent is making it possible for others to achieve maturity and fulfilment along with him. This, according to Fessler quoted by Terblanché (2010), is the essence of planned change in a democratic community.

2.3 Farmer Groups

Farmer groups play an important role in providing a platform for farmers to participate in issues of agricultural development. Stevens and Terblanché (2004) specifically distinguished the farmer groups as ‘effective farmer groups’ which they referred to as a prerequisite for accelerated agricultural development in South Africa. They went on to add that effective farmer groups are the ‘vehicle’ to work collectively towards change at farm level and can help with the empowerment of farmers. It takes time and lots of effort to produce well-functioning farmer groups.

The mobilization of farmers into effective groups is one of the major functions that modern day research and extension officers are expected to undertake as highlighted in section 2.1.4 above. The same transformation is also expected from research officers, their primitive view of regarding their work as independent from farmer involvement should be a thing of the past. Researchers’ approach of regarding extension officers as agents of transferring their findings to farmers is tantamount to poor agricultural development (Rolling, 1995).

2.3.2 Stages of group formation

Like a human baby that goes through several stages of growth and development, farmer groups also goes through several stages or phases of development. According to Stevens and Botha (2003), for groups to be more effective, it is necessary that the dynamics of

group development are facilitated well in order to get synergy between cooperation and combined action of group members, and several skills are needed to successfully guide a group through these stages. The drive behind such guidance is expected to come from extension officers. The question that follows is whether our extension officers are equipped enough to deal with skill demanding duties. There is need for some curriculum review on the training of our extension officers to include courses that cater for such needs. Tuckman and Jensen (1977) and Forsyth (1999) identified five stages of group development. These stages may be longer or shorter for each group, or for individual members of the group.

The five stages of group development are:

- Forming or orientation stage
- Storming or the conflict stage
- Norming stage
- Performance or the task performance stage
- Adjourning or dissolution stage

2.3.3 Characteristics of an effective farmer group

On their work on sustainable agriculture development through effective farmer groups, Stevens and Terblanché (2004:43) identified 8 characteristics of effective farmer groups and these are discussed below.

a) Existing structure

External factors have seen to be major role players in shaping up farmer groups. They come in the form of attitudes, new laws and regulations, tradition or even inadequate support, just to mention a few. These forces may positively or negatively affect the performance of these groups. What individual group members bring to the group goes a long way in shaping the overall performance of that group (Stevens & Terblanché, 2004:44).

Sobel, Curtis and Lockie (2001) were of the opinion that the way these individual human factors are applied within the groups will produce patterns of behaviour in human organization that also determines the productive capacity of the group. Groups and group promoters needs to align their own thinking and that of the rest of the group members to the core functions and needs of the group as a whole if any

meaningful progress as to be achieved. The development of group priorities based on appropriate expectations or indicators of success are important to maintain the engagement of group participants (Stevens & Terblanché, 2004:44).

b) Shared vision and goals

Forming a group with any reasons for its formation will not yield any results. Studies have shown that high efficient groups have clearly illustrated shared vision, goals, objectives and motivation. According to Beal *et al*, (cited by Stevens and Terblanché, 2004:44), 'a group unaware of its purpose is a rudderless ship.' This was supported by Terblanché (2000) who found that nearly 64% of the members of the more effective study groups have a clear knowledge of the group goals, while only 35% of members of the less effective study groups indicated a clear knowledge of the group goals.

c) Setting norms and building trust through active participation

Setting of norms in farmer groups may be both formal and informal, however participatory approaches are vital in opening up and setting individual group members to feel free to talk or express some ideas and contributions. This will help members to develop shared vision in relation to the task and goals ahead of them as a group. The more the group members mix the more trust is built, making it easier to tackle any conflicts or to make collective decisions. Effective communication should be key to the operations of any group. According to (Beal *et al*, cited by Stevens and Terblanché 2004:45), the more group members actively participate and work together within a group, the more favourable are their attitudes towards the rest of the group members, and the greater the feeling of concern for and identifying with the group in future.

In his study Terblanché (1986), found that 30% of the members of the less effective farmer groups are not satisfied with the communication patterns within their groups, while members of the more effective farmer groups were much more satisfied with the two-way communication patterns within their groups (only 4% indicated their dissatisfaction). Group continuity, transparency and accountability is enhanced by seemingly less important issues such as frequency of meetings, meeting venues

and other activities. Terblanché (2004) found that more efficient groups are characterised by the fact that meeting venues are rotated monthly, while the less efficient groups tends to meet monthly on the same venue. Meeting on the same venue is typical of many of communal farmer groups in Zimbabwe who meeting at rural service centres for their farming business. In the same study Terblanché (2000) also found that the more effective groups make less use of external experts in their programs than the less effective groups. They make significant use of their own members to complete tasks and discuss them at group meetings than less efficient groups. This supports the notion that farmers in general are more willing to listen and trust the experience and knowledge of other farmers who are in situations similar to them.

d) Size of group

Stevens and Terblanché (2004) posit that the size of a group is related to the effectiveness of the group, with smaller groups being more effective. The two authors also found that the relative more effective groups were found in general to be fairly small (seven members), democratic and reasonably homogeneous in terms of farming systems, needs and resources at their disposal (Terblanché, 2000). In these enabling environments, it was found that group members are more likely to trust each other and accept joint responsibility for any actions the group takes. Individual needs like self-interests are also expected to be met well in small efficient groups than less efficient groups.

e) Leadership

Leadership can be described as a process by which an individual guides others in their pursuits, in the various forms which include organising, directing, coordinating, supporting and motivating all their endeavours. Groups need leadership and several skills of working together for them to be effective. There are many types of leadership styles that need to be applied to different farmer groups depending on the maturity of the group. The maturity levels are the different combinations of ability and willingness that group members bring to each task (Hersey, Blanchard & Johnson, 2000). The concept of appropriate leadership with specific reference to maturity level of a group as well as conflict resolution in group context was well

articulated by Hersey and Blanchard (2001) in their situational model. The authors of the model used the terms task behaviour and relationship behaviour as well as readiness level in their work. According to Hersey *et al.*, (2001), task behaviour refers to the extent to which leaders are likely to organise and define the roles of the members of their group and to explain what activities each is to do, when, where and how tasks are to be accomplished. It is characterised by endeavouring to establish well-defined patterns of organisation, channels of communication and ways of getting jobs accomplished.

They defined relationship behaviour as the extent to which leaders are likely to maintain personal relationship between themselves and members of their group by opening up channels of communication, providing socio-emotional support, active listening, and psychological strokes and facilitating behaviour. Developers of the model identified ability and willingness as two major components of maturity or readiness level. They defined ability as knowledge, experience and skill that an individual or group brings to a particular task while willingness was referred to as the extent to which an individual or group has the confidence, commitment and motivation to tackle a specific task (Hersey *et al.*, 2001).

After this the authors developed four basic leadership styles which are high task and low relationship; high task and high relationship; high relationship and low task; and lastly low relationship and low task. Presenting graphically by plotting task behaviour from low to high on the horizontal axis and relationship behaviour on the vertical axis makes it easier to describe the four leadership styles. Some work was also done in categorising the different levels of readiness or maturity. The words 'maturity' and 'readiness' levels will be used interchangeably to mean the same thing in the piece of work.

Figure one on below shows the task and relationship behaviours of a leader as well as a continuum of follower readiness.

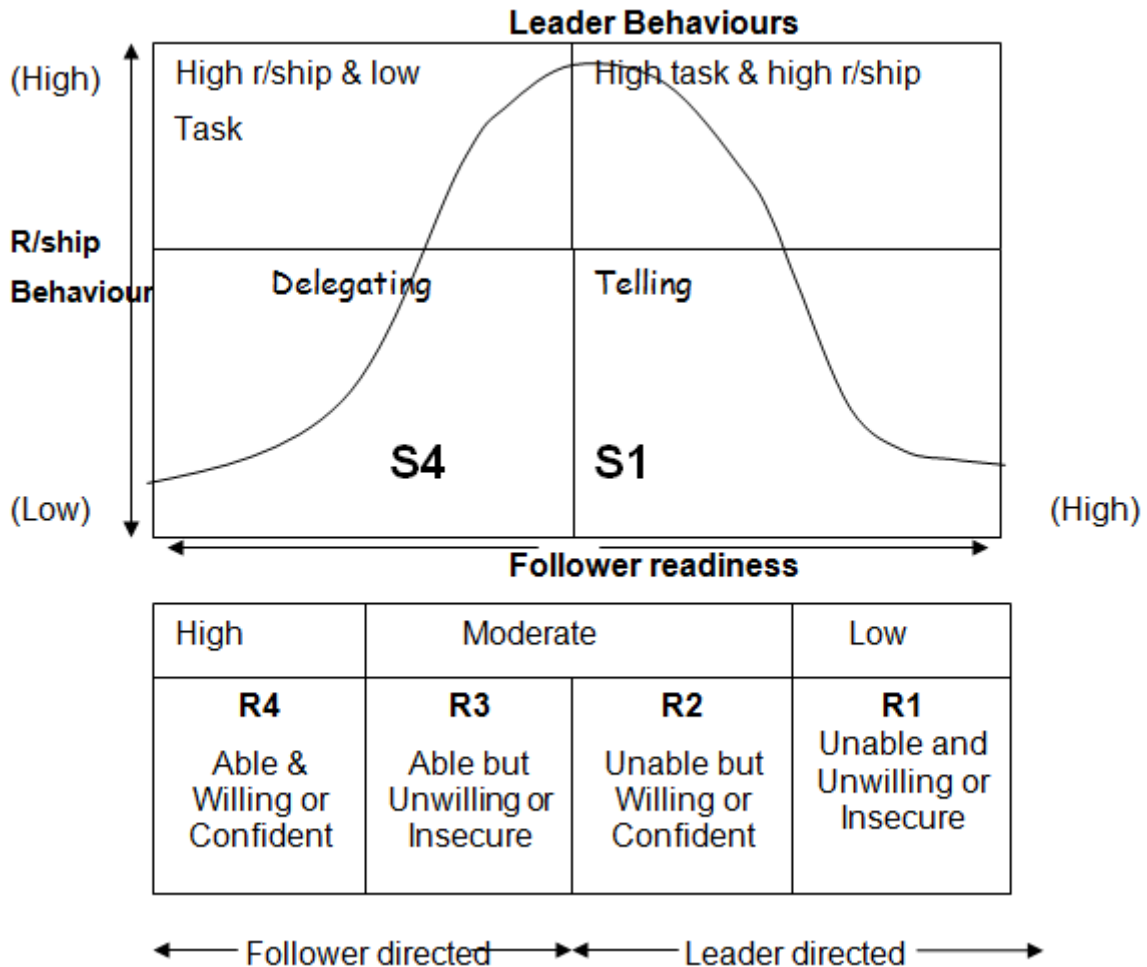


Figure 1: The Expanded Situational Leadership Model (Hersey *et al.*, 2001)

As evidenced by the graph, at lower levels of readiness, the leader provides direction meaning decisions are leader-directed. On the other hand at higher levels of readiness, the followers becomes responsible for task direction, hence the decisions becomes follower or self-directed. The maturity levels are the different combinations of ability and willingness that group members bring to each task (Hersey *et al.*, 2001).

It becomes the duty of the leader to match the appropriate leadership style with the group maturity level in order to bring the expected results. This technique of matching leadership with the maturity level has led to poor farmer groups functioning in South Africa. Leaders rarely assess the maturity levels of their

followers before they adapt a particular style. Participative leadership also captures leadership styles such as transformational, charismatic and visionary leadership. Participative leadership involves consulting with subordinates and the evaluation of their opinions and suggestions before the manager makes the decision (Mullins, 2002).

Charismatic leaders are said to possess a divinely inspired gift that sets them apart from more commonplace leaders (Weber in Forsyth, 1999). They are known to be inspirational speakers who express ideas that are both appealing and easily understood. They change their followers by raising their self- confidence, providing them with a shared set of goals for future activities and increasing the group's sense of common identity (Mullins, 2002:278). These are the kind on leaders that most of our rural farmers groups need, leaders that are not moved by wrong political decisions which at times negatively affects the functioning of farmer groups.

f) Networking

Networking within members of the same farmer group and between farmer groups was found to be very important in enhancing efficiency within the farmer groups. Norman, Bloomquist, Freyenberger, Schurle and De Kok (1996) found out that networking was viewed as critically important by farmers in sustainable agriculture as a means for accessing information that is not readily available from outsiders. There is creation of bonds, feelings of mutual support and common destiny as well as the reduction of feelings of isolation in networking (Stevens &Terblanché, 2004). In his work, Terblanché (1986) found that a total of 86% of the respondents of highly effective groups indicate that it is absolutely desirable to form networking with other groups and even 60% of the respondents of less effective groups shared the same vision.

g) Development of human capital

Group efficacy was found to have an influence on what people do as a group, how much effort they put into their group business and their staying power when efforts fall (Bandura, 1986). Stevens and Terblanché (2004) found individuals belonging to relative efficient study groups were more prepared to set higher goals for

themselves and engaged in self-regulation of their own learning curve to achieve these goals. Such human and social capital is still very much lacking in rural farmer groups in Zimbabwe and many other African countries. Empowering these groups and guiding them towards such development will ultimately lead to improved self-confidence and eagerness to endeavour in experimental learning that could be very beneficial to them.

h) Monitoring and evaluation

The ability to keep track of how a certain program is running as well as being able to make any adjustments is very important in the success of agricultural program and projects. The groups' ability to monitor and evaluate its' own work will be more efficient than those that cannot perform such tasks. Monitoring and evaluation needs to be encouraged in our farmer groups if they are improve on efficacy. It was found to be very important for high efficacy groups to re-evaluate the constitution (once a year) and if necessary adjust their goals, planned activities and budgets based upon what they would have learnt from the recent past Ohlson, Düvel & Terblanché (quoted in Stevens and Terblanché, 2004).

2.4 Institutional linkages

We have been discussing community participation earlier on in this chapter mainly because it is difficult to establish coordinated linkages among research institutions and extension service providers with individual farmers. The paradigm shift of the last decade or so towards more participatory approach in extension and rural development has re-enforced the original philosophy of extension which seeks 'to help people help themselves' (Düvel 2002: 104).

Several researchers, Düvel, 1991; Crompton, 1984; Oakley & Garforth, 1985; Bunch, 1990; Schmidt, undated all in Zwane (2009) have emphasized the importance of participation in development. If the local community is to become involved, the administrative structures must become accessible and they must be encouraged to move away from 'experiencing problems' to a situation of analysis and planning which implies a

process of becoming independent and, what is very important, a process of co-operation and co-ordination with the extension and development organisations (Terblanché, 2010).

2.4.1 Purpose of institutional linkages

Research and extension organisations are established as instruments for promoting agricultural development and effective linkages between these organisations help them to achieve their goals (Agbamu, 2000:1). Düvel (2005a) gave three main reasons as the rationale behind institutional linkage structures and they are discussed below:

a) It allows for a true partner relationship between development agent and community

Participatory development finds its optimal expression in a true partnership between service providers and communities, the most basic of which is that between the extension agent and the community he serves which is commonly referred to as extension service area Düvel (2005a). For such a partnership to be possible and effective, the partners have to interact with one another in order to establish needs, to agree on development priorities, and on procedures and processes through which to pursue them and to evaluate their outcome. However, the practical impossibility of an extension worker to interact with the large number of community members within his area necessitates a linkage or institutional structure in which the target community is represented and acts as its mouthpiece, (Düvel, 2005a).

b) It provides an institutional structure serving as framework for development

The pinnacle of community participation is empowerment and the associated self-determination. The empowerment of communities is based on the process of creating power with others, rather than on self-empowerment (Vogt & Murrell, 1990 cited in Düvel, 2005a). This takes place through participation. Without the necessary institutional structures there cannot be alignment and that can, according to Senge (1992) quoted by (Düvel 2005a), only worsen the chaos and complicate the management and coordinated unfolding of the development process. It is through empowerment that commitment of the community is accomplished, but this calls for empowered, recognized and appropriate institutional structures.

c) Linkage structures provide a framework for effective extension coordination

The linkage structure, which links a community with its' service provider in a partner relationship, can be easily extended to include a multitude of service providers; each entering into a similar partner relationship with the representative body of the community (Düvel, 2005a). That is why the researcher strongly feels that the public agricultural service providers should be at the forefront of the establishment of linkage structures with the communities they serve since they are more like the custodians of service provision to these people.

This would make it easier for other private service providers to come in and establish similar partnerships with the community. If, at the time, the community, on the basis of its empowerment and ownership, dictates or prescribes the development procedures, a sound basis is created for effective coordinated development, characterised by a minimum of duplication and working at cross purposes. Such coordination is structured and more suitable since it no longer relies on unstable and often temporary personal relations between the various service providers, (Düvel, 2005a).

2.4.2 Institutional linkage examples around the globe

2.4.2 (a) Examples from Asia

1). China

According to Stavis (1984), since 1978, the Chinese government has been instituting several reforms to its agricultural system. In its' effort to improve service delivery to its more than 200 million farmers, China eliminated the extension network as a separate system and merged it with the research system and intensified local organisational linkages. Results of this showed notable success in developing new, distinctive technology partially because the Chinese scientists are sensitive to farm conditions.

In the early 1960s the Chinese leadership began to sense certain inadequacies with their research and development (Nyberg, 2002).

- First was the fear that research and development remained too theoretical and was not adequately integrated with actual needs of the farmers.

- To solve this, the major research centres were instructed to establish large demonstration fields on which they could test out their recommendations to see how they worked in practice, ten of them were set up but they somewhat remain isolated from the surrounding countryside.
- This led to the introduction of the new system called 'open door' research. It was designed to ensure free exchange between farm and laboratory.
- This new systems also led to the removal of many research institutes from the oversight of the Chinese Academy of Agricultural Sciences and place them under the supervision of provinces, with the purpose of making them more responsive to local needs.
- The scientists at the research units were required to spend much of their time out of the laboratories; one year in the lab, one year working with rural communities and a third year travelling in rural community to learn the different approaches and problems of different localities.

The greatest success of this merger has been in adapting improved varieties to fit into complex cropping systems under a variety of climatic conditions. This is only a very short example of what has been unfolding in China, a lot of work is continuously done and it is very likely that this system has since undergone some further modifications (Nyberg, 2002).

2). Japan

Agbamu (2000) reported that Japan's 13 national research institutes have networks with 255 prefectural research institutes and experiment stations through six national agricultural experiment stations. The national government does not directly offer extension services, agricultural research-extension linkage in Japan operates at the prefecture (state) level.

- It is a bottom-up management system in which decisions on linkage activities are taken at prefecture level without the direct involvement of national officers.
- Research-extension linkages involve the use of subject-matter specialists, technical committees, joint study meetings, and staff exchanges between prefectural research and extension organisations.
- Farmers' problems and needs are compulsorily sourced by district extension centres from farmers, agro-cooperative societies, schools, and town/village

administrative offices. Local needs identified by extensionists are supplemented with those identified by researchers and subject-matter specialist.

- In general, decisions on the selection of farmers' problems/needs as annual research themes are finalised at the prefectural level by a committee comprised of researchers, administrators, subject-matter specialists, extension workers, farmers' representatives, and knowledgeable persons.
- National officers, although not directly involved in this process, they make input by putting forward unresolved research themes that have been referred to them and by highlighting policy directives on research themes from the National Ministry of Agriculture, Forestry and Fisheries (Agbamu, 2000:3).
- The Japanese research-extension system follows a bottom-up approach with prefectural research and extension organisations of equal status (Agbamu, 2000:3).

3). Indonesia

The Agency for Agricultural Research and Development (AARD) administers 16 national research centres in Indonesia on behalf of the national ministry of agriculture. There are no independent research centres operating at provincial level (Agbamu, 2000:3).

- The agricultural extension service is controlled by the Bureau for Agricultural Extension (BAE), under the ministry of agriculture. BAE supervises extension services at all levels through regional offices and works in collaboration with the heads of districts and villages.
- As part of BAE, the Agricultural Extension and Information Centre (AEIC) operates at district level, while at sub-district level it has about 10-20 field extension workers attached to each Agricultural Extension Centre (AEC).
- Under the AARD is the Rural Socioeconomic Research Centre which is responsible for all on-farm experiments in the regions and (AEC) provinces.
- These on-farm experiments are conducted by the Assessment Institute for Agricultural Technology (AIAT) at provincial level, and by the Agricultural Technology Assessment Place (ATAP) at village level. ATAP is a substation of AIAT.
- Adaptive research staff of AIAT works with subject-matter specialists to develop technology packages which are then passed on to the extension centres. AIAT thus exists as a linkage interface between research and extension organisations on Indonesia.

- The AECs' subject matter specialists and researchers all serve as sources of research needs, but only national researchers make final decisions in selecting research problems and themes. The AECs receive innovation packages from research centres through the subject-matter specialists deployed to AIAT.
- In recent times there has been improved interaction between national research staff, extensionists and farmers at the provincial level but unfortunately this did not influence the structures of final decision on linkage activities which still remains in the hands of AARD (Agbamu, 2000:3).

2.4.3 (b) Examples from Africa

1). Ghana

The work of Quatey (2000:365) asserts that the government of Ghana embarked on several reforms to strengthen its agricultural systems following a recession in the 1970. Most research stations were in dilapidated state, there was a weak and poorly developed agricultural extension system.

Since 1984, the Ministry of Food and Agriculture (MOFA) initiated the Medium Term Agricultural Development Programme (MTADP) which led to the formation of National Agricultural Research Project (NARP) and National Agricultural Extension Project (NAEP). The NARP was initiated in 1992 and the following changes took place (Quatey, 2000:365)

- Research findings are made available for dissemination to the farmers and fishers among other objectives.
- Minor civil works were undertaken in the laboratories and stations.
- Equipment, computers, books, and journals have also been provided to these institutions.
- Research and supporting staff have been given further training.
- NARP now coordinates all research activities in the country to avoid any duplication.
- NARP also introduced a Management Information Systems (MIS) through which a database on all research activities has been created (Quatey, 2000:366).

The NAEP was also initiated in 1992 mainly to execute a unified agricultural extension system, strengthen extension services, to forge linkages between research and extension

and to strengthen the Technical Directorates of MOFA to enable them to provide Subject Matter Specialist (SMS).

Quatey (2000) further postulate that, to fulfil the objectives of NAEP, twenty-two SMS centres have been established throughout the country to facilitate effective research-extension-fisher/farmer linkages and also ensure that relevant research findings are utilised by the fisher/farmer. The SMSs help to identify the technological problems facing the fisher and relay them to the research stations. In cooperation with the research institutes, the SMSs participate in trials to test new technologies for their suitability and adoption. Monthly training of Agricultural Extension Agents (AEA) has also been instituted under the NAEP where, among others new technologies and problems encountered are discussed. In addition to training meetings, bi-Monthly Technical Review Meetings (BMTRM) has been institutionalised. The BMTRM, among its objectives is to provide a platform for interaction between researchers and extensionists for formulation of appropriate solutions to the farmers' technical problems. As a result of BMTRM, research and extension linkage has been strengthened.

The MOFA also formed five Research-Extension Linkage committees (RELCs) whose main duty is to oversee the functioning of research and extension systems in the regions and districts, Some of its duties are, (Quatey, 2000:368):

- Determine research and extension priorities.
- Plan and promote joint training sessions, field visits, workshops, field days and on-farm trials where farmers/fishers and NGOs participate in these trials.
- RELCs have led to greater collaboration and communication between researchers, extension agents, fishers/farmers.
- RELCs, working closely with NARP and NAEP have resulted in higher adoption rates of technologies

2). Nigeria

Agbamu (2000) took his work to Nigeria, his home country. He posits that all the agricultural, forestry and fisheries research institutes are owned by the federal government, the states have no research institutes.

- The extension workers and subject-matter specialist of the state Agricultural Development Programmes (ADPs) depend on the national research system for technologies.
- Five regional coordinating research institutes (operating under the National Agricultural Research Project) oversee the research needs and coordinate farming systems research activities in each of Nigeria's' five ecological zones.
- Research-extension linkages are promoted at regional level through regional research-extension committees and quarterly technology review meetings involving subject-matter specialists. In addition, the National Agricultural Extension and Research Liaison Service (NAERLS) operate through the programmes of each national research institute and through NAERLS regional offices.
- The federal agricultural Coordinating Unit works with collaborating institutions (research, universities and ADPs) in coordinating linkage activities.
- The identification of annual research needs is done through a joint problem diagnostic survey in each state by staff of national research institutes, universities and state ADPs with minimal involvement of farmers, village extension agents and block extension supervisors. National officers assume power in finalising decisions on research themes, a strong top-bottom approach (Agbamu, 2000:5).

3). Tanzania

According to Agbamu (2000:6), research and extension are in different division in the Ministry of Agriculture and linkage mechanisms are not clearly spelt out. The three national research institutes fall under the authority of the Division of Research and Training and have substations in the 47 provinces.

- The Farming Systems Research-Extension Programme- also under the Division of Research and Training is also managed by zonal directors and implemented at provincial level through Liaison Officers.
- Extension falls under the authority of the Division of Agriculture and Livestock Extension Services. Agriculture and Livestock development officers are stationed at regional, with agricultural extension officers and subject-matter specialist based in the provincial headquarters.

- District-level extension officers and village-level farm advisers use the training and visit extension technique. Though the official link between researchers and extensionists is weak (researchers and subject-matter specialist meet once a year), extension officers and subject-matter specialists unofficially inform researchers about farmers' problems.
- Subject-matter specialists are also informally involved in on-farm trials. Farmers and outsiders are mobilised to participate in research-extension linkage programmes, particularly in rice production.
- Research and extension organisations in Tanzania have unequal status and the concentration of power at central headquarters leaves farmer and extension workers as mere consumers of already made packages despite their suitability to their situations (Agbamu, 2000:6).

4). South Africa

ARC South Africa

The Agricultural Research Council (ARC) was established by the Agricultural Research Act 86 of 1990 (as amended) and is the principal agricultural research institution in South Africa. The Act sets out the objectives of the ARC as “conducting of research, development & technology transfer in order to: Promote agriculture & industry; Contribute to better quality of life; Facilitate/ensure natural resource conservation.” This function is carried out through 11 research institutes whose activities are grouped under five divisions: Field Crops (Grain and Industrial Crops), Horticulture, Animal Production and Health, Natural Resources and Engineering as well as Technology Transfer (ARC website, 2013).

Of utmost interest to the researcher is the ‘technology transfer’ function of the ARC. Technology transfer seeks value creation from public investment science to ensure that ARC contributes to a prosperous agricultural sector ARC units work together to facilitate partnerships, coordinate and integrate technology transfer processes. This is done to deliver tangible products and services into the market place for the benefit of the society.

Information from the website indicates that technology transfer falls under four categories which are: Commercialisation; Economy & Biometry Services; Intellectual Property Office (IPO) and Knowledge Management (ARC website, 2013) Only commercialisation and

economy and biometry services, which have some extension components in them, are discussed below.

Commercialization

The Commercialization Programme seeks to explore possibilities of turning ARC research results into tradable commodities for the benefit of the sector. Intellectual Property Rights of the ARC are exploited, using instruments such as technology incubators, joint ventures and licensing models. According to the ARC website (2013), objectives of the Commercialization Programme are:

- Identification and assessment of existing and new ARC technologies for commercialization using a database of ARC technologies to evaluate opportunities for commercialization. This may involve the bundling of technologies into suites as an offering, where warranted
- Development of a licensing protocol for usage of registered Intellectual Property (IP). Guidelines on royalties charged, payment terms, exclusivity and non-exclusivity is provided
- New enterprises/agribusiness that use ARC IP: New businesses, co-operatives or incubators are considered for commercialization of ARC technologies
- Joint venture management with industry players; in joint venture initiatives with key stakeholders such as higher education institutions.

The Economic and Biometrical Services (E&BS)

E&BS facilitates informed decision making by providing research-based strategic advice. It does economic and statistical analyses, provides the arc and potential clients with advice in conducting research, development and technology dissemination projects, and determines the impact of these initiatives(ARC website, 2013).

Economic services

This unit facilitates informed decision making by providing research-based strategic advice. It does economic and statistical analyses; in providing the ARC and potential clients with advise in conducting research, development and technology dissemination projects, and in determining the impact of these initiatives (ARC website, 2013) The economic group uses economic and social analytical techniques to provide strategic advice and economic intelligence in determining investment opportunities; describes the

forces that drive economic development globally in quarterly Economic Outlook reports and their impacts on the South African agricultural sector; determines the viability of envisaged research or development initiatives and establishes the performance of on-going or completed interventions through Impact Assessment studies (ARC website, 2013)

Collaboration with Stakeholders is also under its jurisdiction: includes the University of Pretoria and the Department of Agriculture Forestry and Fisheries, in the form of research; evaluation of technologies; development initiatives; hosting and co-supervising post graduate students and interns and seminar participation. However it was difficult to figure out exactly whether formal or informal linkages exist between ARC and its collaborative institutions.

2.4.3. Zimbabwe, institutional linkages and informal networks

Hanyani-Mlambo (2002) reported some findings of linkages between various organisations in Zimbabwe. In his work he rightfully distinguished formal linkages from informal networks. The main difference between informal networks and formal institutional linkages lies in the initiatives and efforts of different organisations, individuals and local communities to create and maintain them. Formal linkages are very institutional in nature and have written and laid down goals and procedures. All participants know their own and other actors' responsibilities. Informal networks depend on personal contact among the members of different organisations, tend to be determined by need and are developed when required. They also emerge from mutual accommodation and cooperation among and within various state agencies, NGOs, international organisations and groups of farmers. These networks are characterised by the generation or development of knowledge and the exchange of information and resource through regular interaction or informal contacts among different actors (Hanyani-Mlambo, 2002:16).

It is better currently to have at least informal networking taking place than for both public research and extension to fight for higher status and superior recognition from the society. Hanyani-Mlambo (2002) also found that some collaborative initiatives tend to be geographic while others are sector or discipline specific. For example in AGRITEX, the management branch collaborates more with NGOs that are involved in socio-economic issues, while the crop and livestock branches collaborate more with actors whom they have common areas of interest, such as seed companies and stock feed manufactures.

Another general finding of Hanyani-Mlambo (2002) reveals that linkages and networks are more pronounced at the district and local levels than at the head office or provincial levels. A few formal linkages characterize relationship at the administrative (head office) level, where informal networks are almost non-existent.

One of the major findings of Hanyani-Mlambo (2002) was that many stakeholders perceive no clear-cut lines between what can be considered a formal linkage and what can be considered an informal network. Several key informants who were acting as the representatives of various agricultural extension service providers pointed out that they perceive linkages and networks as a single concept in collaboration efforts. Various informal discussions and observations also reveal some weakness among agricultural extension service providers. It is these weaknesses that still prompt the researcher to dwell on the similar subject in order to assist in providing a more sustainable solution to these problems.

2.4.3 Example of linkages and networks around various extension service providers in Zimbabwe (Hanyani-Mlambo 2002:17.)

AGRITEX

Hanyani-Mlambo (2002) reported that AGRITEX has established linkages with organisations and other government departments such as DR&SS, Livestock Production and Development (LPD) Department of Veterinary Services. For example, in on-farm trials, DR&SS conduct the trials, while AGRITEX field staff mobilize local communities, identify collaborating farmers, introduce researchers and monitor experiments. Due to its' extensive coverage on the ground AGRITEX extension officers usually forms part of the boards of Dairy Development Programme (DDP), a wing of the parastatal that is mandated to spearhead smallholder dairy development in Zimbabwe.

A lot of agriculture based NGOs has similar formal arrangement AGRITEX and some. From the above examples alone, it shows that farmers themselves were not treated as equal partners in this linkage structure, a problem which defies the forms and purposes participation mentioned in section 2.4.1 above. A lot more is expected from DR&SS and AGRITEX given the general decline in private sector investment in extension over the

recent times. These two remain the main drivers farmer-research-extension linkages. Hanyani-Mlambo (2002:17) posits that there are aspects of informal networking within what are classified as formal linkages. For example, the informal networks between AGRITEX personnel and the personnel of other donor-funded rural development programmes probably arise because these programmes are often headed by former AGRITEX personnel. Hanyani-Mlambo (2002:17) further posits that AGRITEX informants hold that networks are more pronounced at the district level, where the operating environment and the need to achieve objectives force the various actors to collaborate.

For example, AGRITEX and most government departments have informal linkages with rural district councils. Representatives from these departments seat in their respective sub-committees within the rural district committee. AGRITEX also enjoy symbiotic relations with various other agricultural extension service providers, from which both parties stand to benefit. Examples include the joint field days and competitions organised by AGRITEX and private seed housed and animal feed companies. AGRITEX uses these joint activities as platforms for the dissemination of information and to encourage the adoption of new technologies, while private companies uses the opportunity to market their products. Farmer mobilisation is done by AGRITEX while private agrochemical companies finances the occasions.

Hanyani-Mlambo (2002) further postulates that similar strategic alliances with NGOs allow AGRITEX to mobilize local communities and train them in return for better access to the resources that it needs (vehicles, technical assistance and financing). NGOs benefit from AGRITEX's extension expertise and wide representation on the ground to ensure maximum outreach for their activities. Established linkages and networks have also manifested themselves in other departments and common areas of interest. For example, when a number of organisations involved in link-up programmes became aware that AGRITEX's engineering division (this division has since been upgraded to a department of agricultural engineering) manufactures farm equipment, they start to use that equipment in their projects. However, most linkages with NGOs are based on short-term projects, and so tend not to be very sustainable. That is the other reason why the researcher feels that the public service departments alone should have viable structural institutional linkages. Informal linkages and networks also exist between AGRITEX and the University of

Zimbabwe (based on mutual exchange of information); the Ministry of Health (based on interactions during activities of common concern such as nutrition gardens and supplementary feeding schemes, which both rely on AGRITEX field staff) and many other line ministries which rely on AGRITEX, because their own coverage is very thin (Hanyani-Mlambo, 2002:17).

2.5 The study conceptual model

This study adopted the conceptual schema for the functioning of research-extension linkages by Agbamu (2000). In his work, Agbamu (2000) formulated a theoretical framework of agricultural research-extension linkages from a global perspective and identified the positions of various countries within the framework. The model for a research-extension linkage is shown in Figure 2.

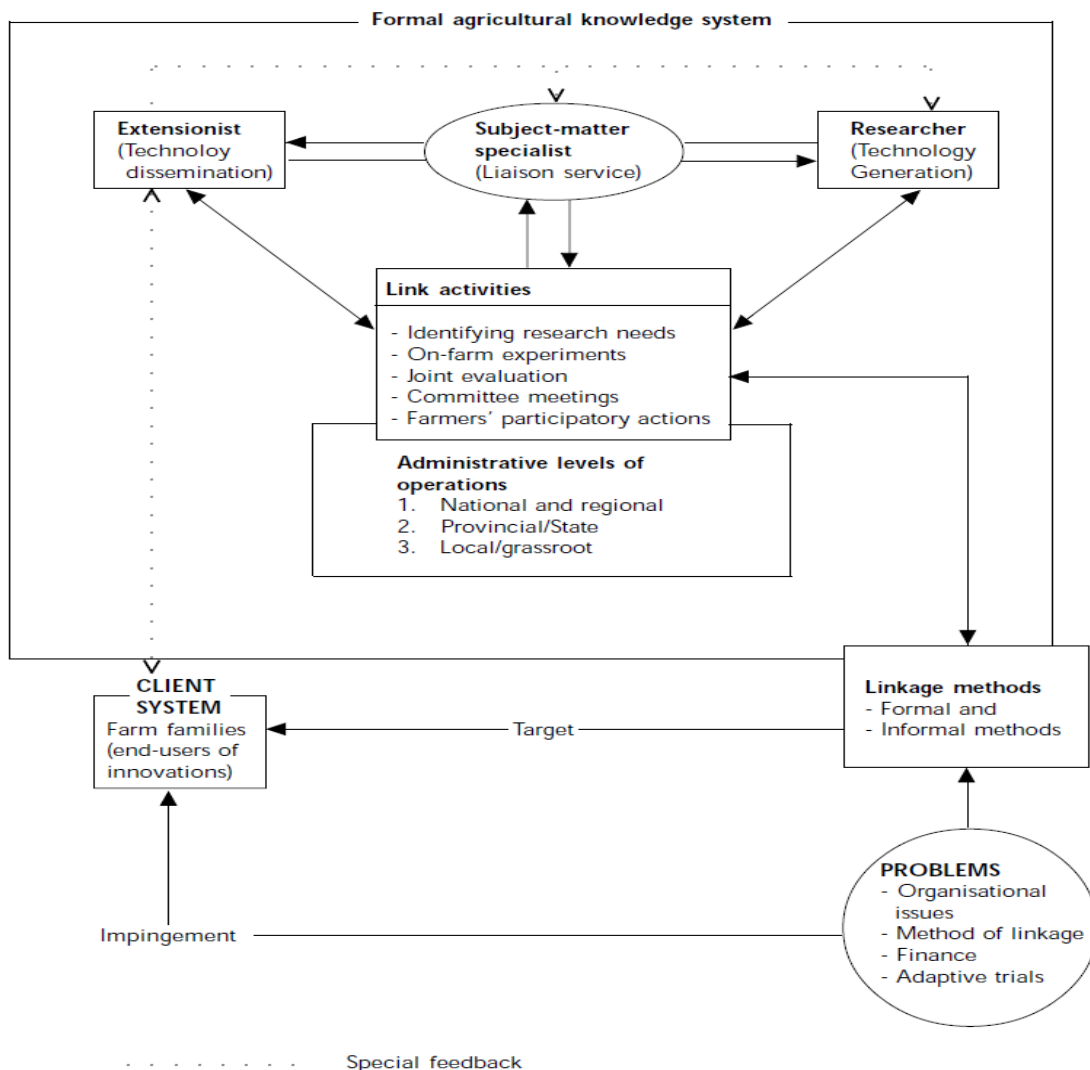


Figure 2: A conceptual schema for the functioning of research-extension linkage(Agbamu, 2000)

The information that was collected in this study suits well into one of the theoretical classification framework that was fashioned by (Agbamu, 2000) which is: ‘no organized linkage system between agricultural research and extension organisations.’ The model above clearly illustrates the type of linkage that is expected between research and extension officers as well as the farmers. The only missing link from the model is a direct client –to- researcher link which is also very crucial. There also seems to be a missing link between farmers (client system) and the ‘linkage activities’. There should be an arrow linking farmers and researchers as well farmers and the linkage activities. The farmers should be directly involved in those linkage activities of identifying research needs, on farm experiments. The scope of this research is only limited to local level and not provincial or national levels.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Chapter 3 briefly provides the description of the study area where the research was carried out. This is followed by the research design which includes sampling, data collection procedures and data processing as well as the statistical analysis procedures.

3.2 The Study Area

3.2.1 Description of the study area

The researcher purposefully chose to study the Nyanga district because it happens to be his home area. Studying in the area would also form part of his wishes; which is promoting agriculture as one of the livelihood sources in the area and ultimately to improving the living standards of the people. Nyanga district is located in the eastern part of the country in the Manicaland province of Zimbabwe and it is divided into 30 administrative wards as shown in Figure 3 below.

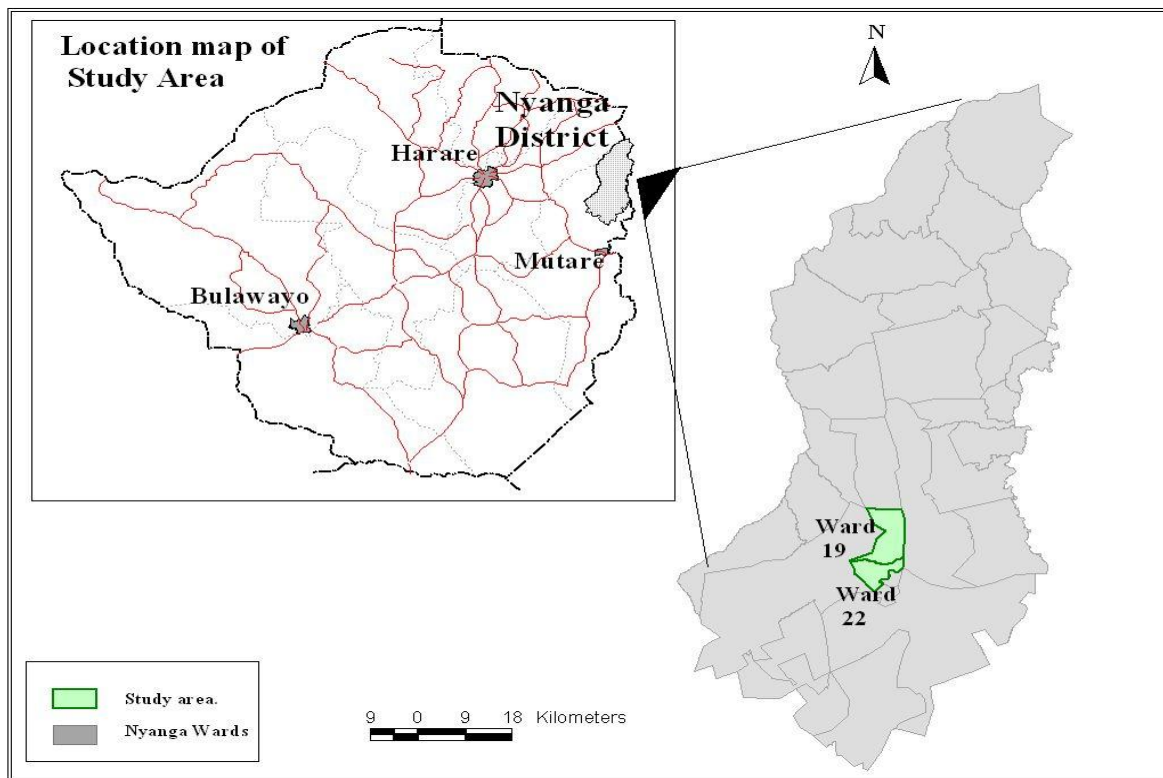


Figure 3: The Map of Zimbabwe showing the location of Nyanga district and its' wards

Out of the 30 wards in the district, the researcher purposefully sampled wards 19 and 22 (Figure 3 above). In ward 19, two clusters namely Sedze and Weaving were chosen while in ward 22, Manjoro cluster was the focal area (clusters are small areas within the ward that are made up of three or more villages, depending on the size of the ward, in other words they are subsets of the ward). The main reason for choosing these three clusters was that they are amongst the clusters that lie within the 30km radius from Nyanga Experiment Station (NES). They are also easier to access as compared to other clusters that also fall within the 30km radius from the NES. It was going to require much more time and money to sample from all the clusters in the district that lies within the 30km radius from NES and given the very much constrained budget that the researcher was working from, that was not going to be possible. According to Central Statistics Office (CSO), 2002 census breakdown cited in Southern Alliance for Indigenous Resources (SAFIRE) (2007a), the population for the ward 19 has about 3 681 inhabitants (1 652 males/ 2 029 females) while ward 22 has 3300 people (1228 males and 1772 females). In 2002, the numbers of households' in ward 19 was 973 with an average household size is 3.9 (SAFIRE, 2007b).

Different parts of the district fall under different agro-ecological regions. Nyanga Experimental station as well as Nyanga Town are under agro-ecological region one. Rainfall is high, above 1000mm per annum. Temperatures are relatively lower as compared to other parts of the district, 23⁰C and 10⁰C for summer and winter average temperatures (DR&SS, 1969). Ward 19 and 22 falls under agro-ecological region 11b that is characterized by annual rainfall of 600- 700 mm per annum. For the past three rain seasons (2007 –2010) the area have experienced long dry spells especially in January and this could be attributed to the effects of climate change. The soils of the district are derived in part from granite and in part from dolerite. According to DR&SS (1969), the soils around the experimental station have been formed under conditions of high mean annual rainfall and in most years sufficient precipitation occurs in winter to maintain moist conditions in the subsoil. The soils have therefore been strongly weathered and leached, resulting in low base saturation and an iron-rich clay fraction in which the only clay minerals are of the kaolinitic type. Such soils have low inherent fertility characteristics and they belong to the ortho-ferrallitic group (DR&SS, 1969).

3.3 Sampling and data Collection Procedure

3.3.1 Sampling

The research involved all AGRITEX extension officers at the district office in Nyanga (that is the District Agricultural Extension Officer (DAEO) and the two District Specialist (DS). Extension Supervisors and workers who work in the two wards were also interviewed in data collection process. In all, a total of 12 extension personnel were involved. From NES, all the 6 technical officers took part in the survey and hence no sampling was done. They comprised of the Officer-in-Charge (OIC), Research Officer (RO), two Research Technicians (RT), two Agricultural Researchers (AR) and one Agricultural Assistant (AA). The majority of the other workers at NES are seasonal or temporary field workers and their input was not required in this study.

The Systematic sampling procedure was employed in selecting farmer respondents from the three clusters. The researcher made use of the EW (Extension Worker) register to systematically select the samples from the three clusters. The only change made to the registers was to rearrange the farmers' names alphabetically since they were recorded according to date of joining the farmer group. Sedze cluster had a total of 400 members followed by Manjoro with 325 and Weaving with 300 registered farmers. A sample of 60 farmers from Sedze was arrived at through the following steps:

- First step, calculating the section interval: N/n $400/60= 6.67$
- After rounding off 7 was the selection interval
- The first farmer name was randomly selected (simple random sampling) from the first 7 names in the register and it was the 5th name. The second name was the 13th (5+7) name.
- The rest of the sample was worked out by designating every 7th name from the register until all 60 names were sampled.

The same method was followed for working out the samples of Weaving and Manjoro respondents.

3.3.2 Data collection tools

Two different but similar sets of structured questionnaires were developed for data collection from research and extension officers as well as farmer respondents from the

three clusters. Research and extension officers had their own questionnaire, while farmer respondents had their own questionnaire as well. The two sets of questionnaires were further thoroughly discussed with a researcher and a statistician and necessary adjustments were made.

3.3.3 Data collection

After selecting the respondents, the actual interviewing was done in various phases. The initial arrangement was to target the respondents on their meeting dates with their EW but turnout was very low since it was peak field preparation time. As a result some arrangements were made to meet these farmers on Sundays after religious prayers. We also made use of Village Head meetings to meet respondents after they had finished their business with the village head. In Manjoro cluster, most respondents were met at Mandipaka community garden. All of the farmer respondents from the Manjoro cluster are members of Mandipaka garden project so we made some arrangements to meet with them when they come to work in the garden.

The actual data collection was done by individual interviews. Data collection exercise started on November 12, 2012 and ended on February 10, 2013. Three additional enumerators under-went a full week of training before the data collection exercise. A lot of emphasis was on understanding the questions, their purpose, the relevant use of scale and the best way of soliciting personal and political information which farmers may be reluctant to share. This was followed by pre-testing the questions at one of the community outside the survey clusters. The pre-test results were discussed and proved very useful, leading to some adjustments to some questions. The interviewing of all the research and extension officers was done by the researcher himself, enumerators only assisted in the interviewing of the farmer respondents.

3.4 Data processing and analysis

Data from the two sets of questionnaires was analysed using SAS Enterprise Guide, version: 43 (4.3.0.11123). The first step before analysis was coding as well as capturing the data on Microsoft excel. Data cleaning which is running frequency tables and inspect the outputs to check if mistakes were made during data entry was done. Frequency tables

were used to get descriptive analysis on variables such as gender, age, household size, available main power, level of education among other variables. On the other hand, Fisher's exact tests were carried out in the analysis of the greater percentage of the data while the Kruskal-Wallis tests were carried out in the analysis of a few data parameters.

CHAPTER 4

DEMOGRAPHIC PROFILE OF THE RESPONDENTS

4.1 Introduction

Chapter four gives a general background on the respondents to the study. Basically, it looks at the personal and socio-economic characteristics of the farmers, extension and research officers. These characteristics will provide some analytical value as we try to establish the working relationship amongst these three players and other determinants of coordinated institutional linkages.

4.2 Demographic characteristics of the farmers

4.2.1 Age and gender distribution of the farmers

A general outlook of the age and gender of the farmers is presented in Table 4.1 below. Research have pointed out age as one of the determinants of behavior (Mangwela, 2007) and this is why we chose to look at the distribution of age within the farmer respondents.

Table 4.1: Age and Gender distribution of the farmer respondents (N=150).

Age (years)	Sedze		Weaving		Manjoro		Grand total	
	N	%	n	%	n	%	N	%
16-35	6	10	6	13.33	13	28.89	25	16.67
36-55	27	45	30	66.67	19	42.22	76	50.66
56-65	18	30	8	17.78	8	17.78	34	22.67
66 and above	9	15	1	2.22	5	11.11	15	10.00
	60	100	45	100	45	100	150	100
Gender								
Female	50	83	43	96	39	87	132	88
Male	10	17	2	4	6	13	18	12
Total	60	100	45	100	45	100	150	100

The age of the farmers ranged from 16 to 78 years with the average age being 58. Most farmers fell within the 36-55 year age group. The Weaving cluster contributed the majority in this category with 30 respondents representing 66.67%. Sedze cluster had more people in the 56-65 year and 66 and above age groups with 18 respondents (30%) and nine respondents (15%) respectively (Table 4.1). The 16-35 year age group recorded a percentage of 16.67 which is lower than 50.66% of the 36-55 year age group. The reason could be that at this age, individuals will still be pursuing other things, such as schooling and hence may not have decided to pursue farming as their career while the 35-55 year age group could be made up of individuals who have taken subsistence farming as their livelihood source.

Only 10% of the farmers fell under the 66 years and above age group which makes some sense given the nature of hard work that they do in their farming activities, at this advanced age it becomes increasingly tough to work on the fields. Even the 22.67% proportion of the 56-65 year age group maybe regarded as high given the nature of the job as highlighted earlier on, it will not be easy at this age to work in the fields but due to limited livelihoods options rural dwellers retire in their fields. The majority of these are women, 132 representing 88%, as shown in Table 4.1. Men only constitute 12%. Weaving cluster only registered two men, the least from all the three clusters. The very low male numbers suggest the continual existence of the rural-urban migration in search of greener pastures which men usually undertake.

4.2.2 Household size

The total number of people who stay in every household was also noted during the survey. According to Cobbett (2000:16), extension deals with all members of the family, for unless all are approached improvement cannot be great and in many instances cannot be sustained. Table 4.2 below shows the household size in the three sampled clusters of Nyanga district in Zimbabwe.

Table 4.2: Household sizes of the farmers (N=150).

Household size	Sedze		Weaving		Manjoro		Grand Total	
	n	%	N	%	n	%	N	%
1-3	16	26.67	20	44.44	11	24.44	47	31
4-6	36	60	20	44.44	26	57.78	82	55
7-11	8	13.33	5	11.11	8	17.78	21	14
Total	60	100	45	100	45	100	150	100

The 4-6 household size was most popular with 55% (82 respondents) followed by the 1-3 category with 31% (47 respondents) and lastly the 7-11 sizes with 14% (21 respondents). Sedze cluster contributed the majority 60% to the 4-6 household size followed by Manjoro with 26 respondents (57.78%). Weaving was the major contributor in the 1-3 category with 20 respondents (44.44%).

The 4-6 category may be regarded as showing a relatively higher dependence ratio in rural subsistence farming communities. This is supported by high unemployment figures of 66% and 30% self-employed farmer figures from Table 4.4. Feeding a family of seven or more will not be easy when subsistence farming is the major livelihood source. This may support high poverty levels in rural communities of most developing countries (Obadina, 2007).

4.2.3 Labour

Farmers were asked to give the number of people within their households who assist them in their farming business. This was interpreted as labour in this study. Table 4.3 below shows the labour distribution for the three sampled clusters of Nyanga district in Zimbabwe.

Table 4.3: Labour distribution for the three sampled clusters of Nyanga district in Zimbabwe.

Size (number of people)	Sedze		Weaving		Manjoro		Grand Total	
	n	%	n	%	n	%	n	%
1-3	35	58.33	32	71.11	27	60	94	62.67
4-6	24	40	13	28.89	15	33.33	52	34.66
7 and above	1	1.67	0	0	3	6.67	4	2.67
Total	60	100	45	100	45	100	150	100

The small labour force category of 1-3 people per household who take part in farming activities was the highest with 62.67% (94 respondents) across the three clusters, Sedze cluster contributed 35 (58.33%), followed by Weaving with 32 (71.11%) and lastly by Manjoro with 27 respondents (60%). The 4-6 labour category was the second largest with 34.66% (52 respondents) and the seven and above labour category was the lowest with just over 2.67% (four respondents). The 4-6 household size category was most popular with 55% (Table 4.2) but when it comes to labour, the 1-3 category is most popular with even a higher percentage of 62.67 (Table 4.3). This clearly shows very low labour in these farming communities, which contributes to low agricultural output per farmer and consequently high poverty levels within the rural developing folk (World bank, 2003; Poverty in Africa, 2011). It also seems to support the point made earlier on probable high dependence ratio. Surely there are more people in the houses but very few of them are contributing towards their survival.

4.2.4 Employment status of the farmers

The frequency analysis of the employment status of the farmer respondents provides more information on the other livelihood sources that the farmers may have. The response of the farmers to the question on employment status is presented in Table 4.4 below.

Table 4.4: Employment status of the farmers

Sector of Employment	Sedze		Weaving		Manjoro		Total	
	N	%	n	%	n	%	N	%
Not employed	34	57	34	76	31	69	99	66.00
Public (gvt)	0	0	1	2	1	2	2	1.33
Self-employed farmer	22	37	10	22	13	29	45	30.00
Small business	3	5	0	0	0	0	3	2.00
NGO	1	1	0	0	0	0	1	0.67
Private	-	-	-	-	-	-	0	0.00
Total	60	100	45	100	45	100	150	100

The majority 66% (99 respondents) of the farmer respondents in all the three clusters are not formerly employed while 30% (45 respondents) referred their subsistence farming as a form of employment (Table 4.4). Weaving had the highest percentage of 76% (34 respondents) followed by Manjoro with 69% (31 respondents) and Sedze with 57% (34 respondents), indicating high unemployment levels in the clusters. The results above show that the farmers mostly rely on farming for their survival.

The relatively higher household sizes from Table 4.2 and high unemployment rate (96%), combined 'not employed and self-employed farmer' from Table 4.4 may support reports of high poverty levels in sub-Saharan Africa. Poverty trapped people have low self-esteem and are not confident to come out and participate in community development activities that can improve their own living standards (Community participation, undated; Swanepoel and De Beer, 2006; Obadina, 2007), this can be a cause for concern if it manifests itself in this particular group. Statistically, there was no significant differences (Fisher's exact test $P=0.1678$) in employment status within the three clusters.

4.2.5 Level of education

Most researchers have linked level of education to participation in agricultural activities. It is therefore necessary to establish how well the farmer respondents are educated. How this can influence participation and building of proper linkages with other stakeholders will

be analysed in subsequent chapters. The level of education of farmers from the three cluster areas is shown in the table below.

Table 4.5: Highest level of education of the farmers from the three cluster areas

Level of education	Sedze		Weaving		Manjoro		Total	
	n	%		%	n	%	N	%
Non formal schooling	3	5	1	2	1	2	5	3.33
Primary education	32	53	17	38	22	49	71	47.33
Secondary education	22	37	26	58	22	49	70	46.68
Tertiary certificate	1	1	1	2	0	0	2	1.33
Tertiary diploma	2	3	0	0	0	0	2	1.33
Total	60	100	45	100	45	100	150	100

Overallly the majority of farmers 47.33% (71) have attained primary education, closely followed by secondary education with 46.68% (70). Manjoro cluster had the same number of 49% (22) for primary and secondary education holders. Weaving had more secondary education holders than primary education holders while Sedze recorded the opposite, more primary than secondary education holders (Table 4.5).

The Fisher's exact test $P= 0.3778$ indicated no significant differences in the levels of educational qualifications in all the three clusters of Nyanga district in Zimbabwe. None the farmers had a first degree let alone a post-graduate degree. However a combined total of 94% for primary and secondary education can be an indicator of probable good literacy levels. The primary education of pre-independence and post-independence Zimbabwe was somewhat different with holders of the former regarding themselves as more educated than the later. An analysis of the literacy levels on the next section should shade some light on the validity of the 'better education' claims.

4.2.6 Literacy levels of the farmers

The literacy levels of the farmers were tested on Shona, there first language and English which is the second language. Both languages were tested in terms of reading, writing and

speaking and scored at three levels as 'poor', 'fair' and 'good.' The literacy level of the farmers is presented in the table below.

Table 4.6: The literacy levels of the farmers respondents

Language ability		Sedze				Weaving				Manjoro			
		poor	fair	Good	total	poor	fair	good	total	poor	fair	good	total
Reading Shona	N	16	5	39	60	4	9	32	45	6	6	33	45
	%	27	8	65	100	9	20	71	100	13	13	74	100
Reading English	N	27	9	24	60	8	15	22	45	9	14	22	45
	%	45	15	40	100	18	33	49	100	20	31	49	100
Writing Shona	N	19	8	33	60	5	9	31	45	6	4	35	45
	%	32	13	55	100	11	20	69	100	13	9	78	100
Writing English	N	29	12	19	60	10	14	21	45	12	12	21	45
	%	48	20	32	100	22	32	46	100	27	27	46	100
Speaking Shona	N	0	1	59	60	0	1	44	45	0	0	45	45
	%	0	2	98	100	0	2	98	100	0	0	100	100
Speaking English	N	33	8	19	60	11	13	21	45	15	10	20	45
	%	55	13	32	100	24	29	47	100	33	22	45	100

(a) Reading of Shona and English

A total of 16 farmer respondents which represent 27% of the Sedze cluster respondents indicated that their ability to read Shona is poor. This number appears very high as compared to 9% and 13% from Weaving and Manjoro respectively who judged their Shona reading ability as poor. However the Fisher's Exact test $P=0.0951$ shows that the difference is not significant. The majority of the farmer respondents from the three clusters shared the view that the reading of Shona is good. Sedze had 39 people (65%) followed by Weaving with 32 people (71%) and lastly Manjoro with 33 people representing 74% of the farmer respondents. This means that any English publications from NES and AGRITEX would benefit a greater population at the same time eliminating some. Overall

there was a significant differences (The Fisher's exact test $P=0.0106$) in all the three clusters in reading English. However Sedze cluster recorded a much bigger figure of 45% who rated their reading of English as 'poor' while Weaving and Manjoro recorded figures of 18% and 20% respectively on the same subject. A total of 49% (22) of farmer respondents from Weaving and Manjoro rated their reading of English as good with Sedze cluster recording 40% (24) on the same subject (Table 4.6). This again shows that the productions of leaflets in English will not benefit all the farmers as is the case with most leaflets from some research stations.

(b) Writing of Shona and English

The Fisher's exact test $P=0.0326$ indicated some significant differences in the levels of ability to write Shona across the three clusters. A total of 19 farmer respondents (32%) from Sedze cluster rated their writing of Shona as poor. This was in sharp contrast to Weaving and Manjoro who recorded only five people (11%) and six people (13%) respectively who rated their writing of Shona as poor. There was an almost the same number of people from the three clusters who rated their writing of Shona as good. Sedze had 33 people (55%), Weaving had 31 people (69%) and Manjoro had 35 people representing 78%. Sedze cluster seems to be consistent with less literate people as compared to the other two clusters. A total of 29 Sedze farmer respondents (48%) rated their writing of English as poor, Weaving had ten people (22%) and Manjoro had 12 people (27%) who rated their writing of English as poor. A similar number of respondents across the three clusters rated their writing of English as fair, 20% (12) from Sedze, 32% (14) from Weaving and lastly 27% (12) from Manjoro (Table 4.6).

Though the rating of 'fair' and 'good' for writing English was almost similar across the 3 clusters, the huge differences in the 'poor' rating resulted in The Fisher's exact test $P=0.054$ showing some significant differences in writing English across the three clusters. Sedze respondents' ability to write English is less as compared to respondents from Weaving and Manjoro. The results above shows that any engagements with the farmers that requires them to write something would be better if it is done in Shona than in English. However the number of farmers who rated their writing of English as fair and good is very encouraging given the fact that these are just rural subsistence farmers. Overall the results

from Table 4.6 above shows that the farmers are more comfortable in using their first language than their second language and this is very normal and expected in any society. However the results from reading and writing of English alone are also very interesting especially when the scores from the 'fair and good' categories are combined they give 70% for reading and 66% for writing. This brings out a fairly good literacy rate. This did not come as a surprise given the fact that Zimbabwe is the top ranked literate country in Africa with 90% literacy rate (The African economist.com, 2013).

(c) Speaking of Shona and English

Shona, being the first language in all the three clusters is highlighted by scores of almost 100% good rating of Shona speaking (Table 4.6). The Fisher's exact test $P=0.0212$ indicated that there is significant difference in speaking English across the three clusters. Again Sedze cluster has the highest number of people with difficulties in speaking English, 33 of them representing 55% indicated that their speaking of English is poor while Weaving had 11 people (24%) and Manjoro had 15 people (33%). It is important not to treat these areas as homogenous whenever one is engaging them in any activity, be it farming or any other developmental activity. The rating of speaking English as 'good' was similar across the three clusters. Sedze had 19 people (32%), Weaving had 21 people (47%) and lastly Manjoro had 20 people (45%), a similar trend also came out on the 'fair' rating (Table 4.6). Speaking in English with the farmers from this three cluster may be described as relatively fair.

4.3 Farmer Groups

4.3.1 Group sizes from the three clusters

All the respondents indicated that they belong to several farmer groups of various sizes and most of them belonged to more than one farmer group. As a result the researcher requested them to make reference to any farmer group of their choice when they respond to all questions pertaining to farmer group issues. One of the important facts that came out during the interviews was that most if not all of the farmer groups are 'general farmer groups' or community based groups as defined by (Stevens & Terblanché, 2006). They are general in the sense that an individual group member can engage in any farming enterprise of choice. Typically, farmers meet for farming classes with their extension

officers there after each individual farmer is flexible to practise any farming business of choice. Other farmer groups are temporary, they only form when they need to achieve something and there after they go into hibernation, and one example was the water harvesting groups. Farmers came together to form groups when they want to harvest water from the mountains and when they are done they rarely meet for any business.

The group sizes ranged from 4 to 200 members, with an average group size of 58. For purposes of further group analysis, the group sizes were categorized into three groups as 4-40 group size, >40-60 and >60 group size. Group size effect was then analysed against individual group member benefits as shown in the table below. However this was done for the combined clusters because statistically there was no significant differences across all the clusters in terms of individual group members benefit.

Table 4.7: Benefits perceived by group members against the group size

Benefits	Group size						Total (%)
	4- 40		>40-60		>60		
		%	n	%		%	
No benefits at all	0	0	0	0	6	1.23	1.23
Acquiring agric inputs	42	8.61	43	8.81	45	9.22	26.64
Assisted in tillage programs	3	0.61	0	0	1	0.20	0.82
Marketing of produce	15	3.07	7	1.43	8	1.64	6.15
Transportation	12	2.46	4	0.82	4	0.82	4.10
Sharing ideas	48	9.84	48	9.84	49	10.04	29.71
Financial contributions	21	4.30	33	6.76	28	5.74	16.80
Water harvesting	29	5.94	19	3.89	23	4.71	14.55
Total	170	34.84	154	31.56	164	33.61	100

From Table 4.7 above it is clear that sharing of ideas was the most popular benefit across all group sizes followed by financial contributions, only six respondents from the sixty plus group size did not realised any benefits of belonging to any group. A large group size could be the contributing factor or the farmers' attitude towards the group functions is just negative hence they do not see anything good coming from their group. They had one objective of joining that group and unless that objective is attained, they do not appreciate anything from that group. Acquiring of agricultural inputs came second on the list of benefits across all the 3 group sizes. The 4- 40 group size had 42 people (8.61%), the

>40-60 had 43 people (8.81%), and lastly the >60 had 45 people (9.22%). Getting some assistance in tillage was the least benefit across the three group sizes with none from the >40-60 group size indicating to have benefited through group organised tillage programs, only one person from the over 60 age group and 3 from the 4- 40 group size indicated to have benefited from group assisted tillage programs.

These small numbers could be resulting from high costs tillage services that are offered by the District Development Fund (DDF). Farmer groups are encouraged to hire the services of DDF as a group for convenience purposes where a tractor would visit a specific area and work in that area and moves to the other area than ploughing one field in one area and go to another area and having to come back to the same area on a later stage. However many rural farmers cannot afford the costs of these DDF services hence very low benefits on this service (Table 4.7).

Results from Table 4.7 above generally show that individual group member benefits are low, typical of community-based groups. As far as marketing of produce is concerned, only 15 people (3.07%) from the 4-40 group size, seven and eight farmer respondents representing a mere 1.43% and 1.64% from the >40-60 and over 60 group size, respectively indicated that they have benefited from group organised marketing of produce. Transportation as a benefit from the individuals across the three group sizes recorded an average of 4.10% (Table 4.7). This shows that the farmer groups rarely organise transport for carrying their produce to the market or inputs to the farming areas.

The 4-40 group size had 12 people (2.56%), with both >40-60 and over 60 group sizes only recording four people (0.82%) each indicating to have benefited through transportation arrangements, this difference was not significant. Financial contributions are also done across the three group sizes, however at very low levels, 21 out of 170 respondents from the 4-40 group size highlighted to have benefited from financial contributions, the >40-60 group recorded 6,76% while the over 60 group size had 5.74%. A total percentage of 14.55% of the farmer respondents indicated that they have benefited from water harvesting. Group size effect seems to show no major influences on individual group member benefits.

4.3.2 Indicators of effectiveness of farmer groups

The overall performance of any group is a function of several factors, some of which are discussed below. Reid (2000) accentuates that participation is the heart that pumps the community's life blood, it is one of the key ingredients of an empowered community. Farmers should feel free to fully participate in their groups in order to fulfil the overall group goals. The farmers were requested to evaluate their group performance at the present moment and their responses are presented in the table below.

Table 4.8: An evaluation of the indicators of group effectiveness of the farmer groups as received by farmer respondents

Indicators of group effectiveness	Level of Agreement									
	Totally disagree		Disagree		Agree		Totally agree		Total	
	n	%	n	%	n	%	n	%	N	%
<i>There is good cooperation between all group members</i>	5	3.3	11	7.43	93	62.84	9	26.35	148	100
<i>Meeting venues are regularly rotated</i>	37	25.00	95	64.19	16	10.81	0.00	0.00	148	100
There is always excellent two-way communication	3	2.03	13	8.78	112	75.68	20	13.51	148	100
The group has a written constitution	3	2.03	6	4.05	115	77.70	24	16.22	148	100
There is a strong "we feeling" in the group	3	2.03	6	4.05	116	78.38	23	15.54	148	100
Group member's role known	3	2.03	8	5.41	119	80.41	18	12.16	148	100
The size of my group ensures effective functioning	4	2.70	7	4.73	126	85.14	11	7.43	148	100
The leadership style in my group is effective	3	2.03	7	4.73	123	83.11	15	10.14	148	100
The leadership style in my group is democratic	3	2.03	13	8.78	121	81.76	11	7.43	148	100
Political interference is present in my group	32	21.62	62	41.89	53	35.81	1	0.68	148	100
My contribution to my group are acknowledged	3	2.03	6	4.05	114	77.03	25	16.89	148	100

Table 4.8 above shows the overall responses from all the three clusters of Nyanga district. There was no significant difference across all the three clusters to the responses on the indicators of group efficacy except for the first **two** indicators which are: There is good cooperation between all group members; and meeting venues are regularly rotated.

(a) Cooperation between group members

There was some significant difference across the three clusters on the question of cooperation between group members. Table 4.8b below shows the cluster responses to this question.

Table 4.8b. An evaluation of cooperation between group members as an indicator of group effectiveness as perceived by farmer respondents

Level of Agreement	Sedze		Weaving		Manjoro	
	n	%	n	%	n	%
Strongly disagree	3	5	0	0	2	4.44
Disagree	8	13	1	2.33	2	4.44
Agree	31	52	35	81.40	27	60
Strongly agree	18	30	7	16.23	14	31.11
Total	60	100	43	100	45	100

Most of the farmer respondents from the three clusters shared the view that there is good cooperation among the group members in their respective groups. There was a great deal of significant differences (Fisher's exact test $P=0.0040$) on the response to this question across the clusters. From Sedze cluster, 31 respondents (51.67%) agreed to the statement while Weaving registered 35 respondents representing 81.40% and Manjoro recorded 27 respondents (60%). Even on the 'disagree' score, Sedze cluster had eight respondents (13.33%) while Weaving registered only one respondent (2.33%) and Manjoro recorded two respondents (4.44%) (Table 4.8b). Surely these differences are very significant across the three clusters. In total, 93 respondents (62.84%) and a further nine respondents (26.35%) agreed and totally agreed respectively that there is good cooperation between all group members. Only 11 respondents (7.43%) and five respondents (3.3%) disagreed and strongly disagreed to the statement (Table 4.8).

Good cooperation may be an indication of well facilitated developmental stages. Stevens and Botha (2003) pointed out that for groups to be more effective, it is necessary that the dynamics of group development are facilitated well in order to get synergy between cooperation and combined action of group members. These groups could have also passed the initial stages of group development which are characterised by so many challenges.

(b) Meeting venues

The statement that says, 'meeting venues are regularly rotated' was the second out of the 11 statements that showed some significant differences (Fisher's exact test $P=0.0018$) in response from the three clusters. Table 4.9 below shows the response of farmers to the statement on meeting venues

Table 4.9: Farmers responses to the statement that meeting venues are regularly rotated

Statement:	Level of Agreement								Total	
	Totally disagree		Disagree		Agree		Totally agree			
<i>Meeting venues are regularly rotated</i>	n	%	n	%	n	%	n	%	N	%
Clusters:	n	%	n	%	n	%	n	%	N	%
Sedze	24	40	29	48.33	7	11.67	0	0	60	100
Weaving	3	6.98	35	81.40	5	11.6	0	0	43	100
Manjoro	10	22.22	31	68.89	4	8.89	0	0	45	100

The majority of the farmer respondents across the three clusters generally disagreed to the statement that meeting venues are regularly rotated. The significant differences was brought about by the differences in the levels of agreement across the three clusters, specifically the number of people who 'totally disagreed' and 'disagreed' across the three clusters was different (Table 4.9). Sedze cluster had 24 respondents (40%) who totally disagreed to the statement while Weaving had only three respondents (6.98%). On the other hand Weaving had significantly more respondents (81.40%) who disagreed to the statement while Sedze had 29 (48.33%) and Manjoro had 31 respondents (68.89%).

Sedze is the biggest of all the three clusters and it has the biggest rural service centre as compared to the other two. As a result most meetings are held there even non-agricultural meetings and (at times) people from Weaving and Manjoro sometimes attend meetings at Sedze and this could be the reason why 40% of respondents from Sedze 'totally disagreed' to the statement. The non-rotation of meeting venues seems to have no negative impact on the overall effectiveness of the farmer groups.

This is in contrast with Terblanché (2004) who found out that the more efficient groups are characterised by the fact that they rotate their meeting venues. This contrast could be attributed to two factors. The first one being that the meeting venues are at rural service centres where farmers can engage in other activities when they are done with their farming business. There are shops, grinding mills and other necessities that farmers would need. The second factor is that most meeting dates are scheduled during days that are traditionally / culturally forbidden to do any field work, '*chis*' in the Shona language. Hence farmers do not feel they are missing on time by attending meetings because they are not allowed to work on their fields on such days. Another reason could be the size of the group (Table 4.7).

(c) Excellent two-way communication

As mentioned early on, the Fisher's exact test $P=0.119$ shows no significant differences across the three clusters in terms of communication within the farmer groups. The majority of the respondents 75.68% (112) shared the same sentiments that there is excellent communication within their groups while only 8.78% (13) disagreed to the statement. Communication is key to the effective functioning of any group. This group scenario is similar to the findings of Terblanché (1986) who found out that 30% of the members of the less effective farmer groups are not satisfied with the communication patterns within their groups, while members of the more effective farmer groups were much more satisfied with the two-way communication patterns within their groups. The only difference is that Terblanché (1986) was dealing with commodity-based groups while this study was based on community –based groups.

(d) Written constitution, group-member feelings and the member's role within the group

Results from Table 4.8 above shows that the farmer groups are guided by a written constitution. The majority namely 115 respondents (77.70%) agreed that they are guided by a written constitution while only six respondents (4.05%) disagreed. A written constitution, supported by norms and values are a vital ingredient in helping members to develop a shared vision in relation to the task and goals that they set as a group (Stevens & Terblanché, 2004). A proper constitution reduces group conflicts since members are aware of process and procedures of handling matters related to their group.

A similar number of respondents, 116 (78.38%) and 119 (80.41%) agreed to the statements that there is a strong 'we feeling' in the group and that group members' roles are also known within their respective groups while only three respondents (2.03%) totally disagreed to the two statements. These findings are similar to the findings of Beal *at al*, quoted by (Stevens and Terblanché, 2004) who indicated that the more group members actively participate and work together within a group, the more favourable are their attitudes towards the rest of the group members, and the greater the feeling of concern for and identifying with the group in future.

(e) Group size and group effectiveness

The average group size from the research study is 58 members and the group members have indicated that their groups are effective. As mentioned in section 4.3.1 above, contrary to the findings of Stevens and Terblanché (2004) who posit that the size of a group is related to the effectiveness of the group, with smaller groups being more effective. Terblanché (2000:62-63) assert that the more effective groups were found in general to be fairly small (seven members), democratic and reasonably homogeneous in terms of farming systems, needs and resources at their disposal.

The findings of Terblanché 2000; Stevens and Terblanché (2004) apply more to commodity-based groups than community-based groups. Table 4.8 above shows that 126 respondents (85.14%) and a further 11 respondents (7.43%) agreed and totally agreed

respectively to the statement that the size of the group ensures effective functioning while 11 respondents (7.43%) and four respondents (2.70%) disagreed and totally disagreed respectively to the statement. As mentioned earlier on, the Fisher's exact test $P=0.358$ shows no significant differences across the 3 clusters in terms of how group size ensures effective group functioning.

(f) Group leadership style

Group members across the three clusters indicated that they are satisfied with their leadership style. A total of 123 respondents (83.11%) agreed to the statement that the leadership style in the group is effective while only seven respondents (4.73%) disagreed. The respondents were also asked to respond to the statement that says, 'leadership style in the group is democratic'. The majority, namely 121 respondents (81.76%) agreed with a further 11 respondents (7.43%) stating that they totally agreed to the statement (Table 4.8). This kind of satisfaction among the majority of the group members may suggest that the leaders are applying appropriate leadership styles to their groups. They are taking into consideration the maturity levels of their groups as suggested by Hersey *et al.* (2003) in their model of situational leadership.

They could be applying participative leadership styles which Mullins (2002) highlighted that it involves consulting with subordinates and the evaluation of their opinions and suggestions before the leader makes the decision. As a leader, being able to identify the group task behaviour as well as relationship behaviour will go a long way in helping one apply the correct leadership style.

(g) Political interference in farmer groups

There was a more or less divided response when it comes to the question of political interference on the functioning of the groups. A total of 53 respondents (35.81%) 'agreed' while 62 respondents (41.89%) and 32 (22%) respondents 'disagreed and 'totally disagreed' respectively that there is some political interference in the functioning of their groups. Due to the volatility of the recent and even present political climate in the country, people are not free to comment on anything that has to do with politics. It was vividly

evident during the interviews that most of the respondents were not comfortable in answering this question, they do not want to talk about politics for safety reasons.

4.4 Demographic characteristics of the researchers and extensionists.

4.4.1 Designations of researchers and extensionists

Designations of research and extension officers who took part in the survey are presented in Table 4.10 below.

Table 4.10: Designations of research and extension officers

Designation	Proportion	
	N	%
Extension worker (EW)	8	66.67
Extension supervisor (ES)	1	8.33
District specialist (DS)	2	16.67
District agricultural extension officer (DAEO)	1	8.33
Total	12	100
Officer-in-charge (OIC)	1	16.67
Research officer(RO)	2	33.33
Research technician (RT)	1	16.67
Agricultural researcher(AR)	1	16.67
Agricultural assistant (AA)	1	16.67
Total	6	100

It is very important to note that the above numbers do not indicate the full complement of extension staff in Nyanga district. Only frontline extension officers who work within the three clusters of Sedze, Weaving and Manjoro were involved, together with their superiors from the district office. However from the research side, a full complement of the technical staff was involved. Nyanga Experiment Station is relatively small with a total compliment of six technical staff members supported by seasonal workers. Extension is headed by the District Agricultural Extension Officer (DAEO) who is supported by two district specialists (Table 4.10). Research is headed by the Officer-In-Charge (OIC) deputised by the Research Officer (RO) all supported by others officers as shown in Table 4.10 above.

4.4.2 Gender distribution within research and extension officers

One of the 2020 UN millennium development goals is to increase women participation in all spheres of work especially those previously dominated by males. Are women of Nyanga district making any in progress in this endeavour? Table 4.11 below shows gender distribution between extension and research officials from the sampled clusters within Nyanga district.

Table 4.11: Gender distribution between extension and research officers from the sampled clusters of Nyanga district

	Extensionists		Researchers	
	n	%	n	%
Male	6	50	4	67
Female	6	50	2	33
Total	12	100	6	100

The gender distribution shown on the extension side indicates that women are getting equal opportunities in areas previously dominated by men (Mangwela, 2007). However researchers still need to improve on women empowerment in order to increase the 33% to better levels.

4.4.3 Education and Training

As much as extension officers are being called to play a more facilitation role, they need to show some expertise in at least one field of agriculture for them to be more useful to the farmers. The results of educational qualifications held by research and extension officers are presented in Table 4.12a below.

Table 4.12a: Educational qualifications held by research and extension officers

Educational qualification	Extensionists		Researchers	
	n	%	n	%
Tertiary certificate	4	33.33	1	16.67
Tertiary diploma	5	41.67	3	50.00
Degree	2	16.67	2	33.33
Post-graduate qualification	1	8.33	0	0
Total	12	100	6	100

Tertiary diploma was the most popular qualification with 41.67% (five respondents) and 50% (three respondents) in extension and research respectively and distribution of the qualifications within the two departments was as follows:

- Four EW and one AA hold tertiary certificates
- Four EW and one ES hold tertiary diploma in agriculture
- Two RT and one AR hold tertiary diploma
- Two DS and one RO and OIC holds degrees in agriculture
- One DAEO hold a post graduate degree in agriculture

A total of 33.33% of frontline extension workers hold a tertiary certificate in Agriculture and their superiors are academically higher qualified. Interestingly, there was no significant differences (Fisher's exact test $P= 0.6910$) in terms of educational qualification between research and extension officers. Besides the academic qualifications, both sets of officers were also asked if they have received any professional training in aspects that promote participatory extension approaches which will ensure sustainable agricultural development. The response to this question is presented in Table 4.12b below.

Table 4.12b: Professional training in participatory extension approaches according to research and extension officers

Period when training was received	Extensionists		Researchers	
	n	%	n	%
Never received any training	6	50.00	5	83.33
1 year ago	4	33.33	0	0.00
2 years ago	0	0.00	0	0.00
3 years ago	0	0.00	0	0.00
4 years ago	0	0.00	1	16.67
5 or more years ago	2	16.67	0	0.00
Total	12	100.00	6	100.00

The results from Table 4.12b shows that six extensionists (50%) and five researchers (83.33%) have never received any professional training in aspects that promote participatory extension approaches to ensure sustainable agricultural development. None of the extension officers received training in the last two to four years with only one research officer indicating that he received such training four years ago.

A trend which may suggest that this is not a priority area within the Ministry of Agriculture itself or other factors such as lack of funds to undertake such training could be to blame. From this scenario alone, it is very unlikely that the extension officers would change from their traditional duties of being agents of technology bridges to more dynamic, facilitators and innovators of the new extension systems, while on the other hand researchers may still believe that their duties are only problem solving without the participation of the concerned farmers.

4.5 Summary and conclusions

1).Age and gender distribution of the farmer respondents

- The majority of the farmers fell within the 36-55 year age group indicating the most active age group which is still very much energetic and has taken up farming as their livelihood source.

- Only 10% fell under the 66 years and above age group at this advanced age it becomes increasingly tough to work on the fields.
- Women constituted 88% while men only constituted 12% in this study, indicating the continual existence of the rural to urban migration in search of greener pastures which men usually undertakes.

2).Employment rate and literacy levels of the farmer respondents

- 96% unemployment rate, low manpower, and signs of high dependence ratio in the rural subsistence farming communities makes higher poverty levels a possibility.
- Farmers still value their education and their high literacy rates support their love for education.

3). Farmer groups

- All the farmers belonged to one or more farmer groups, and most of the groups are 'general or community farmer groups'.
- The group sizes ranged from four to 200 members, with an average group size of 58.
- There was no evidence of negative group functioning due to large group sizes.

4).Educational and professional qualifications of research and extension officers

- There was no significant difference in terms of educational qualification between research and extension officers.
- There is less in-house training in aspects that promote participatory extension approaches, which could be the main reason behind the poor institutional linkages between farmers and research and extension officers.

CHAPTER 5

THE SERVICES RENDERED BY RESEARCH AND EXTENSION OFFICERS AS PERCEIVED BY THE FARMERS

5.1 Introduction

Farmers are the final recipients of all the services rendered by research and extension officers and there is no doubt that they are the best positioned group to give a fair evaluation of the services rendered. This chapter is aimed at establishing how the farmers rate or evaluate some of the services that they receive from research and extension officers. In some instances, same or similar set of questions were asked to all three respondent categories namely farmers, researchers, and extensionists. This was done to improve on the fairness of the results.

Some of the issues that will be discussed in this chapter includes: communication channels, frequency of meetings, knowing the officers whom the farmers work with by name, research and extension officers' efforts in promoting farmer groups, that is:(setting up, maintaining, supporting new and existing farmer groups) as well as farmers rating of the usefulness and practicality of the information and assistance rendered by the officers. It is the authors believe that by testing all the above mentioned aspects, one of the major objectives of this study, which is to determine the current state of linkages amongst these three groups will be explored.

5.2 Farmers' rating of research and extension officers' work

5.2.1 Farmer's knowledge of research and extension officers whom they work with.

One of the indicators of close ties between farmers and researchers as well as between farmers and extensionists is that farmers should know these both sets of officers by their names. Farmers were asked to give the names of research and extension personnel whom they work with. The result of this question is presented on Table 5.1 below.

Table 5.1: Farmer respondents' knowledge of research and extension officers rendering services to them

	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Total		Sedze		Weaving		Manjoro		Total	
Officers' identity	n	%	n	%	n	%	N	%	n	%	n	%	n	%	N	%
Name known	59	98	43	100	40	89	142	96	0	0	4	9	5	10	9	6
Name forgotten	0	0	0	0	4	9	4	3	0	0	1	2	20	45	21	14
Name unknown at all	1	2	0	0	1	2	2	1	60	100	40	89	20	45	120	80
Total	60	100	43	100	45	100	148	100	60	100	45	100	45	100	150	100

The results from Table 5.1 above show two contrasting scenarios. The extension side is almost the opposite of the research side and these differences were highly significant (Fishers exact test $P=0.0022$). A total of 142 farmers which represent 96%, know their extension officers by name while only 6% of the same population know researchers who renders some services by name. All 43 respondents (100%) from Weaving know their extension officers by name, while 59 out of 60 respondents (98%) from Sedze cluster also knew their extension officers by name. From Manjoro, 40 out of the 45 respondents also reported that they know their extension officers (EO) by name. A total of four respondents (9%) from Manjoro reported that they had forgotten the name of their EO while none from Sedze or Weaving gave such a response (Table 5.1). This differences in number of responses from the three clusters was also statistically different (Fishers exact test $P=0.0122$), however the most important fact is that the majority of the respondents from all the three clusters share the same view.

All respondents (60) from Sedze indicated that the name of research officer is unknown by name (nor have they forgotten their name). The respondents from this cluster reviewed during the interviews that they have never done any business with researchers from NES. From Weaving, 40 out of the 45 respondents (89%) also reported that they do not know any researcher from NES by name, with one person from the same cluster indicating to have forgotten the name and the remaining four individuals (9%) gave the names of the researcher from NES (Table, 5.1). Responses from Manjoro cluster were significantly different from those from Sedze and Weaving (Fishers exact test $P=0.0000$). A total of 20 respondents (45%) from Manjoro cluster reported that they have forgotten the names of

NES researchers while the same number also reporting that they do not know anyone from NES, (Table 5.1). The remaining five respondents (10%) gave the names of the research officers from NES who render services to them in their farming business. During the interviews with the staff from NES, the Officer-in-charge (OIC) who heads NES highlighted that they have recently started some organic pesticides control trials at nearby two community gardens, one in Bore village, and the other one in Mandipaka village.

Bore village falls under Weaving cluster while Mandipaka village falls under the Manjoro cluster. It is most likely that those small numbers of individuals from Weaving (four) and Manjoro (five) who either know the researchers from NES by names or those who indicated to have forgotten their names are the very same individuals who are working with the researchers on the organic pesticides control trials. However it should be noted that the target responses on the farmers side were those that meet for farming business with their agricultural extension workers and hence most of them know their officers by name. At the same time one would expect the very same group to know their researchers by name because the researchers themselves indicated that their gate-way to the farmers is through the extension officers. Given the relatively small number of only six technical research officers, many in the community should be familiar with them.

5.2.2 Meetings between farmers and research and extension officers

The frequency of meetings alone can be used to measure the state of linkage between any two or more separate organisations. The outcomes of such meetings can further provide some insights into the state of linkages between two or more organisations too. It is against this background that the author sorts to find out how well these three different institutions are linked by analysing their frequency of meetings. The farmers' response to the question on meetings is shown in Table 5.2a while the research & extension officers' response to the same question is shown in Table 5.2b below.

Table 5.2(a): Farmers response to the frequency of meetings between them and the research and extension officers

Frequency of meeting	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
	n	%	n	%	n	%	N	%	n	%	n	%	n	%	N	%
Never met before	0	0	0	0	0	0	0	0	60	100	39	87	20	44	119	79.33
Once a week	54	90	40	88.9	39	86.7	133	89	0	0	0	0	3	7	3	2.00
Every fortnight	2	3.33	2	4.44	2	4.44	6	4	0	0	2	4	5	11	7	4.67
Once a month	3	5.00	2	4.44	4	8.89	9	6	0	0	3	7	17	38	20	13.33
Once in two months	1	1.67	1	2.22	0	0.00	2	1	0	0	1	2	0	0	1	0.67
Once in six months	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Total	60	100	45	100	45	100	150	100	60	100	45	100	45	100	150	100

A total of 54 farmer respondents (90%) from Sedze, 40 farmer respondents (88.89%) from Weaving and 39 farmer respondents (86.67%) from Manjoro indicated that they meet once a week for some farming business with their EW. Two farmer respondents from each cluster indicated that they meet every fortnight with their EW. These similar figures indicated that there was no significant differences (Fisher's exact test $P=0.9560$) within the three clusters in the frequency of meeting between farmers and EW. However there was highly significant differences (Fisher's exact test $P=0.0000$) within the three clusters in the frequency of meeting between farmers and researchers from NES, (Table 5.2a).

The number of farmer respondents who indicated that they have never met for business with researchers from Sedze (100%) and Weaving (87%) was significantly higher than those from Manjoro (44%). On the other hand the number of farmer respondents who indicated that they meet once a month for business with researchers from Manjoro (38%) was significantly higher than those from Sedze (0%) and Weaving (7%). However the overall response is that more (79.33%) people have never met with researchers from NES for any farming business (Table 5.2a).

Table 5.2b: Research and extension officers' response to the frequency of meetings between them and the farmers

Frequency of meeting	Extensionists		Researchers	
	n	%	N	%
Have never met before	0	0	1	10
Once a week	8	67	4	80
Every fortnight	3	25	0	0
Once a month	1	8	0	0
Once in six months	0	0	1	10
Once a year	0	0	0	0
Total	12	100	6	100

Results from Table 5.2b above shows that once a week meetings are more popular from both research and extension officers. A total of eight EO (67%) and four research officers (80%) revealed that they meet once a week with their farmers and a Fisher's exact test $P=0.3121$ did confirmed that there is no significant differences in research-farmer and extension-farmer meetings. However the farmers do not share the same view as the researchers on the same subject (Table 5.2a). The outcome in Tables 5.2a and 5.2b above indicated a higher farmer-extension than farmer-research contacts. This could be resulting from the fact that has been highlighted earlier on that the sample of farmers chosen were those that belong to farmer groups and they regularly meet with the extension officers.

The other factor is that one of the core duties of frontline extension officers is to meet farmers at least once a week. Most of the frontline extension officers also reside within their areas of work which makes them very accessible to the local farmers unlike research officers who stay at the research station. The very low farmer-research contacts can be attributed to the unwillingness to engaged farmers on the researchers side, a behaviour which was picked by the author during the interviews. Most, if not all of the researchers showed some elements of surprises when the question of meetings was asked. During the interviews, most researchers highlighted that their core business is to generate new information, research on farmers problems that they get through extension officers and

disseminate the solutions and other new technology through extension whom they expect to transfer the new technology to the farmers. Researchers also reported that they have very constrained budgets which make them almost immobile, they do not have enough vehicles to use, they do not get enough fuel supplies, no computers, printers, and other stationery to use. All these shortfalls limit their proper execution of duties.

5.2.3 Communication channels used by farmers and the research and extension officers

The following question was asked to farmers: What communication channels do you use with your extension officers and with researchers from NES? Research extension officers were asked: What communication channels do you use in conducting business with farmers? Communication is key to any successful farming business and it can provide a good measure of the type of linkage that exist amongst these three stakeholders. It is also important to mention that on this question, farmers and officers were asked to indicate which channels of communications they use mostly and the frequency of use of each channel is represented by the percentages in Tables 5.3a and 5.3b below. Table 5.3a shows the farmers response to the question while Table 5.3b shows research and extension officers' response to the communication question.

Table 5.3a: Farmer's response to the question on communication channels used

Communication channels	Extensionists		Researchers	
	frequency	%	Frequency	%
Yet to communicate	0	0.00	714	79.33
No direct communication	596	66.22	147	16.33
Cell phone calls	121	13.44	16	1.78
Cell-phone sms	36	4.00	1	0.11
By word of mouth	147	16.33	0	0.00
e-mail	0	0.00	0	0.00
Twitter	0	0.00	0	0.00
Facebook	0	0.00	0	0.00
Total	900	100	877	100

This multiple response question and possible answers revealed the following: A total of 66.22% and 16.33% of the farmers concurred that there is no direct communication between them and the extension and research officers respectively. This means that their group leaders usually make some arrangements for any meetings on their behalf. In other words the ordinary group members go through their group leaders most of the time when they want something from the officers. However 79.33% of the farmers agreed that they have not yet communicated with the research officers from NES either directly or even indirectly through their group leaders. A total of 13.44% and 1.78% of farmers agreed that they use cellphone calls to communicate with extension and research officers respectively. A total of 16.33% of the farmers indicated that they use word of mouth to communicate with extension officers.

These findings are possible given the fact that most frontline extension workers live within their working communities and they can be very accessible to the farmers. Results from Table 5.3a above indicate that the use of internet based communication channels such as emails, twitter, and Facebook is non-existing. The overall picture shown above indicates that there is very little communication between farmers and researchers while there is better communication between farmers and extension officers. This may reflect a very weak linkage structures between farmers and researchers. It is very difficult to imagine a formal linkage structure between farmers and researchers when 79% of the farmers have never communicated with their research officers.

Table 5.3b: Research and extension officers response to the question on communication channels used

communication channels	Extensionists		Researchers	
	frequency	%	Frequency	%
Agricultural shows	11	16.92	2	11.76
Cell-phone calls	9	13.85	4	23.53
Weekly meetings	8	12.31	1	5.88
Word of mouth	7	10.77	1	5.88
Every fortnight	6	9.23	0	0.00
Cell-phone sms	6	9.23	1	5.88
Annual meetings	5	7.69	0	0.00
Monthly meetings	5	7.69	0	0.00
Half yearly meetings	3	4.62	0	0.00
Leaflets	3	4.62	5	29.41
Newsletter	2	3.08	3	17.65
Total	65	100.00	17	100.00

Agricultural shows came out as the most popular communication channel with 16.92% on the extension officers side but it came forth on the researchers side with 11.76% (Table 5.3b). Cellphone calls came second in terms of usage to both extension and research officers with 13.85% and 23.53% respectively. Weekly meetings came third and fifth as the most used channel with 12.31% and 5.88% by extension and research officers respectively. Interestingly leaflets come out first on the researchers priority channels list with 29.41% but it came tenth out of the eleven listed channels on the extension officers list with just 4.62% (Table 5.3b).

Results in Table 5.3b above shows that newsletters are the third (17.65%) most preferred researchers' communication channel while on the other hand it came out as the least used channel by extension officers with just 3.08% of usage. The results confirms that research officers from NES do not hold any fortnightly, monthly, half year or even annual meetings with the farmers. Farmers never mentioned agricultural shows, leaflets, and newsletters as part of their communication channels. May be it has been long time ever since they got hold of any leaflets and newsletters that they forgot to include them as a means of

communication. Since the research station serves the whole district and even beyond it is very likely that they may have not got hold of any publications in a long time. The other reason could be the limited resources that the research department has which may be affecting their potential to work to their maximum. The use of these publications would be of good use to the farmers given their acceptable literacy levels, however it is very difficult to imagine the existence of a proper linkage structure were people communicate mostly through leaflets, cellphone calls and even agricultural shows which to the best of knowledge are held once a year.

There is also very little engagement during agricultural shows, most of the time is set aside for exhibitions, judging and awarding of prizes. Judging from the results shown in Table 5.3b above one may begin to believe that no formal linkage structures are in existence amongst these three stakeholders, the following chapters will shade more light on the state of farmer-research-extension linkage. The levels of communication that are expected in formal institutional linkage structures seem to be far from those depicted in the community of Nyanga.

5.2.4 Farmers' perspective on research and extension officers' services towards promoting farmer groups

The importance of farmer groups in spearheading agricultural development especially in resource poor countries have been lately advocated for by many in the agricultural field. Farmer groups make good bases for coordinated linkage structures with service providers within the agricultural sector, among other advantages. They are the "vehicle" to work collectively towards change at farm level and to the agricultural system in general (Stevens & Terblanché 2004:45).

In this survey, both research and extension officers agreed that farmer groups help in saving time and resources since one extension or research officer can meet several farmers at one given time. The researcher therefore went on to ask the farmers as well as researchers and extensionists the kind of effort they see and put respectively in aspects that promote viable new and existing farmer groups. The aspects of farmer groups that were tested or rated include: setting up new farmer groups, maintaining new farmer

groups, supporting new farmer groups, maintaining as well as supporting existing or old farmer groups. The results of this are shown in the following tables. It should be noted that setting or establishing new farmer groups is expected much from the researchers. However their own view on this function was sort after in the present study.

Table 5.4a: Farmers’ rating on extension and research officers’ efforts on setting up and maintaining new farmer groups

‘Setting up new farmer groups	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
Level of effort	n	%	N	%	n	%	N	%	n	%	n	%	n	%	N	%
No effort at all	3	5	0	0	4	8.89	7	5	60	100	37	86.05	27	60	124	84
Very little effort	10	16.67	1	2.33	10	22.22	21	14	0	0	5	11.63	14	31.11	19	13
Some effort	46	76.67	41	95.35	28	62.22	115	78	0	0	1	2.33	2	4.44	3	2
Considerable effort	1	1.67	1	2.33	3	6.67	5	3	0	0	0	0	2	4.44	2	1
Total	60	100	43	100	45	100	148	100	60	100	43	100	45	100	148	100
‘Maintaining new farmer groups’																
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
	Level of effort	n	%	N	%	n	%	N	%	n	%	n	%	n	%	N
No effort at all	3	5	0	0	3	6.67	6	4	60	100	39	90.70	27	60	126	85
Very little effort	8	13.33	3	6.98	13	28.89	24	16	0	0	3	6.98	14	31.11	17	12
Some effort	49	81.67	40	93.02	27	60	116	78	0	0	1	2.33	2	4.44	3	2
Considerable effort	0	0	0	0	2	4.44	2	1	0	0	0	0	2	4.44	2	1
Total	60	100	43	100	45	100	148	100	60	100	43	100	45	100	148	100

(a) Setting up new farmer groups

The trend of results in Table 5.4a above shows that extension officers are putting more efforts in setting up new farmer groups than research officers though a Fishers Exact Test ($P= 0.9371$) did not show any significant differences in the efforts of these two departments. A total of 49 farmer respondents representing 81.67% from Sedze and 40 farmer respondents representing 93.32% from Weaving who reported that there was 'some effort' from extension officers in setting up new farmer groups were significantly higher (Fishers Exact Test $P= 0.0046$) than 27 farmer respondents representing 60% from Manjoro who reported the same. A total of ten respondents each from Sedze and Manjoro rated the extension workers efforts on this task of setting up new farmer groups as 'very little effort' while only one respondent from Weaving shared the same view with his or her counter-parts from Sedze and Manjoro.

There was also a great deal of significant differences (Fishers Exact Test $P= 0.0000$) across the three clusters on their rating of the effort put by researchers from NES in setting up new farmer groups. All respondents (100%) from Sedze cluster concurred that there is no effort at all from researchers as far as setting up new farmer groups is concerned. This was followed by Weaving cluster where 37 out of the 43 respondents (86.05%) shared the same sentiments and Manjoro had 27 respondents (60%) who gave the same rating of 'no effort at all'. The majority feeling in all three clusters is that researchers are putting 'no effort at all' in setting up new farmer groups in their clusters. Only 14 respondents (31.11%) from Manjoro cluster agreed that researchers from NES were putting a 'very little effort' and 2 respondents (4.44%) each from the same cluster judged that researchers' are putting 'some effort' and 'considerable effort' respectively in setting up new farmer groups (Table 5.4a). This trend confirms that researchers do not put the efforts of establishing new farmer groups as their core business.

(b) Maintaining new farmer groups

The figure for setting up new farmer groups and maintaining new farmer groups are very similar. Clusters responses to the effort put by EW in maintaining new farmer groups was significantly different (Fishers Exact Test $P=0.0107$), though the overall responses shows

that the majority of the farmer respondents (116 people) across the three clusters agreed that EW are putting 'some effort' in maintaining new farmer groups. A total of 40 people (93.02%) from Weaving, 49 people (81.67%) from Sedze were significantly higher than 27 people (60%) from Manjoro, (Table 5.4a). The farmers view for the efforts put by researchers in maintaining new farmer groups is almost a replica of the efforts put by researchers in setting up new farmer groups, (Table 5.4a). The cluster differences was also significant (Fishers Exact Test $P= 0.0000$) but the overall view of the farmers was that researchers are not putting any effort at all in maintaining new farmer groups. Unlike setting up new farmer groups, the engagement of researchers with the farmers should portray some efforts maintaining these groups for the benefit of both farmers and researchers The results portrayed in this section thus far are consistence with the findings of section 5.2.1 at the beginning of this chapter.

None of the respondents from Sedze cluster knew any researcher from NES and all of them reported 'no effort at all' in setting up as well as maintaining new farmer groups in their cluster. A few respondents from Manjoro and Weaving who knew researchers or had forgotten their names in section 5.2.1 are most likely to be the ones who have reported 'very little' and 'some effort' in setting up as well as maintaining new farmer groups in their clusters, bearing in mind that the researchers from NES reported that they have recently started some on-farm trials in villages in these two clusters.

Table 5.4b: Farmers' rating on extension and research officers' efforts on supporting new farmer groups

'Supporting new farmer groups'	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
Level of effort	n	%	N	%	n	%	N	%	n	%	N	%	n	%	N	%
No effort at all	3	5	0	0	3	6.67	6	4	60	100	39	90.70	26	57.78	125	85
Very little effort	7	11.67	1	2.33	11	24.44	19	13	0	0	4	9.30	15	33.33	19	13
Some effort	50	83.33	42	97.67	27	60.00	119	80	0	0	0	0	2	4.44	2	1
Considerable effort	0	0	0	0	4	8.89	4	2	0	0	0	0	2	4.44	2	1
Total	60	100	43	100	45	100	148	100	60	100	44	100	43	100	148	100

(c) Supporting new farmer groups

Supporting new farmer groups did not show any preferential support from the research and extension officers. The trends of efforts are very much similar to the ones depicted in maintaining and setting up new farmer groups. The majority (80%) of the farmers rated the effort put by extension officers as 'putting some effort' in supporting new farmer groups. On the other hand, the research officers received their majority (125 respondents) rating of 85% on the negative side of 'not putting effort at all' in supporting new farmer groups (Table 5.4b). The trend of showing some intra cluster difference in terms of numbers per level of effort differences in this section just like it was in the case of maintaining and setting up new farmer groups. The Fishers Exact Test value was ($P=0.0000$) for Extension side and ($P=0.0000$) for the researchers side, (Table 5.4b)

(d) Maintaining and supporting old farmer group

From Table 5.4c below, maintaining and supporting old farmer group meant that the respondents were giving particular reference to their respective farmer groups. In this section these groups are also referred to as old or existing farmer groups.

Table 5.4c: Farmers' rating on extension and research officers' efforts in maintaining and supporting the existing or old farmer groups

	Extensionists								Researchers							
	Cluster								Cluster							
Maintaining your farmer group';																
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
	n	%	N	%	n	%	N	%	n	%	n	%	n	%	N	%
N-effort at all	3	5	0	0	3	6.67	6	4	60	100	38	88.37	25	55.56	123	83
V-little effort	6	10.00	1	2.33	8	17.78	15	10	0	0	4	9.30	15	33.33	19	13
Some effort	48	80.00	42	97.67	29	64.44	119	80	0	0	1	2.33	3	6.67	4	3
C- effort	3	5	0	0	5	11.11	8	6	0	0	0	0	2	4.44	2	1
Total	60	100	43	100	45	100	148	100	60	100	43	100	45	100	148	100
'Supporting your farmer group'																
	n	%	N	%	n	%	N	%	n	%	n	%	n	%	N	%
N-effort at all	2	3.33	0	0	3	6.67	5	3	60	100	38	88.37	26	57.78	124	84
V- little effort	6	10	1	2.33	8	17.78	15	10	0	0	4	9.30	14	31.11	18	12
Some effort	50	83.33	42	97.67	29	64.44	121	82	0	0	1	2.33	3	6.67	4	3
C-effort	2	3.33	0	0	5	11.11	77	5	0	0	0	0	2	4.44	2	1
Total	60	100	43	100	45	100	148	100	60	100	43	100	45	100	148	100

N-effort at all means no effort little effort; V- little means-very little effort; c-effort means considerable effort

The farmer respondent rating of the effort that research and extension officers put did not show any changes, suggesting that the officers do put the same effort in for both new and existing farmer groups. According to Table 5.4c above, 15 farmers (10%) agreed that extension officers effort in maintaining as well as supporting their farmer groups is very little. The majority number of 119 respondents (80%) were of the opinion that extension officers are putting 'some effort' in maintaining the existing farmer groups and 82% (121) agreed that extension officers too are putting 'some effort' in supporting their farmer group (Table 5.4c).

The rating of the researchers by farmer respondents on maintaining their farmer groups was very similar to the rating they got on supporting their farmer groups as well (Table 5.4c). Similarly there was some significant differences (Fishers Exact test $P = 0.0066$) in the general rating of EW efforts in maintaining existing farmer groups across the clusters, the similar trend continues on the researchers rating with a Fishers Exact test of $P = 0.0000$ showing significant differences in the response to this question. As mentioned earlier in this section, the differences were on the distribution of the number of responses on the different levels of effort. Table 5.4c shows all respondents from Sedze cluster shared the view that 'no effort at all' is being put by researchers in supporting their farmer groups while in Manjoro cluster a lower number of 26 respondents (57.78%) shared the same sentiments and this difference is significant.

In maintaining their farmer groups, 83% of the farmers from the three clusters representing 123 respondents were of the view that 'no effort at all' was put in by researchers while 84% (124 respondents) of the farmer respondents shared the same sentiments in as far as supporting their groups by research officers (Table 5.4c). The highest and lowest average rating for the levels of effort put by extension officers in promoting farmer groups was 80% on 'some effort' and 3% on 'considerable effort' respectively. On the researchers side, the highest average rating was 84% on the very negative side of 'no effort at all' and the lowest was a mere 1% on the very positive side of 'considerable effort' ,(not shown in the Tables above.). The result from this section shows some satisfaction in efforts of the extension workers in promoting farmer groups. Research officer from NES appears to be invisible within the farmers' activities which would make it very difficult to advocate for

some participatory, all inclusive research and extension methods which are seen as key to improving sustainable and more productive agricultural and rural development at large.

5.2.5 Research and Extension officers' efforts towards setting, maintaining and supporting new farmer groups

After getting the farmers' side of how they rate the efforts that is put in by research and extension officers in promoting farmer groups, the cycle will be completed by looking at how the research and extension officers themselves rated their own efforts in promoting farmer groups.

Both research and extension officers were requested to rate their own efforts in establishing, maintaining and supporting new farmer groups. The response to this question is shown in Table 5.5 below.

Table 5.5: Extension and Research officers' own rating of their efforts on setting, maintaining and supporting new farmer groups

	Extensionists										Researchers									
	Level of effort										Level of effort									
	1		2		3		4		Total		1		2		3		4		Total	
Type of Effort	n	%	N	%	n	%	n	%	N	%	n	%	n	%	n	%	n	%	N	%
Setting new f-groups	0	0	0	0	3	25	9	75	12	100	2	33	1	17	2	33	1	17	6	100
Maintaining new f-groups	0	0	0	0	2	17	10	83	12	100	2	33	1	17	1	17	2	33	6	100
Supporting new f-groups	0	0	1	8	1	8	10	84	12	100	2	33	1	0	3	50	1	17	6	100
Average	0	0	0.3	3	2	17	10	81	12	100	2	33	1	11	2	33	1	22	6	100

Key: 1-no effort at all; 2- very little effort; 3-some effort; 4-considerable effort

*f-groups means farmer groups

A comparative analysis of Table 5.5 and Tables 5.4a to 5.4c above shows that extensionists rated their efforts much higher than the recipients (farmers) of those particular services. A total of nine extensionists (75%) concurred that they are putting 'considerable effort' in setting new farmer groups as compared to three farmers (6.67%) who shared the same sentiments with them, (Table 5.4a). A Kruskal-Wallis Test statistic =26.72; P-value=0.000 confirms these highly significant differences.

On maintaining new farmer groups, ten extensionists (83%) indicated that they putting 'considerable effort' (Table, 5.5) while only two (1%) farmers respondent out of 150 farmers rated it this high (Table 5.4a). The trend of results is not different when it comes to supporting new farmer groups, 84% and 4.44% of extension officers and farmers respectively highlighted that they are putting 'considerable effort' in supporting new farmer groups, (Tables 5.3a and 5.4). Again a comparative analysis of these responses indicated a highly significant differences (Kruskal-Wallis Test statistic =32.93; P-value=0.0000). Extension officers also rated their efforts in supporting new farmer groups much higher than the farmers. There were mixed responses from the researchers, 33% of them (two research officers) admitted that they are 'not putting any effort at all' in setting, maintaining and supporting new farmer groups, while 85% of farmers agreed that no effort at all is coming from researchers as far as setting, maintaining and supporting new farmer groups.

Contrary to the fact that setting up new farmer groups is not expected from research officers 33% (two) and 17% (one) of the indicated that they are 'putting some effort' and 'considerable effort' respectively in this kind of work though the concerned farmers seems not to agree with them. None of the research officers dismissed the question on setting up new farmers as irrelevant, suggesting that they could considering it as part of their duties. A total of three researchers (50%) felt that they are putting 'some effort' in supporting new farmer groups, contrary to that of a mere 1% of the farmers who shared the same perceptions with them. Kruskal-Wallis Tests for researchers' efforts in setting, maintaining and supporting new farmer groups all showed high significant differences as compared to those reported by the farmers. For setting up new farmer groups, the P-value was 0.0002; for maintaining new farmer groups, the P-value was 0.0007 and 0.0012 for supporting new farmer groups.

Research and extension officers were also asked to indicate if they are also members of some farmer groups. The results we got indicated that almost all researchers (98%) are not part of any farmer groups, they only assist the groups but they are not group members. On the extension side, 29% of them were found to be members of farmer groups that they work with. These are mostly officers who work within their home areas, hence they join their colleagues in these farmer groups.

5.2.6 Practical advice rendered to farmers by research and extension officers

In any given situation, it is important that the recipients of any service are satisfied with that kind of service or else the recipients shows their displeasure in several ways such as boycotts or demonstrations. The past experiences of working with communal farmers have shown that the farmers will not attend any meetings if the type of advice they get is of poor quality. In a democratic society farmers are expected to play a pivotal role in determining the type of practical advice that they need.

Table 5.6 below shows the results of how farmers rated the practical advice they receive from their research and extension officers.

Table 5.6: Farmers rating of the practical advice rendered by research and extension officers

	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
Level of practical advice	n	%	N	%	n	%	N	%	n	%	n	%	n	%	N	%
No practical advice received at all	1	1.67	2	4.44	2	4.44	5	3	59	98.33	39	88.64	24	53.33	122	81.88
Very little practical advice received	2	3.33	3	6.67	10	22.22	15	10	0	0	4	9.09	11	24.44	15	10.07
Some practical advice received	52	86.67	39	86.67	31	68.89	122	82	1	1.67	1	2.27	9	20.00	11	7.38
Considerable practical advice received	5	8.33	1	2.22	2	4.44	8	5	0	0	0	0	1	2.22	1	0.67
Total	60	100	43	100	45	100	148	100	60	100	44	100	45	100	148	100

A total of 122 (82%) farmer respondents reported that they do receive 'some practical advice' from the extension officers, however the distribution of the response to this question was significantly different (Fishers Exact test $P=0.0274$), whereby only 31 farmer respondents (68.89%) from Manjoro reported to be receiving 'some practical advice' from the EW while both Sedze and Weaving clusters recorded 52 respondents (86.67%) and 39 respondents (86.67%) respectively. This suggests that EW from Sedze and Weaving are doing a better job as compared to their counterparts from Manjoro cluster. It is further supported by the fact that 10 respondents (22.22%) from Manjoro shared the view that they only receive very little practical advice from the EW (Table 5.6). These results suggest that extension officers from Manjoro cluster could be providing text-book based advice to their farmers which is very difficult to put into practice.

The researchers side is completely the opposite of the extension side. A total of 122 farmer respondents (81.88%) across the three clusters concurred that they have not yet received 'any practical advice' from the researchers at all. However there was significant difference (Fishers Exact test $P= 0.0000$) in response to this question across the three clusters with Manjoro showing the least number of respondents, 24 representing 53.33% while Sedze had 59 respondents (98.33%) and Weaving had 39 respondents (88.64%) who gave this rating.

The other difference was that only 11 respondents (24.44%) from Manjoro concurred that they receive very little practical advice from the researchers, with a further nine respondents (20%) concurring that they receive some practical advice from the researchers. From Weaving four and one respondent reported that they received 'very little practical advice' and 'some practical advice' respectively from NES researchers while Sedze had only one respondent who reported to be receiving some practical advice from NES researchers.

The same reasons cited earlier on in section 5.2.2 and 5.2.3 may also be a result of this outcome. During the interviews, researchers did not show much enthusiasm to meet the farmers, to them it is not their core business. The ToT extension approach system seems to be their very much preferred extension approach system. Researcher from NES still upheld the fact that once they generate information and publish it through leaflets and

newsletters, their job is done. Getting this information out to end user is the core duties of their extension officers' counterparts. The picture of the current state of affairs thus far shows that there are no formal institutional linkages that exists amongst farmers and the two stakeholders, however the farmer-extension linkage is showing some potential. Farmers should have at least indicated that they receive some practical advice from researchers as much as they did from extension officers if problem identification and solving, implementation and monitoring and evaluation was done together in a set up that is expected in stakeholders that are properly linked.

5.2.7 Usefulness of information provided to the farmers by the research and extension officers

In a properly linked organisational set up, farmers are supposed to determine the type of information that they require and they are supposed to be responsible for the generation of such information. During the survey, farmers were asked to rate the usefulness of information that they receive from the research and extension officers (Table 5.7).

Table 5.7: Farmer respondents rating the usefulness of information received from the research and extension officers

	Extensionists								Researchers							
	Cluster								Cluster							
	Sedze		Weaving		Manjoro		Grand Total		Sedze		Weaving		Manjoro		Grand Total	
Level of usefulness	N	%	n	%	n	%	N	%	n	%	n	%	n	%	N	%
No information provided at all	0	0	0	0	0	0	0	0	17	28.33	7	15.56	3	6.67	27	18.00
Not useful at all	1	1.67	1	2.22	2	4.44	4	2.67	42	70	33	73.33	20	44.44	95	63.33
Very little usefulness	4	6.67	4	8.89	8	17.78	16	10.67	0	0	3	6.67	10	22.22	13	8.67
Some useful information	49	81.67	36	80	33	73.33	118	78.67	1	1.67	2	4.44	11	24.44	14	9.33
Considerable usefulness	6	10	4	4.89	2	4.44	12	8.00	0	0	0	0	1	2.22	1	0.67
Total	60	100	43	100	45	100	148	100	60	100	44	100	45	100	148	100

Results shown in Table 5.7 above shows that extension officers continues to outclass their research counterparts in providing useful services to the farmers. None of the farmer respondents reported never to have received any information from EW while a total of 27 farmer respondents (18%) highlighted that they have never received any information from researcher. There was no significant cluster differences (Fishers exact test $P= 0.5216$) in the rating of information given to farmers by extension officers. The overall view across the three clusters is that extension officers are providing 'some useful information' to the farmers.

The farmers' rating of the usefulness of information rendered by researchers from NES was significantly different (Fishers exact test $P= 0.000$) across the three clusters. The majority (95 respondents, 63.33%) of the farmers in all the three clusters concurred that the information they receive from researchers is not useful at all, however the figures of respondents who shared the same sentiments from Manjoro (20 respondents, 44.44%) were significantly lower than that from Sedze and Weaving who had 42 respondents (70%) and 33 respondents (73.33%) respectively.

A significant number of 11 farmer respondents (24.44%) from Manjoro were of the view that the information rendered to them by researchers from NES is indeed 'useful' while only two and one respondent from Weaving and Sedze shared the same sentiments respectively (Table 5.7). A total of 6.67% and 22.22% respondents from Weaving and Manjoro clusters reported that the information they receive from researchers contains 'very little usefulness' in it. Again the presence of researchers in two villages in these clusters is seen to be having some influence on the farmers, unlike from Sedze cluster where the researchers have not yet established anything with them, farmers have nothing to report.

5.5 Summary and conclusions

1).Farmer-research-extension officers relationship

- 96% of the farmer respondents know the extension officers whom they work with by their names while only 6% could report the same when it comes to knowing the research officers by name.

- All farmer respondents from Sedze neither know any research officer by name nor have they forgotten their name. Researchers from NES are completely unknown from Sedze cluster which roughly 20km from NES.
- The recent establishment of some organic pesticide control trials in some parts of Manjoro and Weaving clusters have slightly improved the farmer-research contact

2). Frequency of meetings

- On average farmers and extension officers meet once every week.
- There were some great significant differences within the three clusters in the frequency of meeting between farmers and researchers from NES. The number of farmer respondents who indicated that they have never met for business with researchers from Sedze (100%) and Weaving (87%) was significantly higher than those from Manjoro (44%).
- The majority of research (80%) and extension officers (67%) revealed that they meet once a week for some farming business with their farmers. However the farmers do not share the same view as their researcher with only 2% of them from all the three clusters indicating that they meet once a week.
- There are higher farmer-extension contacts than farmer-research contacts. Extension officers are obliged to meet once a week with the farmers.

3). Communications channels used by farmers in doing business with research and extension officers

- 79.33% of the farmers reported that they have not yet communicated with the research officers from NES, directly or even through their group leaders.
- 13.44% and 1.78% of farmers agreed that they use cell phone calls to communicate with extension and research officers respectively.
- A total of 16.33% of the farmers indicated that they use word of mouth to communicate with extension officers.
- There is no internet based communication between farmers and extension officers as well as between farmers and researchers.
- There is more farmer-extension communication than farmer-research communication. This also suggests a very weak farmer-research linkage.

- Farmers never mentioned agricultural shows, leaflets and newsletters as part of their communication channels with research and extension officers.

4). Communications channels used by research and extension officers in doing business with farmers

- Agricultural shows came out as the most popular communication platform with 16.92% on the extension officers side but it came forth on the researchers side with 11.76%.
- Cell phone calls came second in terms of usage to both extension and research officers with 13.85% and 23.53% respectively.
- Weekly meetings came third and fifth as the most used channel with 12.31% and 5.88% by extension and research officers respectively.
- Interestingly leaflets come out first on the researchers priority channels list with 29.41% but it came tenth out of the eleven listed channels on the extension officers list with just 4.62%.
- Newsletters occupied third (17.65%) place on the researchers list. Research officers from NES do not hold any fortnightly, monthly, half year or even annual meetings with the farmers.
- It is very difficult to imagine the existence of a proper linkage structure were people communicate mostly through leaflets, cell-phone calls and even agricultural shows which are held once a year

5). Farmers rating of research and extension officers' efforts in promoting farmer groups

- The majority of the farmer respondents highlighted that there was 'some effort' from extension officers in setting up and maintaining new farmer groups
- Farmer respondents across the three clusters differ on the rating of the effort put by researchers from NES in setting up and maintaining new farmer groups.
- All farmers (100%) from Sedze, 86.05% from Weaving and only 60% from Manjoro concurred that there is 'no effort at all' from researchers in setting up new farmer groups

- None of the respondents from Sedze cluster knew any researcher from NES. A few respondents from Manjoro and Weaving who knew researchers or had forgotten their names
- Supporting new farmer groups did not show any preferential support from the research and extension officers. The trends of efforts are very much similar to the ones depicted in maintaining and setting up new farmer groups.
- 80% of farmer respondents were of the opinion that extension officers are putting 'some effort' in maintaining their/existing farmer groups.
- All respondents from Sedze cluster shared the view that 'no effort at all' is being put by researchers in supporting their farmer groups while in Manjoro cluster a lower number of 26 respondents (57.78%) shared the same sentiments and this difference is so much significant.
- In maintaining old/existing farmer groups, 83% of the farmers respondents from the three clusters were of the view that 'no effort at all' was put by researchers
- 84% of the farmer respondents reported 'no effort at all' in supporting existing farmer groups by research officers
- The highest and lowest average rating for the levels of effort put by extension officers in promoting farmer groups was 80% on 'some effort' and 3% on 'considerable effort' respectively.
- On the researchers side, the highest average rating was 84% on the very negative side of 'no effort at all' and the lowest was a mere 1% on the very positive side of 'considerable effort'.
- Farmers show some satisfaction in efforts of the extension workers in promoting farmer groups by extension officers and a lot of dissatisfaction from NES researchers.

6) Research and extension officers rating of their efforts in promoting farmer groups

- Both research and extensionists rated their efforts much higher than the recipients (farmers) of those particular services themselves in all the aspects of promoting farmer groups.
- 75% of the extension officers concurred that they are putting 'considerable effort' in setting new farmer groups as compared to three farmers (6.67%) who shared the same sentiments with them.

- On maintaining new farmer groups, ten extensionists (83%) indicated that they putting 'considerable effort', while only two farmers respondents out of 150 (1%) farmers rated them this high.
- 84% and 4.44% of extension officers and farmers respectively highlighted that they are putting 'considerable effort' in supporting new farmer groups.
- 33% (two) research officers reported that they are 'not putting any effort at all' in setting, maintaining and supporting new farmer groups while 85% of farmers agreed that no effort at all is coming from researchers as far as setting, maintaining and supporting new farmer groups is concerned.
- 50% of research officers reported that they are putting 'some effort' in supporting new farmer groups, contrary to that of a mere 1% of the farmers who shared the same sentiments with them.
- 98% of researchers are not part of any farmer groups, they only assist the groups but they are not group members.
- 29% of extension officers are members of farmer groups that they work with.

7) Practicality and usefulness of services rendered by research and extension officers to the farmers

- 82% of farmer respondents acknowledged that they do receive 'some practical advice' from the extension officers with the majority of them coming from Sedze and Manjoro clusters.
- Extension officers from Manjoro cluster could be providing text-book based advice to their farmers which is very difficult to put into practice.
- 81.88% of farmer respondents across the three clusters concurred that they have not yet received 'any practical advice' from the researchers at all.
- Researcher from NES still upheld the fact that once they generate information and publish it through leaflets and newsletters, their job is done. The picture of the current state of affairs shown thus far shows that there is no formal institutional linkages that exists amongst farmers the two stakeholders.
- The majority of the farmers indicated that they are receiving useful information from the farmers and nothing from research officer though a significant number of (24.44%) from Manjoro were of the view that the information rendered by researchers from NES is indeed 'useful'.

CHAPTER 6

INSTITUTIONAL LINKAGES

6.1 Introduction

Chapter 6 is divided into four sections. The first section deals with respondents' answers to questions which were directly soliciting information on the current state of farmer-research-extension linkages. Unlike in the previous Chapters (Chapters 4 and 5) where the questions on linkage status were indirect, this time the questions were very direct and straight forward. The second section looks at the factors that may affect farmer-research-extension linkages such as the restructuring of the Ministry of Agriculture (MOA) specifically the merger of research and extension portfolios. The third part still deals with factors that may affect farmer-research-extension linkages, but this time focusing on personal and socio-economic factors that affect the work of research and extension officers as civil servants. Issues such as negative stress or burnt out, job satisfaction and work place situation are discussed in that section. The fourth and final section summarizes and concludes the whole of Chapter 6.

6.2 Importance of public research and extension organisations

Before some direct questions on the current state of farmer-research-extension linkages were asked, all three role players were requested to comment on the following statement: "Public agricultural research and extension organisations in Zimbabwe are established as instruments for promoting agricultural development and that effective institutional linkage structures between these departments and local farmers would help to achieve better agricultural results". The response to this statement is shown in Table 6.1 below.

Table 6.1: Farmers, research and extension officers respondents' responses on public agricultural research and extension organisations as engines for promoting agricultural development

Level of Agreement	Sedze		Weaving		Manjoro		Grand total		Extensionists		Researchers	
	n	%	n	%	n	%	N	%	n	%	n	%
Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0
Disagree	0	0	0	0	1	2	1	0.67	1	8.33	0	0
Agree	30	50	15	34	22	49	67	44.67	1	8.33	4	66.67
Strongly agree	30	50	30	67	22	49	82	54.67	10	83.33	2	33.33
Total	60	100	45	100	45	100	150	100	12	100	6	100

The three stakeholders overwhelmingly agreed that public agricultural research and extension organisations in Zimbabwe are established as instruments for promoting agricultural development and that effective institutional linkage structures between these departments and local farmers would help to achieve better agricultural results. Extension officers with 83.33% (ten) strongly agree to the above statement followed by 66.67% (four) researchers who agree and lastly by 54.67% (82) farmers who strongly agreed to the statement. A further 44.67% (67) of the farmers indicated that they indeed agreed to the statement. Although Manjoro cluster had more people 67% (30) who strongly agreed to the statement as compared to Sedze 50% (30) and Manjoro 49% (22) this difference was not significant at all (Fisher's exact test $P=0.155$) (Table 6.1).

A Fisher's exact test $P= 0.0217$ indicated some significant difference in the number of respondents who agreed to this statement between research and extension officers. A total of ten extension officers who strongly agreed to the statement were significantly more than the four research officers who agreed to the statement. Agreeing to the statement is one thing and doing what the statement says is also another different thing. It is therefore necessary to establish how well all the stakeholders are practising what they agree to. The Kruskal-Wallis Test statistic =3.95; P -value=0.1388 indicated that there was no significant differences in the response to this question between research and extension officers and farmers, they all agree and strongly agree to the statement.

6.3 Farmer-research-extension linkages

In this section farmer-research-extension linkages will be split into farmer-extension, farmer-research, and research-extension linkages in order to establish an extensive insight into the current state of linkages amongst the three role players.

6.3.1 The current state of farmer-research-extension linkages as perceived by the farmers

In an effort to establish the current state of institutional linkages between farmers and extensionists as well as between farmers and researchers, a similar set of questions were asked to the three role players. Table 6.2a below shows farmers' evaluation on the current state of existence of farmer-extension and farmer-research linkages.

Table 6.2a: Farmers perception of coordination on linkage planning methods, agreement first before implementation of planned methods and follow through on planned activities as indicators of farmer-research-extension linkages

1. Coordination on linkage planning methods is..													
Cluster	AGRITEX officers							Researcher from NES					
		1	2	3	4	5	Total	1	2	3	4	5	Total
Sedze	N	24	22	13	1	1.86	60	60	0	0	0	1.00	60
	%	40	37	22	1		100	100	0	0	0		100
Weaving	N	11	17	17	0	2.13	45	43	1	1	0	1.07	45
	%	24	38	38	0		100	96	2	2	0		100
Manjoro	n	7	18	20	0	2.28	45	39	6	0	0	1.13	45
	%	16	40	44	0		100	87	13	0	0		100
Grand Total	N	42	57	50	1		150	142	7	1	0		150
	%	28	38	33.33	0.67		100	94.67	4.67	0.67	0		100

2. Agreement first before implementation of planned methods is...													
Cluster	AGRITEX officers							Researcher from NES					
		1	2	3	4	5	Total	1	2	3	4	5	Total
Sedze	n	32	15	13	0	1.68	60	60	0	0	0	1.00	60
	%	53	25	22	0		100	100	0	0	0		100
Weaving	n	21	7	17	0	1.91	45	44	0	1	0	1.04	45
	%	47	15	38	0		100	98	0	2	0		100
Manjoro	n	13	12	20	0	2.15	45	39	6	0	0	1.13	45
	%	29	27	44	0		100	87	13	0	0		100
Grand Total	N	66	34	50	0		150	143	6	1	0		150
	%	44	22.67	33.33	0		100	95.33	4	0.67	0		100

3. Follow through on planned activities is...													
Cluster	AGRITEX officers							Researcher from NES					
		1	2	3	4	5	Total	1	2	3	4	5	Total
Sedze	n	29	17	14	0	1.75	60	60	0	0	0	1.00	60
	%	49	28	23	0		100	100	0	0	0		100
Weaving	n	22	5	18	0	1.91	45	43	1	1	0	1.06	45
	%	49	11	40	0		100	96	2	2	0		100
Manjoro	n	11	12	21	1	2.17	45	39	5	1	0	1.15	45
	%	24	27	47	2		100	87	11	2	0		100
Grand Total	N	62	34	53	1		150	142	6	2	0		150
	%	41.33	22.67	35.33	0.67		100	94.67	4	1.33	0		100

*Scores: 1. Non-existence 2. Existence at times 3. Existence 4. Always existence; 5-mean score

(a) Coordination on linkage planning methods, as a linkage indicator

Coordination on linkage planning methods is key to any endeavour or activity that aims to achieve good results. All agricultural activities need proper, all inclusive planning. Farmers need to be active partners in research and extension activities such as programme development, agricultural problem identification, and agricultural problem prioritisation among other activities (Reid, 2000). Farmer respondents across the three clusters showed some significant differences (Fisher's exact test $P= 0.0417$). From the Sedze cluster, 24 respondents (40%) indicated that coordination on linkage planning methods is 'non-existent' while a significantly lower number of 11 respondents (24%) from Weaving and 7 respondents (16%) from Manjoro shared the same view with fellow respondents from Sedze cluster. The mean score of 1.85 for Sedze supports this large percentage on 'non-existence' of coordination on linkage planning methods.

Another significant difference in number of respondents who shared the same view from the three clusters was on the 'existence' rating. A total of 20 respondents (44%) from Manjoro indicated that coordination on linkage planning methods is 'existent' between them and the extension officers closely followed by 17 respondents (38%) from Weaving and a low 13 respondents (22%) from Sedze cluster. The majority of the respondents 28% (42) and 38% (57) were of the view that coordination on linkage planning methods is 'non-existent' and 'sometimes existent' respectively (Table 6.2a). These figures may very well be interpreted as highlighting a very weak farmer-extension linkage. The mean score figures of 2.13 and 2.28 for Weaving and Manjoro clusters respectively shows that coordination on linkage planning methods is 'existence at times'.

The farmer-research linkage is best described as non-existent. All the linkage indicators have shown that there is almost no interaction between farmers and researchers from NES. The mean score figures of 1.0 for Sedze, 1.07, and 1.13 for Weaving and Manjoro clusters respectively clarify the farmers displeasure of 'non-existence of coordination on linkage planning methods. Table 6.2a above shows that all farmer respondents (100%) from Sedze cluster do not coordinate any planning with researchers from NES. This figure was significantly different (Fisher's exact test $P=0.0018$) from Manjoro cluster were 39 respondents (87%) also said the same about the current state of farmer-research linkage.

The other cluster difference was brought about by 6 respondents (13%) from Manjoro cluster who reported that coordination on linkage planning methods is 'sometimes existent' compared to just one and zero from Weaving and Sedze clusters respectively.

(b) Agreement first before implementation of planned methods, as a linkage indicator

In well linked organisations, after some deliberations on which methods to follow during the planning phase it is expected that there should be some feedback to the rest of the concerned stakeholders before any implementation kicks off. If this does not take place the linkage bond can be weakened or it may suggest that there is no linkage at all. The farmer respondents from the three clusters gave some significantly different views (Fisher's exact test $P=0.0001$).

There were more farmer respondents (32) from Sedze and Weaving (21) clusters who shared the view that agreement first before implementation of planned methods is non-existent between them and extension officers than those from Manjoro (13) cluster. Rather there were more farmer respondents from Manjoro (20) cluster who felt that agreement first before implementation of planned methods is 'existent' between them and extension officers than those from Weaving (17) and Sedze (13). Extension officers and farmers from Manjoro could be doing things differently from the other two clusters. There seems to be some elements of agreement first before implementation takes place. The mean score of 1.68 for Sedze which suggest that there is a positive movement from 'non-existent' to 'existent at times' on agreement first before implementation is still low when compared to mean scores of 1.91 and 2.15 for Weaving and Manjoro respectively. Manjoro cluster may be moving from 'existent at times' to 'existent' which is a good sign of linkages amongst the role players.

The farmer-researchers side portrays a much more worry-some scenario than the one shown on the farmer-extension side. Almost all the farmer respondents 142 (94.67%) highlighted that agreement first before implementation of planned methods is non-existent between them and research officers (Table 6.2a). These results are only confirming the signs and symptoms of poor linkage structures that were portrayed in Chapters four and five

earlier on. In Table 5.1, 80% of the farmer respondents highlighted that they do not know any research officers from NES by name and the same number of farmers also shared the same sentiments that they have never met for business with any research officers from NES before. All farmer respondents from Sedze cluster have no knowledge of the existence NES, hence a mean score of 1.0-indicating 'non-existence' of any agreement first before implementation of planned methods.

(c) Follow through on planned activities, as a linkage indicator

Results from Table 6.2a above shows that follow through on planned activities has similar trends with agreement first before implementation of planned methods. There were some significant differences (Fisher's exact test $P=0.0067$) across the three clusters on this linkage indicator. A total of 49% (29) of farmer respondents from Sedze and 49% (22) from Weaving concurred that follow through on planned activities is 'non' existent between them and extension officers while only 11 respondents (24%) from Manjoro cluster shared the same view with their colleagues from Sedze and Weaving clusters. There were more people (47%) from Manjoro cluster who reported that follow through on planned activities is 'existent' between them and extension officers than those from Sedze 23% (14) and 40% (18) from Weaving clusters. The mean scores of 1.75 for Sedze, 1.91 for Weaving and 2.17 for Manjoro supports the above figures.

This trend suggest that there is some work being done either by extension officers or by the farmers in trying to establish some proper institutional linkages between themselves. This trend may be a reflection of what Hanyani-Mlambo (2002) described as informal networks that depends more on individual efforts to network than on organisational mandates or initiatives. If there was a formal linkage almost all farmer respondents should be pretty aware of all activities taking place within their midst. So these smaller numbers may be showing some personal contact between individual farmers and their extension officers.

Farmers across the three clusters thus far have highlighted that there is neither coordination on linkage planning methods nor agreement first before implementation of planned methods as well as follow through on planned activities between them and research officers. There is no way that farmers can now report of the existence of follow through on

planned activities when there have never been joined planning before. All respondents (100%) from Sedze cluster posit that follow through on planned activities between them and research officers from Nyanga experiment station is 'non-existent', hence a mean score of 1.00 indicating 'non-existence' of follow through on planned activities. Only five respondents (11%) from Manjoro cluster reported that coordination on linkage planning methods is 'existent at times', slightly raising the mean score to 1.15. These differences in response from the three clusters were statistically different (Fisher's exact test $P= 0.0067$) but the overall response was not different at all.

(d) Communication as a linkage indicator

Table 6.2b below shows the outcome of farmer responses on the aspects of communication as a linkage indicator. It shows that communication of planning activities to all members; communication of progress to all members; communication of success to all members and communication of failures to all members is non-existent between farmers and NES researchers. All these linkage indicators did not show any significant cluster differences on the farmers-extension side and that is the reason why the table only shows the overall or combined cluster figures. However the farmers-research side did show some cluster differences which have an almost insignificant bearing on the overall outcome of the whole cluster responses.

Table 6.2b: Farmers perception of communication as a linkage indicator on the existence of farmer-research-extension linkages

Linkage indicators	AGRITEX officers							Researcher from NES					
		1	2	3	4	5	Total	1	2	3	4	5	Total
Communication of planning activities to all members is	N	69	29	51	0	1.86	150	143	5	2	0	1.06	150
	%	46	20	34	0		100	95.33	3.33	1.33	0		100
Communication of Progress to all members is	N	57	41	52	0	1.09	150	143	5	2	0	1.06	150
	%	38	27	35	0		100	95.33	3.33	1.33	0		100
Communication of success to all members is	N	57	34	59	0	2.00	150	143	5	2	0	1.06	150
	%	38	23	39	0		100	95.33	3.33	1.33	0		100
Communication of failures to all members is	N	66	39	45	0	1.86	150	143	6	1	0	1.06	150
	%	44	26	30	0		100	95.33	4	0.67	0		100

*1. Non-existence 2.Existence at times 3.Existence 4.Always existence; 5 mean score.

Communication is very crucial in all institutions of farming related business. Success of any linkage venture is centred on how well the business of that venture is communicated to all members. Table 6.2b above shows that 69 farmer respondents who constitute 46% shared the view that communication of planning activities to all members is non-existent between them and the AGRITEX officers, a further 20% (29) reported that this type of communication is 'existent at times, bringing the mean scores to 1.86, which may suggest the upward movement from 'non-existent' to 'existent at times'. These figures are comparatively higher than the 34% (51) who concurred that communication of planning activities is 'existent' between them and the AGRITEX officers.

If farmers are not aware of planned activities around them, then it shows there are no any linkage structures that exist. The 34% of respondents across the three clusters may also support the earlier argument that there could be informal networks between individual farmers and their AGRITEX officers. The researchers' side does not show any signs of linkages formal or informal. Table 6.2b above shows a more or less similar response to all communication related indicators, were the majority of the farmers overwhelmingly concurred that all these forms of communication are 'non-existent between them and the research officers from NES, further cemented by mean scores of 1.06-indicating 'non-existence' of communication at all. The results from Chapter 5, relating to which

communication channels are used between farmers and research officers also support this scenario. Table 5.3b shows that there is not enough round-table meetings between these two stakeholders that can support cohesive institutional linkage structures. There can never be a two-way communication process when researchers earlier on reported that they mostly use leaflets and newsletters as their medium for communication. The element of reluctance on the part of researchers to engage farmers in their work could be the reason of such poor linkage structures.

As mentioned in the previous chapters that there was a behaviour noticed within the research officers that engaging farmers was not key in their job hence, very poor linkages structures or just unwilling to engage with farmers as Mangwela (2007) argued. They still consider their main duties as information generation and scientific problem solving with less priority on inclusive farmer-extension participation. The researchers also indicated that they were not comfortable with the merger of AGRITEX and DR&SS to form Agricultural Research and Extension Services (AREX) in 2001 because it was affecting their core business of research.

Communication of progress and success between farmers and AGRITEX officers showed similar trends, whereby 57 respondents (38%) were of the view that communication of progress and success between them and AGRITEX officers is 'non-existent'. On the other hand 52 respondents (35%) and 59 respondents (39%) concurred that communication of progress and success between them and AGRITEX officers is 'existent' respectively (mean score=2.00) (Table 6.2b). The weak farmer-extension linkage continues to be portrayed here. The use of agricultural shows as one of the most popular communication channel between farmers and AGRITEX officers supports this situation.

Communication of failures again is not well communicated between farmers and AGRITEX officers. Results from Table 6.2b above shows that 44% (66) farmer respondents were of the view that communication of failures between them AGRITEX officers is virtually 'non-existent' (mean score= 1.86). A further 26% (39) highlighted that communication of failures is 'existent at times'. Only 30% (45) concurred that communication of failures is 'existent'. This figure is far too low to suggest any proper linkage between farmers and AGRITEX officers. Most disappointing is the result that none of the farmers indicated that

communication between them and both research and extension officers are 'always existent'.

(e) Agreement in setting goals and objectives as linkage indicators

After a coordinated planning exercise is complete, it is expected that in a well set up linkage structure there has to be some agreement first before the implementation of a program begins. Goals and objectives needs to be agreed upon before any program starts. Table 6.2c below shows the farmer respondents' perception when it comes to agreements in setting goals and objectives.

Table 6.2c: Farmers perception on agreement in setting goals and objectives as linkage indicators between them and research and extension officers

<i>Agreement in setting objectives is...</i>													
Cluster	AGRITEX officers							Researcher from NES					
		Scale 1-4					Total	Scale 1-4					Total
		1	2	3	4	5		1	2	3	4	5	
Sedze	N	32	17	11	0	1.51	60	60	0	0	0	1.00	60
	%	53.33	28.33	18.33	0		100	100	0	0	0		100
Weaving	n	24	4	17	0	1.82	45	44	1	0	0	1.00	45
	%	53	9	38	0		100	98	2	0	0		100
Manjoro	N	19	12	13	0	1.91	45	39	5	1	0	1.15	45
	%	42	27	29	0		100	87	11	2	0		100
Grand	N	75	33	41	0		150	143	6	1	0		150
Total	%	50	22	27.33	0		100	95.33	4	0.67	0		100

<i>Agreement in setting goals is...</i>													
Cluster	AGRITEX officers							Researcher from NES					
		1	2	3	4	5	Total	1	2	3	4	5	Total
Sedze	N	37	15	8	0	1.81	60	60	0	0	0	1.00	60
	%	62	25	13	0		100	100	0	0	0		100
Weaving	N	25	3	17	0	1.84	45	44	1	0	0	1.00	45
	%	55	7	38	0		100	98	2	0	0		100
Manjoro	N	19	11	15	0	1.82	45	39	5	1	0	1.15	45
	%	42	25	33	0		100	87	11	2	0		100
Grand	N	81	29	40	0		150	143	6	1	0		150
Total	%	54	19.33	26.6	0		100	95.33	4	0.67	0		100

1. Non-existence 2. Existence at times 3.Existence 4.Always existence; 5 mean score.

The Fisher's exact test $P = 0.0004$ shows that there was some significant cluster differences in the response to this question. There were significantly more people from Sedze (62%) who concurred that agreement in setting goals is 'non-existent' than those from Weaving (55%) and Manjoro (42%) clusters. The differences in farmer respondents from Weaving and Sedze were also significant with more farmer respondents from Weaving (38%) indicating that there is agreement in setting goals between them and AGRITEX officers than those from Sedze (13%). These figures generally show that there is no proper linkage in place between farmers and AGRITEX officers, hence a low mean

score of 1.51 which is an indication of 'non-existent' linkages. However the state of this poor linkage is not the same across the three clusters. Weaving and Manjoro clusters are in a better though poor state as compared to Sedze cluster, hence slightly higher mean scores of 1.82 and 1.91 for the two clusters respectively. Either farmers or AGRITEX officers or both, have some programs where they set and agree on goals of their programs. Agreement in setting objectives also showed some similar trends to those shown by the responses to agreement in setting goals. The farmer-research side indicates that agreement in setting goals and objectives is 'non-existent'. All the mean scores are rooted at 1.00 and 1.15 for all the three clusters (Table 6.2c).

These results support the findings of Terblanché (2000:64) who found that nearly 64% of the members of the more effective study groups have a clear knowledge of the group goals, while only 35% of members of the less effective study groups indicated a clear knowledge of the group goals.

(f) Autonomy and resource sharing as linkage indicators

The perception of formal linkages is that everything is formalized and laid down, and that all participants know their own and other actors' responsibilities (Hanyani-Mlambo, 2002). Some individual as well as organisational autonomy should not be compromised in any structurally linked organisations. Table 6.2d below shows a combined response of all the three clusters to the question on: the existence of individual autonomy; autonomy of partners and sharing of resources between linked partners. The results were combined because statistically, the farmer-AGRITEX side did not show any significant cluster differences hence eliminating the need to look at respective cluster responses separately.

Table 6.2d: Farmers perception of the existence of individual autonomy, autonomy of partners and sharing of resources, as linkage indicators between them and research and extension officers

Linkage indicators	AGRITEX officers							Researcher from NES					
	score →	1	2	3	4	5	Total	1	2	3	4	5	Total
The existence of my i- autonomy is..	n	78	23	49	0	1.80	150	143	6	1	0	1.05	150
	%	52	15	33	0		100	95.33	4	0.67	0		100
Autonomy of partners is	n	76	22	52	0	1.90	150	144	5	1	0	1.04	150
	%	51	14	35	0		100	96	3.33	0.67	0		100
Sharing of resources between partners is ..	n	62	25	61	2	1.35	150	144	5	1	0	1.04	150
	%	41	17	41	1		100	96	3.33	0.67	0		100

*1. Non-existence 2.Existence at times 3.Existence 4. Always existence;5-mean score; i-autonomy means- individual

Results from Table 6.2d above shows that existence of individual as well as organisational autonomy is very low. A total of 78 respondents (52%) and 76 respondents (51%) concurred that existence of individual as well as organisational autonomy is 'non-existent' respectively. The mean score of 1.8, indicating 'non-existence' but close to 'existent at times' suggests that farmers are not always free to make some decisions on their own without the input of their extension officers. Individual reluctance, lack of self-confidence, inexperience or past discrimination on the part of farmers could be behind this lack of individual as well as organisational autonomy. In some cases there are certain conditions that AGRITEX officers set to farmer groups in order for them to qualify for certain agricultural input assistance programs. A typical example is that farmers are required to attend a certain numbers of farmer schools training (master farmer training) for them to be eligible beneficiaries of the government or political party sponsored agricultural inputs schemes.

Figures of 49 respondents (33%) and 52 respondents (35%) for the 'existence' of individual as well as organisational autonomy may suggest that the situation is not that bad in these farming clusters, the mean score of 1.9 may be indicating a positive trend from 'non-existent' to 'existent at times'. At least there are certain members who enjoy their autonomy though they are members of the farmer-AGRITEX network.

Sharing of resources is a typical feature in linked organisations. There was a divided response on this linkage indicator across the three clusters whereby 62 (41%) and 61 (41%) farmer respondents reported that sharing of resources between them and AGRITEX officers is 'non-existent' and 'existent' respectively, the mean score of 1.32 suggest that sharing of resources is still very low. The farmer-research side shows 'non-existence' of individual and organisational autonomy as well as sharing of resources, with all the three linkage indicators showing mean scores of 1.00. Linkages are costly and they require money (Düvel, 2005a).

The sharing of those scarce resources between farmers and their research and extension officers may help to alleviate the problems. On the other hand, the very poor financial support that the research and extension departments get from the fiscus may be also to blame for this negative situation. Both AGRITEX and NES have very few functioning motor vehicles, computers and stationery are always in short supply rendering sharing impossible Saravanan, (2008), also reported on these same findings. Even the publication of leaflets and newsletters by the researchers is very difficult. Travel and subsistence (T&S) allowances have since died a natural death. Extension officers use their feet to go to work and walk long distances because the motor bikes have broken down or are not available any more (Personal communication).

6.3.2 The role played by research and extension officers in building and maintaining effective farmer-extension as well as farmer-research linkages.

After getting the farmers' view on the current state of farmer-research-extension linkage structures, it was important to get the researchers and extensionists view on the same subject. This was done to get a better insight into the state of affairs from these stakeholders. The only difference in the questioning was that the two sets of officers were requested to indicate how much effort they are putting: (i) in building and (ii) maintaining effective linkages rather than giving a judgement or perception as was the case with farmers. The columns labelled 'linkage indicators' on Tables 6.3a and 6.3b below only shows some of the activities that are expected in linked institutions. They are not exhaustive, as highlighted by Düvel (2005b), linkages can take different forms depending on specific local circumstances. The trend of numbers in terms of personnel for each linkage indicator in Table 6.3a and 6.3b below shows some great similarities in the effort

put by both research and extension in building as well as maintaining effective linkages with farmers.

Table 6.3a: Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings, ensuring two-way information flow and satisfaction among farmer groups in building effective farmer-extension and farmer-research linkages

score →	Extensionists								Researchers											
	Role played								Role played											
	1		2		3		4		Total		1		2		3		4		Total	
Linkage indicators	n	%	n	%	n	%	n	%	N	%	n	%	n	%	n	%	n	%	N	%
Joint planning	0	0	1	8	5	42	6	50	12	100	2	33.00	0	0.00	4	67.00	0	0.00	6	100
S-committee member	0	0	1	8	7	58	4	33	12	100	3	50.00	1	16.67	1	16.67	1	16.67	6	100
Ensuring equal partnership	0	0	0	0	6	50	6	50	12	100	1	16.67	1	16.67	4	66.67	0	0.00	6	100
Organising meetings	0	0	0	0	3	25	9	75	12	100	2	33.33	1	16.67	1	16.67	2	33.33	6	100
Chair meetings	0	0	0	0	5	42	7	58	12	100	2	33.33	1	16.67	2	33.33	1	16.67	6	100
Ensuring two -way information flow	0	0	0	0	5	42	7	58	12	100	0	0.00	1	16.67	3	50.00	2	33.33	6	100
Ensuring s-faction among F- groups	0	0	0	0	5	42	7	58	12	100	1	16.67	1	16.67	2	33.33	2	33.33	6	100

Key: 1-almost no role; 2-a small role; 3-role; 4-definite role;*s-faction means satisfaction

*F-groups means farmer group

Table 6.3b: Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings, ensuring two-way information flow and satisfaction among farmer groups in maintaining effective farmer-extension and farmer-research linkages

Extensionists										Researchers										
Role played										Role played										
Scores →	1		2		3		4		Total		1		2		3		4		Total	
	n	%	n	%	N	%	n	%	N	%	n	%	n	%	n	%	n	%	N	%
Joint planning	0	0	0	0	6	50	6	50	12	100	2	33.33	0	0.00	1	16.67	3	50.00	6	100
S-committee member	0	0	1	8	6	50	5	42	12	100	2	33.33	1	16.67	3	50.00	0	0.00	6	100
Ensuring equal partnership	0	0	0	0	3	25	9	75	12	100	1	16.67	1	16.67	3	25.00	1	16.67	6	100
Organising meetings	0	0	0	0	3	25	9	75	12	100	1	16.67	1	16.67	3	50.00	1	16.67	6	100
Chair meetings	0	0	0	0	5	42	7	58	12	100	0	0.00	3	50	2	33.33	1	16.67	6	100
Ensuring two-way information flow	0	0	0	0	3	25	9	75	12	100	0	0.00	2	33.33	2	33.33	2	33.33	6	100
Ensuring s-faction among F- groups	0	0	0	0	5	42	7	58	12	100	1	16.67	1	16.67	3	50.00	1	16.67	6	100

Key: 1-almost no role; 2-a small role; 3-role; 4-definite role;*s-faction means satisfaction

S- Committee means steering;*F-groups means farmer group

(a) Joint Planning as a linkage indicator

When it comes to joint planning as an indicator in building linkages (Table 6.3a), 50% (six extension officers) and none of the research officers reported that they are 'definite role' players in performing joint planning duties with their farmers. Four NES research officers and five extension officers assert that they are 'role' players as far as joint planning is concerned. A total of 33% representing two research officers honestly concurred that they do not take part in any joint planning activities with the farmers. However it was surprising to note that only one member of the research team indicated that he/she plays a 'role' in steering committee duties but when it comes to joint planning, a bigger number of four research officers reported to be 'role' players on this subject. This may actually suggest that there is joint planning that is held by non-steering committee members which is very questionable and difficult to imagine in any linked partners.

This along with other preceding responses from both research and extension officers raises a lot of questions on the credibility and honesty of the responses from these officers, especially when reference is made to some previous responses. These include farmers rating on the work of researchers and extensionists, on communication channels that they used and the frequency of meetings between themselves just to mention a few. On the researchers side, (Table 5.3b, Chapter 5) cell-phone calls are less popular as a communication channel than leaflets, with no monthly, half yearly or even annual meetings.

(b) Steering committees, as a linkage indicator

The linkage indicators shown in Tables 6.3a and 6.3b above are only some of the linkage components that are expected at all levels of any linked organisations, that is from organisational level, managerial level or further down to ward or village level. Steering committees composed of representatives from every stakeholder are usually established to drive the activities of the linked organisations. Seven out of twelve extension officers indicated that they are 'role' players; with a further four stating that they are 'definite role' players in steering committees that include their farmers representatives. Most frontline extension officers live within the locality of their workplace and they frequently meet with their farmers for various farming business that's why the majority of them indicated that

they are indeed 'role' players (Table 6.3a). A total of (50%) of the researchers indicated that they do not play any role in steering committees, with the other three officers indicating that they each has a 'small role', 'role' and 'definite role' to play in the steering committees with their farmers representative. The job responsibilities of junior research staff members limits their interactions with the farmers hence they reported that they are not part of the steering committees. On the other hand, the senior staff members like the Officer-in-charge (OIC) and research officer (RO) concurred to be role players in the research – farmer steering committee.

(c) Ensuring equal partnership, as a linkage indicator

A total 66.67% (four) of the researchers judged themselves as 'role' players in ensuring equal partnership as they strive to build effective links with their farmers. The fact that they make some phone calls to the farmers letting them know about their visits to assess the progress of their trials prompted 50% (three) of the researchers to judge their efforts as 'role' players in ensuring two way communication flow with 33.33% (two) of these researchers sharing the view that they are also 'role' and 'definite role' players in ensuring satisfaction among the farmer groups that they work with (Table 6.3a) when in actual they are working with just two or three individuals from a group of fifty or more farmers. On the extension officers side, 75% (nine) of the extension officers reported that they are 'definite role' players in ensuring equal partnership between them and the farmer groups.

(d) Organising and chairing meetings as linkage indicators

The fact that the research officers work with very few farmers whom they sometimes conduct through the frontline AGRITEX extension officers explains why most of them do not organise meetings with the farmers (Table 6.3a). Only 16.67% which represent one research officer reported to be playing a 'small role' and 'role' in organising meetings (Table 6.3a). Their dealings require no formal meetings with their farmers, it only requires a few minutes of assessing progress of their plots and discussing a few items standing next to the plots. The farmers themselves rarely have nothing to discuss because they not have enough information of how everything is supposed to go except watering and weeding the plots.

Seventy-five percent of the extension officers claimed that they are 'definite role' players in building as well as maintaining effective linkage structures with the farmers through organising and chairing meetings. (Tables 6.3a and 6.3b). Since AGRITEX has better frontline extension worker numbers in the villages, they sometimes help other line ministries in mobilising people during activities of common concern (Hanyani-Mlambo, 2000). This explains why a greater percentage of these extension officers indicated that they do organise meetings as compared to chairing them. They only chair meetings that are directly of their own farming business. Five and seven extension officers shared the same view that they are 'role' and 'definite role' players respectively in chairing meetings, ensuring two way information flow and ensuring satisfaction among farmer groups respectively, all in the efforts of building effective institutional linkage structures with their farmers (Table 6.3a).

(e) Ensuring that information flow is two-way, as a linkage indicator

A similar scenario to the one above is also portrayed on the question of ensuring that information follow is two way. A small percentage of 33.33% (two)of the researchers pointed out that they are 'small role', 'role' and 'definite role' players in ensuring that information flow is two way between themselves and their farmers. Table 5.3b shows that the very same researchers listed the use of leaflets as their main medium of communication with the farmers. It is very difficult to see two-way communication in leaflets coupled with no monthly or even annual meetings. The same applies to the extension officers whom a good 75% of them indicated that they are 'definite role' players in ensuring that information flow is two way as they strive to maintain effective linkages with the farmers, (Table 6.3b). The same extension officers in Table 5.3b of Chapter 5 put up agricultural shows as their main communication channel. Agricultural shows are only held once in year were exhibitions of agricultural produce takes centre stage. It is not a platform for any program formulation, discussion, review or evaluation.

(f) Ensuring satisfaction among farmer groups, as a linkage indicator

A look at ensuring satisfaction among farmer groups shows that 50% and 16.67%of the researchers assert that they are 'role' and 'definite role' players respectively as far as this duty is concerned (Table 6.3b). As has been the case before, the farmers themselves do

not share the same sentiments with them. On average 84% and 18% of the farmer respondents contends that 'no effort at all' and very 'little effort' respectively is put by research officers in setting, maintaining, supporting new farmer groups as well as maintaining and supporting already existing farmer groups (Table 5.4a). Could it be lack of honesty on the researchers side or farmers generally are not appreciating the hard work that is put by their research officers? Some total percentages of 45 and 58 of extension officers indicated that they are 'role' and 'definite role' respectively in ensuring satisfaction among farmer groups as one of the means of maintaining effective farmer-extension linkages.

6.3.3 Summary of farmer-research and farmer -extension linkages

1) Farmers involvement in research-extension activities

During the interviews, farmers highlighted that they were very happy with the current visits to their areas by NES staff even though they were never consulted before they came, let alone to be given any chance to discuss the nature of trials that they can forge together with these research officers. Rural farmers are still taken as consumers of already made packages. Farmer mobilisation which should be prioritised and used to identify where the farmer's priorities lie and figure out what it is that motivates them (Community participation, undated) is still lacking. Reid (2000) posits that communities in most developing countries should be encouraged to realise that past discrimination, colonial oppression, dirty politics, poverty and individual reluctance should not be allowed to continue hindering full community involvement, however this is yet to find its space in this set up of Nyanga district in Zimbabwe. It could be possible that researchers are still using farmers' plots for their own academic advancement and enrichment at this era of time.

2) Building institutional linkage structures

Results from Table 6.3a above shows that the average score for efforts put by extension officers in building effective institutional linkage structures with their farmers is zero percent for 'almost no role' column, only two percent (one extension officer) for 'a small role' column, 43% (five extension officers) for a 'role' column and an encouraging figure of 66% (7 extension officers) for the 'definite role' column. However these seemingly good results are in sharp contrast with the farmers view. The average scores for all the linkage

indicators from (Table 6.2a to Table 6.2d) above highlights that the farmers' view on the current state of farmer-extension linkage is 43.97% (66) for the 'non-existent' column, 22.23% (33) for the 'sometimes existent' column, 33.52% (50) for the 'existent' column and a mere 0.28% for the 'always existent' column (The average scores are not shown on the tables).

3). Farmer-extension contacts

Farmers indicated during the interviews that they attend meetings with their extension officers to learn whatever extension officers would have prepared for those particular meetings, 44% of the farmers indicated that there is no agreement first before any implementation of planned activities. This agrees with Hanyani-Mlambo (2000) who mentioned that AGRITEX offers a blanket public good service, which farmers are expected to accept and use. A similar situation of contrasting responses between farmers and researchers as was the case between the farmer-extension situations still prevails. Bearing in mind the huge sample and population size differences between researchers and farmers, no general correlations in responses could be found.

4).Farmer-research contacts

The percentage score for the farmers' view on the current state of research-farmer linkage is 95.33% (143) for the 'non-existent' column while Table 6.3a above shows an percentage score of 26.14% (two researchers) for the 'almost no role' column on the efforts put by research officers in building effective institutional linkage structures with their farmers. This big figure of 95.33% is no were near comparable figures with 26.14%. The percentage score for farmers rating on the current state of research-farmer linkage is 3.78% (six farmer respondents) for the 'sometimes existent column, a mere 0.89% for the 'existent' column and zero percent for the 'always existent' column but the corresponding researchers side shown in Table 6.3a above shows that the average efforts put by extension officers in building effective institutional linkage structures with their farmers is 14.29% for the 'small role' column and 52.48% for the 'role' column. Surely the differences in opinion on this is too big (52.48% compared to 0.89%) and lastly 19.05% for the 'definite role' column which also indicates a big view point differences with farmers were none of them gave a score on the 'always existent' column. Once again the farmers are not seeing as much as what the researchers are reporting to be doing.

5).Current state of farmer-extension as a well as farmer-research linkages

The differences or failures in interpreting the institutional linkage structure by both research and extension officers could be simply resulting from total failure in comprehending the linkage concept. Hanyani-Mlambo (2000:16) found out that many stakeholders in the agricultural sector perceive no differences between a formal linkage or an informal network. They simply put linkages and networks as a single concept in collaboration efforts.

Most of the officers have never received any additional training in aspects that promote participatory extension approaches, (Table 4.9b in Chapter 4) where such linkage issues are expected to be covered. While there is an appreciation that linkages are determined by needs and that they do not necessarily follow a very uniform and specific structure, the results that have been portrayed in these findings so far are no-where near any formal institutional linkage structure or an informal network. So far in this research, there is no evidence of any formally written down goals and procedures, where all concerned stakeholders are aware of their responsibilities and that of linkage partners.

A streamlined, coordinated and formal way of working together of different but related institutions or individuals to achieve one or more goals is not yet seen. According to Hanyani-Mlambo (2000:16), formal linkages are very institutional in nature and have written and laid down goals and procedures. He further posits that informal networks depend on personal contact among the members of different organisations and they tend to be determined by need and are developed when required. All this is still far-fetched with more than 80% of the farmer respondents who live within the 30 km radius from NES concurring to the fact that they do not know any NES researcher by name with almost the same number of farmers reporting not to have held any meetings with them before. Farmers seem to be giving a true account of the status of the farmer-research-extension linkage so far.

6.3.4 The role played by research and extension officers in building effective research-extension linkages

After concentrating on farmer-extension and farmer-research linkages, to complete the linkage cycle there is need to look at research-extension linkages. Some of the

interventions discussed below were described by Swanson (2004) as managerial changes that can be implemented to strengthen the research-extension linkage. For example, research and extension may agree to collaborate on joint planning and review activities, such as conducting rapid rural appraisal (RRA) or participatory rural appraisal (PRA) in different agro-ecological zones to assess the farming systems and technology needs of different groups of farmers. These activities would likely result in joint priority-setting and in joint planning activities such as on-farm trials and demonstrations (Swanson, 2004). Tables 6.4a below shows the roles played by research and extension officers in building proper institutional linkages between themselves. (i.e research-extension linkages).

Tables 6.4(a): Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings and ensuring two-way information flow in building effective extension - research linkages

Extensionists											Researchers									
Role played											Role played									
Scores →	1		2		3		4		Total		1		2		3		4		Total	
	n	%	n	%	n	%		%	N	%	n	%	n	%	n	%	n	%	N	%
Joint planning	5	41.67	5	41.67	2	16.67	0	0.00	12	100	2	33.33	1	16.67	2	33.33	1	16.67	6	100
Steering committee member	8	66.67	1	8.33	3	25.00	0	0.00	12	100	2	33.33	2	33.33	1	16.67	1	16.67	6	100
Ensuring equal partnership	7	58.33	3	25.00	1	8.33	1	8.33	12	100	1	16.67	1	16.67	4	66.67	0	0.00	6	100
organising meetings	7	58.33	1	8.33	1	8.33	3	25.00	12	100	2	33.36	0	0	2	33.33	2	33.33	6	100
Chair meetings	7	58.33	2	16.67	2	16.67	1	8.33	12	100	2	33.36	1	16.67	2	33.33	1	16.67	6	100
Ensuring two -way information flow	7	58.33	1	8.33	1	8.33	3	25.00	12	100	0	0	1	16.67	3	50.00	2	33.33	6	100
Average	7	57.00	1	18.06	2	13.89	1	11.11	12	100	2	25.00	1	16.67	2	38.89	1	19.45	6	100

Key: 1-almost no role; 2-a small role; 3-role; 4-definite role

(a) Joint Planning as a linkage indicator in building effective research-extension linkages

The results shown in Table 6.4(a) above shows that the same number of five extension officers (41.67%) reported that they are 'non role players' as well as 'small role players' in joint planning activities with their research officers. Only two extension officers indicated that they are 'role players' with none of them rating his or her efforts as 'definite role players' in joint planning activities.

Joint planning does not necessarily require the whole staff members from either of the two public entities, hence two and three individuals from extension and research officers form the committee (Table 6.4a). Two research officers (16.67%) concurred that they are 'role players' in joint planning activities aimed at building effective research-extension linkages. One researcher from NES reported that he is a 'definite role' player in this task of joint planning as well. Joint planning is very crucial in driving programs of linked institutions. The Fisher's exact test $P=0.423$ shows no significant differences in the numbers of representatives from the two institutions who are involved in joint planning activities.

(b) Steering committee as a linkage indicator in building effective research-extension linkages

Members of the joint planning committee are usually the same people who form the steering committee. Figures from Table 6.4a above seem to portray this picture. A total of three extension officers (25%) indicated that they are 'role' players as steering committee members while two research officers also indicated that they are members of a steering committee were they each play a 'role' and 'definite role' in these committees together with their extension officers counterparts (Table 6.4a). The existence of such committees may be a sign of some district level networks which were also reported by Hanyani-Mlambo (2002) in his findings. He revealed that there seems to be more cohesion at the very local level (district) than at upper levels (provincial or head offices). However the existence of such committees is an encouraging scenario since it forms a good basis for coordinated, agricultural programmes between these two service providers.

(c) Equal partnerships partnership, as a linkage indicator in building effective research-extension linkages.

Formal institutional linkages and formal networks are characterised by joint planning, joint implementation, division of tasks, and sharing of information and resources, (Hanyani-Mlambo, 2002:16). However there should be no over dominance of one organisation by the other. Institutions within a linkage set up should be free to execute some of their other mandates that are outside of the linkage programs. Seven extension officers (58.33%) indicated that they are 'non-role' players in ensuring equal partnership with their fellow research officers.

Only one extension officer indicated to be a 'role' player with another also indicating to be a 'definite role' player in ensuring equal partnership with fellow research counter parts. The task of ensuring equal partnerships within linked institutions cannot be left to members of the steering committee alone. It is supposed to be a collective action from all members within the linkage system. This was portrayed by the researchers were 66.67% (four) indicated that they are indeed 'role' players in ensuring equal partnership between them and the extension officers.

(d) Organise and chair meetings as linkage indicators in building effective research-extension linkages.

All the activities of organisations within a linkage are organised through meetings between themselves. The figures portrayed in Table 6.4a above suggests that members of the steering committee are also responsible for organising as well as chairing meetings, three extension officers and two research officers reported that they are 'definite role' players in organising meetings while one each from the researchers and extension officers side indicated to be 'definite role' players in chairing meetings between themselves.

(e) Ensuring two-way information flow, as a linkage indicator in building effective research-extension linkages

The strength of any linkage structure is very much dependent of how well informed are the members of the linkage set up in business deals of their linkage programs. This

determines how much they can participate and spare some time to work on their linkage related activities. The linkage committee or representatives are supposed to take a leading role in communicating the activities of the linkage programs. The rest of the other members are also expected to be taking some information to their representatives, in a feedback manner. This calls for active participation from all members and not just the representatives.

A total of seven extension officers (58.88%) who reported that they 'almost play no role' in this task suggest that they leave these duties to their representatives, A total of three extension officers indicated that they are 'definite role' players in ensuring that information flow is two way. The researchers seem to be doing well in this task, three and two researchers representing 50% and 33.33% reported that they are 'role' and 'definite role' players respectively in ensuring that information flow is two way between them and the AGRITEX extension officers. On average more extension officers 57% (seven) are 'non role' players in building effective linkages while 38.89% of the researchers indicated that they are 'role' players in building linkages with their extension counter parts.

6.3.5 The effort of research and extension officers in maintaining effective research-extension linkages

It requires a lot of effort and commitment to maintain linkages in various organisations. There are lots of challenges at stake that are always threatening the continuous functioning of linked institutions or organisations. Both research and extension officers from Nyanga district were requested to give their perceptions on the roles they are playing in maintaining effective linkage between themselves.

Tables 6.4(b): Roles being played by research and extension officers' in joint planning, steering committee, ensuring equal partnership, organizing & chairing meetings and ensuring two-way information flow in maintaining effective extension -research linkages

Extensionists											Researchers									
Role played											Role played									
scores →	1		2		3		4		Total		1		2		3		4		Total	
	n	%	n	%	n	%	n	%	n	%	N	%	n	%	n	%	n	%	N	%
Joint planning	6	50.00	3	25.00	2	16.67	1	8.33	12	100	2	33.33	0	0.00	3	50.00	1	16.67	6	100
Steering committee member	6	50.00	5	41.67	0	0.00	1	8.33	12	100	3	50.00	0	0.00	2	33.33	1	16.67	6	100
Ensuring equal partnership	8	66.67	1	8.33	2	16.67	1	8.33	12	100	2	33.33	0	0.00	2	33.33	2	33.33	6	100
organising meetings	8	66.67	1	8.33	2	16.67	1	8.33	12	100	2	33.36	1	16.67	1	16.67	2	33.33	6	100
Chair meetings	8	66.67	0	0.00	2	16.67	2	16.67	12	100	1	16.67	2	33.33	1	16.67	1	16.67	6	100
Ensuring 2 -way info, flow	8	66.67	0	0.00	2	16.67	2	16.67	12	100	1	16.67	1	16.67	4	66.67	0	0.00	6	100
Average	7	61.00	2	13.89	2	13.89	1	11.11	12	100	2	30.56	1	11.11	2	36.11	1	19.44	6	100

Key: 1-almost no role; 2-a small role; 3-role; 4-definite role;*

(a) Joint Planning as a linkage indicator in maintaining effective research-extension linkages

There was a similar trend in personnel who reported to be 'role' and 'definite role' players in maintaining effective linkage structures as it was in building effective linkage structures. A total number of two extension officers (16.67%) and three research officers (50%) reported that they are 'role players' while one each from the two departments indicated that they are 'definite role' players in joint planning activities aimed at maintaining effective linkages between their two departments. This suggests that the same members from the two departments who are responsible for spearheading the building of linkage networks are also responsible for its' maintenance.

(b) Steering committee as a linkage indicator in maintaining effective research-extension linkages

Only one extension officer and two research officers reported to be 'role' players in a steering committee that runs the affairs of the research-extension linkage. A Fisher's exact test $P = 0.0650$ shows that there is no significant differences in the personnel from the two departments that are responsible for steering the activities that aimed at maintaining effective linkages between them.

(c) Ensuring equal partnerships as a linkage indicator in maintaining effective research-extension linkages

The duties of ensuring partnerships within these two departments is still so much left to the hands of those who seat at joint planning and steering committee members. From the extension and research side, two officers each have indicated to be 'role player' in ensuring equal partnership between their two departments. The majority (66.67%) of the extension officers most of whom are the frontline EW indicated that they are playing 'almost no role' in this regard, leaving the duties of ensuring equal partnerships only to the committee members. Two researchers (33.33%) also indicated that they are not 'role

players in this activity. This should be the responsibility of all the members and not just the committee members

(d) Organise and chairing meetings as linkage indicators in maintaining effective research-extension linkages

The responsibilities of organising and chairing meetings are left to the representatives of the two departments within the linkage. Two research and extension officers indicated that they are 'role' players in organising meetings within their linkage. The same number of extension officers also concurred to be 'role' players in chairing meetings while one officer from the researchers side indicated to be a 'role' player in the same duties (Table 6.4b). Just like in building effective linkages, maintaining effective linkages is also very important and the elected members from the two departments should be very hard-working in order to keep this linkage running.

(e) Ensuring two-way information flow as a linkage indicator in building effective research-extension linkages

A Fisher's exact test $P=0.0446$ shows that there is a significant difference in the number of individuals who are involved in ensuring two-way information flow from the two departments. As mentioned in building of effective linkages above, this task of ensuring two-way information flow should be the responsibility of everyone. A total of eight extension officers (66.67%) who reported to be 'non-role' players in this regard is too high. The trend shown on the research side of the same percentage of 66.67% of officers who indicated to be 'role' players in ensuring equal partnership between the two departments is much encouraging. Every member has to be active in the communication process for all linkage programs to succeed. This trend of leaving everything to the representatives is a good recipe to the death of the linkage.

It is however not very clear according to the study if research and extension officers representatives are regularly consulting with each other in driving any joint agricultural programmes and facilitating the flow of technology and feedback within the whole system.

Earlier on in Chapter 5, researchers from NES indicated that they have just started some organic pesticides trials in some villages in Weaving and Manjoro areas but the farmers and extension officers are only taken to provide plots and care for the plots. They were not consulted prior to the commencement of the program. This example alone may be enough to highlight the weakness of these joint planning and steering committees that some officers have claimed to be part of. The very few numbers of farmers who reported to have worked with NES researchers coupled with the very poor farmers' perceptions on the overall work of research officers highlighted in Chapter 5 may also suggest poor research-extension-farmer collaboration.

6.3.6 Institutional working relationship and the strength of linkages according to farmers, researchers and extension officers respondents

To sum up on all the above questions on linkages, farmers, research and extension officers were directly asked two sets of similar questions. The first question to the farmers was: Generally how would you **describe** your institutional **working relationship** with researchers from NES and AGRITEX? Similarly research and extension officers' question was: How would you **describe** your institutional **working relationship** with farmers? The second summative question to the farmers was: How would you **describe** the **strength** of the linkage between researchers from NES and your AGRITEX extension officers. Similarly research and extension officers' question was: How would you **describe** the strength of the linkage between researchers from NES and AGRITEX extension officers and farmers.

(a) Working relationship

Farmers and research & extension officers responses to the first question on working relationship was elicited on a 4-point scale of very poor to very good. Tables 6.5a and 6.5b below show their response to the question.

Tables 6.5a: Farmers' perceptions of the overall institutional working relationship with NES researchers and AGRITEX officers

Farming Cluster	Researchers from NES						AGRITEX officers				Total
		1	2	3	4	Total	1	2	3	4	
Sedze	n	55	3	2	0	60	0	1	15	44	60
	%	91.67	5	3.33	0	100	0	1.67	25	73.33	100
Weaving	n	38	3	3	1	45	0	1	7	37	45
	%	84.44	6.67	6.67	2.22	100	0	2.22	15.56	82.22	100
Manjoro	n	23	7	11	4	45	0	2	15	28	45
	%	51.11	15.57	24.44	8.89	100	0	4.44	33.33	62.22	100

Scale 1-very poor, 2-poor, 3-good, 4-very good.

Results from Table 6.5a above shows that the majority of the farmers in all the three clusters rated their institutional working relationship with researchers from NES as very poor, 91.67% (55) from Sedze cluster, 84.44% (38) and 51.11% (23) from Weaving and Manjoro clusters respectively. The cluster differences shown above were significant (Fisher's exact test $P=0.0000$), farmer respondents from Sedze showed so much more displeasure in their working relationship with NES researchers than those for Weaving and Manjoro clusters. Some positive working relationship with NES personnel was highlighted by just over 30% of the farmer respondent from Manjoro cluster (Table 6.5a).

The recent establishment of organic pesticides trials by NES researcher in Manjoro could have sparked this excitement from the framers. Farmers from all the three clusters continued to show satisfaction in the work of extension officers as 73.33% (44) from Sedze, 82.22% (37 respondents) from Weaving and 62.22% (28 respondents) from Manjoro all rated their farmer-extension working relationship as very good and Fisher's exact test $P=0.2456$ indicated that there was no significant differences within the three clusters in their levels of satisfaction.

Tables 6.5b: Research and extension officers rating of the overall institutional working relationship between themselves and the farmers

Rating	Extensionists		Researchers	
	n	%	n	%
Very Poor	-	-	-	-
Poor	-	-	-	-
Good	2	17	4	67
Very good	10	83	2	33
Total	12	100	6	100

Neither the researchers nor the extension officers rated their institutional working relationship with the farmers as very poor or poor, all their rating was very positive as it was either good or very good (Table 6.5b). However a Kruskal-Wallis Test statistic =61.05; P-value=0.0000 confirms this huge significant differences in the researchers and farmers responses to this question, and the conclusion that can be drawn thus far shows that farmers were telling the truth than the researchers.

A total of 83% of the extension officers rated their extension-farmer working relationship as very good while 67% of the research officers rated their research-farmer relationship as good. These summative findings have been consistence throughout this study where both research and extension officers rate their efforts and work much more that the recipients of the services themselves. Unlike the research-farmers response which indicated some significant differences, the extension officers and farmers responses were not significantly different (Kruskal-Wallis Test statistic =4.87; P-value=0.0877).

(b) Strength of linkages

The second summative question to the farmers was: How would you **describe** the **strength** of the linkage between researchers from NES and your AGRITEX extension officers. Similarly research and extension officers' question was: How would you **describe** the strength of the linkage between researchers from NES and AGRITEX extension

officers and farmers. Their responses on a four-point scale from non-existent, minimal, fair and good are presented in Tables 6.6a and 6.6b below.

Table 6.6a: Farmers rating of the strength of the linkage between them and research and extension officers

Farming Cluster	Researchers from NES					AGRITEX officers					
		1	2	3	4	Total	1	2	3	4	Total
Sedze	n	57	2	1	0	60	0	2	9	49	60
	%	95	3.33	1.67	0	100	0	3.33	15	81.67	100
Weaving	n	38	4	2	1	45	0	1	3	41	45
	%	84.44	8.89	4.44	2.22	100	0	2.22	6.67	91.11	100
Manjoro	n	22	13	5	5	45	0	2	7	36	45
	%	48.89	28.89	11.11	11.11	100	0	4.44	15.57	80	100

Scale: 1- non-existent, 2-weak, 3-fair and 4- good

The summative information shown in Table 6.6a above is very much consistent with what the farmers highlighted earlier on. A total of 95% (57) and 84.44% (38) of the farmer respondents from Sedze and Weaving clusters reported non-existence of any institutional linkages with researchers from NES. Even in the Manjoro cluster, most of the farmer respondents, 22 (48.89%) also indicated non-existence and weak linkage structures between them and the researchers from NES and this cluster difference was significant (Fisher's exact test $P=0.0000$). However Manjoro cluster has more people who reported fair and good (11.11%) structural linkages with researchers that both Sedze and Weaving clusters.

The findings of Hanyani-Mlambo (2002) who reported that many stakeholders perceive no clear-cut lines between what can be considered a formal linkage and what can be considered an informal network are also evident here. Contrary to the displeasure of non-linkage between them and the research officers, farmers had something positives to report on the strength of linkage between them and the AGRITEX officers. A total of 41

respondents (91.11%) from Weaving, 49 respondents (81.67%) from Sedze and 36 respondents (80%) from Manjoro concurred that there is a good farmer-AGRITEX linkage with no any significant cluster difference to this view (Fisher's exact value $P=0.6162$) (Table 6.6a). The fact that AGRITEX officers stays with the farmers within their villages and that they are always available when they need then could have prompted the farmers to report this way.

However the interpretation of formal linkages on the farmers side could still be very much questionable here given the background on how the same farmers have previously rated the existence of certain linkage indicators between them and the AGRITEX officers earlier on in this Chapter as well as in Chapter 5. The farmers' views continues to show some strong significant differences (Kruskal-Wallis Test statistic =26.72; P-value=0.0000) to those of research officers from NES. On the other hand the farmers' views continues to no significant differences (Kruskal-Wallis Test statistic =0.21; P-value=0.9019) to those of extension officers.

Table 6.6b: Research and extension officers rating of the overall strength of linkage between them and the farmers

Rating	AGRITEX officers						NES researchers					
	NES-AGRITEX		NES-farmers		AGRITEX-farmers		NES-AGRITEX		NES-farmers		AGRITEX-farmers	
	n	%	n	%	n	%	n	%	n	%	n	%
Non-existent	4	33.33	7	58.33	1	8.33	0	0	0	0	0	0
Weak	4	33.33	4	33.33	0	0	1	16.67	0	0	0	0
Fair	3	25.00	1	8.333	1	8.333	3	50.00	2	33.33	1	25
Good	1	8.333	0	0	10	83.33	2	33.33	4	66.67	3	75
Total	12	100	12	100	12	100	6	100	6	100	4	100

Table 6.6b above shows that the majority of extension officers summed up their extension-research linkage as non-existent (33.33%) and weak (33.33%). This may suggest that the joint planning and steering committee members discussed in section 6.3.4 and 6.3.5 above are mostly inactive or very weak. The majority of the extension officers (83%) described their extension-farmer linkage as good, the same view that was shared by the farmers themselves. However a closer analysis of the farmers-extension linkage depicted in section 6.3.1 above shows contrasting results.

The responses to the linkage indicators in Tables 6.2a to 6.2d shows a true reflection of how farmers and extension officers work together and from what they have highlighted, no proper linkage structures are existent between them. The problem being shown in this question is failure from both farmers and extension officers in interpreting the concept of institutional linkage. The routine work that the extension officers do is now being described as a good linkage structure.

A total of seven (58.33%) extension officers judged the NES-farmer linkage structure as 'non-existent' with a further 33.33% sharing the opinion that the linkage structure is weak. This view is in sharp contrast with the view of the research officers themselves whom 66.67% (four) and 33.33% (two) described their NES-farmer linkage structure as 'good'

and 'fair' respectively (Table 6.6b). Judging from the linkage indicators depicted in section 6.3.2 above, it is clear that a good NES-farmer linkage structure does not exist. Lack of understanding of the linkage concept on the side of researchers is again being highlighted here. However the other possible reason for such responses from researchers could be due to the fact that they do not want to be seen as not working hence they report good linkages even if it does not exist. Researchers also gave opposing views to those of their extension officers counterparts on the NES-extension linkage, were 50% (three officers) and 33.33% (two officers) of research officers from NES claimed 'fair' and 'good' linkage. A smaller percentage of 25% (3) and 8.33% (one) of extensionists shared the same view with them respectively.

This continues to show a clear indication of the lack of understanding of the linkage concept amongst the research and extension officers. It also supports the claim made earlier on of a very weak and non-functional NES-extension joint planning and steering committees. The researchers also rated the AGRITEX-farmers linkage as good, 75% (three) reported that this linkage is good with one of them indicating that the linkage is fair. On the other hand, the majority (58.33%) of AGRITEX officers view the NES-farmers linkage as 'non-existent'.

6.4 The services of agricultural research stations

One of the indicators of a well linked research-extension-farmers structure is that the three stakeholders should be aware of the most common challenges that farmers face. Policies aimed at addressing such problems should be known to the three role players. In order to find out the state of affairs in Nyanga district the three stakeholders were asked if they are aware of how the nearby NES sets out its research programmes. The response of the farmers, researchers and extensionists to this question is shown in Table 6.7 below.

Table 6.7: Farmers, researchers and extensionists knowledge on how NES sets out its' research programmes

Level of Knowledge	Farmers		Extensionists		Researchers	
	n	%	n	%	n	%
I have no idea	148	98.67	9	75	2	33.33
The research station are given priorities by head office	1	0.67	1	8.33	1	16.67
The head of the research station determines what research is to be conducted	1	0.67	1	8.33	2	33.33
The research station sets them considering input from AGRITEX	0	0	1	8.33	0	0
The research station sets them considering input from Farmers and AGRITEX	0	0	1	0	1	16.67
Total	150	100	12	100	6	100

Results from Table 6.7 above shows that 98.67% (148) of the farmers indicated that they do not have any idea on how the setting of research priority programmes is done. They are never consulted and do not even know that it is their democratic right to determine the kind of service they are supposed to receive from such entities like the NES. The farmers' response was very similar to that of extension officers who also reported to be clueless on this subject.

Only one extension officer and one researcher reviewed during the interviews that they suspect that the Officer-in-Charge (OIC) determines what the research program will be while others were of the opinion that researchers considers input from AGRITEX and that input from AGRITEX and farmers is considered. Two research personnel, the Agricultural Researcher (AR) and Agricultural Assistant (AA) had also no idea of how research programmes are set out. Most interesting was the fact that the OIC clearly indicated that they get research priority programme areas from their head office (Table 6.5). This clearly shows that all the other responses from fellow research personnel are only their own thoughts and not the reality of what is happening on the ground.

This top-down approach is very primitive and denies the other stakeholders the opportunity to take part in determining issues that affect their farming business. Some research work has also described it as robbing the farmers of their democratic rights of determining how they should be assisted. This again shows how weak the linkage is amongst the three stakeholders.

6.5 Governments efforts to improve technology generation and dissemination

Swanson (2004) identified two basic linkage mechanisms namely organisational and managerial mechanisms. He described organisational mechanism as the changes that involve structural modifications of the research and/ or extension organisations or other organisations that are involved in agricultural technology systems (ATS). The structural changes or modifications may range from the formal merger of research and extension, at the broader system level, the merger of specific units within research and extension, or it could involve the creation of new positions, units or permanent committees (Swanson, 2004).

In 2001 the government of Zimbabwe merged (DR&SS) with AGRITEX to form AREX in an effort to improve technology generation and dissemination and made some structural changes similar to those described by Swanson (2004) above. The farmers together with research and extension officers were asked if they are aware of this merger and of any notable changes in terms of service delivery and overall efficiency in technology generation and dissemination. The response of the farmers, researchers and extensionists to these questions is shown in Tables 6.8a and 6.8b below.

Table 6.8a: Farmers, researchers and extensionists response to the question on the merger of DR&SS and AGRITEX to form AREX

YES/NO	Sedze		Weaving		Manjoro		Extensionists		Researchers	
	n	%	n	%	n	%	n	%	n	%
Yes	55	92	44	98	34	76	12	100	5	83
No	5	8	1	2	11	24	0	0	1	17
Total	60	100	45	100	45	100	12	100	6	100

Results from Table 6.8a above shows that the majority of the farmer respondents across the three clusters are aware of the merger. However there were significantly more (Fisher's exact test $P=0.0034$) farmer respondents who are aware of this merger from Weaving and Sedze than from Manjoro. A total of 44 respondents (98%) from Weaving, 55 respondents (92%) from Sedze and 34 respondents (76%) all agreed to be aware of this merger. All research and extension officers, except for one research officer are aware of this organisational change as well (Table 6.8a). An analysis of this response across the three role players showed no significant difference (Kruskal-Wallis Test statistic =1.71; P-value=0.4248), the majority are aware of this merger.

The next question was a follow up to the one above and it was eliciting for any changes in service delivery from the new Department of AREX which was formed from the merger of DR&SS and AGRITEX. Table 6.8b below shows the response to this question from farmers, research and extension officers.

Table 6.8b: The improvement of service delivery from AREX as perceived by farmers, research and extension officers

Service delivery improvement	Farmers		Extensionists		Researchers	
	n	%	n	%	n	%
Nothing changed	57	38	3	25	2	33.33
Service delivery extremely worsened	3	2	0	0	0	0
Service delivery worsened	8	5	0	0	2	33.33
Service delivery improved	69	56	6	50	2	33.33
Service delivery extremely improved	13	9	3	25	0	0
Total	150	100	12	100	6	100

Table 6.8b above shows some mixed reactions to this question, 56% (69) and 9% (13) of the farmer respondents were of the opinion that service delivery improved and extremely improved respectively. On the other hand, 38% (57) of the farmer respondents saw no changes in terms of technology generation and dissemination. There was no significant difference (Fisher's exact test $P=0.3023$) within the three clusters in their response to this question, hence eliminating the need to show individual cluster responses. Extension officers also expressed some different views, 25% (three) of them reported that nothing changed while the same number saw completely the opposite, they concurred that service delivery extremely improved (Table 6.8b).

Despite these seemingly different response, a Kruskal-Wallis Test statistic =3.06; P-value=0.2163 shows that the differences are not significant. Maybe research and extension officers who joined the service after the merger were the ones who could not compare the previous to the current service delivery efficiency hence they indicated that nothing changed. The most notable response came from the OIC and RO who indicated that service delivery worsened. From the verbal talk they both highlighted that their duties were so much affected, there was too much confusion and duplication of duties amongst other disturbances. They were so much relieved because the government de-merged the

two departments in 2010. However the reasons behind the de-merger are not clearly explained by the government. The whole ministry of Agriculture have been continuously going through some re-structuring processes which are at times difficult to follow unless you are part of it.

6.6 Research and extension officers' perceptions on burnout, job satisfaction and work situations.

Agunga, Ojomo and Na Seung (1996) assert that agricultural extension workers in resource-stressed Third-World environments are faced with lots of operational and intellectual demands of having to do more under difficult circumstances. They further alluded that this could easily lead to frustrations, burnout and ultimately, poor quality of service from these officers. Zimbabwe has of late experienced severe political and economic meltdown, an unfortunate experience which might have added woes to already dire situations that the research and extension workers were working under. It is against this background that this section of the study seeks to understand the feelings of research and extension officers in terms of burnout, job satisfaction and work situation in their jobs. This is of great importance to this study as these three factors have a strong bearing on the building and maintenance of effective institutional farmer-research-extension linkages.

6.6.1 Extension and research officers' perceptions of burnout (negative stress or frustrations)

Burnout or negative stress or frustrations is a condition that results when a person feels that his/her role is ambiguous or they cannot see any future prospects for the position they fill (Agunga *et al*, 1996). Potter (1985) defined burnout as a reduction in one's motivation to work. If such conditions manifest itself in the research and extension service, definitely the functional institutional linkage structures the one expect to see will be jeopardised.

(a) Extension Officers' experience of Burnout

Table 6.9a below reveals Nyanga district extension officers' experience of burnout in their job.

Table 6.9a: The extent of burnout as experienced by District Extension officers

Statements		Disagree			Agree			Total
		1	2	3	4	5	6	
Top management understands the local situation	n	0	0	2	6	3	1	12
	%	0	0	16.67	50.00	25.00	8.33	100
I am emotionally drained by my work	n	1	1	5	3	2	0	12
	%	8.33	8.33	41.67	25.00	16.67	0	100
I am burned out from my work	n	1	1	6	3	1	0	12
	%	8.33	8.33	50.00	25.00	8.33	0	100
I am working too hard in my job	n	0	0	0	8	4	0	12
	%	0	0	0	66.67	33.33	0	100
I feel frustrated in my job	n	2	1	7	2	0	0	12
	%	16.67	8.33	58.33	16.67	0	0	100
Coordination problems are present	n	1	2	2	6	1	0	12
	%	8.33	16.67	16.67	50.00	8.33	0	100
Staff members need frequent in-service training in communication	n	0	0	0	5	5	2	12
	%	0	0	0	41.67	41.67	16.67	100
Top management supports me adequately	n	0	0	5	5	2	0	12
	%	0	0	41.67	41.67	16.67	0	100
I need more training to deal with the demands of my work	n	1	0	2	6	1	2	12
	%	16.67	0	16.67	50.00	8.33	16.67	100
My job responsibilities are increasing	n	0	1	2	6	1	2	12
	%	0	8.33	16.67	50.00	8.33	16.67	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree.

Results from Table 6.9a above shows that more than 80% of the extension officers agreed that their top managers understand their local situation. This provides highly probable chances that policies that are formulated include inputs from frontline extension officers. This is further supported by the fact that 58.34% of the extension officers felt that they get adequate support from their top managers although 41.67% disagreed with them. Despite this top management support, most of the extension officers' (58.33%) admitted that coordination problems are present in their organisation.

This could be the reason why there are weak linkages between extension and research within Nyanga district. If coordination is a problem within the extension department itself, how can it be fine in a linkage structure? Proper coordination is one of the key factors that drive institutional linkages. All Nyanga district extension officers interviewed assert that they need frequent in-service training in communication, 41.67% agreed and strongly agreed while 16.67% very strongly agreed to the statement. This may suggest a poor current communication challenge, which is again like coordination, unhealthy to the development and well-functioning of any linked or unlinked organisations. A total of 75% of the extension officers pointed out that their responsibilities are increasing, prompting the possibility of why a similar number of 74% felt that they need more training to deal with the demands of their work (Table 6.9a).

This lack of training within the officers was highlighted in Chapter 4 and it also manifests itself in the poor linkage structures that are being portrayed in this set up. Despite all these constraints, all the extension officers agreed that they are working too hard, with 85% of them reporting no frustrations in the job. The majority (67%) of the extension officers indicated that they are not burnout as well, with an almost divided response on emotional drainage were 8.33% 'very strongly' and 'strongly disagreed' to this statement. A total of 41.67% also 'disagreed' to the statement. On the other hand 25% and 16.67% 'agreed' and 'strongly agreed' respectively to this statement. These numbers may suggest two contrasting scenarios altogether, either the creeping in or the dying down of emotional stress within the extension system.

(b) Research Officers' experiences of burnout

Table 6.9b below reveals NES research officers' feelings of burnout in their job.

Table 6.9(b) The extent of burnout as experienced by Nyanga experiment station research officers'

Statements	Disagree				Agree			Total
		1	2	3	4	5	6	
Top management understands the local situation	n	0	0	0	4	0	2	6
	%	0	0	0	66.67	0	33.33	100
I am emotionally drained by my work	n	0	0	1	5	0	0	6
	%	0	0	16.67	83.33	0	0	100
I am burned out from my work	n	0	0	3	3	0	0	6
	%	0	0	50.00	50.00	0	0	100
I am working too hard in my job	n	1	0	0	3	0	2	6
	%	16.67	0	0	50.00	0	33.33	100
I feel frustrated in my job	n	1	0	4	0	0	1	6
	%	16.67	0	66.67	0	0	16.67	100
Coordination problems are present	n	0	0	1	2	2	1	6
	%	0	0	16.67	33.33	33.33	16.67	100
Staff members need frequent in-service training in communication	n	0	0	0	1	1	4	6
	%	0	0	0	16.67	16.67	66.67	100
Top management supports me adequately	n	0	0	1	3	1	1	6
	%	0	0	16.67	50.00	16.67	16.67	100
I need more training to deal demands ofwith the my work	n	0	0	0	1	2	3	6
	%	0	0	0	16.67	33.33	50.00	100
My job responsibilities are increasing	n	0	0	1	1	4	0	6
	%	0	0	16.67	16.67	66.67	0	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree

Results from Table 6.9b above show that 67% of the research officers 'agreed' and a further 33% 'very strongly agreed' that their top management understands their local situation. This could be attributed to the relatively small nature of NES which has a total establishment of only six permanent technical officers. They are supported by varying numbers of seasonal or temporary workers, this should make it easier for managers to be pretty aware of the situation on what affects every worker on the ground. Besides just being aware of the local situation, 83% of the research officers concurred that top

managers adequately supports them (Table 6.9b). As was the case with extension officers, 83% of the research officers also highlighted the problem of coordination within their research job. The same numbers of 83% of the research officers were of the opinion that they need frequent in-service training in communication and that their job responsibilities are increasing.

The weak research-extensions linkage structures that have been depicted earlier on could be explained by such challenges. As highlighted in Table 6.9b above, 50% of the research officers provided evidence that they are burned-out at their job, this is a worrying situation as burnout results in substandard performances, emotional outburst and health problems among other negativities. However the levels of frustrations are still low and most of the officers concurred to be still working too hard despite such hardships (Table 6.9b).

6.6.2 Extension and Research Officers' perceptions of Job Satisfaction

The research and extension officers' perceptions on job satisfaction was obtained using a series of statements and a six point Likert scale of disagreement-agreement, in a similar way for the question on burnout.

(a) The extent of Job Satisfaction as perceived by Extension Officers'

Job satisfaction has an important bearing on the individual and the overall performance of an organisation. Research and extension officers from Nyanga district were asked about their feelings on job satisfaction and their responses are presented in Table 6.10a below.

Table 6.10(a): The extent of Job Satisfaction as perceived by District Extension officers' according to selected statements

Statements	Disagree			Agree			Total	
		1	2	3	4	5		6
My employer is far better than other Government departments	n	1	0	9	2	0	0	12
	%	8.33	0	75.00	16.67	0	0	100
The work I do is worth the benefits I receive	n	3	0	8	1	0	0	12
	%	25.00	0	66.67	8.33	0	0	100
My work meets the needs of farmers	n	0	0	0	12	0	0	12
	%	0	0	0	100	0	0	100
Privatization of my employer will result in more efficiency	n	1	0	6	5	0	0	12
	%	8.33	0	50.00	41.67	0	0	100
I am very energetic in my job	n	0	0	0	6	6	0	12
	%	0	0	0	50.00	50.00	0	100
I am proud of the work I do in my job	n	0	0	0	4	7	1	12
	%	0	0	0	33.33	58.33	8.33	100
I have accomplished many worthwhile things in my life	n	0	0	2	5	5	0	12
	%	0	0	16.67	41.67	41.67	0	100
I am pleased to work for the department I am In	n	0	0	2	7	3	0	12
	%	0	0	16.67	58.33	25.00	0	100
My job has good future prospects	n	0	0	0	9	2	1	12
	%	0	0	0	75.00	16.67	8.33	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree

Table 6.10a above shows that all extension officers' (100%) indicated that the work they produce meets the needs of their farmers, they also share the same sentiments that they are very energetic and proud of their job as extension officers. A total of 83% agree and strongly agreed that they have accomplished many worthwhile things in their lives and they are pleased to be working for the agricultural extension department. They all foresee good future job prospects in their job although the majority of them (83%) refuted the statement that their employer is better than other government departments. These extension officers' feelings show very little in terms of their work being negatively affected by the recent political and economic meltdown that the country recently went through. The

only negative side in these statements was that 92% of the extension officers who perceive that the work they do is not worth the benefits they receive. They expect more benefits from the hard work they perform. Extension offices were somehow divided when it comes to the privatisation question whereby 8% and 50% of the extension officers 'very strongly disagree' and 'disagreed' respectively to the statement that privatisation of extension will result in better efficiency.

On the other hand, a total of 42% of the extension officers 'agreed' that privatisation of extension service will result in better efficiency (Table 6.10a). This mixed response could be resulting from the lessons learnt from other government departments that have been privatised and the results of the privatisation move are very difficult to figure out. The department of Natural Resources has been privatised for more than six years now and it is still very difficult to see any better changes in service delivery as a result of this.

(b) Research Officers' perceptions of Job Satisfaction

Research officers from NES were also asked to share their experience on job satisfaction just like their extension counterparts. The results of their experience are shown in Table 6.10b below.

Table 6.10(b): The extent of Job Satisfaction as perceived by Nyanga experiment station research according to selected statements

Statements	Disagree			Agree			Total	
		1	2	3	4	5		6
My employer is far better than other Government departments	n	0	1	3	2	0	0	6
	%	0	16.67	50.00	33.33	0	0	100
The work I do is worth the benefits I receive	n	2	0	3	1	0	0	6
	%	33.33	0	50.00	16.67	0	0	100
My work meets the needs of farmers	n	0	0	1	2	1	2	6
	%	0	0	16.67	33.33	16.67	33.33	100
Privatization of my employer will result in more efficiency	n	0	0	1	3	0	1	5
	%	0	0	16.67	50.00	0	16.67	83.34
I am very energetic in my job	n	0	0	0	2	3	1	6
	%	0	0	0	33.33	50.00	16.67	100
I am proud of the work I do in my job	n	0	0	0	3	3	0	6
	%	0	0	0	50.00	50.00	0	100
I have accomplished many worthwhile things in my life	n	0	0	0	3	2	1	6
	%	0	0	0	50.00	33.33	16.67	100
I am pleased to work for the department I am In	n	0	0	2	2	2	0	6
	%	0	0	33.33	33.33	33.33	0	100
My job has good future prospects	n	0	0	2	3	1	0	6
	%	0	0	33.33	50.00	16.67	0	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree

Researchers from NES seem to be sharing the same view on the extent of job satisfaction with their extension officers' counterparts. A total of 83% of the research officers were of the opinion that their work did meet the needs of the farmers. They all posit that they are very energetic and proud of the work that they are doing (Table 6.10b). The same numbers of 83% are pleased to be working for the research department while 66.67% also see good future prospects in their job. Although only 33.33% agreed that their employer is better than other government departments these findings are very positive and provides a good platform for workers to be motivated to perform even better.

All research officers indicated that they have accomplished many worthwhile things in their research job. They also agree with the extension officers that they are not getting enough benefits that are worth the effort they put in their work. However they differ in the privatisation policy with their extension counterparts, whereby 83% of research officers indicated that privatisation would improve efficiency and service delivery. During the interviews, some research officers indicated that a lot of red tape and bottle necks typical of government departments may be eliminated by privatisation.

6.6.3 Extension and Research Officers' perception the of Work Situation

The work situation is very important if productivity of any organisation is to reach its maximum potential. Issues of resources to get the job done, supervision, evaluation criteria, vacation leaves and many others are discussed in this section.

6.6.3 (a) Extension Officers' Perceptions the of Work Situation

Extension officers' perceptions of the work situation are presented in Table 6.11a below.

Table 6.11(a): The work situation as perceived by district extension officers' according to selected statements

Statements	Disagree			Agree			Total	
		1	2	3	4	5		6
I perform tasks in my job for which I have been trained	n	1	0	0	6	5	0	12
	%	8.33	0	0	50.00	41.67	0	100
I have the resources to get my job done	n	2	4	6	0	0	0	12
	%	16.67	33.33	50.00	0	0	0	100
I am able to satisfy my needs for success in my job	n	1	0	6	5	0	0	12
	%	8.33	0	50.00	41.67	0	0	100
I am able to satisfy my needs for recognition in my job	n	1	0	5	6	0	0	12
	%	8.33	0	41.67	50.00	0	0	100
My supervisor asks me for one thing, but really wants something else	n	1	0	7	2	2	0	12
	%	8.33	0	58.33	16.67	16.67	0	100
I know the basis on which I am evaluated	n	0	0	0	9	3	0	12
	%	0	0	0	75.00	25.00	0	100
There is conflict between what my employer expects me to do and what I think is right	n	2	0	8	2	0	0	12
	%	16.67	0	66.67	16.67	0	0	100
I have more than one person telling me what to do	n	1	0	7	3	1	0	12
	%	8.33	0	58.33	25.00	8.33	0	100
I feel good about the work I do	n	0	0	0	9	3	0	12
	%	0	0	0	75.00	25.00	0	100
I am proud of what I do for a living	n	0	0	0	7	3	2	12
	%	0	0	0	58.33	25.00	16.67	100
When I need a vacation, I take one	N	0	1	1	8	0	2	12
	%	0	8.33	8.33	66.67	0	16.67	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree

Results depicted in Table 6.11a above indicated that extension officers (92%) are performing tasks which they have been trained for. All of them (100%) know the basis on which they are evaluated, this is important as it eliminates inconsistencies and chances of unfair evaluation amongst the same group of workers. Close to 100% of the extension officers feel good about the work they do and still hold some pride in what they do for a living. A total of 83.34% indicated that they can take a vacation when they need . The

majority 83.33% of them reported no conflict between themselves and their employer, this lack of conflict creates eliminates ambiguity and should motivate workers even to perform better. Elements of having more than one person giving orders on what needs to be done were also dismissed by 67% of the extension officers. Getting orders from more than one person creates confusions and frustrations on the recipients. This can ultimately affect the overall mood of working and in this set up where one expects different departments to forge proper institutional linkages will be a non-starter.

There was a divided response when it comes to being able to satisfy needs for success and recognition in the job whereby 58% indicated that they are not able to satisfy their needs for success and recognition in the job while 50% indicated that they can satisfy their needs for success and recognition in the job (Table 6.11a). This could be resulting from the fact that they are severely under-resourced at the department which makes it very difficult to perform some of the very basic duties and hence ultimately fail to meet some of their own goals and expectations.

According to Newcomb and Clark 1985a, cited in Agunga *et al*, (1996) these are the things that brew frustrations which leads to burnout. All extension officers disagreed to the statement that they have the resources to get their jobs done. Such situations could be blamed for the very poor extension-research linkages and weak extension-farmers linkages that have been revealed earlier on in some previous sections of this study.

(b) Research Officers' perceptions of Work Situation

Research officers' perceptions of work the situation is presented in Table 6.11b below.

Table 6.11 (b): The work situation as perceived by NES research officers' according to selected statements

Statements	Disagree			Agree			Total	
		1	2	3	4	5		6
I perform tasks in my job for which I have been trained	n	0	0	1	1	1	3	6
	%	0	0	16.67	16.67	16.67	50.00	100
I have the resources to get my job done	n	0	1	5	0	0	0	6
	%	0	16.67	83.33	0	0	0	100
I am able to satisfy my needs for success in my job	n	0	0	2	3	0	1	6
	%	0	0	33.33	50.00	0	16.67	100
I am able to satisfy my needs for recognition in my job	n	0	0	1	3	2	0	6
	%	0	0	16.67	50.00	33.33	0	100
My supervisor asks me for one thing, but really wants something else	n	0	1	5	0	0	0	6
	%	0	16.67	83.33	0	0	0	100
I know the basis on which I am evaluated	n	0	0	0	4	0	2	6
	%	0	0	0	66.67	0	33.33	100
There is conflict between what my employer expects me to do and what I think is right	n	0	2	2	0	0	2	6
	%	0	33.33	33.33	0	0	33.33	100
I have more than one person telling me what to do	n	1	0	2	3	0	0	6
	%	16.67	0	33.33	50.00	0	0	100
I feel good about the work I do	n	0	0	1	3	1	1	6
	%	0	0	16.67	50.00	16.67	16.67	100
I am proud of what I do for a living	n	1	0	3	2	0	0	6
	%	16.67	0	50.00	33.33	0	0	100
When I need a vacation, I take one	n	0	0	2	0	1	3	6
	%	0	0	33.33	0	16.67	50.00	100

Scale: 1-very strongly disagree, 2- strongly disagree, 3-disagree, 4-agree, 5- strongly agree, 6- very strongly agree

Out of the six research officers from NES, only one officer disagreed to the statement that he/she performs tasks in his job for which he have been trained to do while the rest agreed, strongly agree and very strongly agreed to the statement (Table 6.11b). A total of 67% of them ruled out any conflicts between what the employer expects them to do and what they think is right. All of them rejected the statement that their supervisors ask for one

thing but really wanting something else. However they gave an almost equally divided response on the question of having more than one person telling them what needs to be done, 16.67% of the officers 'very strongly disagreed', 33.33% 'disagreed' to the statement while the remaining 50% 'agreed' to the statement (Table 6.11b). This response supports the findings earlier on that there are coordination problems within this seemingly small research station (Table 6.8a) and again pointing out to the probable causes of non-existing research-farmer and research-extension linkages. More than 83% of the researchers indicated that they feel good about the work they do but 67% of them concurred to the statement that they are not proud of what they do for a living.

They said so despite the fact that they are able to satisfy their needs for success and recognition in the job they are doing. Just like their extension counterparts, all researchers rejected the statement that they have the resources to get their jobs done. How they satisfy their needs for success and recognition under such resource stressed work environment becomes very questionable. One line of thought could be that they are now setting themselves goals or targets that are easy to achieve thus they satisfy their needs for success and recognition. Institutional linkages, being resource demanding as they are (Düvel, 2005a), will therefore be very difficult to build and maintain in this environment.

6.7 SUMMARY AND CONCLUSIONS

1). Framers' perceptions on the state of farmer-extension and farmer-research linkages

- There is poor farmer-extension and non-existent farmer-research linkages.
- There is a very weak and non-functional research-extension joint planning and steering committees
- Most farmers reported that there is poor coordination and planning no agreement in setting goals and objectives between them and the extension officers. Poor coordination was also highlighted by Saravanan 2008, who found out that there is incoherence in the research-extension-farmer linkage due to lack of coordination between research, training, extension institutions and farmer organisations.

- Non-existence of proper communication of progress, successes and failures on their farming programs with their research and extension officers.
- There is some reluctance or unwillingness on the part of researchers to engage farmers in their work.
- This very poor and non-existent of proper institutional linkages was blamed on the following probable reasons:
 - a) Both research and extension officers lack professional training on aspects that promote institutional linkages and participatory extension approaches.
 - b) Research officers from NES portrayed some behaviour that seems to suggest that engaging farmers in their core research duties is not part of their work. They still consider their main duties as information generation and scientific problem solving with less priority on inclusive farmer-extension participation.
 - c) Linkages are costly and they require money, given the extremely poor resource-stressed environments that the two public departments work under, it will be very difficult for them to forge sustainable linkages amongst themselves. This agrees with the findings of Düvel 2005a who reported that linkages are costly and they require funding
 - d) Farmers are also not empowered enough to be able to take the leading role in establishing viable linkages with their research and extension officers.

2).Research and extension officers perception on their state of linkages

- On average there are two representatives each from research and extension officers who form a joint planning committee.
- Most of the research and extension officers reported that they play some important roles in joint planning activities, organise and chair meetings, ensuring equal partnerships, and two way information flow between them and the farmers.
- There were conflicting reports from what the research and extension officers reported that they are doing and what the recipients (farmers) reported to be receiving.

- A closer analysis of the two contrasting reports highlighted some severe lack of understanding of the concept of linkages within the research and extension officers.
- There is a good working relationship between farmers and extension officers. However researchers also reported to be having a good working relationship with the farmers but the farmers themselves described this relationship as weak.

3). Setting of research programmes or priority areas by research stations

- All the farmer respondents and the majority of extension officers have no clue as to how NES sets out its' research priorities.
- The research priority areas or programmes are set at the head office in a typical top to bottom approach which has been documented to playing a major role in slowing agricultural development programmes.

4). Merger of AGRITEX and DR&SS to form AREX

- The majority of farmers, research, and extensions officers were aware that the government merged AGRITEX and DR&SS to form AREX in 2001 in an effort to improve information generation and dissemination.
- Some research officers were not happy with the merger as they reported that it brought about some confusion and duplication of duties.
- The merger did not bring the expected improvement in technology generation and dissemination that a di-merger was implemented in 2010.

5). Research and extension officers perceptions on burnout, job satisfaction and work situation

- Despite the recent political and economic challenges that Zimbabwe recently experienced, extension officers from Nyanga district still put a lot of hard work in their job, with lots of support from their top managers.
- A bigger number of EW dismissed any burnouts and frustrations in their job, however close to half of them are emotionally drained and the majority of the acknowledged the existence of coordination problems.

- There is need for in house training to equip them with better skills to cope with the ever increasing job demands.
- Burnout is manifesting itself in the work of researchers from NES.
- Research also needs to deal with the problems of, poor coordination of research activities.
- Both research and extension officers are satisfied with their jobs and they even see better future prospects in these jobs, however the majority of them believe that the work they do is not worth the benefits they receive.
- They expect more benefits from the hard work they perform.
- There are some challenges in the work of research and extension officers but they are satisfied with their work situations.
- The common setback from both departments is shortage of resources to get their work done.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introductions

Chapter 7 summarises and gives some conclusion as well recommendations to policy makers based on the findings of the study.

7.2 Summary and conclusions

a). Personal and socio-economic characteristic of farmers, research and extension officers

Women constituted 88% while men only constituted 12% in this study, indicating the continual existence of the rural to urban migration in search of greener pastures which men usually undertakes. The majority of the farmers fell within the 36-55 year age group indicating the most active age group which is still very much energetic and has taken up farming as their livelihood source. Due to their age, they could have lost hope in urban employment prospects. Only 10% fell under the 66 years and above age group and at this advanced age it becomes increasingly tough to work on the fields. The three clusters are characterised by high (96%) unemployment rate and low Labour, indicating high dependence ratio.

The literacy levels of the farmers were relatively good making it very possible to communicate with them through leaflets or newsletters that research stations normally publish. All the farmers belonged to one or more farmer groups, and most of the groups are 'general or community farmer groups'. The group sizes ranged from 4 to 200 members, with an average group size of 58 and there was no evidence of negative group functioning due to large group sizes. Most frontline extension officers hold tertiary certificates in agriculture. The senior officers hold degrees in agriculture however there was no significant difference in terms of educational qualification between research and extension officers. There is a great deficiency in house training in aspects that promote

participatory extension approaches, which could be the main reason behind the poor institutional linkages between farmers and research and extension officers.

b). Communication

The majority (96%) of the farmer respondents know the extension officers whom they work with by their names while only 6% could report the same when it comes to knowing the research officers by name. The recent establishment of some organic pesticide control trials in some parts of Manjoro and Weaving clusters have slightly improved the farmer-research contacts. The majority of research (80%) and extension officers (67%) revealed that they meet once a week for some farming business with their farmers. However the farmers do not share the same view as their researcher with only 2% of them from all the three indicating that they meet once a week.

On the communication channels used, 79.33% of the farmers are yet to communicate with the research officers from NES, directly or even through their group leaders. Agricultural shows came out as the most popular communication platform with 16.92% on the extension officers side while leaflets come out first on the researchers priority channels list with 29.41%. Weekly meetings came third and fifth as the most used channel with 12.31% and 5.88% by extension and research officers respectively. It is very difficult to imagine the existence of a proper linkage structure where people communicate mostly through leaflets, cell phone calls and even agricultural shows which are held once a year

c). Farmers perceptions on the services or work efforts from research and extension officer

The majority of the farmer respondents highlighted that there was 'some effort' from extension officers in promoting (setting, maintaining and supporting) farmer groups. All farmers (100%) from Sedze, 86.05% from Weaving and only 60% from Manjoro concurred that there is 'no effort at all' from researchers in promoting farmer groups. The highest and lowest average rating for the levels of effort put by extension officers in promoting farmer groups was 80% on 'some effort' and 3% on 'considerable effort' respectively. On the

researchers side, the highest average rating was 84% on the very negative side of 'no effort at all' and the lowest was a mere 1% on the very positive side of 'considerable effort'. Farmers show some satisfaction in efforts of the extension workers in promoting farmer groups by extension officers and a lot of dissatisfaction from NES researchers. On the other hand both research and extension officers rated their efforts much higher than the recipients (farmers) of those particular services themselves in all the aspects of promoting farmer groups.

d) Practicality and usefulness of services rendered by research and extension officers to the farmers

A total number of 82% of farmer respondents acknowledged that they do receive 'some practical advice' from the extension officers with the majority of them coming from Sedze and Manjoro clusters while the same percentage of farmers concurred that they have not yet received 'any practical advice' from the researchers at all. Researcher from NES still upheld the fact that once they generate information and publish it through leaflets and newsletters, their job is done. The picture of the current state of affairs has shown thus far shows that there is no formal institutional linkages that exists amongst farmers the two stakeholders. The majority of the farmers indicated that they are receiving useful information from the farmers and nothing from research officer though a significant number of (24.44%) from Manjoro were of the view that the information rendered by researchers from NES is indeed 'useful'.

e). Framers, research and extension perceptions on the state of farmer-extension-research linkages

There is a poor farmer-extension and non-existent farmer-research linkages with no communication of progress, successes and failures in their farming programs. There is some reluctance or unwillingness on the part of researchers to engage farmers in their work. There were conflicting reports from what the research and extension officers reported that they are doing and what the recipients (farmers) reported to be receiving. A closer analysis of the two contrasting reports highlighted some severe lack of understanding of the concept of linkages within the research and extension officers. The

results of the study indicated that there is a good working relationship between farmers and extension officers. However researchers also reported to be having a good working relationship with the farmers but the farmers themselves described this relationship as weak.

g). Setting of research programmes and the merger of DR&SS and AGRITEX

All the farmer respondents and the majority of extension officers have no clue as to how NES sets out its' research priorities. The research priority areas or programmes are set at the head office in a typical top to bottom approach which has been documented to playing a major role in slowing agricultural development programmes. The merger did not bring the expected improvement in technology generation and dissemination that a di-merger was implemented in 2010.

i). Research and extension officers perceptions on burnout, job satisfaction and work situation

Despite the recent political and economic challenges that Zimbabwe recently experienced, extension officers still put a lot of hard work in their job, with lots of support from their top managers. A bigger number of them dismissed any burnouts and frustrations in their job, however close to half of them are emotionally drained and the majority of the acknowledged the existence of coordination problems. There is need for in house training to equip them with better skills to cope with the ever increasing job demands. On a bad note, burnout is manifesting itself in the work of researchers from NES. Research also needs to deal with the problems of, poor coordination of research activities and they expect more benefits from the hard work they perform. There are some challenges in the work of research and extension officers but they are satisfied with their work situations. The common setback from both departments is shortage of resources to get their work done.

7.3 Recommendations

1. The literacy levels of the farmers from the sampled clusters is relatively good, however there are more farmers who are comfortable in reading, writing and speaking Shona than

English. It is recommended that most agricultural publications should be done in both Shona and English in order to benefit all the intended beneficiaries.

2. The community or general farmer groups in which farmers belong to have shown great efficacy. It is recommended that stakeholders take this opportunity to involve farmers in all the stages of agricultural development activities. These farmer groups need to be strengthened so that they serve their purposes of being vehicles to work collectively towards change at farm level and to the agricultural system in general (Stevens & Terblanché, 2004:49).
3. The qualifications of both research and agricultural extension officers shows some shortfalls, the majority of them holds tertiary certificates and diplomas and only one hold a post-graduate qualification. This is not good enough to be confident and be competitive before the farmers. It is recommended that both research and agricultural extension officers upgrade their educational qualifications. Farmers tend to have more confidence in their officers if they show some form of expertise in one or more fields of agriculture.
4. In-house professional training in aspects of participatory extension approaches should also be prioritized by the government. There is also need to review the agricultural curriculum from both Universities and Agricultural Colleges in the country, with a view to include more agricultural extension courses. (Pazvakavabwa, Sukume, Sibanda & Hanyani-Mlambo, 2010).
5. The role of farmer groups as 'vehicles' to work collectively towards change at farm level and to the agricultural system in general should be given greater importance by both research and extension officers. Extension officers should not only meet the farmers for Master Farmer syllabuses only but should infuse aspects that promote farmer groups in their teachings.
6. The non-existent farmer-research linkage needs to be addressed and the very poor farmer- extension and research-extension needs total revamp. There is a need to make use of the non-functioning joint planning and steering committees that are in existent

between research and extension officers. There should be more collaboration to ensure efficient use of limited resources and more effective intervention programmes. This calls for government to take centre stage in facilitating these coordination functions, through legislative, mandatory, financial, and other tools (Hanyani-Mlambo, 2002:25).

7. The non-existent farmer-research linkage can be strengthened if researchers consider themselves as equal partners with farmers and extension officers in the process of problem identification, problem conceptualisation, planning and implementation as well as monitoring and evaluation. The researchers need to be assisted through training so that they do not continue to regard extension officers as transmitters of already made solutions and farmers as mere users of already made solutions. Training and improved financial support can be used to transform the weak farmer-extension and research-extension linkages into proper formal linkages through provision of technical resources, creating stable communication channels, establishing regular discussion forums, providing 'hands-on' practical sessions, holding social functions, holding regular meetings and annual conferences.
8. The merger of AGRITEX and DR&SS was a good organisational change aimed at improving technology generation and dissemination however the move did not work and it was reversed after six years. The government did not put in place proper changes in the whole systems and a lot of things became ambiguous. There is a need for re-definition of roles and duties with some changes in the reporting structures which was not done. As result there was a lot of confusion, overlap, and duplication of duties.
9. Despite the unfavourable conditions that public research and extension officers work under, the extensionists are striving and coping under these extremely resource limited environments, however the same cannot be reported for the researchers who indicated that they are burnout. This calls for some urgent intervention by the government to avert this situation. One of the motivation strategies they may implement is to organise educational qualifications upgrade with other countries where the researchers can go and study instead of just sitting at the research station. The government used to secure some

funding from abroad in the form of bursaries for civil servants to study abroad and they can do the same for their employees since they cannot afford to pay for them.

10. The farmers' involvement in determining research and extension policies is very low, but the farmers themselves are very much willing to be involved. The excitement of a few farmers from Weaving and Manjoro clusters who have recently engaged researchers from NES supports this. The current policy framework does not enable farmers to take part in formulation of research and extension policies that affect them. It is recommended that the government moves away from this top-to-bottom approach and adopt the more inclusive, democratic bottom-up approach were farmers are afforded the opportunity to participate in these policy processes.

LIST OF REFERENCES

Agbamu, J.U. 1998. A study on agricultural research–extension linkages: with focus on Nigeria and Japan'. Ph.D. thesis, Tokyo University of Agriculture.

Agbamu, J.U. 2000. Agricultural Research–Extension Linkage Systems: an International Perspective. Agricultural Research & Extension Network. *Network Paper No. 106*.

Agunga, R., Ojomo, C. & Na Seung Il. 1996. *Burnout, job satisfaction and work situations as perceived by District Extension officers*, Ondo state, Nigeria. Paper presented at the Twelfth Annual Meeting of the Association for International Agricultural and Extension Education, Arlington, VA, U.S.A., March 28-30, 1996.

ARC (Agricultural Research Council) 2013. [Online] Available from <http://www.arc.agric.za/Pages/About%20Us/What-We-Do.aspx>. [Accessed: 2013-04-23].

Bandura, A.A. 1986. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs. NJ: Prentice Hall.

Chipika, S. 1985. *Master farmer schemes in Zimbabwe's communal agricultural development*. Harare, Zimbabwe, Department of Agricultural, Technical and Extension Services.

Cobbett, M. 2000. Agricultural extension: The basis for rural development.

Community participation, undated. Chapter 12: Community participation. [Online] Available from <http://www.disasterinfo.net/watermitigation/i/publications/EmSanitation/12.pdf>. [Accessed: 2012-04-23].

DR&SS. 1969. Guide to Rhodes Inyanga Experimental Station. Harare.

Düvel, G.H. 2002. Towards developing an appropriate extension system for South Africa. National research project. National department of agriculture.

Düvel, G.H. 2005a. Principles, realities and challenges regarding institutional linkages for participatory extension and rural development in South Africa. *South African Journal of Agricultural Extension*, 34 (2): 188-200.

Düvel, G.H. 2005b. The identification and acceptability of linkage principles and their implementation in the promotion of participatory extension and rural development in South Africa. *Journal of Extension Systems*, 21(2):1-11.

Forsyth, D.R. 1999. Group dynamics, Third Edition. Wadsworth publishing Company. USA.

Hanyani-Mlambo, B.T. 2000. Re-framing zimbabwe's public agricultural extension services: institutional analysis and stakeholders views, *Agrekon*, 39(4): 665-672. [Online] Available from <http://dx.doi.org/10.1080/03031853.2000.9523682>. [Accessed: 2013-04-23].

Hanyani-Mlambo, B.T. 2002. Strengthening the pluralistic agricultural extension system: a Zimbabwe case study. Agricultural Research Council (ARC). Zimbabwe.

Hagman, J., Chuma, E., Murwira, K & Connolly, M. 1998. Learning together through participatory extension: A guide to an approach developed in Zimbabwe. AGRITEX. Harare. Zimbabwe.

Havelock, R.G. 1986 'Linkage: a key to understanding the knowledge system' in G.M. Beal, W. Dissanayake and S. Konoshima, (eds) *Knowledge Generation, Exchange and Utilisation*. Boulder, Colorado: Westview Press.

Hersey, P., Blanchard, K.H. & Johnson, D.E. 2001. Management of organizational behavior. 8th edition. Prentice Hall, NJ. U.S.A.

Kramer,E. 1997. The early years: Extension services in peasant agriculture in colonial Zimbabwe, 1925-1929. Department of Economic History, University of Zimbabwe

Mangwela, D.L. 2007.Towards appropriate institutional linkage structures for effective participatory and coordinated agricultural extension in Malawi. University of Pretoria. (unpublishedM.S.c thesis)

Mullins, L.J. 2002. Management and organizational behavior.6th edition.Prentice Hall, Harlow, England.

Norman, D.L., Bloomquist,R.J., Freyenberger,J.J., Schurle, B. & De Kok, H. 1996. Sustainable agriculture: reflections of a few Kansas practitioners. Manhattan. Kansas State University.

Nyberg, N. 2002 China agricultural research review: Rural development and natural resources sector East Asia and Pacific region. Word Bank working paper.

Obadina, T. 2007. Africa: Progress and Problems: *Poverty and Economic Issues*. Manson crest. India.

Pazvakavabwa, Sukume, Sibanda & Hanyani-Mlambo, 2010, Rehabilitation and improving national extension systems. European Union delegation to Zimbabwe.

Pazvakavambwa, S. 1994. Agricultural extension. *In* M. Rukuni and C. Eicher, eds. *Zimbabwe's agricultural revolution*, pp. 104–113. Harare, Zimbabwe, University of Zimbabwe Publications.

Potter,B.A. 1985. Beating job burnout: How to transform work pressure into productivity. Berkeley,CA: Robin Publishing.

Poverty in Africa. 2011. Poverty in Africa. [Online] Available from: http://en.wikipedia.org/wiki/Poverty_in_Africa. [Accessed: 2011-05-27].

Quaatey, S.N.K. 2000. Research and Extension Linkages in Ghana's Agricultural Development: the case of Marine Fisheries.

Reid, J.N. 2000. Community participation: how people power brings benefits to community: USDA rural development office of community development. [Online] Available from http://ec.europa.eu/echo/files/evaluation/watsan2005/annex_files/WEDC/es/ES12CD.pdf. [Accessed: 2012-04-23]

Roling, N. 1995. What to Think of Extension? A Comparison of Three Models of Extension in Practice. AERDD Bulletin. December.

SAFIRE, 2007a. Southern Alliance for Indigenous Resources ,Chitsanza ward livelihood assessment report.

SAFIRE, 2007b. Southern Alliance for Indigenous Resources, Nyanga district profile.

Saravanan, R. 2008. Agricultural extension _worldwide Innovations. [Online] Available from <https://books.google.co.za/books?isbn=8189422960> [Accessed: 30-11-2015].

Sobel, J. Curtis, A & Lockie, S. 2001. The role of land care network in Australia: exploring the contribution of social capital. *Journal of Rural Studies*, 17:265-276.

Stavis, B. 1984. *Agricultural Research and Extension Services in China*.

Stevens, J.B. 2010. *Study guide for Group Dynamics and Leadership*. Pretoria: Department of Agricultural Economics, Extension and Rural Development, University of Pretoria.

Stevens, J.B. and Terblanché, S.E. 2004. Sustainable agriculture development through effective farmer groups. *South African Journal of Agricultural Extension*, 33: 40-53.

Stevens, J.B. and Terblanché, S.E. 2006. *Working with small groups in agricultural extension*. Paper presented at the proceedings of the SASAE central branch symposium, Tswane University of Technology, 6 September: 22-30.

Stevens, J.B. Botha, C.A. 2003. *Group dynamics and leadership*. University of Pretoria.

Swanepoel, H. and Der Beer, F. 2006. *Community development. Breaking the cycle of poverty*. Juta. Landowne. South Africa.

Swanson, B.E. 2004. *Strengthening the research-extension-farmer linkages*: University of Illinois.

Terblance, S.E. 1986. *Die invloed van groepsdinamika op die funksionering van stiegroepe*. M. InstAgrar. University of Pretoria. Pretoria.

Terblance, S.E. 2000. *The catalytic function of leadership in efficient group functioning*. *Journal of Extension*.

Terblanché, S.E. 2010. *Study guide for Programme and project planning*. Pretoria: Department of Agricultural Economics, Extension and Rural Development, University of Pretoria.

The African economist.com, 2013

Tuckman, B. & Jensen, M. 1977. *Stages of a small group development*. *Group organizational studies*, 2:419-427.

Umali-Deininger, D. 1997. *Public and Private Agricultural Extension: Partners or Rivals?* *The World Bank research observer* 12(2):203-224.

World Bank. 1992. *Economic Classification of Countries*. Washington D.C.: World Bank.

World bank. 2003. *World Development Indicators*. Washington, DC.

Zwane, E.M. 2009. Participatory development of an extension approach and policy for Limpopo province, South Africa. PhD Thesis: University of Pretoria.

Zimbabwe Agriculture Policy Framework, 1995-2020. [Online] Available from: www.g-fras.org/en/policy.../category/?...agricultural-policy-framework. [Accessed: 2015-011-30].

APPENDIX 1 FARMERS QUESTIONNAIRE

APPENDIX 2 RESEARCH AND EXTENSION OFFICERS QUESTIONNAIRE

