

# Assessment of agricultural extension services in Tanzania. A case study of Kyela, Songea Rural, and Morogoro Rural Districts



**Internship report**  
By  
Elifadhili Daniel  
Programme; MPS  
Reg.No. 801017171110  
February 2013

# ASSESSMENT OF AGRICULTURAL EXTENSION SERVICES IN TANZANIA. A CASE STUDY OF KYELA, SONGEA RURAL AND MOROGORO RURAL DISTRICTS

Elifadhili Daniel

Internship Report in Plant Sciences

CSA

February 2013

## Supervisors

Dr Lammert Bastiaans

Wageningen University and Research Centre

[Crop Systems Analysis](#)

Email: [lammert.bastiaans@wur.nl](mailto:lammert.bastiaans@wur.nl)

Address: CSA, Droevendaalsesteeg 1, 6708 PB Wageningen, the Netherlands

Landline phone: +31 (0)317 484770

Dr Jonne Rodenburg

Africa Rice Center (AfricaRice)

Sustainable Productivity Enhancement Program

Email: [j.rodenburg@cgiar.org](mailto:j.rodenburg@cgiar.org)

Address: P.O. Box 33581, Dar es Salaam, Tanzania

Landline phone: +255 222780768

Dr Marc Schut

Knowledge, Technology and Innovation Group, Wageningen University and Research Centre,

P.O. Box 8130, 6700 EW Wageningen, The Netherlands.

Telephone: +31 317 484635.

Email: [marc.schut@wur.nl](mailto:marc.schut@wur.nl).

Dr Juma Kayeke Mohamed

Institute: Ministry of Agriculture Food Security and Co-operatives,

Directorate of Research and Development

Mikocheni Agricultural Research Institute – (MARI)

Email: [jkayeke@yahoo.com](mailto:jkayeke@yahoo.com)

Address: P.O. BOX 6226, Dar es Salaam, Tanzania

Mobile phone: +255 75 448 81 12

Landline phone: +255 22 270 05 52

## PREFACE

Writing of this report signifies the end of my internship conducted in Tanzania. This internship began in November 2012 to February 2013 under the supervision of Wageningen University in collaboration with the Africa Rice Center (AfricaRice). AfricaRice is a Pan African research organisation committed to alleviate poverty and food insecurity in Africa through research, development and partnership activities. Tanzania is among the African countries benefiting from AfricaRice research activities. Being a Master of Science Student at Wageningen University in the Netherlands, I was privileged to do my internship through the PARASITE programme in Tanzania where my main objective was to study the extent to which agricultural extension policy has contributed to improving the delivery of extension services and whether the farmers have improved their farming practices as a result of the implementation of this policy.

The new agricultural policy in Tanzania stipulates the need for the Government to deliver extension services to (primarily small scale) farmers at the village level. Pending the Cabinet's approval of the policy, part of the implementation started in 2007. Through the Ministry of Agriculture Training Institutes (MATIs), many extension officers have been enrolled, trained and deployed to the Districts throughout the country. The aim is to ensure that the farmers are equipped with agricultural knowledge and skills to improve their farming practices and eventually productivity.

As an agronomist, I have been working as a Government Agricultural Extension Officer myself, in Mbulu District Council in Tanzania since 2008. In my experience, serving farmers at a village level is a challenging task that requires not only a sufficient number of committed extension personnel, but also facilitation in terms of creating conducive working environment and support to extension workers. In this study, I was interested in investigating the extent to which the implementation of the new agricultural policy has impacted on the delivery of extension services and improved farming practices. We focused on small-scale rain-fed rice farmers in Kyela, Morogoro Rural and Songea Rural Districts. Many arable fields in the three districts selected in this study are infested with parasitic weeds (*Striga spp* and *Rhamphicarpa fistulosa*). These weeds are causing huge yield losses and also forcing some rice farmers to abandon their fields in case of severe infestation. As opposed to *Striga* which is well known by farmers and extension, *Rhamphicarpa* is still unknown by both extension and researchers. Little research work has been done on this parasite yet and farmers are still not well informed on how to deal with it. AfricaRice is currently conducting extensive research to develop locally adaptable, socially and economically acceptable strategies that will help small-holder rain-fed rice farmers and agricultural professionals in Tanzania to cope with the problem of parasitic weeds in their fields and increase their rice production of rice.

This study provides recommendations that can support the effective implementation of the National Agricultural Policy.

## **ACKNOWLEDGEMENT**

I would like to extend my gratitude to my supervisors for their tireless contribution throughout my internship period. Special thanks go to Dr Lammert Bastiaans, my supervisor from CSA group in Wageningen University for informing me about the possibility of doing an internship in my home country. I appreciate his support, assistance and advice through the application process to the actual execution of my internship. To Dr Paul Kiepe, the Regional Representative for East and Southern Africa for welcoming me in AfricaRice Tanzania.

My deepest gratitude goes to Dr Jonne Rodenburg, my supervisor at AfricaRice. I appreciate his readiness to support, guide, facilitate, advise and supervise me despite his busy schedule.

I would also like to thank my supervisor Dr Marc Schut for being so helpful from the beginning to the end of my internship. I learned a lot from him especially in doing the social science related research. Furthermore my sincere appreciation goes to Dr Juma Kayeke of Mikocheni Agricultural Research Institute (MARI) for his comments and willingness to accompany and assist me in organizing and carrying out the field work. It would have been a very difficult job on my side to accomplish the entire exercise on my own.

I appreciate the support I received from officials at the Ministry of Agriculture Food Security and Cooperatives particularly Mr Yongolo of Training Department and Mr Kanyoki from extension department. Last but not least I am indebted to the District Agricultural and Livestock Development Officers of Songea Rural, Morogoro Rural and Kyela District Councils, the extension officers based at the headquarters and in the field, farmers who were interviewed during the survey and the AfricaRice drivers. To all of you I say thank you very much.

## SUMMARY

The majority of Tanzanian farmers are small-scale farmers who depend mainly on agriculture for their livelihoods. Agriculture provides food for their families and cash to meet their daily needs such as housing and school fees. To meet the family food and financial demands, small-scale farmers are obliged to adhere to good agricultural practices which are fundamental for high productivity. Rain-fed rice is an increasingly important crop in smallholder farming. In Tanzania 74% of rice is grown under rain-fed lowland and 20% is under rain-fed upland (Mgase et al., 2009). Parasitic weeds (*Striga spp* and *Rhamphicarpa fistulosa*) pose a threat to income and food security to many farming households. Economically feasible and socially acceptable management practices are needed to counter the effects of these weeds as well as to improve farming practices. Agricultural extension is essential for providing spaces for experimentation and innovation where new technologies can be explored.

This report presents the results of my internship study conducted in Tanzania between November 2012 and May 2013 . The study was focused on small-scale rain-fed rice farmers in Songea, Kyela and Morogoro Rural Districts. The objective of the study was to assess the delivery of agricultural extension services, the central concern of the new agricultural policy, so as to see how its implementation is impacting on improved farming practices at farmers' level.

To realize the objectives of the study the agricultural policy was analysed to get insights in its formulation, operationalization and implementation at National, Regional and District levels. Interviews were conducted with agricultural extension officers and rice farmers in the districts to collect information on the delivery of extension services and the current farming practices.

The study revealed that the implementation of agricultural policy has resulted in an increase in the number of extension workers in three Districts surveyed since 2007. The majority of extension officers deployed were generalists. However, not all villages in the three districts under review have access to extension services yet. Some achievements that have been realized include the increased use of inorganic fertilizers in villages of Nakahuga in Songea, Kiroka in Morogoro and Kasala in Kyela due to availability of government subsidies. A few farmers in these villages also have improved their farming practice through the use of improved seeds, fertilizers, agro-chemicals and mechanisation following the advice they received from extension workers. Generally we found that there are still many challenges to address before the implementation of the new policy yields intended results. At the district level, the main challenge concerns the low budget allocated for extension services and also the late disbursement of funds irrespective of the growing season. Extension officers were found to face challenges of poor working environments including a lack of reliable means of transport to reach the farmers, limited financial support to carrying out demonstrations and field experiments on new technologies, sub-optimal housing, lack of working facilities and

low salaries. As a result, extension officers are not motivated to perform their duties well. Although farmers recognize the role and importance of having an extension officer in their areas, many have not yet to adopted new agricultural technologies disseminated. They also lack adequate knowledge on farm management skills like correct land preparation, timely planting, pest and diseases and their control, timely weed control to bypass the critical period of weed competition, knowledge on nutrient deficiency symptoms and how to correct them and keeping farm records. Poverty was found to be the major obstacle hindering the farmers from investing in agriculture.

## Contents

PREFACE .....	i
ACKNOWLEDGEMENT .....	ii
SUMMARY .....	iii
List of tables .....	vii
CHAPTER ONE: INTRODUCTION .....	1
1.1 Background information.....	1
1.2 Agricultural extension services in Tanzania .....	1
1.3 Problem statement.....	2
1.4 Hypothesis .....	3
1.5 Objectives .....	3
1.5.1 General objective .....	3
1.5.2 Specific objectives .....	3
1.6 Research questions.....	3
CHAPTER TWO: METHODOLOGY.....	5
2.1 Study areas .....	5
2.2 Design of the survey and data collection .....	5
2.3 Sample size and sampling of the villages .....	5
2.4 Secondary data collection .....	6
2.5 Data analysis.....	6
CHAPTER THREE: RESULTS AND DISCUSSION.....	7
3.1 Organisation of agricultural extension services in Tanzania .....	7
3.2 The organizational structure after decentralization .....	7
3.3 Tanzania’s Agricultural policy.....	7
3.4 The need for a new agricultural policy.....	8
3.5 Implementation of the agricultural policy and its impacts .....	9
3.6 Implementation challenges.....	9
3.7 Agricultural extension and the government’s program to prepare extension specialists.....	10
3.7.1 Agricultural Training Institutes in Tanzania (MATIs) .....	10
3.7.2 Demand for Extension Personnel in Tanzania.....	10
3.7.3 The curriculum of the MATIs and the quality of the extension officers .....	10
3.7.4 The curriculum review process .....	11
3.8 Farmers Survey .....	11
3.8.1 Description of the survey areas.....	11

3.8.2 Morogoro Rural District.....	11
3.8.3 Kyela District.....	12
3.8.4 Songea Rural District .....	12
3.8.5 Demographic characteristics of the survey area.....	12
3.8.6 Other economic activities apart from farming.....	13
3.8.7 Farm size and land acquisition .....	13
3.8.8 Productivity trend for the past five years (2007-2012).....	14
3.8.9 Contribution of extension officer on increase in rice production.....	14
4.8.10 Causes for decline and variability in rice production .....	15
3.8.11 Changes observed in farming practices for the past five years .....	16
3.8.12 Livestock keeping and the use of manure.....	17
3.8.13 Use of inorganic fertilisers.....	18
3.8.14 Use of improved rice varieties.....	19
3.8.15 Source of power .....	20
3.9 Farmer-Extension relations in the surveyed areas.....	20
3.9.1 The need for extension services.....	20
3.9.2 Frequency of seeking technical advice.....	21
3.9.3 Communication between extension personnel and the farmers .....	21
3.9.4 Issues learned from extension and usefulness of technical information received.....	22
3.9.5 Access to other sources of agricultural information .....	23
3.10 Analysis of extension officers and service delivery .....	24
3.10.1 Updating extension staff with new technologies.....	24
3.10.2 Approaches used to communicate with farmers and challenges encountered .....	25
3.10.3 Farmers reached by extension in a season .....	27
3.10.4 Advice given to farmers.....	28
3.10.5 Collaboration with private extension service providers .....	28
3.10.6 Allocation of time for field and administrative issues.....	28
3.10.7 Adoption of technologies by farmers.....	29
3.10.8 Means of transport used by extension staff .....	30
3.11 Analysis of the results.....	31
CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS.....	34

## List of tables

<i>Table 1: Education level of people in the surveyed area .....</i>	<i>13</i>
<i>Table 2: Table 2: Main source of power in the study area .....</i>	<i>20</i>
<i>Table 3: Extension-farmer ratio in the study area .....</i>	<i>32</i>

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background information**

The agricultural sector in Tanzania provides employment and source of livelihood to about 80% of its people and it contributes 27% of GDP and 35% of foreign currency (MAFC, 2012). It is mainly dominated by small-scale farmers who grow different kinds of crops for both domestic consumption and for cash. Food crops are commonly cultivated on relatively small surface areas averagely ranging from 0.9 up to 3 ha per household (MAFC, 2011a). Main food crops grown are maize, rice, sorghum, wheat, pulses, cassava, millet and sweet potatoes. The main cash crops grown include coffee, cashew nut and sisal (MAFC, 2012) .

Rice is among the major staple food crops in Tanzania. It is the second most important food crop after maize, primarily grown on small areas and under rain-fed conditions (Mghase et al., 2009). Despite the big potential in terms of productive lands where rice is grown, small-scale rain-fed rice farmers are still producing far less than the attainable yields. The yields are between 1.6 to 1.8 tons per hectare while the estimated potential is between 4 and 5 tons per hectare.(MAFC, 2009). The common constraints in rain-fed rice farming are (1) environmental, e.g. unreliable rains and depleted soil fertility, (2) market related, e.g. low prices of their produce particularly during the harvesting season and lack of market information, (3) political, e.g. unfavourable government policies like barriers to international trade or (4) economic, e.g. poor transport infrastructures, lack of processing facilities and access to credit and (5) technical aspects such as lack of agricultural knowledge like mechanization (PESAP 2013).

### **1.2 Agricultural extension services in Tanzania**

Agricultural extension includes the provision of farmers with knowledge, information, experiences and technologies needed to increase and sustain productivity and for improved wellbeing and livelihoods (NRI, 2011). Delivery of quality agricultural extension services in Tanzania has been a centre of attention for a long time. Given the fact that the majority of Tanzanians (more than two thirds) live in rural areas and depend on small-scale agriculture for their livelihood and employment (URT, 2006), the Government's efforts have been geared towards improving production and productivity so as to attain food security and sufficiency at household and national level. These efforts are in line with the targets of the National Development Vision 2025 which envisages achieving a high quality livelihood through, among other things, food self-sufficiency and food security (URT, 1996). The National Strategy for Growth and Reduction of Poverty (NSGRP) emphasises the reduction of poverty levels among the majority who live in rural areas through enhancement of agricultural productivity (URT, 2005), so as to achieve Millennium Development Goal (MDGs) number one which targets on eradication of extreme poverty and hunger.

To ensure the performance of the agricultural sector, it is important that agricultural extension services in Tanzania are provided in the right frequency and time (Rutatora and

Matee, 2001). Currently, agricultural extension services in Tanzania have been vested in local government authorities to ensure effective participation of beneficiaries and motivate private sector involvement in service delivery (Kimaro et al., 2010). Various pluralistic demand-driven approaches have been used whereby farmers participate in planning and implementation. Approaches used include Farmers Field Schools, Farming Systems Approach, Training and Visit, Contract Farming, Participatory Extension and Farmer to farmer Extension (Kimaro et al., 2010).

The National Agriculture Policy of 2007, formed after the review of the Agriculture and Livestock Policy of 1997, targets at developing and transforming the agricultural sector in Tanzania, making it more efficient, competitive and profitable. Some areas of attention that hinder development of the agricultural industry include low productivity, inadequate support services, low quality produce, poor participation of private sector and dependence on rain-fed agriculture (NAP, 2012).

Both National Agriculture Policy of 2007 and the old Agriculture and Livestock Policy of 1997 emphasize the need to deploy agricultural extension officers to work at village level. The target of the government is to employ 15,082 extension officers by the end of 2015 (MAFC, 2009).

An increasing production constraint in rain-fed rice farming is parasitic weeds, such as *S. asiatica* and *Rhamphicarpa fistulosa*. These weeds are constraining not only rice production but also other cereals to the extent of threatening efforts to fight poverty and food insecurity in the country. As explained earlier, *Rhamphicarpa* has not yet been studied extensively as is the case for *Striga*. Farmers need to be provided with easily accessible, affordable and acceptable control strategies that they can apply to check parasitic weeds in their fields. We want to see in this study how the implementation of the agricultural policy is helping small scale farmers change their traditional farming practices. To achieve this, the performance of the extension system is vital. The extension system should be well staffed, sufficiently equipped in terms of facilities and affordable and relevant technologies. The on-going field experiments of the PARASITE programme in Kyela District will come up with user-friendly parasitic weeds control strategies that rice farmers can assimilate. It is hoped that extension agents will be familiarized with the species (*Rhamphicarpa fistulosa*) and possible management practices. They will also get acquainted with the farmer participatory research approaches followed by the researchers in the PARASITE programme so that they are able to help more farmers by undertaking similar work (participatory on-farm technology testing and selection) in other infested areas.

### **1.3 Problem statement**

The Tanzanian government has implemented a range of policy measures to renovate the extension system and improve agricultural service delivery to farmers. One of the measures has been to increase the number of agricultural extension personnel to work with farmers at village level. Five years after the implementation of the policy, the first effects are becoming

visible. In some regions and districts, extension staff has doubled. We focus on rain-fed rice farmers in Kyela, Morogoro Rural and Songea Rural Districts which are among the rice producing areas in Tanzania. Rice farming is increasingly expanding in these regions. Among the production challenges rain-fed rice farmers are current facing is the spread of parasitic weeds (*Striga spp* and *Rhamphicarpa fistulosa*). These weeds are expanding and inflicting huge losses in rice production system, posing a threat to food and income security of farmers. Combating these weeds and other production constraints requires an efficient and effective extension system in place. It is not known whether the increased number of extension staff is actually positively impacting on agricultural practices among small-scale rain-fed rice farmers in Tanzania. There are also concerns about the extent to which the newly employed extension officers serving farmers at the villages are actually enabled and facilitated to deliver agricultural extension service.

## **1.4 Hypothesis**

Increased numbers of agricultural extension staff do not necessarily improve farming practices and agricultural productivity.

## **1.5 Objectives**

### **1.5.1 General objective**

To study the relationship between the Tanzanian government's new agricultural policy on extension and improved farming practices (with focus on rain-fed rice farming).

### **1.5.2 Specific objectives**

1. To understand how the agricultural extension system in Tanzania is organised;
2. To study the extent to which rain-fed rice farmers in Songea, Morogoro Rural and Kyela Districts have benefited from (improved) extension services as a result of deploying more extension experts at village level from 2007 onwards.
3. To assess how extension officers are equipped and facilitated to serve the farmers;
4. To assess the challenges that extension officers face while discharging their duties in the study area;
5. To provide recommendations for further strengthening of the extension system in Tanzania.

## **1.6 Research questions**

- What challenges were observed in terms of agricultural performance that led the Government to formulate a new policy focusing on deploying the extension personnel to village level?
- How is the new agricultural extension policy implemented at National, Regional and District levels?

- What tangible impacts have been realized as a result of the implementation of the new policy?
- To what extent does the impact correspond with the policy objectives?
- What challenges are observed towards achieving these objectives?
- What lessons can be learned and what recommendations can be made with regard to the effective implementation of the policy?

## **CHAPTER TWO: METHODOLOGY**

### **2.1 Study areas**

The survey was conducted in three areas; Songea Rural, Kyela and Morogoro Rural District. These are currently important areas for rice production in Tanzania with a large potential for increased production. Farmers grow rice as an important food security crop and for commercial purposes. Parasitic weeds (*Rhamphicarpa fistulosa* and *Striga asiatica*) pose a threat for rain-fed rice farming in these areas.

Kyela and Songea Rural Districts are located in the Southern highlands of Tanzania while Morogoro Rural District is located in Morogoro region in the Eastern part of Tanzania. In Dar Es Salaam we interviewed officials at the Ministry of Agriculture Food Security and Cooperatives while in Songea Rural, Morogoro Rural and Kyela Districts rice farmers and extension officers were interviewed.

### **2.2 Design of the survey and data collection**

The research survey was divided over two phases. Phase one involved document analysis and interviews of officials at the Ministry of Agriculture, Food Security and Cooperatives. This was done to get a broader perspective of organization and implementation of extension services in Tanzania. To collect this information, interviews using a topic list as a guide, were conducted in three sections of the Ministry of Agriculture Food Security and Cooperatives (MAFCs) which are Extension, Training and Policy and Planning departments.

The second phase of the process encompassed a case study on the rain-fed rice farming system in Songea Rural, Morogoro Rural and Kyela Districts. The core focus of the survey was to explore the impact of the Tanzanian government's agricultural policy on rain-fed rice farming practices in these Districts. To achieve this goal, extension workers at the District headquarters and farmers were interviewed. Semi-structured interviews were conducted, and the questionnaires were designed in such a way that of the right information was obtained to answer the research questions. Questions asked were both open ended and closed. Data collected from the Ministry of Agriculture, extension workers and farmers were both qualitative and quantitative.

### **2.3 Sample size and sampling of the villages**

A total of 30 agricultural extension officers, 10 from each District participated in the survey. To maintain a balanced response from the extension officers, out of the 10 interviewees from each District, 5 had to be stationed at the District headquarters and the remaining 5 extension workers had to be based in field offices. On the field level, particular attention was given to the newly employed extension workers (from 2007 onwards) as a result of implementation of the government's agricultural policy. At the producer level, 6 villages were sampled, 2 from each District. Rain-fed rice farmers (men and women in a ratio representative to the gender balance) from 18 years and above in three Districts were sampled to participate in the survey. In total, 120 rain-fed rice farmers, 20 from each village

were interviewed. Questioning the farmers took a maximum of 30 minutes. From Kyela District, the villages of Kasala and Lukama were selected with the distance to Kyela town as a stratification criterion. Kasala village is near Kyela town approximately 5km while Lukama is 25km from Kyela. In Morogoro Rural District, Kiroka and Kiziwa villages were selected. In this case, Kiroka village had access to extension services while Kiziwa village had no extension officer. In Songea Rural District, the two villages selected were Nakahuga and Nambendo. Nakahuga village had access to extension services while Nambendo did not have access to extension services before and during the survey.

#### **2.4 Secondary data collection**

Analysis of policy documents from the Ministry of Agriculture Food Security and Cooperatives and documents from the District headquarters in Songea Rural, Morogoro Rural and Kyela Districts was done to obtain the secondary data.

#### **2.5 Data analysis**

Information obtained was coded using Statistical Package for Social Sciences (SPSS) version 16 whereby descriptive statistics (frequencies and descriptives) were used in the analysis to determine the extent by which extension system is delivering and adoption of farming practices by farmers.

## CHAPTER THREE: RESULTS AND DISCUSSION

### 3.1 Organisation of agricultural extension services in Tanzania

The organisational structure of the Ministry of Agriculture has been changing with the changing policy environment in the country. Before the Local Government Reform Program (LGRP) in 1996 and its official approval in 1998 which led to decentralisation of power to local authorities, all affairs of the local government were under the control of the Central Government (PHDR, 2003). Agricultural extension services were directed and controlled from the Ministry of Agriculture headquarters in Dar es Salaam. Following the decentralization policy, agricultural activities including extension services are now under the Prime Minister's Office, Regional Administration and Local Government (PMO-RALG/TAMISEMI). This was done to give more autonomy and power to local government authorities to decide and plan development activities on their own without interference from the Central Government. The main idea behind decentralization was to facilitate access to various services including bringing agricultural extension services closer to people. The role of the central government is to formulate policy, give support and to monitor implementation of development projects.

### 3.2 The organizational structure after decentralization

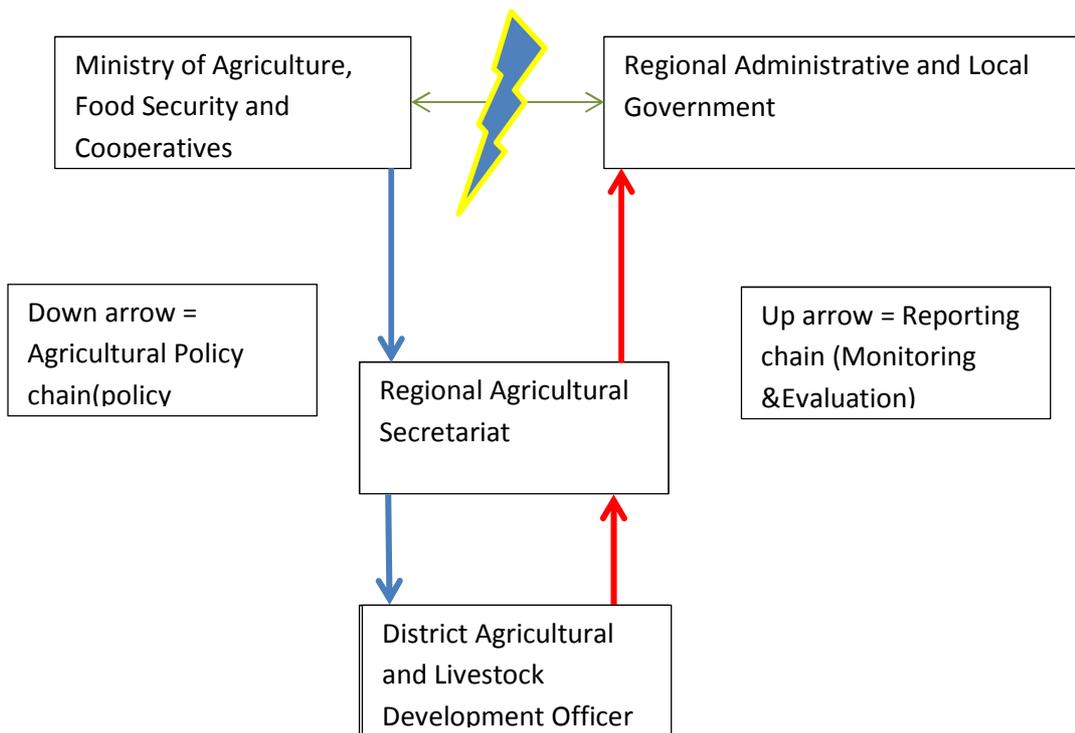


Figure 1: Organisation structure of agricultural extension services in Tanzania

### 3.3 Tanzania's Agricultural policy

The National Agricultural policy of 2007 was formulated after a review of the National Agricultural and Livestock policy of 1997. The review was done to cope with policy changes at national, regional and global levels that generally affect agricultural production. It is

focused on attaining the goals of the National Strategy for Growth and Reduction of Poverty, Tanzania National Vision 2025 and the Millennium Development Goals. To alleviate abject poverty and improve the living condition of small-scale farmers in Tanzania, the agricultural policy aims at increasing efficiency, profitability and competitiveness of the agricultural sector in Tanzania (NAP, 2012).

### **3.4 The need for a new agricultural policy**

Despite being considered as a backbone of the national economy, there has been unsatisfactory performance of the agricultural sector in Tanzania. The huge potential in terms of productive land and favourable weather in different agro ecological zones is yet to be tapped. On extension services, new technologies have been developed through research but most of them have not been disseminated to benefit the farmers. Some of the issues leading to dwindling performance of the agricultural sector and which are addressed by the new policy on extension include among others;

- Poor research-extension- farmers linkage
- Lack of strong supervision and an insufficient number of extension workers
- Low involvement of the private sector on delivery of extension services
- Inadequate service delivery performance standards and regulations
- Lack of conducive working environments
- Unsatisfactory knowledge on the advancements of technologies
- Poor coordination of agricultural extension services.

In order to address the above challenges, the policy statement suggests:

- Transformation of extension services is essential to provide quality services and attract more private sector participation.
- Strengthening farmer's education is a must so as to ensure effective dissemination and linkage of technology and information.
- Promotion of participatory approaches and gender issues shall be considered in providing extension services through integrated single delivery system approach.
- Promotion and strengthening of specific commodity extension services shall be done (NAP, 2012).

The policy also addresses technical support services like irrigation development, enhancing agricultural mechanization, increasing agricultural land area, increasing access to agricultural inputs, control of crop pests and diseases, development of agricultural commodities, improving food security and nutrition, access to agricultural marketing, agro processing, provision of agricultural information services and risk management. Combination they will positively impact on production and productivity of factors of production. The previous National Agricultural and Livestock Policy of 1997 also address the need for training and

deployment of extension officers to lower levels where they can serve the farmers. Part of the policy statement states:

“The extension service will have certificate holders serving at the village level, diploma holders (and in specific cases degree holders) serving at the divisional levels, graduate and or post graduate serving at district and regional levels, post-graduate holders serving in some technical and upper managerial posts. Furthermore, the government will increase the number of subject matter specialists available to extension at below district levels as well as assessment and rationalization of their locations” (MOAC, 1997).

### **3.5 Implementation of the agricultural policy and its impacts**

The new agricultural policy covers a wide range of aspects with the ultimate objective to revamp the entire agricultural sector in the country, making it more competitive, efficient and profitable. Implementation of extension component of the agricultural policy is guided by Agricultural Extension Implementation Guidelines of 2008. The guidelines map various stakeholders involved in delivery of extension service at National, Regional, District, Ward and Village levels and stipulates the involvement and roles of each stakeholder. At national level, the Ministry has an established mechanism for coordinating and supervising agricultural extension services in the country. At regional level, extension services are coordinated through the Regional Consultative Committees. At District and Ward levels the District Facilitation Team (DFT) and Ward Facilitation Team (WFT) coordinate and strengthen team work and transform the roles of extension from technology transfer to facilitation and farmers’ empowerment. The two teams are responsible for participatory planning, implementation and monitoring of different extension activities in the District. At village level, the Village extension officer works in collaboration with the village government on establishing farmers groups and networks on implementation of extension services (MAFC, 2008).

### **3.6 Implementation challenges**

With respect to agricultural extension, some challenges still remain to be addressed to realise the impact on delivery of agricultural extension services. The challenges encountered at the ministry level are:

- The set-up of the Ministries; According to the current set-up, extension services at the Ministry of Agriculture has no direct link with extension services at the District level because the latter is under Prime Minister’s Office, Regional Administrative and Local Government (PMO-RALG) which is a different ministry.
- Weak research – extension linkage at the ministry level; Agricultural research is a fully-fledged department at the ministry of agriculture while extension is under the Department of Crop Development. This imposes a limitation as extension coordinators at the ministry cannot make their own decisions or plans without the consent of the Director of Crop Development.

- Budget constraints. The budget allocated to extension services is small compared to the amount of work that has to be done throughout the country. As a consequence, the limited budget allocated to extension work is hampering the implementation of planned activities (Personal Communication <sup>1</sup>).

### **3.7 Agricultural extension and the government's program to prepare extension specialists**

#### **3.7.1 Agricultural Training Institutes in Tanzania (MATIs)**

The Ministry of Agricultural Training Institutes (MATIs) were established in Tanzania with the aim of producing middle cadre competent technical experts, by offering demand-driven courses aiming to transform agriculture in Tanzania from food import reliant to food self-sufficient country through adoption of modern farming practices (MATI, 2012). The experts are trained for two years at certificate and diploma levels after which they are employed in both private and public sectors as change agents of new technology innovations. So far, there are 13 MATIs and 3 private agricultural training institutes in Tanzania. Training offered in the institutes includes generalized and specialized courses tailored to address the knowledge gaps of the farmers. They include crop production, general agriculture, agro mechanisation, irrigation, horticulture, land use, food production and nutrition. The three private institutes mentioned also use the curriculum of the Ministry of Agriculture Training Institutes.

#### **3.7.2 Demand for Extension Personnel in Tanzania**

The target of the Government is to employ 15,082 new agricultural extension experts by the end of 2015. This number corresponds to the number of villages in Tanzania mainland (MAFC, 2009). The experts are deployed to serve small-scale farmers at a village level in an attempt to improve their farming practices and productivity. To reach the target number, from 2007 enrolment of students in the Ministry of Agriculture Training Institutes (MATIs) and private institutions, both first and second year certificate and diploma courses has increased to 3,500 each year. Until December 2012, a total of 7,974 experts had been employed by the government and 2,000 other graduates were expected to be employed in the 2012/2013 financial year. After the end of the special training program (2007-2012), a survey will be conducted in 2013 to assess the progress and performance of the extension officers. The survey will also provide data on the actual deficit of extension personnel throughout the country (Personal Communication<sup>2</sup>).

#### **3.7.3 The curriculum of the MATIs and the quality of the extension officers**

Extension workers produced through this special program are better off due to the fact that the students pursue courses that are demand-driven and have more time allocated for practical sessions. Before the beginning of the program, rehabilitation of the buildings in the training institutes and re-tooling was done. New academic staffs were also employed.

---

<sup>1</sup> Official at the extension department of the Ministry of Agriculture Food Security and Cooperatives

<sup>2</sup> Official at the Training division of the Ministry of Agriculture Food security and Cooperatives

Training materials were bought to ensure the Institutions are well equipped with materials necessary for the students' academic demands.

#### **3.7.4 The curriculum review process**

To ensure that the training needs of the students and farmers are met, the curriculum is subjected to review every five years. The review of the General Agriculture Course for example was done in 2007 and the second one in 2012. The Diploma in Crop Production curriculum was last reviewed in 2010. In the review process, various stakeholders are involved including the tutors, input suppliers, employers, farmers, extension officers, private practitioners and other stakeholders involved in agricultural production. Sampling of areas to visit for the review process is done in such that the whole country is represented. Stakeholders are invited to give their opinions on what should be included in the curriculum based on their field experience. Most input comes from the tutors and the extension experts. The provided feed-back is taken into consideration during the curriculum review, to ensure that the content of materials covered in lectures and in practical sessions are relevant and applicable in addressing the field challenges (Personal Communication<sup>2</sup>). Example of a response from MATI students in Mwanza city during the curriculum review survey is shown in annex 1.

In this format, extension experts in the field are involved and asked to give their opinions regarding the applicability of materials covered in classes on tackling field challenges. This format is adopted in the review of all courses taught in MATIs and the information gathered is used as an input in the review process. A different format is also used by the employers and supervisors to assess the performance of the MATIs students. Information gathered is on the activities they are best at, areas for improvement, and appropriateness of the courses as shown in Annex 2. This assessment report is essential for the MATIs to improve the curriculum by omitting irrelevant aspects, modifying others and including new aspects that were excluded in the curriculum. The goal is to produce well-trained and competent extension professionals who can assist farmers to tackle their production challenges.

### **3.8 Farmers Survey**

#### **3.8.1 Description of the survey areas**

##### **3.8.2 Morogoro Rural District**

Morogoro Rural District is among six districts of Morogoro region. It is estimated to have 88,453 farming households with a potential area of 88,000 ha out of which 13,177 ha are under rice production (NSCA, 2012b). It encompasses 29 wards and 142 villages. The average farm size is 1-2 ha per household and the average rice production is 2.5 – 3 tons per hectare. The government deployed 67 extension workers in Morogoro District since 2007. The employed staff are both generalists and specialists (DALDO, 2012 Unpublished-b)

### **3.8.3 Kyela District**

Kyela District is found in Mbeya region, the southwest part of Tanzania. It is among the seven districts in Mbeya. The district comprises 20 wards and 97 villages. There are approximately 30,226 farming households

in the district growing different kinds of food and cash crops. There are 55,000 ha of arable land, out of which 52,000 ha were under cultivation at the moment this study was conducted. About 60% of farmers in Kyela grow rice as their priority crop, 30% grow cocoa and the remaining 10% are involved in small business and livestock keeping (DALDO, 2012 Unpublished-b). However, most farmers practice mixed cropping. The average farm size is 1 ha per household and rice production is averagely 2.5 -3 tonnes per hectare under rain-fed conditions. About 98% of agriculture in the district is under rain-fed conditions. Kyela District has a total of 49 extension experts of which 43 serve at Ward and Village levels and 6 are based at the District headquarters. The majority of the extension workers employed in the district are generalists (35) and the remaining 14 are specialists (DALDO, 2012 Unpublished-b)

### **3.8.4 Songea Rural District**

Songea Rural District is among the five Districts in Ruvuma region. The major economic activity in the District is annual crop farming. The average farm size per household is 0.79 ha, of which only 50% is been utilized. Major crops grown are annual crops like cereals and vegetables occupying on average 0.33ha per household. The second priority crops are permanent crops like banana, cashewnut and coffee. Farmers also engage in other activities unrelated to farming (NSCA, 2012a). The District comprises 17 wards and 64 villages. It has 45,152 households out of which 44,152 are the farming households. The district has 94 Agricultural extension officers among whom 60 officers were deployed since 2007. They include 59 generalists and 1 specialist. Potential area for rice cultivation in the district is estimated to be 146,000 ha while the current rice production is 2.8 tons per hectare (DALDO, 2012 Unpublished-a).

### **3.8.5 Demographic characteristics of the survey area**

Out of the interviewed farmers in the three districts, 68% were men and 32% women. The average age was 39.5 years whereby the youngest interviewee was 19 years and the eldest was 76 years old. The household size on the survey area was on average 5.5 persons per household whereby the smallest household size had 1 person and the biggest one had 10 persons. The level of education of the surveyed villages showed that majority (73%) had attained primary school education, 13% had a secondary school education, 2% had collage education, 2% had attended an adult learning education program and 11% had not attended any formal school (Table 1). Nearly 6% of the farmers were single, 88% were married, 5% were widowed and 2% was divorced.

Table 1: Education level

Response	Frequency	Percentage of respondents
No school	13	10.8
Primary school	88	73.3
Secondary school	15	12.5
College education	2	1.7
Adult school	2	1.7
<b>Total</b>	<b>120</b>	<b>100</b>

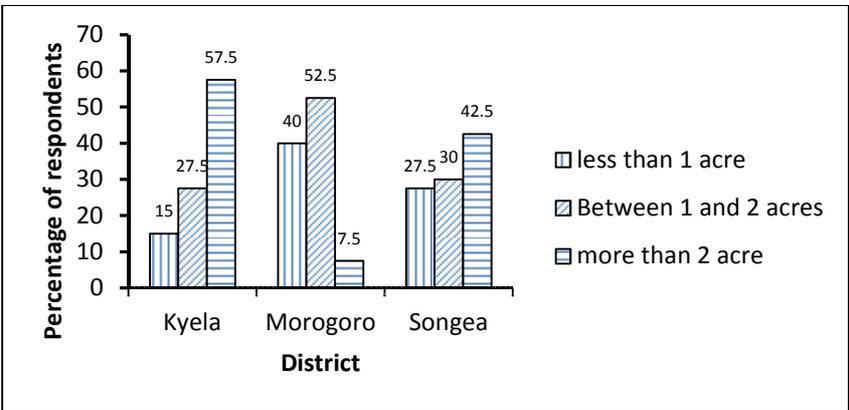
**3.8.6 Other economic activities apart from farming**

The survey results indicate that the majority of farmers in the three districts (49%) participate in other economic activities apart from farming. These farmers engage in small businesses particularly during the off-season or during the season after finishing the field work. They buy, process and sell palm oil, making and selling bricks especially in Kyela District, some sell local brews and others buy produce like bananas (Kyela and Morogoro), maize and other cereals (Songea) from the farmers and sell them in the local markets and other business brokers for some profit.

**3.8.7 Farm size and land acquisition**

It was found that 15%, 40% and 27.5% of farmers in Kyela, Morogoro and Songea respectively had rice farms of less than 0.2ha. Also 27.5% in Kyela), 52.5% in Morogoro and 30 % in Songea had farm sizes between 0.4 and 0.8ha. Furthermore, 57.5% of farmers in Kyela, 7.5% in Morogoro and 42.5% in Songea had farm sizes between 1 and 1.5ha for rice cultivation. These findings were in line with those of the Tanzania agricultural sample census 2007/8 which revealed that more than 50% of farming households that grow crops have farm sizes ranging from 0.01 to 1.5 hectares (NBS, 2010).

**Figure 2; Percentage of respondents with respect to farm size**

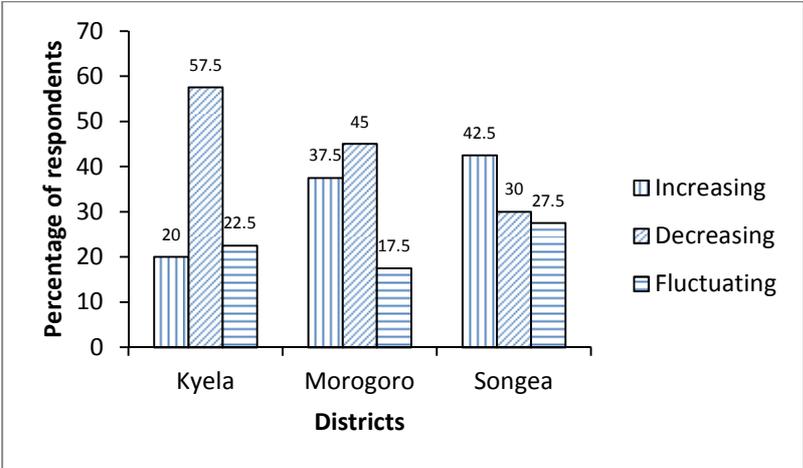


On land acquisition, it was noted that the majority of farmers in the three districts inherited their land (Morogoro: 67.5%; Kyela: 52.5%; Songea: 50 %). Songea was found to have plenty of land available for rice cultivation and 20% of farmers cleared the bush to open their own farms. This was not the case in Morogoro and Kyela. Also 22.5% of farmers in Songea had their land allocated to them by the village governments as opposed to Kyela and Morogoro. Other means of land acquisition in the study area was through buying from other farmers (10% in Kyela, 12.5% in Morogoro and 7.5% in Songea).

**3.8.8 Productivity trend for the past five years (2007-2012)**

Responding to the question of the rice productivity trend for the past five years, 20% of farmers in Kyela, 37.5% in Morogoro and 42.5% in Songea noticed an increase in production. Others (57.5% in Kyela, 45 % in Morogoro and 30 % in Songea) indicated that productivity has been declining over the years. It was also found that 22.5% of farmers in Kyela 17.5% in Morogoro and 27.5% in Songea indicated fluctuations in rice production over the seasons as shown in figure 2. These findings are in line with the study conducted by Lokina et al. (2011) who measured farm size-productivity relationship in Tanzania with reference to agricultural data collected at national level in 202/03-2008/09. They studied important crops like maize, paddy, sorghum and beans for small-scale farmers. The study indicated an inverse size-productivity relationship which was attributed to failures in rural markets, labour and credit.

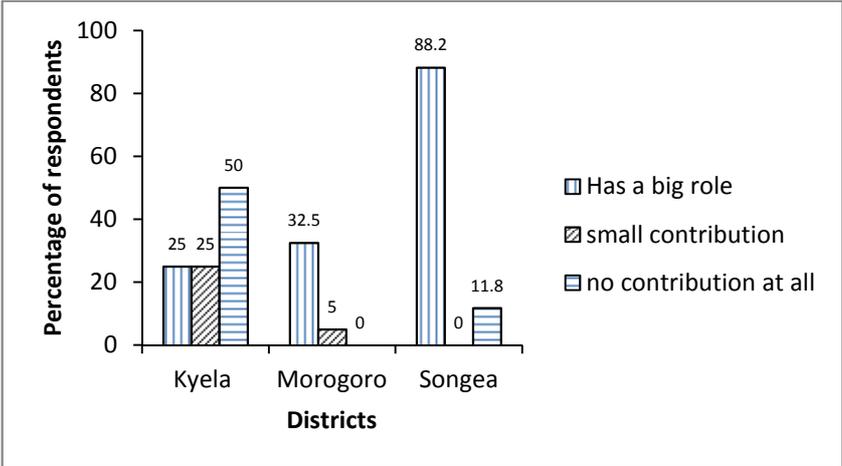
**Figure 3; Response on rice productivity in three Districts for the past five years**



**3.8.9 Contribution of extension officer on increase in rice production**

Of the farmers who noticed an increase in rice production, 25% (Kyela), 32.5% (Morogoro) and 88.2% (Songea) explained that the extension officer had a big role to play in terms of provision of agricultural education and advice. On the other hand, 25% of farmers in Kyela, and 5% in Morogoro said an extension officer had a small contribution to their success while 50% of farmers in Kyela and 11.8% in Songea said an extension officer had no contribution at all (Figure 4).

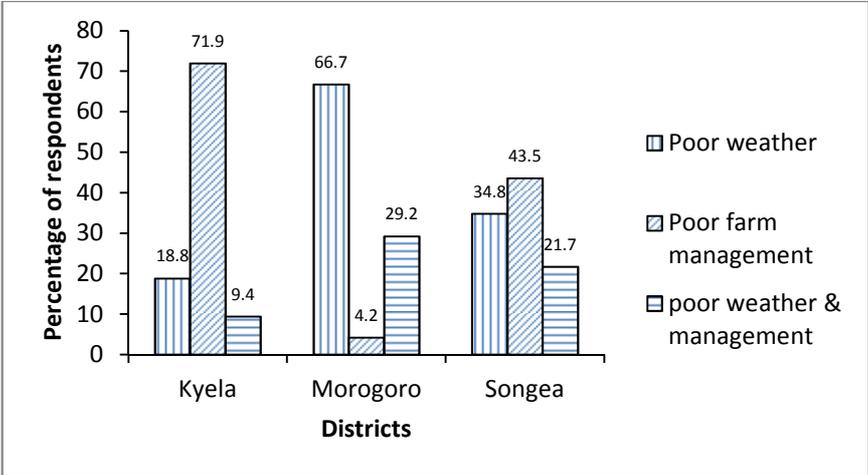
**Figure 4; Percentage response on contribution of extension officer on productivity**



**4.8.10 Causes for decline and variability in rice production**

The decrease and fluctuation in rice production for the past 5 years in the survey area was mainly attributed to poor farm management by 18.8% of farmers in Kyela, 66.7% in Morogoro and 34.8% in Songea. Another cause was unfavourable weather, mentioned by 71.9% of farmers in Kyela, 4.2% in Morogoro and 43.5% of farmers in Songea. Other farmers (9.4% in Kyela, 29.2% in Morogoro and 21.7% in Songea) mentioned both unfavourable weather and poor farm management to be the major causes of declining production. These results indicate that rice farmers in the survey area lack adequate knowledge on farm management aspects. Providing the farmers with extension services only does not always lead to increasing land productivity since many farmers still do not have sufficient technical knowledge (CUTS, 2011). Due to shortage of labour and lack of sufficient knowledge on rice farming, farmers prefer broadcast sowing of rice. This method imposes difficulties in carrying out other farm management operations like weeding, thinning and gap filling, pest and disease control and even fertilizer application. As a consequence, sub-optimal yields are obtained per unit area.

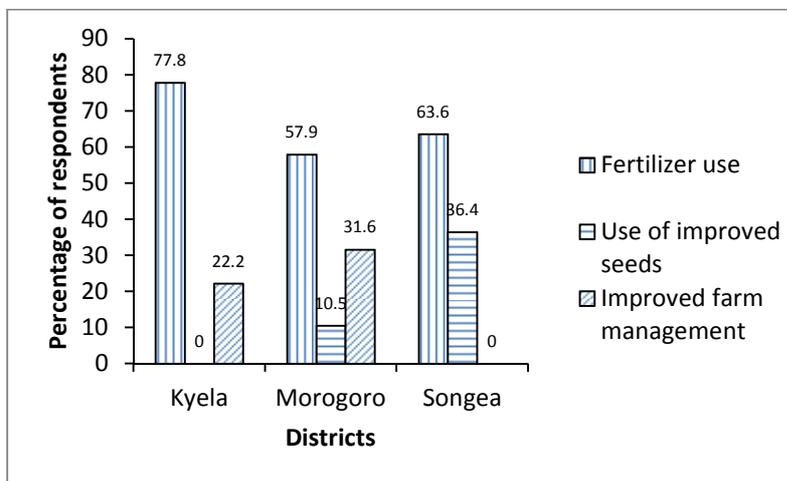
**Figure 5; Causes for declining and variability in production**



### 3.8.11 Changes observed in farming practices for the past five years

The majority of farmers (65% in Kyela, 47.5% in Morogoro and 56.4% in Songea) indicated they changed their farming practice for the past five years. The remaining (35% in Kyela, 52.5% in Morogoro and 43.6% in Songea) had not changed their farming practices. The changes include the use of fertilizers (77.8% in Kyela, 57.9% in Morogoro and 63.6% in Songea), use of improved rice seeds (10.5% in Morogoro and 36.4% in Songea, 0% in Kyela) and improved farm management (22.2% in Kyela, and 31.6% in Morogoro, 0% Songea). Improved farm management encompass adherence to good agronomic practices. It was also noted that fertilizer use in the study area was stimulated by the availability of government subsidies.

**Figure 6; Kind of changes observed**



These results comply with the statistics of FAO 2009 which revealed that there has been an increase in fertiliser use in Tanzania due to availability of subsidised agricultural inputs as shown in Figure 7 below.

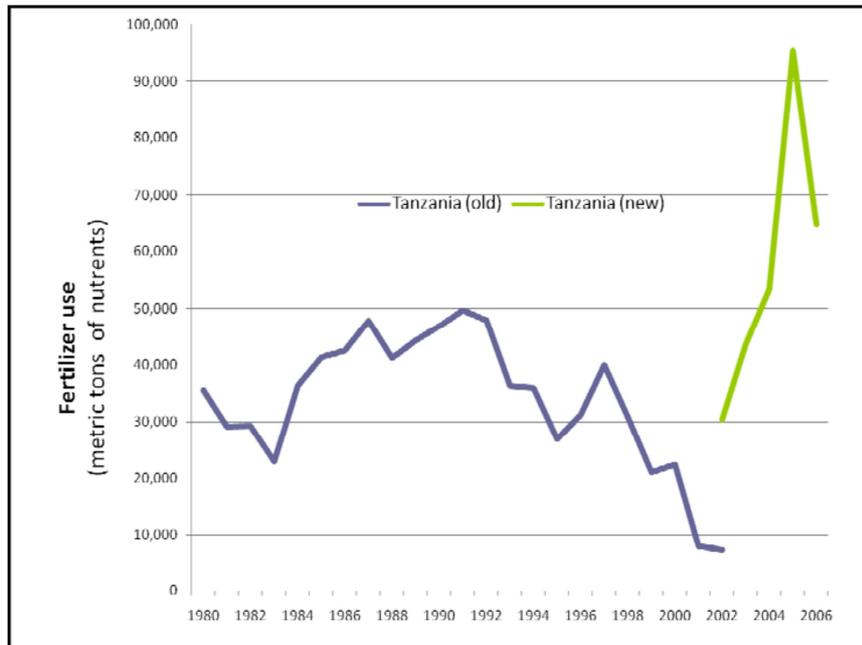
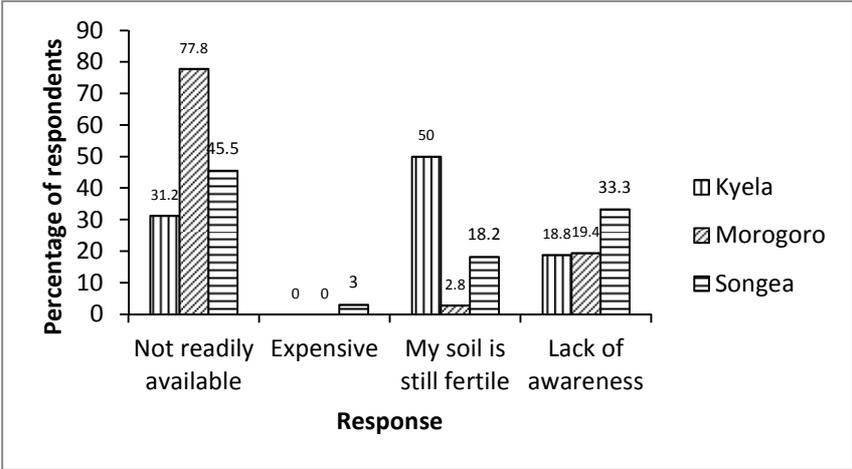


Figure 7; Fertilizer use in Tanzania (FAOSTAT, 2009). Tanzania Old means the amount of fertilizer (metric tons of nutrient) used before the introduction of subsidies. Tanzania (new) represents the amount of fertilizer used after subsidies were introduced.

### 3.8.12 Livestock keeping and the use of manure

It was observed that the majority of farmers keep livestock in the study area. These include 89.7% in Kyela, 70% in Morogoro and 90% in Songea. The types of animals kept include cows, goats, chicken and pigs. However, chicken are more frequently kept than any other type of animal. Despite the fact that farmers kept livestock in the survey areas, it was found that the majority (91.7% in Kyela, 95% in Morogoro and 85% in Songea) do not use animal manure in the rice fields. Farmers had their reasons for not using manure in rice fields. From our analysis, (31.2% of farmers in Kyela, 77.8% in Morogoro and 45.5% in Songea) indicated that they do not use manure due to its scarcity. Also farmers (50% in Kyela, 2.8% in Morogoro and 18% in Songea) do not use manure as they claimed their soil to be fertile. Moreover, 18.8% of farmers in Kyela, 19.4% in Morogoro and 33.3% in Songea do not use manure as they are not aware about the use of manure in rice fields. Only 3 % from Songea said manure is expensive. The small amount of manure they had was used in other crops like banana, maize fields and in vegetable gardens.

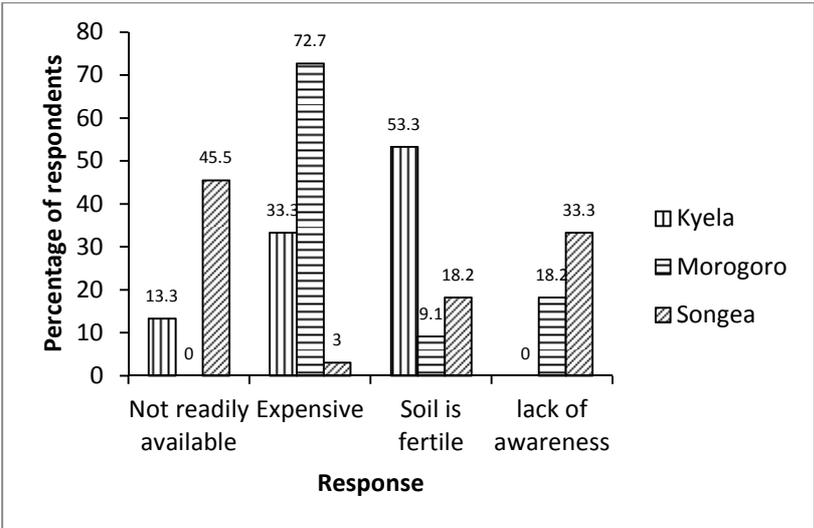
**Figure 8; Reasons for not using manure**



**3.8.13 Use of inorganic fertilisers**

Inorganic fertilizer was only used by 60% of farmers in Kyela, 42.5% in Morogoro and 60% in Songea. The reasons for not using inorganic fertilizers were high costs of unsubsidized fertilisers (33.3% in Kyela, 72.2% in Morogoro and 3% in Songea). Other farmers said their soils are fertile enough (53.3% in Kyela, 9.1% in Morogoro and 18.2% in Songea); while 13.3% in Kyela and 45.5% in Songea claimed that artificial fertilizers are not readily available. Other farmers in Morogoro (18.2%) and Songea (33.3%) were not aware that fertilizers are used in rice fields as they had never used them before. It was also indicated in a study on fertilizer policy and use in Tanzania that the reasons for not using inorganic fertilizers include high prices (63%), unavailability of fertilizers (20%), lack of knowledge on fertilizer use (10%) and other reasons (7%) (Minot, 2009). Inorganic fertilisers were used more in Kiroka Morogoro, Kasala in Kyela and Nakahuga in Songea as a result of access to government subsidies and availability of extension services, particularly to farmers who noticed an increase in productivity in their farms for the past five years. Some farmers in in Lukama village in Kyela District claimed that their soil was still fertile, claims that were disproved by the District Agricultural and Livestock Development Officer (DALDO) who said the soils in the District are generally deficient in Nitrogen and Phosphorus. In Nambendo village in Songea, many fields farms were established and cultivated for only two to three seasons and could still produce substantial amount of rice with no fertilizer addition.

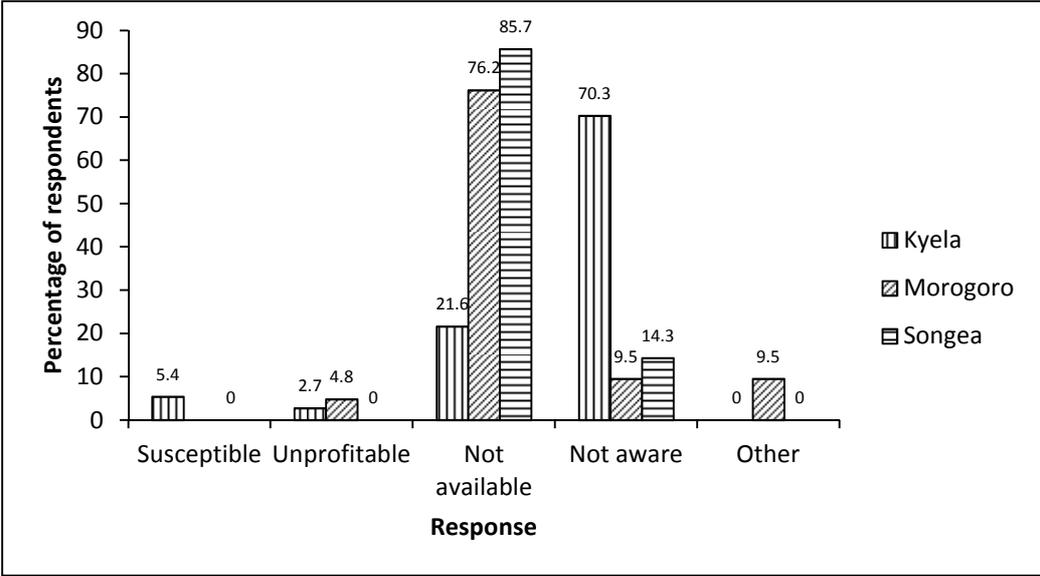
**Figure 9; Reasons for not using artificial fertilizers at the study area**



**3.8.14 Use of improved rice varieties**

Many farmers in the survey area did not use improved rice varieties. Only 12.5% of farmers in Kyela, 45% in both Morogoro and Songea, used improved rice varieties. The improved varieties used were SARO 5 (TXD 306) mostly used in Kyela and Morogoro and IR64 was mostly used in Nakahuga village in Songea rural. Availability of improved rice varieties in Tanzania is one of the major challenges facing the rice subsector. Only 10% of rice farmers use improved varieties, while the rest rely mainly on traditional ones which have low yield potential, are susceptible to lodging and late maturing (MAFC, 2009). The reasons for not using improved varieties according to farmers were lack of awareness (70.3% in Kyela, 9.5% in Morogoro and 14.3% in Songea), scarcity or in availability of seeds (21.6% in Kyela, 76.2% in Morogoro and 85.2% in Songea), unprofitability of improved varieties as compared to local ones (2.7% in Kyela and 4.8% in Morogoro), susceptibility to pests and diseases (5.4% in Kyela) and others (9.5% in Morogoro). Another reason given was that the local variety is appreciated more by consumers as compared to improved rice varieties and its price in the market is higher. Farmers were worried that the quality would be affected by contaminating it with improved varieties.

**Figure 10; Reasons for not using improved rice varieties**



**3.8.15 Source of power**

The study revealed that the majority of farmers still rely on man power for carrying out field operations. This was particularly observed in Morogoro Rural and Songea Rural Districts. A few farmers used tractors in the three districts. In Kyela however, the majority use draft animals as their main source of power (Table 2).

**Table 2; Main source of power in the study area**

Response	Kyela (%)	Morogoro (%)	Songea (%)
<b>Man power</b>	2.5	92.5	92.5
<b>Mechanization</b>	7.5	7.5	7.5
<b>Draft animals</b>	90	0	0

**3.9 Farmer-Extension relations in the surveyed areas**

**3.9.1 The need for extension services**

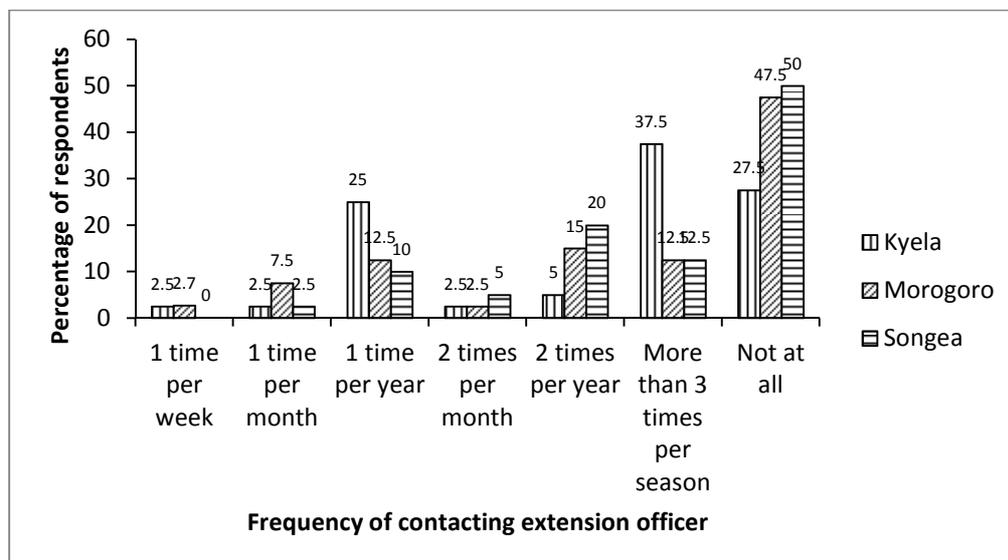
Agricultural extension service can be an engine for enhancement of social and economic development and it involves transfer of technology, facilitation roles, provision of advisory and information services (Rivera and Qamar, 2003). All the farmers in the survey area (100% in Kyela, Songea and Morogoro) admitted that having extension personnel in their villages is indispensable. The two surveyed villages of Lukama and Kasala in Kyela, Kiroka in Morogoro and Nakahuga in Songea Rural were benefiting from the services of extension workers. No extension personnel had been deployed in Kiziwa village in Morogoro and Nambendo village in Songea. When asked why it is necessary to have an extension officer in their villages, farmers mentioned many reasons including the need for agricultural education, knowledge on the right use of agricultural inputs like seeds and fertilizers, treatment of livestock

diseases, education on farm management and interestingly it was mentioned that extension worker could help them to access seeds and fertilizers from the government for free.

### 3.9.2 Frequency of seeking technical advice

Despite the fact that 4 out of 6 surveyed villages had an extension officer and that 100% of the farmers found it indispensable to have an extension officer in their village, many farmers did not consult the extension officer for advice. A large number of farmers (30% in Kyela, 47.5 % in Morogoro and 50% in Songea) did not have any contact with the extension officer, while those who had contact with the extension officer (37.5% in Kyela, 12.5% in Morogoro and 12.5% in Songea) contacted the extension officer more than 3 times in one season. Others (5% in Kyela, 15% in Morogoro and 20% in Songea) contacted extension 2 times only per season, 2.5% of the farmers in Kyela and 2.7% in Morogoro used to contact extension officer 1 time per week and 2.5% of the farmers in Kyela, 7.5% in Morogoro and 2.5% in Songea contacted extension officer 1 time per month (Figure 10). Many farmers in Kyela and Morogoro admitted that they called upon the extension personnel when they needed to have their sick animals attended. In Kyela many farmers did not even recognise the extension officer as a crops scientist (*Bwana shamba*) but as an animal scientist (*Bwana mifugo*). Extension officers on the other hand prefer to introduce themselves to farmers as livestock extension officers hence prioritizing more on livestock management. They also carry out meat inspection which gives them immediate remuneration. This would not have been the case if each area had a livestock and crop extension officer.

**Figure 11; Frequency of contact between farmer and extension**

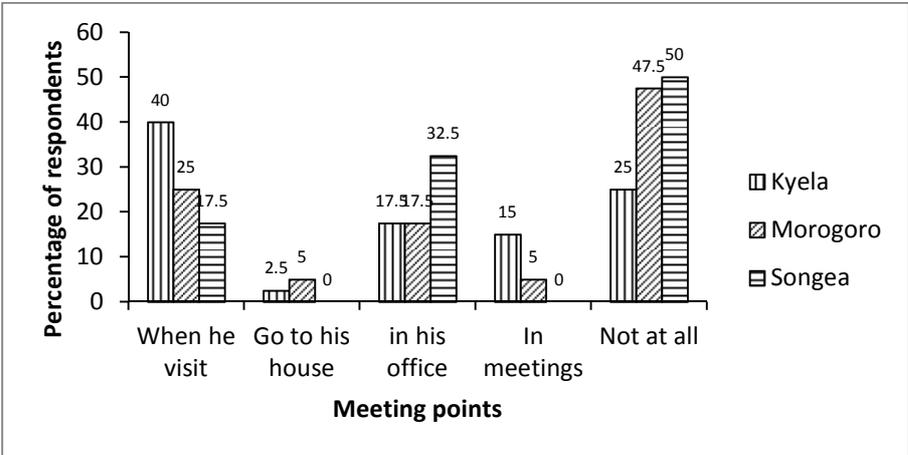


### 3.9.3 Communication between extension personnel and the farmers

Farmers in the survey area contacted the extension officer mostly when they met during field visits (40% in Kyela, 25% in Morogoro and 17.5% in Songea; Figure 12). Other farmers

(17.5 % in Kyela and Morogoro, 32.5% in Songea) dropped by the office whenever they needed help while others (15% in Kyela and 5% in Morogoro) would hear extension messages in village meetings since it is a normal practice to include agricultural development in their meetings' agenda. A few farmers (2.5% in Kyela and 5% in Morogoro) dropped by the extension officer's house. With advancement in science and technology, mobile communication was also used, although extension officers admitted that most urgent calls received had to do with cases related to animal health. It was also established that most field visits were made to progressive farmers eager to learn and adopt new technologies. Extension officers worked closely with these committed and serious farmers so that their fellows could learn from them.

**Figure 12; Meeting points between farmers and extension officer**



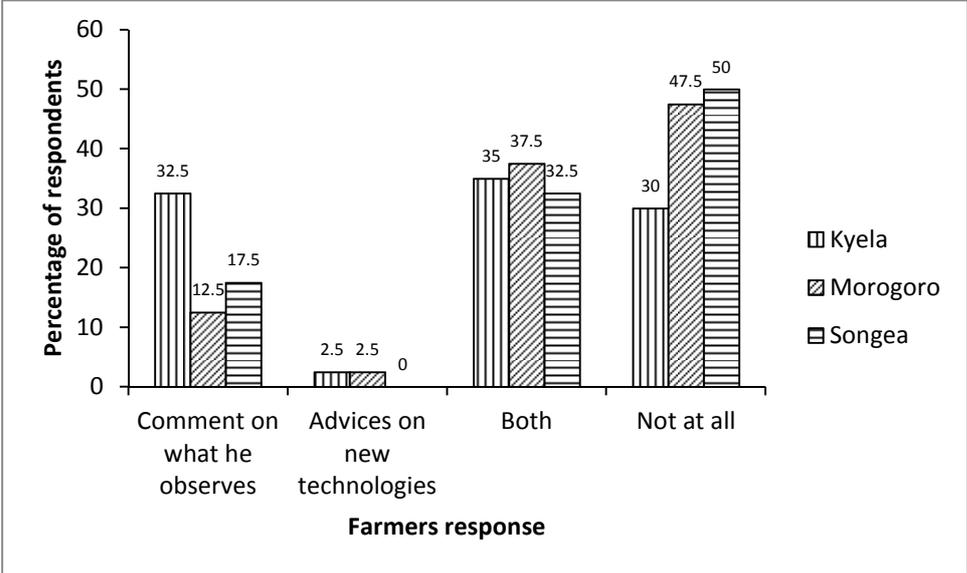
**3.9.4 Issues learned from extension and usefulness of technical information received**

From the surveyed farmers 35% (Kyela), 37.5% (Morogoro) and 32.5% (Songea) indicated that the extension officer gave comments based on what he observed in the field and also advised on trying new technologies. On the other hand, 32.5% of farmers in Kyela, 12.5% in Morogoro and 17.5% in Songea indicated that the extension officer commented based on what he observed in the field only, while 2.5% both in Kyela and Morogoro indicated they only got advice on new technologies. Despite the fact that some farmers learned specific topics like crop protection, we found that most extension officers deployed in the villages were not specialists in specific areas like plant protection or soil and water conservation therefore they advised the farmers on all matters related to crop and animal production. When a farmer had a specific question on a specific problem, extension officer would respond accordingly.

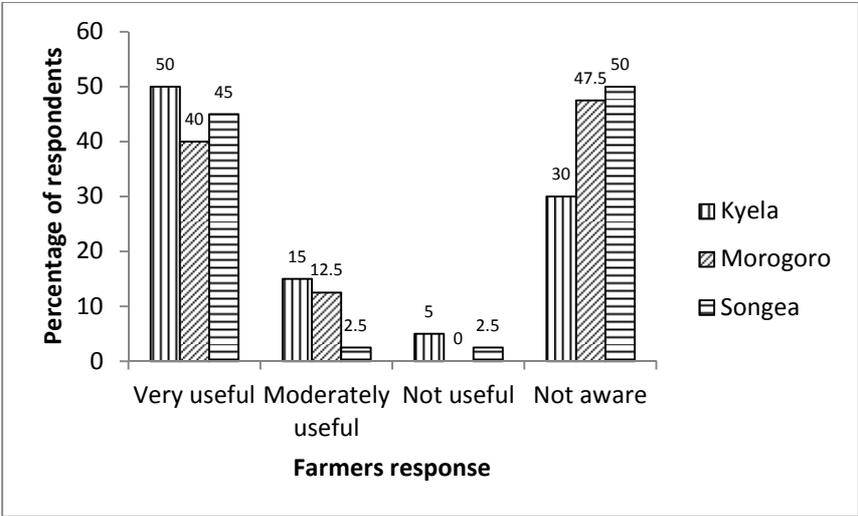
On the usefulness of the information received from the extension officer, 50% of farmers in Kyela, 40% in Morogoro and 45% in Songea acknowledged that information received was very useful, 15% in Kyela, 12.5% in Morogoro and 2.5% qualified it as moderately useful, while 5% in Kyela and 2.5% in Songea had not seen any value of extension information. A large share of farmers (30 % in Kyela, 47.5 % in Morogoro and 50% in Songea) had learnt or heard nothing from extension. The latter were mostly farmers from Kiziwa in Morogoro and

Nambendo village in Songea rural who had no extension officer at all and those from Kyela who were not aware of the presence of extension officer in their villages

**Figure 13; Issues learned from extension officer**



**Figure 14; Usefulness of information learned from extension officer**

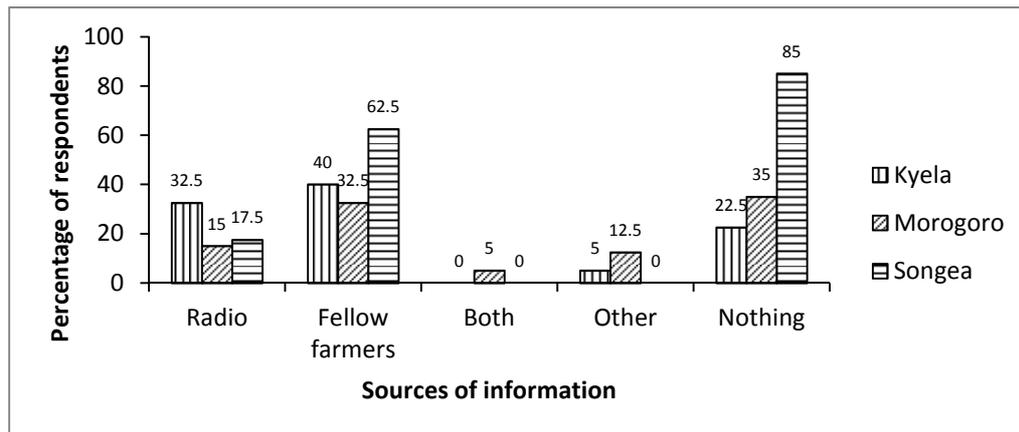


**3.9.5 Access to other sources of agricultural information**

Apart from extension officers, farmers in the study area had alternative sources of acquiring agricultural knowledge. It was found that farmers could learn a lot from their fellow farmers as they visited each other’s fields. They also share agricultural knowledge, experiences and challenges when they meet on social and formal gatherings. Analysis showed that 40% of farmers in Kyela, 32.5% in Morogoro and 62.5% in Songea learned from one another. Also 32.5% in Kyela, 15% in Morogoro and 17.5% in Songea listened to radio programmes, 5% in

Morogoro listened to radio and exchanged ideas with their fellow farmers and 5% in Kyela and 12.5% in Morogoro learned from other sources like newspapers and from their children who pursued agricultural subjects in schools. It was also found that 22.5% in Kyela, 35% in Morogoro and 85% in Songea did not have other sources of getting agricultural information apart from extension service. These results showed that empowering a few progressive farmers in the villages can have a huge impact by providing an opportunity for farmers to learn from each other.

**Figure 15; other sources of agricultural information**



### 3.10 Analysis of extension officers and service delivery

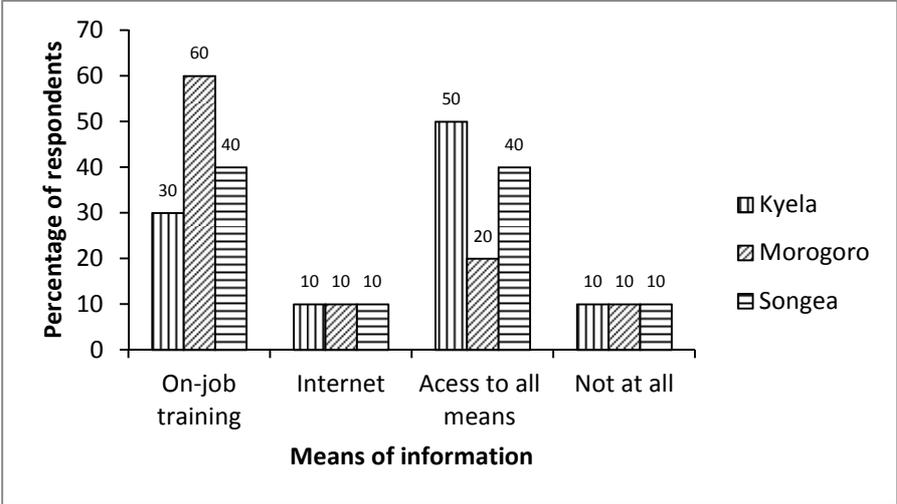
Out of 30 extension officers interviewed, 66.7% served the three districts for up to 5 years, 13.3% for 6-10 years and 20% have worked for more than 10 years. The majority (76.7%) are generalists and only 23.3% are specialists. On average, content of materials covered in training was relevant for addressing the field challenges. Results of this study show that 63.3% of the extension officers indicated what they learned was moderately relevant while 36.7% qualified the content as very relevant. This feedback complied with the Ministry of Agriculture Training Institutes’ main objective which is to offer courses aimed at preparing graduates to employ themselves and help farmers improve their agricultural knowledge and receptivity to novel technologies so as to do farming as business (MATI, 2012). The field challenges encountered by the extension officers are presented and considered during the curriculum review process. Extension officers are also involved to give their opinions and their experiences on the relevance of content of materials covered during training on addressing issues in the field.

#### 3.10.1 Updating extension staff with new technologies

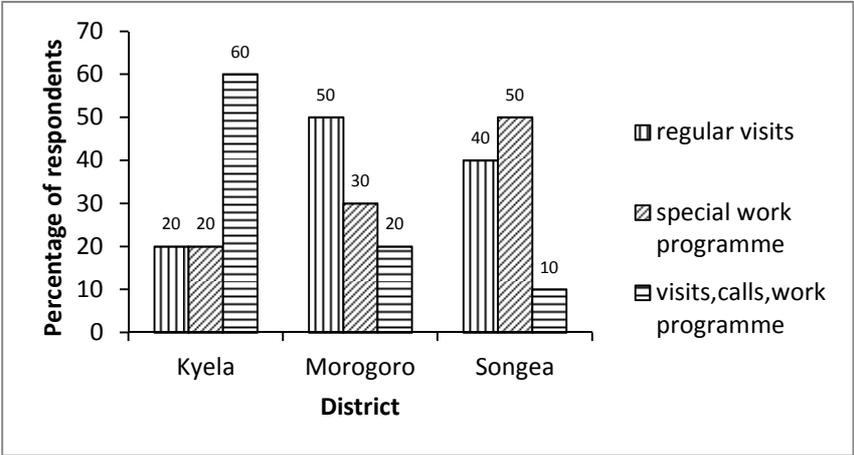
Extension officers receive updates on new technologies mostly through on-the-job training (60% in Morogoro, 40% in Songea and 30% in Kyela). They had attended various training courses in the districts and outside. Others 10% in three districts mobile phones have been used to access and learn new technologies through internet and 50% in Kyela, 40% in Songea

and 20% in Morogoro had access to all means available like trainings, internet sources, publications, radio and television. The latter were found to be extension officers based at the district headquarters. Another 10% of field based extension workers in the three districts did not have access to any means of getting new information due to remoteness of their work stations.

**Figure16; Means of updating extension officers with new technologies**



**Figure 17; Extension-Farmers contact in the study area**

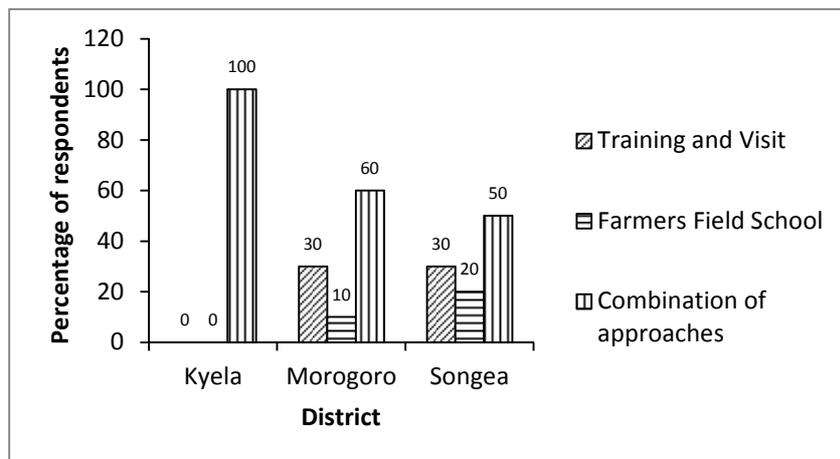


**3.10.2 Approaches used to communicate with farmers and challenges encountered**

In order to convey extension messages to the farmers, 100% of the extension officers in Kyela, 60% in Morogoro Rural and 50% in Songea Rural used a combination of approaches including farmer field school, training and visit and working with exemplary farmers. Only 30% of extension officers both in Songea and Morogoro Rural Districts used the Training and Visit (T&V) *per se*. T&V is a technology transfer approach whereby all the impact points

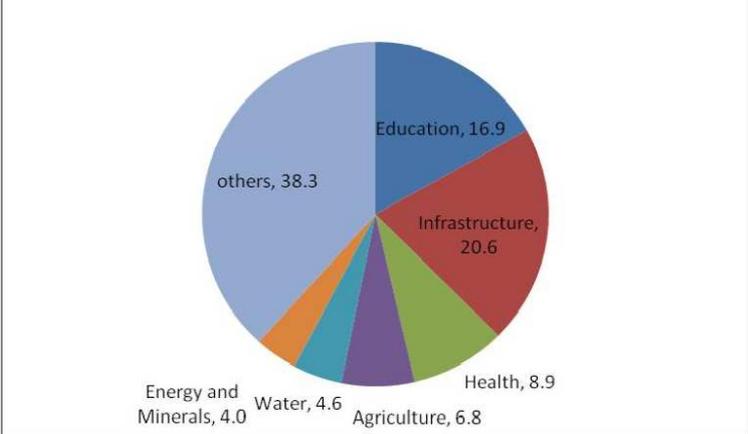
disseminated to farmers are originating from research (Van den Ban and Mkwawa, 1997) and 20 % in Songea and 10% in Morogoro used Farmer Field School (FFS) approach only. In FFS approach, farmers have opportunity to learn in groups, integrating various methods and concepts that help them solve particular problems in a cheap and sustainable way. Considering the heterogeneity of farmers in terms of resource endowment, extension officers in the survey area mentioned that a combination of approaches based on the farmer’s situation yielded the best results, making this approach preferable to many extension workers than relying on one approach.

**Figure 18; Approaches used to communicate extension messages to farmers**



Challenges encountered by extension agents with respect to the approaches used included budget constraints (100% in Songea, 40% in Kyela and Morogoro). Sometimes extension officers had to spend their own money to incur expenses like buying inputs for the field trial. Another reason was poor financial and material support from the districts (50% in Morogoro and 30% in Kyela). Some extension workers would prepare a work plan of field activities and logistic support needed but when they presented it to the district office they did not get the support to execute their duties as planned. The district officers indicated that they often do not have the financial means to support the extension workers. This in turn results from the small budget allocated to agricultural sector on a national scale. The target and agreement of the SADC countries is to allocate at least 10% of National budget to agricultural sector. For example, despite the importance of the agricultural sector in the national economy (accounting for 27% of GDP, 35% of exports and about 80% of employment and raw materials for industries and market for industrial products), during the 2011/12 financial year, the agricultural sector received only 6.8% of the National budget which was 926.2 billion Tanzanian Shillings only a 2.5% increase from 903 billion Tanzanian shillings allocated in 2010/11 financial year. This is shown in figure 19 below.

**Figure 19; Sectorial allocation as percentage of total budget of the United Republic of Tanzania 2011/12 (MoF, 2011).**

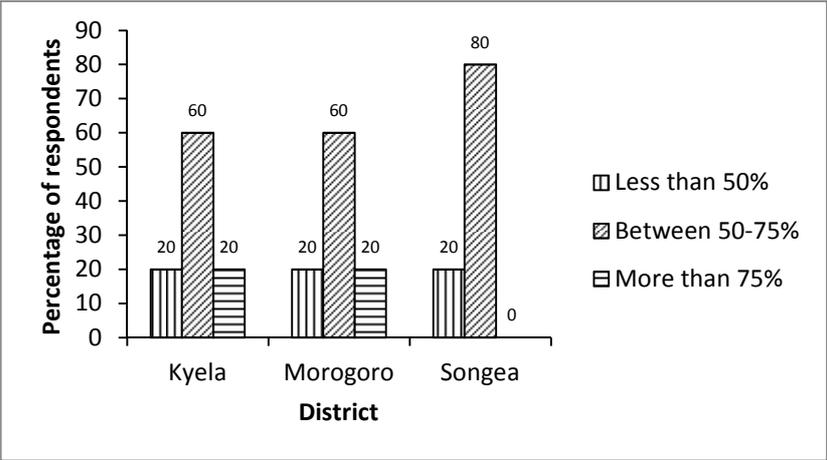


Another challenge observed was the poor financial situation of the farmers (20% in Kyela). Farmers were also supposed to incur some expenses such as buying seeds or fertilizers to be used on their experimental fields. Due to poor financial capability, farmers expected to receive all the resources from the extension workers for free. It was also found that 10% of extension workers in Kyela and Morogoro encountered a challenge of low turn up of farmers in training sessions. These farmers demanded to be paid some allowances by extension workers whenever they attend training sessions.

**3.10.3 Farmers reached by extension in a season**

Not all farmers in the study area were reached by extension personnel within a season. Analysis showed that 80% of extension workers in Songea and 60% in Kyela and Morogoro reached between 60-75% of the farmers (Figure 20). Also 20% of extension workers in all three Districts reached more than 75% of the farmers and only 20% of extension workers in Kyela and Morogoro reached more than 75% of the farmers in their areas. Ideally, extension workers would like to reach all farmers in their areas. They were constrained by lack of means of transport and other necessary working facilities. This is also attributed to the low budget allocation to District extension services. Rutatora and Matee (2001) also reported on the inability of many Districts in Tanzania to fund extension services from their own sources without external assistance. This is because revenues collected are very low, hardly sufficient to cover many development priorities in the districts. The poor financial situation makes it difficult for the district to allocate sufficient funds to extension as a result the extension workers are not able to reach many farmers.

**Figure 20; Farmers reached by extension officer per season**



**3.10.4 Advice given to farmers**

Kind of advice given to farmers, majority advised on all matters in general (90% in Kyela, 70% in both Morogoro and Songea Rural), while only a few (10% in Kyela and 30% in Morogoro and Songea Rural) advised on specific topics. This is in line with our earlier finding that the majority of the extension officers are not specializing on specific subjects. A few experts who advised on specific areas are subject matter specialists mainly at the district headquarters like irrigation technicians, crop protection specialists, soil and water conservationists and agricultural mechanization experts.

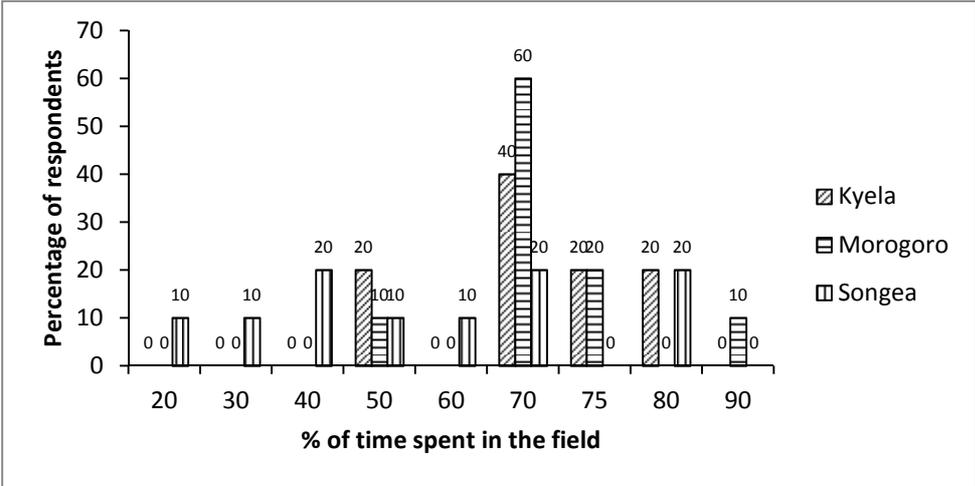
**3.10.5 Collaboration with private extension service providers**

The private sector is attracted to participate as input suppliers, services providers and producers (Kimaro et al., 2010). It was noted that 90% of extension officers in Morogoro, 70% in Kyela and Songea recognized the presence of private service providers in their work areas. Only 30% in Kyela and Songea and 10% in Morogoro had no private service providers from both formal and informal sector. Collaboration with the government extension workers was also good since 70% in Kyela, 80% in Morogoro and 87.5% in Songea admitted to collaborate with private service providers. Poor collaboration was mentioned to be caused by lack of transparency of some of the private organisations and enterprises. The experts from these organizations would meet the government extension workers and the village government for introduction and later they only work with farmers.

**3.10.6 Allocation of time for field and administrative issues**

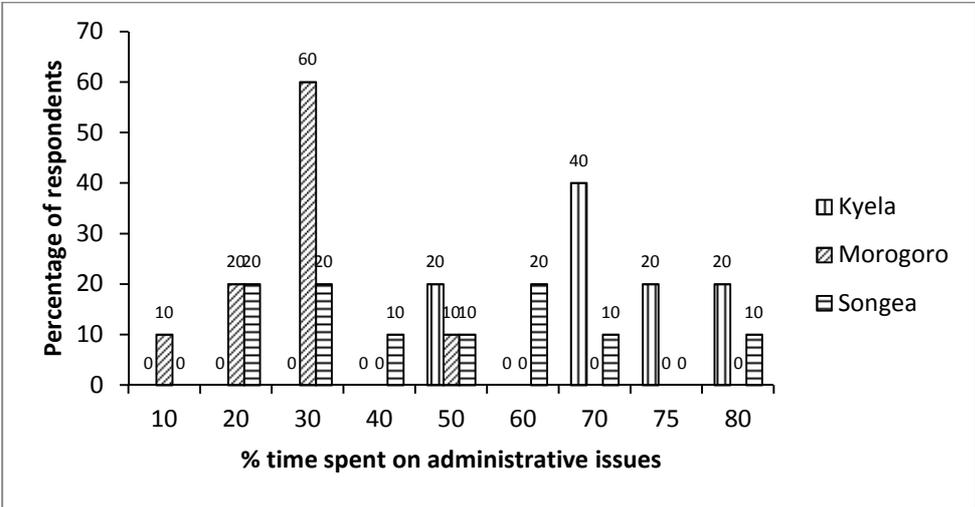
The survey showed that extension officers spent more time in the field than in the office. Extension officers based at the district headquarters had more administrative issues to handle than their field based counterparts. We found out that extension officers are sometimes assigned by Village Executive Officers to perform administrative duties of the village government. These kinds of additional responsibilities conflict with their job and consume time which would have been spent with farmers. In Morogoro, 60% of extension officers spent 70% of their time in the field. The same amount of time was spent by 40% of officers in Kyela and by 20% of the officers in Songea (Figure 21).

**Figure 21; Time allocated by extension officer for field work**



Time spent on administrative issues is indicated on (Figure 22). Most of the officers spending much time on administration are the heads of departments (DALDOs) and Subject Matter Specialists (SMS) who are mainly often based at the district headquarters. Field officers would in most cases visit the District headquarters once in a month and handle village government administrative issues when they are assigned to do so by their Village Executive Officers. The longest time spent on administration issues in three districts surveyed was 60% in Morogoro, 40% in Kyela and 20% in Songea.

**Figure 22; Time spent by extension officers for administrative issues**

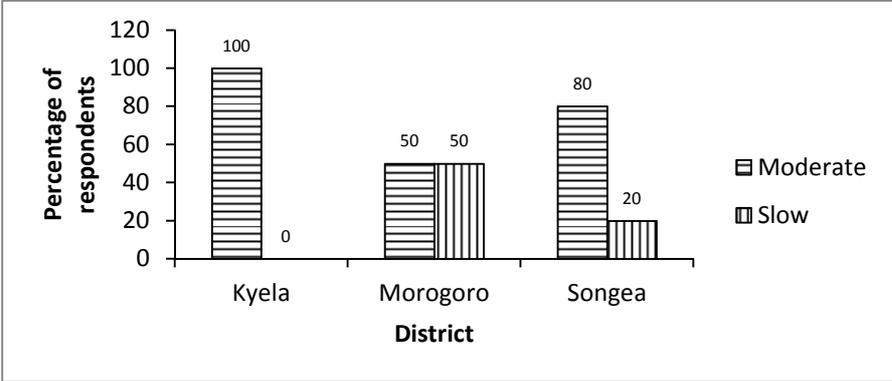


**3.10.7 Adoption of technologies by farmers**

Although the extension officers indicated to spend many hours in the field adoption of technologies in the study area was generally poor. There was a moderate to poor adoption rate of the new technologies disseminated by extension officers (Figure 23). This could be explained by limited resources allocated to extension services by the government, the high poverty level of farmers disabling them to commit sufficient resources in agriculture, low level of education of farmers and inappropriate technologies that do not consider the

farmer’s situation. It was identified that reasons for failure to adopt new technologies in the Training and Visit approach used in Tanzania was that many blanket recommendations given did not consider the limited possibilities of the farmers. It was therefore recommended to provide farmers information that can enable them make their own decisions based on their goals and situations (Van den Ban and Mkwawa, 1997).

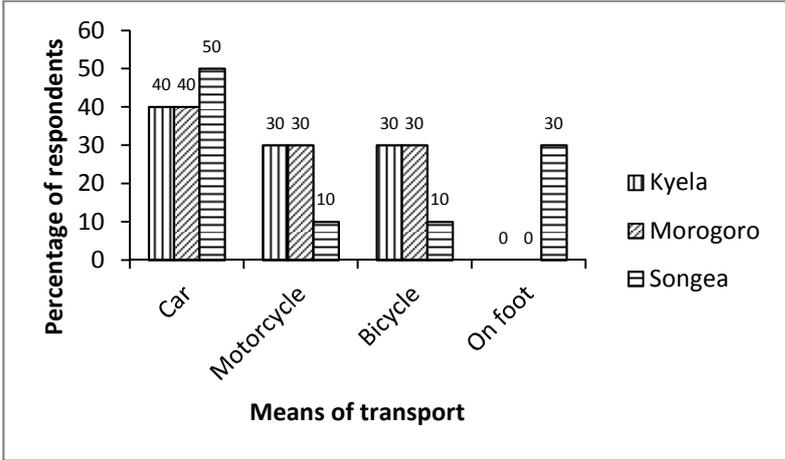
**Figure 23; Adoption of agricultural technologies by farmers in the study area**



**3.10.8 Means of transport used by extension staff**

Extension officers based at the district headquarters were better off in terms of transport facilities. They could access and use office cars and motorcycles to reach the farmers. The survey indicated that 50% of extension officers at the district headquarters in Songea, 40% both in Kyela and Morogoro could access and use office vehicles. Also 30% of extension staff in Kyela and Morogoro and 10% in Songea had motorcycles. These were Ward Extension Officers who had a relatively large area (several villages) to cover. Others 30% in Kyela and Morogoro and 10% in Songea bought their own bicycles at least to enable them move around. In Songea 30% of the extension officers had no means of transport and went to and from the field by feet. It was indicated that many extension officers in the Districts rely on very old cars, motorcycles and bicycles which are not in good working condition and need repair (PHDR, 2003). It was also found that even the extension officers with motorcycles were not facilitated in terms of fuel and maintenance costs. As a consequence, the motorcycles were not serviced regularly. Provision of better means of transport for the District and Village level officers in Tanzania would improve the quality of extension services given to farmers as well as enhancing their reach as well as the extension-research linkages (Agbamu, 2000).

**Figure 24: Means of transport used by extension officers**



**3.11 Analysis of the results**

The new agricultural policy was formulated to address challenges of the agricultural sector, an important source of living for majority rural families in Tanzania. The core objective is to transform the sector from subsistence to export agriculture. To achieve this objective, focus was put on small scale farmers at village level who encounter many production challenges. These challenges include among others; erratic weather patterns due to changing climate, poor agricultural knowledge, pests and diseases, high levels of land degradation and lack of access to inputs and credit. The new policy therefore aimed to reform the sector by empowering the farmers through quality extension service delivery.

Implementation of the agricultural policy seems to yield some positive results as seen in our study. At National level we observed the efforts of educating 15,082 extension officers so that each village in Tanzania has one extension expert. By February 2013, a total of 7,974 experts had been employed and other 2000 graduates were to be employed. We also noted an increase in number of agricultural extension staff since 2007 in the study areas. In Songea Rural 60 new extension officers were employed, In Morogoro Rural 67 new officers and in Kyela District 43 officers. The newly employed extension officers led to increase in number of extension staff in the Districts. The current extension- farmer ratio in the study area is shown in table 3 below;

Table 3: Extension-farmer ratio in the study area

District	Farming households	Extension workers	Extension:household ratio
<b>Kyela</b>	30,226	49	1: 617
<b>Morogoro Rural</b>	88,453	67	1: 1320
<b>Songea Rural</b>	44,152	94	1: 469

Generally, extension officer in the study area has a large number of farming households to attend. Although not all the villages in the study area have extension officers, new graduates are being employed every financial year in attempt to reach the target stipulated in the agricultural policy. In Morogoro Rural extension officer has to reach almost three times more farmers than it is in Songea Rural and twice as much when compared to Kyela. This is challenging since analysis results indicate lack of reliable means of transport to extension workers (Fig. 24). Only 30% in Kyela, 30% in Morogoro Rural and 10% in Songea Rural field based extension officers have motorcycles. They also use bicycles and in Songea Rural 30% walk on foot. Although the ratio of extension to farmers in Songea is small, it is difficult to attend many farmers with no means of transport.

Adoption of agricultural technologies as a measure of the impact of implementation of the policy is unsatisfactory. Extension officers in Kyela indicated a moderate adoption of technologies. In Morogoro Rural we found a moderate (50%) and slow (50%) rates while in Songea Rural it was moderate (80%) and slow (20%) (Fig. 23). Morogoro Rural has a big extension- farmer ratio and also no reliable means of transport to reach the farmers. Kyela has a fewer number of households among the three areas and at least the village based extension officers have motor cycles and bicycles. It is relatively easier to reach many farmers. Songea Rural has a smaller extension- farmer ratio, fewer farming households and more extension officers than Morogoro Rural and Kyela districts. However, extension workers are not facilitated by means of transport. Of the interviewed field based extension staff, 30% walk on foot to reach the farmers. This is an indication that big number of extension officers in the District does not necessarily lead to quality extension services.

It was also interesting to find that all interviewed farmers in the three Districts acknowledged the need for extension officers in their villages. Farmers in the surveyed area had different response about rice production for the past five years (Fig. 3). Although production is a function of many factors, extension service also has a role to play. Even those who noticed increase in productivity acknowledged that extension officer has a big role to play (Fig. 4). Farmers in villages with extension officers also appreciate the usefulness of information received from extension (Fig. 14). However, putting the knowledge gained into practice was found to be constrained by poverty. The use of artificial fertilizers for example, farmers in villages with extension officer understand advantages of applying fertilizers. It was found that they would like to use fertilizers but its availability within their areas and high prices was a limiting factor (Fig. 9). Extension officer can do a good job of demonstrating and educating the farmers on different technologies. Farmers are also satisfied about extension services offered (Fig.11) but the affordability of these technologies is often problematic. The fertilizer use in three Districts observed in Figure 5 was mainly due to availability of government subsidies. There is however a small amount allocated per District that cannot meet the needs of all farmers. On the use of improved rice seeds, a big difference was observed. Farmers in Morogoro Rural and Songea Rural were aware of improved rice varieties. The only limitation was the availability of the seeds. In Kyela many interviewed

farmers are not aware of the presence of improved rice varieties (Fig. 10). Kyela farmers are known for producing Super India locally known as *Kilombero* which is low yielding but good cooking qualities. Improved rice varieties were mostly mentioned in Morogoro (SARO 5) and Songea (IR64).

Despite that field based extension officers in the three districts were found to work under unsatisfactory conditions, they try to use available means to reach as many farmers as possible. In general terms, extension officers reached about 50-75% of farmers. This percentage was reached by 80% of extension workers in Songea Rural and 60% in Kyela and Morogoro Rural. We also found that 20% of extension officers in Kyela and Morogoro reached more than 75% of farmers (Fig. 20). This shows that if extension workers are provided with conducive working environment, they can reach a large number of farming households in their respective work areas. Extension workers reach the farmers on their regular field visits, when they are called upon and others have a special work programme (Fig.16). It was found that field based extension workers have regular field visits, and most office based extension workers have special working programme for field visits.

In this study, we used six villages in three Districts to get an insight of the current situation after the implementation of the agricultural policy. Although this is not a representative sample considering the fact that Tanzania is a big country with many Districts and villages. The general observation is that not all the villages in the study area are covered by extension services as explained in Section 2.3. Even in the villages with extension officers, not all farming households have been visited or reached. For those who have been reached by extension officers, it was also found that not all are capable of applying the knowledge gained to improve their farming practices. Apart from the above observations, we also noticed general differences in three districts with respect to land ownership, type of animals kept and source of power in the farm. In Kyela district and Morogoro Rural, the fields are mostly inherited from generation to generation while in Songea Rural many farmers established the fields themselves. This is due to availability of land in Songea Rural. The types of animals kept in Kyela are predominantly cattle, goats and chicken while in Morogoro and Songea are mostly chicken and a few goats. Source of farm power in Kyela is draft animals while in Songea Rural and Morogoro Rural is mostly man power.

## **CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS**

Based on the results of the survey conducted in six villages of three districts, we conclude that some achievements have been observed in terms of implementation of the agricultural policy. Farmers recognised the role and need of having extension officers a village level. In terms of delivery of sound and effective extension services and improved farming practices however, there are still some challenges. Addressing these challenges will ensure the core objectives of the new agricultural policy are met.

The study revealed that extension service at the Ministry of Agriculture Food Security and Cooperatives (MAFC) is only at the national level. In the Districts extension services are under Regional Administration and local Government (PMO-RALG) who work with MAFC as partners. However, there is no clear mechanism on the ground that stipulates the coordination of activities or mode of partnership between extension services at the MAFC and at the Districts. In line with that, the lack of clear guidelines on operationalization of the partnership between extension services at the MAFC and the districts lead to a weak extension-farmer linkage. This hampers the effective dissemination of extension messages.

All farmers in the study area mentioned the need for an extension officer in their villages so as to benefit from advisory services and improve their farming methods and productivity. However, they recognise extension officers as a veterinary professional because they are mostly seen and called upon to attend the livestock (treating sick animals, castration, meat inspection, vaccinations) rather than crops. As a consequence, farmers do not ask extension officers to advise them on crop related issues.

The small national budget allocated to the agricultural sector affects the overall performance of the sector. The districts eventually receive inadequate funds to meet the needs of extension services like transport, fuel and maintenance, housing, and even supporting their work plans like establishing farmers' field schools, demonstrations and conducting farmers' trainings.

Despite the fact that extension experts claim to spend most of their time in the field, adoption of technologies is poor. This can be attributed to among other causes, low education levels of the farmers, negligence, poverty, poor monitoring by extension staff and the methods of technology transfer applied. The technology transfer approach is mostly participatory but in most cases not practically implemented due to budget constraints. Fertilizer use in the study area was influenced by the availability of subsidies from the government. Farmers still lack knowledge on farm management aspects resulting into significant yield losses every season.

Based on the above observations, a number of recommendations can be made.

A clear mechanism guiding the coordination of extension activities between the MAFC and RALG should be put in place so as to enable staff from the two ministries to work together.

Extension division of the MAFC need to be a full-fledged department within the ministry and instruments for improving communication between the two departments (Research and Extension) should be in place so that research findings are disseminated to beneficiaries more efficiently.

The Tanzanian government should allocate adequate financial resources in agricultural activities proportional to the contribution of the sector to the national economy. This will in turn facilitate execution of extension activities at District and village levels.

As the agricultural policy stipulates, more extension workers should be deployed at a village level. However, they should be supported and facilitated by providing them a conducive working environment. This can support extension officers in exploring technologies that will fit farmer's needs and abilities based on their existing situation. They should focus on building farmers capacity in terms of experimentation and help them realize through participatory methods that experimenting using locally available resources could reduce cost and bring more benefit.

## REFERENCES

- Agbamu, J. (2000). "Agricultural Research -Extension linkage Systems: An International Perspective," Department for International Development (DFID): UK.
- CUTS (2011). "Extension Services in Tanzania: Better reaching Remote Areas," Geneva Switzerland.
- DALDO (2012 Unpublished-a). District Agricultural Development Plans report, Songea Rural District.
- DALDO (2012 Unpublished-b). District Agricultural Development Plans Report. Kyela District.
- FAOSTAT (2009). "Trends in Fertilizer use in Tanzania. As cited by Nicholas Minot 2009."
- Kimaro, H., Mukandiwa, L., and Mario, E. Z. J. (2010). Towards Improving Agricultural Extension Service Delivery in the SADC Region. *In* "Workshop on Information Sharing among Extension Players in the SADC Region", Dar es Salaam Tanzania.
- MAFC (2008). "Agricultural Extension Implementation Guidelines," Ministry of Agriculture Food Security and Cooperatives; Dar es Salaam.
- MAFC (2009). "National Rice Development Strategy," Dar es Salaam; Tanzania.
- MAFC (2011a). "Basic Data, Agriculture Sector." Ministry of Agriculture, Food Security and Cooperatives, Dar es Salaam.
- MAFC (2011b). Comprehensive Data on Situation Analysis (Unpublished). Agricultural Training Institutes, Dar es Salaam, Tanzania.
- MAFC (2012). Agricultural Statistics. Vol. 2012.
- MATI (2012). Training Institutions. Vol. 2012.
- Mgase, J. J., Shiwachi, H., Nakasone, K., and Takahashi, H. (2009). Agronomic and socio-economic constraints to high yield of upland rice in Tanzania. *African Journal of Agricultural Research* **Vol 5**, 150-158.
- Mghase, E., Shiwachi, H., Nakasone, K., and Takahashi, H. (2009). Agronomic and socio-economic constraints to high yield of upland rice in Tanzania. *African Journal of Agricultural Research* **5**, 150-158.
- Minot, N. (2009). "Fertilizer Policy and use in Tanzania." International Food Policy Research Institute.
- MOAC (1997). "Agriculture and Livestock Policy," Ministry of Agriculture and Cooperative Development; Dar es salaam.
- MoF (2011). "Government Budget for Financial year 2011/2012,Citizens Budget Edition," Ministry of Finance;Dar es Salaam.
- NAP (2012). "The National Agricultural Policy (Final draft)," United Republic of Tanzania;Dar es Salaam.
- NBS (2010). "National Sample Census of Agriculture 2007/2008;Preliminary Report ", Ministry of Finance; Dar es Salaam.
- NRI (2011). "Natural Resources Institute: Agricultural Extension, Advisory Services and Innovation," University of Greenwich, England.
- NSCA (2012a). National Sample Census of Agriculture, Regional Report Ruvuma Region 2007/2008.
- NSCA (2012b). National Sample Census of Agriculture,Regional Report, Morogoro Region.
- PHDR (2003). "Poverty and Human Development Report," Dar es salaam Tanzania.
- Rivera, W., and Qamar, M. (2003). "Agricultural Extension,Rural development and the Food Security Challenge." Food and Agriculture Organisation of the United Nations, Rome,

- Extension, Education and Communication Service Research, Extension and Training Division ,Sustainable Development Department.
- Rutatora, D., and Matee, A. (2001). Major Agricultural Extension Providers in Tanzania. *African Study Monographs* **4**, 155-173.
- URT (1996). "The Tanzania Development Vision 2025," Dar es Salaam.
- URT (2005). "National Strategy for Growth and Reduction of Poverty (NSGRP)," Dar es Salaam.
- URT (2006). "National Sample Census of agriculture 2002/2003:Small holder agriculture-Crop Sector."
- Van den Ban, A. W., and Mkwawa, D. S. (1997). Towards a participatory and demand-driven Training and Visit (T&V) agricultural extension system: A case of Tanzania. *European Journal of Agricultural Education and Extension* **Vol 4**.

ANNEXES

Annex 1. Response from MATI students In Mwanza City during curriculum review

Course; Diploma in Food production and Nutrition

District	Topic	Comments/Suggestions	General view
Mwanza City	Human Nutrition	Is applicable and relevant to the field	<p><b>Emphasis</b> Human nutrition Adult learning Food processing and storage</p> <p><b>Subjects/topics requiring less emphasis</b></p> <p>Oxenization Farm structures Pig husbandry</p> <p><b>Relation to field situation</b></p> <p>Many topics we were taught have no relevance at the field situation. The syllabus needs to be re - structured</p>
	Food Science	Only the introductory part seems to be relevant	
	Principles of Livestock production	Not applicable at all. Can be omitted	
	Soil science	Not applicable	
	Pig husbandry	Not applicable	
	Extension 1	Ideal and applicable in the field	
	Food Economics	Should be reviewed /scrutinised to omit some of the sub topics that are not applicable	
	Political economy	Out-dated	
	Home management II	Not practically applicable but it is good to learn	
	Oxenization	Omit from the syllabus	
	Farm structures	Relevant parts are introduction to extension, Agricultural research, Agricultural pricing, and principles of agricultural extension.	
	Communication skills	Is ideal and applicable	

(MAFC, 2011b)

Annex II

**Employers/Supervisors opinion on the performance of the extension workers**

Course –Diploma in Agro mechanisation

District	Mbeya	Shinyanga	Bariadi	Kinondoni	Tanga
Activities done	Extension Repair of animal draught power equipment	Extension/Training	Extension/training	Ext&training	Extension Draught power equipment repair Administration
Performance rating	Very good	-	Satisfactory	Satisfactory	Very good
Activities they are best at	Extension Animal draft power equipment	Extension	Extension	Extension Management of workshop Equipment repair	Extension Management of workshop and equipment repair Training of draft animals
Aspects they are weak at	-	-	-	Soil and water management Livestock production	PRA Data collection Report writing
New aspects to be included				Crop production Farm machinery	PRA Data collection Report writing
Course appropriate	Yes	Yes	Yes	No	No
Aspects to be deleted				Capital intensive farm machinery	
New to be added to the curriculum	Computer PRA			Crop processing Gender	National policies PRA Data collection Report writing

(MAFC, 2011b)

Annex III

**Questionnaire for small scale rice farmers in Morogoro Rural and Kyela Districts**

Interviewers name .....

Name of the farmer.....

Name of the Village..... Date.....

1. Age of the farmer ..... years
2. Sex of the respondent (a) Male ( ) b) Female ( )
3. Marital status
  - a) Single ( )
  - b) Married ( )
  - c) Widow ( )
  - d) Separated ( )
4. What is the number of people in your household..... people.
5. What is your education level?
  - a) No school attended ( )
  - b) Primary school education ( )
  - c) Secondary School education ( )
  - d) College/University education ( )
6. What other economic activities do you have apart from farming?
  - a) Business ( )
  - b) Employed ( )
  - c) Other (please specify).....

7. What is the size of your farm?
- a) Less than an acre ( )
  - b) Between 1 and 2 acres ( )
  - c) More than 1 ha ( )
8. How did you acquire your farm?
- a) Inherited it ( )
  - b) Bought it ( )
  - c) Hired ( )
  - d) Allocated by the village government ( )
9. How is the productivity trend in your farm for the past 5 years?
- a) Increasing ( ) b) Declining ( ) c) Variable ( )
10. If the answer is (A), how do you rate the contribution of the extension officer on the performance of your farm particularly on addressing production constraints?
- a) Has a big role to play ( )
  - b) Has a small contribution ( )
  - c) No contribution at all ( )
11. If the answer to question 10 is B or C, what could be the underlying causes?
- a) Poor weather ( ) b) Poor farm management ( )
  - c) Other (Please mention).....
12. Have you observed changes on your farming practices for the past 5 years?
- a) Yes ( ) b) No ( )
13. If the answer to question 12 above is yes, what kind of changes have you observed? (Please specify).....
14. Do you keep livestock?
- a) Yes ( ) b) No ( )
15. If the answer to above question is yes, what kind of animals do you keep?
- a) Cows ( ) b) Sheep ( ) c) Goats ( ) d) Pigs ( )
  - d) Any other (please mention).....
16. Do you use animal manure in your farm a) yes ( ) b) No ( )
17. Do you use any inorganic fertilizer in your farm? a) Yes ( ) b) No ( )
18. If the answer to question 16 is No, what is/are the reasons for not using manure?
- a) Not readily available ( )
  - b) They are expensive ( )
  - c) My soil is still fertile ( )

d) Lack of awareness ( )  
e) Any other reason (Please mention).....  
19. If the answer to question 17 is No, what is/are the reasons for not using artificial fertilizers?

- a) Not readily available ( )
- b) They are expensive ( )
- c) My soil is still fertile ( )
- d) Lack of awareness ( )
- e) Any other reason (Please mention).....

20. Do you use improved rice varieties on your farm?

- a) Yes ( )
- b) No ( )

21. If yes to question 20, what varieties do you use? Please mention

.....

22. If No, why not

- a) Susceptibility to pests and diseases ( )
- b) Poor palatability ( )
- c) Unprofitable ( )
- d) Not available ( )
- e) Any other (please mention).....

23. What is the major source of power on your farm?

- a) Man power ( )
- b) mechanisation ( )
- c) Draft animals ( )

24. In your opinion, do you think it is important to have an extension officer in your village?

- A) Yes ( )
- b) No ( )

25. If Yes to the question above, why do you think so?

.....  
.....

26. If Not, why?

.....  
.....

27. How many times per week /month/ year do you get in contact with the extension officer?

- a) 1 time/week/month/year ( )
- b) 2 times/week/ month/year ( )
- c) Not at all ( )
- d) Other (specify).....

28. How do you get in contact with the extension officer?

- a) When he/she visits my farm ( )
- b) I drop by his /her house to ask for advice ( )
- c) In village meetings ( )
- D) I drop by his/her office when I need help ( )

29. What kind of issues do you hear /learn from the extension officer?  
 a) S/he only gives comments based on what s/he observes on the farm ( )  
 b)S/he advices on new technologies and motivate us to try them ( )  
 c) Any other (mention).....
30. Do you find the information received from the extension officer useful in overcoming production challenges you have been facing?  
 a) Very useful ( )  
 b) Moderately useful ( )  
 c) Not useful, I am learning nothing new ( )
31. What other sources of information (apart from the extension officer) do you use to learn about agriculture? (Tick more than one)  
 A) Radio ( ) b) Television ( ) c) Internet ( ) d) Newspapers ( ) e) Journals ( )  
 f) Any other (Mention).....

**Annex IV. Questionnaires to extension officers**

Interviewers name .....

Name of the Extension officer.....

Work Station ..... Date.....

1. How long have you been serving the farmers in this District ..... years
2. What was your area of study in collage? A) Generalist ( ) B) Specialist ( )
3. How do you rate the relevance of the content of materials covered in class in addressing the field challenges?  
 a) Very relevant ( ) b) Moderately relevant ( ) c) Irrelevant ( )
4. How do you update yourself with new agricultural development technologies? (Tick where appropriate)  
 a) On-job training ( ) b) Internet sources ( ) c) Publications ( )  
 d) Radio & television programs ( ) e) Not at all ( ) f) other (specify).....
5. How do you come in contact with your farmers?  
 a) By visiting them regularly  
 b) Visit only when I am called for  
 c) I have a special working programme  
 d) Any other (specify).....

6. What kind of methods or approaches do you use to communicate the technical knowledge to farmers?

- A) Training and visit ( )
- b) Farmers Field School ( )
- c) Farmer to farmer visit ( )
- d) Any other (specify).....

7. What challenges do you encounter with respect to the method you use on question 4 above?

Please mention .....

.....

8. What percentage of your farmers do you reach for advice in a season?

- a) Less than 50% ( )
- b) Between 50 -75 % ( )
- c) More than 75 % ( )

9. If A or B above, what could be the reasons

- a) Farmers are not ready to learn something new ( )
- b) I mostly deal with administrative issues ( )
- c) Any other .....

10. What kind of technical advice do you give to farmers?

- a) Advice on all matters in general ( )
- b) Advice on specific topics ( )

11. Are there private extension service providers in your work area?

- a) Yes ( )
- b) No ( )

12. If yes to number 11 above, do you collaborate with them?

- a) Yes ( )
- b) No ( )

13. If No, what could be the reason for not collaborating in service delivery? .....

.....

14. How do you see your working environment as you execute your daily obligations?

- a) Conducive ( )
- b) Moderate ( )
- c) Poor ( )

15. If B or C to question 14 above, what issues do you think should be addressed as backstopping mechanism to facilitate and provide the ideal working environment to extension practitioners?

.....

.....

16. How much percentage of time do you spend on field and administrative issues?

A) Field work .....%                      b) Administrative issues.....%

17. On average, how do you rate the adoption of agricultural technologies by farmers in your area?

a) Fast ( )      b) Moderate ( )      c) Slow ( )

18. If B and C what could be the underlying causes (please mention) .....

19. What means of transport do you use to reach the farmers on your daily routine?

- a) An office vehicle ( )
- b) A bicycle ( )
- c) A motorcycle ( )
- d) On foot ( )

20. What do you need to further improve the quality and efficiency of your work?"

.....  
.....  
.....

THANK YOU FOR YOUR COOPERATION