# EFFECTIVENESS OF AGRICULTURAL CREDIT ON PADDY PRODUCTIVITY IN KILOMBERO DISTRICT, TANZANIA

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN RURAL DEVELOPMENT OF SOKOINE UNIVERSITY OF AGRICULTURE. MOROGORO, TANZANIA.



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## ABSTRACT

The study on which this dissertation is based was conducted to determine the effectiveness of agricultural credit on paddy productivity among smallholder farmers in Kilombero District, Morogoro Region. The study focused on the amount of credit provided to smallholder paddy farmers, improved agricultural inputs, and paddy productivity between credit receivers and non-credit receivers. It also assessed the impact of credit on paddy productivity. The data for this study were collected using a household questionnaire that was administered to a sample of 160 households, 80 of whom had received credit and 80 others who had not. MS Excel and Statistical Product and Services Solutions (SPSS) Version 20 were used to analyse the data. Multiple linear regression was used to establish the influence of credit and some other factors on paddy productivity. The average paddy yields for credit receiving farmers were higher (1641kg/ha) compared to the yields of paddy from non-credit receivers (1288kg/ha). Credit receipt or otherwise influenced paddy yields negatively, but the influence was not significant ($p > 0.05$). Despite the non-statistically significant influence of access to credit on paddy yield, credit for paddy production is very important for smallholder farmers to alleviate capital constraints. This was said by focus group participants. Furthermore, the results indicated that labour had a positive influence on paddy productivity which was statistically significant ($\beta = 0.170$, $p < 0.05$); and improved seeds significantly influenced paddy productivity ($\beta = 0.414$, $p < 0.05$). Fertilizers also significantly influenced paddy productivity ($\beta = 0.206$, $p < 0.05$). Based on the findings of this study, it is concluded that receiving credit and using it with the above significant factors appropriately increase paddy productivity in Kilombero District. On the basis of the conclusion, it is recommended that agriculture stakeholders should strive to ensure that credit support facilities and/or agencies support smallholder farmers effectively. Further credit conditions, particularly availability,

accessibility, and timeliness should be observed to enhance farmers' access to agricultural inputs timely.

## DECLARATION

I, Rose Mageka, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other Institution.

| | |
|---|---|
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The above declaration is confirmed

| | |
|---|---|
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| **(Supervisor)** | |

## COPYRIGHT

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## DEDICATION

This dissertation is dedicated to my husband Alistidy Arbogast and our offspring Evelyn and Evarist for their endurance and diligence during my stay away from home pursuing the Master's Degree programme. Also, the dissertation is dedicated to my father, the late Fabiano Mageka; may the Almighty God rest his soul in peace, Amen. The dissertation is also dedicated to my mother Ethirida Mageka who, together with my late father, laid the foundation for my education.

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| AFAP | Africa Fertilizer Agribusiness Partnership |
| AfDB | Africa Development Bank |
| AGMARK | Agriculture Market Development Trust |
| AGRA | Alliance for Green Revolution |
| AU | African Union |
| BRN | Big Results Now |
| CR | Credit Receiver |
| DAICO | District Agricultural Irrigation and Cooperatives Officer |
| ECDPM | European Centre for Development Policy Management |
| ESRF | Economic and Social Research Foundation |
| FGD | Focus Group Discussion |
| n | Number of Respondents |
| NAIVS | National Agricultural Inputs Voucher Scheme |
| NCR | Non-Credit Receiver |
| NEPAD | New Partnership for Africa's Development |
| NPS | National Panel Survey |
| NSGRP | National Strategy for Growth and Reduction of Poverty |
| RFSP | Rural Finance Sector Programme |
| SD | Standard Deviation |
| SPSS | Statistical Product and Services Solution |
| SRS | Simple Random Sampling |
| SSA | Sub Saharan Africa |
| Std | Standardized |
| TBBT | Tanzania Bread Basket Transformation |

| | |
|---|---|
| TDV | Tanzania Development Vision |
| Unstd | Unstanderdized |
| URT | United Republic of Tanzania |
| VEO | Village Executive Officer |

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background Information

Agriculture plays a major role in the economy of many developing countries in the world, as it is a big source of nourishment for citizens and a means of livelihood for the most vulnerable members of the society. Consequently, raising agricultural productivity is an important issue of concern to governments and development agencies. Increasing agricultural productivity requires among others; increases in outputs and inputs with outputs increasing more proportionately than inputs (Adewuyi 2006; Oni *et al.*, 2009). Increasing use of agricultural inputs in order to expand outputs involves raising both their quality and quantity. Examples of the above include mechanization of agricultural processes, use of high yielding varieties, use of fertilizers, irrigation in areas where rainfall is inadequate and the use of agrochemicals such as herbicides and pesticides. Although all of the afore mentioned activities have the potential for productivity enhancement, smallholder farmers, who account for the vast majority of farmers in developing countries, often cannot afford those investments due to their limited resources and restricted access to credit (Saweda *et al.*, 2011).

Agricultural credit is a crucial component in the development of agriculture as many smallholder farmers cannot afford costs of production; thus, total productivity decreases compared to optimum levels. In sub-Saharan Africa (SSA), most smallholder farmers cannot cultivate enough land due to financial constraints to buy agricultural inputs. Hence, microcredit benefits them in many aspects (Hasan *et al.*, 2013). The crucial role of credit in agricultural production and development can also be appraised from the perspective of the quantity of problems emanating from the lack of it (Adebayo *et al.*, 2008). Access to

credit is a significant determinant of agricultural productivity and poverty reduction. The key long-standing challenge of the smallholder farmers is low productivity, stemming from lack of access to markets, credit, and technology (Mashindano *et al.*, 2013).

According to URT (2009), farmers have limited access to agricultural credit because they are not credit worthy and are unaware of credit opportunities. For example, in Tanzania, the share of commercial banks' loans to agriculture has been very low compared to the manufacturing, trade, and services sector, are thus hampering expansion and technology adoption. Although agriculture plays an important part in regional development, yet it is faced with many challenges including low productivity which requires substantial investment for the necessary changes to occur. Rural financial services could be crucial in reducing this problem.

Africa consumes over 11.6 million tons of milled rice per year, of which 3.3 million tons (33.6%) are imported. As many as 21 of the 39 rice-producing countries in Africa import between 50% and 99% of their rice requirements (Futoshi, 2007). The distribution of rice importation on a regional basis appears skewed, with the North and Central Africa regions setting the lower (1.7%) and upper (71.7%) limits, respectively (Kisetu *et al.*, 2013; Oteng and Sant, 2011).

In SSA, Tanzania inclusive, rice consumption increased by 5.3% from 1995 to 2001, while the production increased by only about 2% during that period (Africa Rice Centre, (ARC), 2006). Tanzania is the second largest rice producer in East Africa and the second largest producer of rice in SSA after Madagascar which produces 818 000 tons (Jerry *et al.*, 2007). Rice is the second most important food and commercial food crop in Tanzania

after maize and it has become an important strategic and daily staple food crop in Tanzania (Kisetu *et al.*, 2013).

Rice is one of the major sources of food security, employment and income. Paddy is very much dependent on irrigation and rain-fed conditions. In Tanzania, paddy production has been sub-optimal since about 90% of paddy production is mainly done by small-scale farmers on 1to3 ha farms depending heavily on rainfall while few large-scale paddy producers use irrigation (URT, 2012). Thus, Tanzanian paddy productivity is one of the lowest in the world and lower than that of her East African neighbours. However, Tanzania has remained the second largest paddy producer in Southern-and Eastern Africa (URT, 2014).

In Kilombero, Tanzania, Bread Basket Transformation (TBBT) Kilombero District Project (2014) reports that the agricultural sector employs the largest proportion of the total population of 1 753 362 with 85% of this population being involved in agriculture as paddy being the main crop grown in the District. This indicates that any interventions that increase agricultural productivity will have significant impact on both income levels and food security. Credit finance to small scale farmers has been relatively low and as a consequence hindering ability to expand paddy production.

Kilombero District has the lowest area planted with improved paddy seeds in Morogoro Region, with 22% of households planting such seeds. The average yield in the district is 1.3 tones/ha (Futoshi, 2007). However, that production is still lower than in other prominent paddy producing areas in Tanzania such as Mbarali District, which has an average yield of 2.4 tonnes/ha (URT, 2011). Usually, provision of agricultural credit is not enough, but efficient use of such credit has become an important factor in order to increase

productivity. There is a room to improve production further by increasing the use of inputs.

### 1.2 Problem Statement

Most documentation reports very low productivity of paddy in different parts of Tanzania. For example, paddy yields of 5.5 t $ha^{-1}$ were reported in Ifakara Morogoro, 1.5 to 3.0 t $ha^{-1}$ in Bagamoyo Coast, 3.2 to 4.8 t $ha^{-1}$ in Dakawa Morogoro and 5.2 to 6.5 t $ha^{-1}$ at Lower Moshi (Kisetu *et al.*, 2013; URT, 2008). However, Kanyeka *et al.* (2004) obtained yields of 6.9 t $ha^{-1}$ for the NERICA-4 cultivar of rice. Mghase *et al.* (2011) showed that paddy yields in the afore-mentioned areas have dropped to below 3 t $ha^{-1}$, which is attributed to the depletion in use of improved agricultural inputs. Most smallholder farmers in paddy producing areas have limited access to financial services, hence poor adoption of recommended agricultural technologies due to financial constraints. According to Tripath and Chandra (1994) credit has a favourable impact on crop returns: Hence, credit is an effective way of increasing farm output. Credit provided to smallholder farmers in Kilombero District has been relatively low (TBBT, 2014). Though credit is available in little amounts, its effect is not clear. Kilombero District's Agricultural, Irrigation and Cooperatives (DAICO) report (2014) shows that farmers who get agricultural credit only harvest an average of 2851 kg per ha (equivalent to 2.851 t/ha), which is lower compared to the potential of paddy production per ha in the area, which is estimated to be 6000 to 7000 kg per ha (equivalent to 6 to 7 t/ha).

This problem of low productivity is estimated to affect more than a half of the farmers who receive credit for paddy production (DAICO, 2014). The possible causes of the problem are not well known, but they might include low uses of improved seeds and fertilizers, inadequate amount of credit given (TBBT, 2014) or other factors. If the

problem of paddy productivity is not solved, paddy farmers may not qualify for agricultural loans and may not be able to improve their levels of well- being. Therefore, the aim of this research was to determine the extent to which credit and some other factors influence paddy productivity in Kilombero District.

### 1.3 Justification for the Study

The government of Tanzania has been making efforts to improving access to financial services by the rural poor through Rural Finance Sector Programme (RFSP) established in 2008 with a focus on improving crop production and productivity in view of many challenges facing the programme (URT, 2011). It is important to analyse paddy productivity to determine the effectiveness of agricultural credit on the productivity which provides contribution to a household well -being, economic growth and poverty reduction as a whole (Oni *et al*., 2009).

In addition to the above mentioned, the study is in line with Tanzanian policies, particularly the National Strategy for Growth and Reduction of Poverty (NSGRP) whose second and fourth goals in its Cluster I are "Reducing income poverty through promoting inclusive, sustainable, and employment-enhancing growth and development" and "Ensuring food and nutrition security, environmental sustainability and climate change adaptation and mitigation" respectively. The study is also in line with Tanzania's Development Vision 2025, which states that by 2025 Tanzania should be a nation imbued with high quality livelihood, among other things. Furthermore, the Vision highlights on transforming the economy from a predominantly agricultural one with low productivity to a diversified and semi-industrialized one with high agricultural productivity by the year 2025. Also, the National Agricultural Policy (2013) and the National Micro-finance Policy (2001) objectives emphasize developing efficient and effective micro-finance systems that

empower farmers' access to credit. For people whose main activity is agriculture, improvements in income, food security and overall quality of livelihood will mainly depend on increased agricultural productivity. The empirical knowledge generated from this research on credit effectiveness on paddy productivity in Kilombero District is important to inform policy makers, planners and other stakeholders about the need for stronger and more effective agricultural finance to support agricultural productivity.

## 1.4 Objectives of the Study

### 1.4.1 General objective

The general objective of the study was to determine the effectiveness of agricultural credit on paddy productivity among smallholder farmers in Kilombero District.

### 1.4.2 Specific objectives

In order to meet the general objective, the following specific objectives were used:

i. To determine the amount of credit provided to smallholder rice farmers
ii. To assess the use of improved agricultural inputs in paddy production by credit receivers and non-credit receivers
iii. To compare paddy productivity between credit receivers and non-credit receivers
iv. To determine the impact of credit on paddy productivity.

## 1.5 Hypotheses of the Study

The following null hypotheses were tested:

i. The amount of paddy harvested per ha does not differ significantly between credit receivers and non-credit receivers.
ii. The amount of credit received does not have significant impact on the amount of paddy harvested per ha.

### 1.6 Organization of the Dissertation

This study consists of five chapters. Chapter one presents an introduction which includes: background to the research problem, statement of the problem, justification of the research, objectives, hypotheses of the study as well as organisation of the dissertation. Chapter two covers literature review which includes, among other things, a review of empirical studies and a theoretical framework underpinning this study. Chapter three describes the methodology and tools used in the study. Chapter four presents and discusses the findings. Finally, conclusions in terms of implications of the findings meeting the specific objectives and recommendations tied up to the conclusions are provided in chapter five.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### 2.1Definitions of Key Concepts

#### 2.1.1Agricultural credit

Agricultural credit is the amount of investment funds made available for agricultural production from resources outside the farm sector. In most developing countries, including Tanzania, agricultural credit is considered an important factor in stimulating agricultural production, particularly among small-scale farmers. However, the provision of credit to the rural areas has experienced a number of problems including shortage of lending funds. Secondly, most rural credit programmes have not been able to reach the poor smallholder farmers whom they are intended to help: instead, they divert credit to the rich, big farmers. Furthermore, credit borrowers face the problem of poor loan repayment and diversion in use of the credit (Masawe, 1994). Extension and deepening of financial service system in the rural area and facilitating the agricultural lending are essential (Sharma, 2014).

Further, unregulated private money lenders are still a major source of financing agricultural sector in Nigeria. The main obstacles for agricultural credit from formal sector include high interest rates, bureaucratic bottlenecks, late approval of loans, and unnecessary request for collateral, among others. Therefore, banks and financial institutions should create credit instruments and services that are tailored to the risks and cash flow patterns in the agricultural sector. The banks should open up new branches in rural areas and avoid unnecessary credit conditionalities that discourage famers from borrowing Ayegba and Ikani (2013).

#### 2.1.2 Agricultural productivity

Agricultural productivity refers to the output produced by a given level of input(s) in the agricultural sector of a given economy (Fulginiti and Perrin 1998). More formally, it can

be defined as "the ratio of the value of total farm outputs to the value of total inputs used in farm production" (Olayide and Heady, 1982). Agricultural productivity is measured as the ratio of final output, in appropriate units, to some measure of inputs. Agricultural credit not only helps to increase the productivity but also develop the process of cultivation as a whole since there is an enormous increase in the usage of modern seeds, modernized inputs, fertilizers and pesticides after receiving the agricultural credit (Devi, 2012).

### 2.1.3 Agricultural inputs

Agricultural inputs are primarily referred to as seeds, fertilizers and agrochemicals such as pesticides, fungicides and herbicides. Inputs have an enormous potential to leverage the efforts of hard-working farmers. If they are used appropriately, they can mean the difference between a good harvest and starvation. Improved inputs lead to greater productivity, which not only increases farmer incomes but also has the potential to fight famine in many countries. Therefore, it is essential that the right inputs get into the hands of farmers (Ajah *et al.*, 2012). Farmers often do not get timely and accurate response of key inputs due to inefficient transport means and problematic basic data information availability. Most farmers cannot afford buying fertilisers and other inputs due to limited access to financial services. However, farmers lack enough knowledge to optimise the use of fertilizers on how much fertiliser to use per hectare for grain crops which lead to low crop yield (Chirwa *et al.*, 2013).

## 2.2 Paddy Productivity in Tanzania

In Tanzania, agriculture is the mainstay of the national economy, with rice being one of the major food and cash crops, as acknowledged by Agritrade (2012) for being the largest paddy producer accounting for about 80% of total production in Eastern Africa. The

country ranks second within Eastern, Central and Southern Africa in terms of rice production and consumption after Madagascar (Agritrade, 2012).

It is further noted that paddy productivity is low compared to the potential of the country's capability of achieving food self-sufficiency. Paddy production in Tanzania is expected to reach 1.2 million tons of milled rice whereas the consumption needs are about 1.39 million tons (ORIZA, 2014). Paddy in Tanzania is mainly grown under upland rain fed conditions (80 to 90%), and in irrigation schemes (about 10 to 20%). Paddy production is based on low inputs and minimum land and water management, and most irrigation schemes are in a poor condition.

Jens *et al.* (2014) states that factors constraining paddy productivity in Tanzania are poor quality seeds, limited control of water, insufficient fertilization, pests, diseases and weeds. Moreover, factors related to production, warehousing, credit and marketing should also be taken into consideration in order to improve overall paddy production and productivity in the country. In Tanzania, it is evident that there is a wide gap in paddy yields between the actual and potential yields under improved management or technologies (1 to 2 tonnes/ha against 6 tonnes/ha). According to URT (2013) Tanzania's current productivity is 2.0 to 3.8 tonnes/ha. Nonetheless this could be raised to potentially 6 to 8 tonnes per ha while that in Gambia is 7.6 tonnes/ha (Ceesay, 2011). This indicates that Tanzania has low paddy production compared to Gambia.

### 2.3 Policies Promoting Paddy Production and Productivity

*Kilimo Kwanza* (Agriculture First) and Big Results Now (BRN) slogans are the documents of the Ministry of Agriculture and Cooperatives for the promotion of agriculture in Tanzania. The policy document on *Kilimo Kwanza* focuses on improving the supply of

good quality seeds and fertilisers. The plan identifies paddy as one of the key crops for agricultural development. Concurrently, "Big Results Now" programme of the President's Office focuses on rehabilitation of irrigations schemes and promotion of good agronomic practices in paddy cultivation. The National Agricultural and Micro-finance Policies (2001) emphasizes the development of efficient and effective micro-finance systems that empower farmers to access credit for meeting development objectives (Girabi, 2013).

## 2.4 Theoretical Framework

Agriculture has often been referred to as the engine of economic growth and development which propelled forward the development of the now economically advanced nations. The following theory gives an insight to the importance of agriculture and its development using various strategies especially financial incentives. This research was based on the Agriculture Based Economic Development Theory of 1995. Following an economic development theorist Wiggins (2006), agricultural–based strategy for economic development requires a technical, institutional and financial- incentive change that will raise the productivity of small farmers. Wiggins explains that agricultural financial incentives can play a dual role in the process of economic development. Since agriculture is the world's single largest employer, raising productivity through financial incentives can immediately place additional purchasing power in the hands of the rural poor who will in turn use the additional income to buy more food and other basic consumer goods. The increased agricultural produce can also become raw material for a wide-range of agricultural-based industries and services, stimulating the formation of new enterprises and creating downstream jobs and hence economic development and transformation.

## 2.5 A Brief Review of the Importance of Credit to Agricultural Productivity

According to Sidhu *et al.* (2008) and Abedullah *et al.* (2009), credit not only improves agricultural productivity but also raises the purchasing power of the farmers and enables

transformation from subsistence to cash economy (Bhulmall, 2000; Rugumamu, 2014). If farmers get loans, then they can purchase inputs and, if these are used efficiently they can lead to increased productivity. After getting involved in credit, the credit bridges the gap between income and expenditure for poor people (Abedullah *et al.*, 2009; Khan *et al.*, 2011).

A study conducted by Guirkinger and Boucher (2008) found that credit constraints reduced agricultural output in Peru by 26% while findings of a study by Foltz (2004) reported that the constraints to credit market access significantly impinges farm profitability. Ajagbe (2012) reported that, although loans were borrowed for agricultural production, but indeed it is only 26.5% which went to the sector. This shows that the loan received by smallholder farmers had multiple uses and not necessarily used for agricultural production. Rural farmers in Benue state, Nigeria were also likely to seek credit for other pressing needs such as food, health, education and so forth. Access to fertilizer, agro-chemicals, and improved seeds/planting materials as inputs has been proven as an important driver of agricultural production and productivity of crop farming among farmers in SSA.

Ayaz and Hussain (2011) observe that credit availability to farmers is much more important than any other factors to improve the resource use efficiency in agriculture sector. They conclude that credit to agricultural sector has more constructive and significant impact on the farmers' technical efficiency than other factors like farming experience, education, herd size and number of cultivation practices.

A study by Ismael (2013) which examined the empirical relationship between credit terms, credit accessibility and the performance of agricultural cooperatives established that

farmers have the desire to get credit to boost the business, but every time they try to apply their applications are rejected. Secondly, they are discouraged by the unattractive credit terms or lending policies. In addition findings revealed that access to credit was generally low; this is because most of the agricultural cooperatives could hardly qualify on the terms and or criteria set by the lending institutions.

Rahman *et al.* (2014) emphasizes agricultural credit as a major determinant of farm productivity. There is positive association between credit and agricultural productivity a timely provision of appropriate amount of loan to farmers is helpful for the enhancement of agricultural productivity as it enables them to purchase high yielding variety seeds, fertilizers and pesticides.

Lawal *et al.* (2009) observed that social capital have positive impact on credit access among cocoa farming households in Osun state, Nigeria. Also it enhanced productivity among crop farmers in Nigeria. This was likely because social capital tends to promote membership welfare and reduce conflicts, a move that is important for enhancing productivity of farming households.

**2.6 Research Gap**

A review of literature has shown that most scholars have concentrated their researches on the importance of credit on agricultural productivity in general. Other related aspects dealt with by most researchers are credit in raising purchasing power of farmers on agricultural inputs, credit constraints in reduction to agricultural output, multiple uses of credit to smallholder farmers apart from agricultural production, important drivers of agricultural production, credit availability as important factor for resource use efficiency, relationship between credit terms, accessibility and performance of agricultural cooperatives and

association between social capital and access to loan towards crop productivity. Thus, most previous studies have paid little attention to effectiveness of credit utilization on paddy productivity among smallholder farmers. Therefore, less is known and documented on effectiveness of credit utilization on paddy productivity among smallholder farmers in Tanzania, particularly in Kilombero District, which has great potential for paddy production. This research gap is addressed in details by the present study.

### 2.7 Conceptual Framework

The conceptual framework of this study is based on the argument that an increase in paddy productivity in Kilombero District will result from increase in access to and the quantity of credit available (Fig. 1).

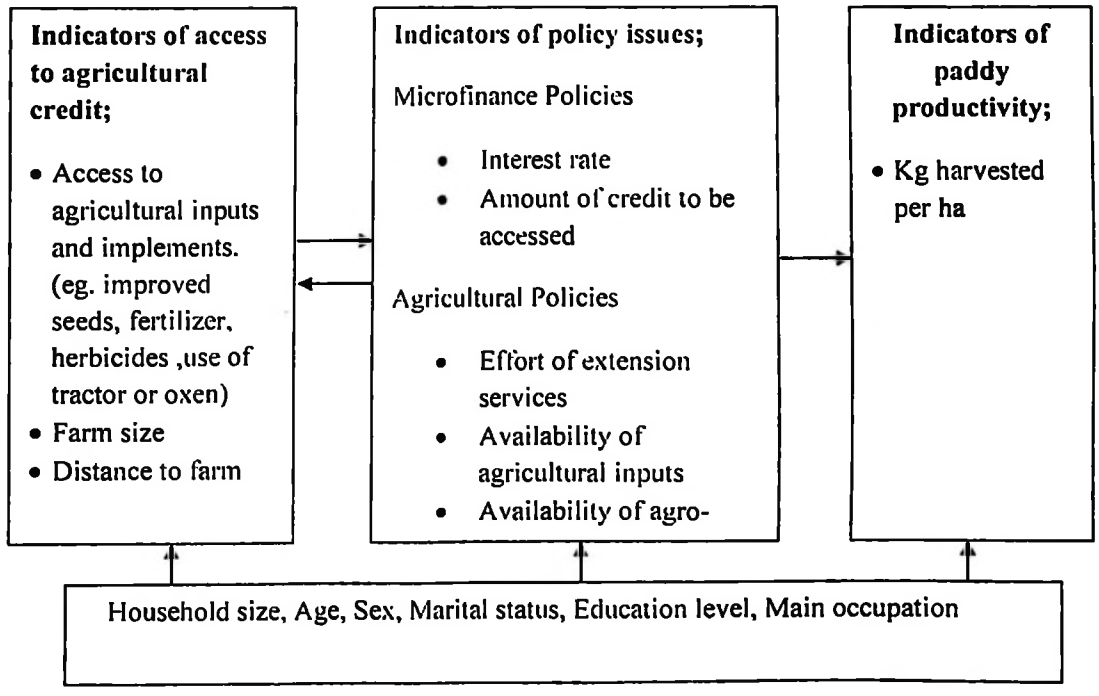


**Figure 1: Conceptual framework for analysing effectiveness of credit on rice productivity**

**Source: Literature review**

This will enable farmers to purchase adequate improved seeds, fertilizers, herbicides and pesticides. Increasing social network, that is social capital will influence the adoption of technologies such as cultivation by power tillers, oxen and tractors. It is expected that if all these are done, paddy productivity will increase. Furthermore, it is assumed that a household' background variables (Fig. 1) have an influence on agricultural credit and paddy productivity. This entails that any change in these variables will definitely cause changes in paddy yields. In addition, sub-optimal use of any of these variables has a negative effect on paddy productivity, if other factors remain constant (Amman, 2012). However, the intermediate variables were not in the scope of study. Therefore, they can be studied in further research.

# CHAPTER THREE

## 3.0 RESEARCH METHODOLOGY

### 3.1 Description of the Study Area

This study was carried out in Kilombero District. Three divisions of the district, namely Kidatu, Mang'ula and Ifakara were involved in the study, and three wards; Sanje, Mkula, and Ifakara; were involved in the providing the study's sample. Kilombero is one of the six administrative districts of Morogoro Region. Kilombero District is located between latitudes 08°00' and 16°00' South and between longitudes 36°04' and 36°41' East, with an elevation ranging from 262 to of 550m above the sea level and covering 14 246 $km^2$, with a population of 407 880 people (including 202 789 male and 205 091), and with an average growth rate of 4.3% per annum (URT, 2013). The area is predominantly rural with semi-urban district headquarters in Ifakara town as a major settlement area. The district comprises 5 divisions. 19 wards and 46 villages (URT, 2012). The district was selected for the study because paddy is grown as a staple food and is a main source of income among smallholder farmers in the area (Jens *et al.*, 2014).

The 2012 Population and Housing Census shows that the District of Kilombero has a population size of 407 880 ie.0.91% of Tanzania's population 44 922 823. The population density is 51 people per $km^2$, and the average household size is 4.8. Based on the 2012 Population and Housing Census (URT, 2013), Kilombero District was the second district with high population in the region after Kilosa District, which had 438 175 people.

The major economic activities in Kilombero District are agricultural crop production and livestock keeping. The main food crops and cash crops grown in the district included rain fed upland paddy, banana, fruits, coffee, beans, spices, vegetables, maize, cassava, sorghum,

simsim, and sugarcane. More than 85% of the population is engaged in agricultural production of paddy, maize, beans, cassava, sorghum, fruits, coffee, and cotton. Animal husbandry includes cattle, goat, sheep, pigs, chicken and ducks. The lowland areas have fertile soil deposited from highlands by floods during heavy rainfall, and the area is suitable for rice production. Other land uses include livestock keeping, including pigs, goats, cattle, ducks and chickens and fishing; wildlife conservation and forest reserves.

### 3.2 Research Design

A cross-sectional one-point-in-time research design was adopted whereby data were collected only once. A cross-sectional survey is useful in obtaining quantitative information, and the method is suitable for a descriptive study as well as for determination of relationships between and among variables (Bailey, 1998). Since this was a causal-effect study, a with and without design was employed (farmers who had received credit and those who had not received credit).

### 3.3 Study Population

The target population of this study was all smallholder farmers who had access to credit and those who lacked such access in the selected divisions, wards, villages and households.

### 3.4 Sampling and Sample Size

The household was used as the unit for analysis, whereby heads of households were included in the study. The sample size for this study was 160 households. The decision to choose160 households was based on the argument by Bailey (1994) that regardless of the population size, a sample or sub-sample of 30 respondents is the bare minimum for studies in which statistical data analysis is to be done. Therefore, the 160 households sample was

appropriate: it is even higher than the minimum number of cases recommended by Bailey (1994).

The sampling procedure involved multistage sampling, whereby in the first stage purposive selection of three divisions namely Kidatu, Mang'ula and Ifakara where paddy is plentifully grown was done. The second stage involved random selection of one ward from each division namely Sanje, Mkula, and Ifakara, making a total of three wards. The third stage involved random selection of two villages from Ifakara Ward where one village was selected from Sanje and the other one from Mkula Ward, making a total of four villages. The last stage was concerned with sampling of respondents. In this regard, purposive sampling was applied to get 80 credit beneficiary households, and simple random sampling was used to select 80 households which were non-credit beneficiaries. In each village, a random sample of 20 households which were non-credit beneficiaries was selected from a sampling frame using village household register. The lottery method was used to select the households. Moreover, from each village, 20 households which were credit beneficiaries for paddy production were selected purposefully. For the sampled households, the household head was interviewed. Therefore, the study covered 160 respondents in total. The aim of choosing equal numbers of credit beneficiaries and non-credit beneficiaries was to compare rice productivity more reasonably and balance arguments which were given by the two categories of households.

The sampling procedure adopted a combination of different approaches including the multistage, simple random sampling (SRS), and purposive sampling. Multistage sampling was used to identify areas of survey, that is, divisions, wards and villages. Purposive sampling approach was applied to get 80 credit beneficiaries rice farmers. Simple random sampling was applied to get 80 non-credit beneficiaries to make a total of 160.

### 3.5 Data Collection Methods

The study involved both qualitative and quantitative data collection methods. Qualitative data were collected through Focus Group Discussions (FGDs) using an FGD guide to capture information from credit beneficiary farmers and non-credit beneficiary farmers, based on sex, age and farming experience and key informant interviews using a checklist of items for discussions to capture information from district agricultural irrigation cooperative officers, village and ward extension officers, village leaders and farmers group leaders. A household questionnaire was used to collect quantitative data from households which had received credit and those which had not received credit.

#### 3.5.1 Questionnaire design

A structured household questionnaire (Appendix 1) with both closed and open-ended questions was used to obtain information on the objectives of the research and was designed to collect both qualitative and quantitative data from farmers. The questionnaire was pre-tested on 10 households from Wami-luhindo, Morogoro to check its reliability and validity before the main survey (actual data collection) was done. This helped to avoid ambiguity of some of the questionnaire items. The questionnaire was divided into the following sections: Section A: Background information about farmers' residence; Section B: Household composition of farmers'; Section C: Crop land owned and operated by households; Section D: Use of inputs for rice production; Section E: Credit information for 2014/2015 season; Section F: Rice yield and productivity; and Section G: Extension services.

Before conducting the research, two enumerators with experience were employed and trained on how to ask questions and data recording, importance and objectives of the research. After recruitment and provision of training to enumerators, the administration of

the questionnaire took 2 weeks in November 2015. Face to face, interviews were conducted with household heads. Interviews were conducted in Kiswahili, although the questionnaire copies were in English. In addition to that, close supervision of enumerators was undertaken by the researcher during the process of data collection to make sure that the data collected were of high quality. Generally interviews were conducted at the respondents' homes and asked for their consent to participate in the study. Those who agreed to participate in the study were requested to provide information concerning the previous year's production. Luckily, no single potential respondent who was approached by the researcher refused to participate in the study.

### 3.5.2 Focus group discussions

For qualitative data collection, focus group discussions (FGDs) (Appendix 3) were used. Four (FGDs) were done in four villages. Two FGDs with farmers who had received credit and two FGDs for the farmers who had not received credit were conducted. The group participants were chosen with intention to balance social aspects such as gender, age, experience and geographical dispersion in the target areas. Each group discussion consisted of 8 members, with at least four female participants. Choosing 8 discussants for each of the groups was based on suggestions by Barbour (2011) and Morgan (1998, cited by Bryman, 2004) that a typical focus group should have 6 to 10 members. The reasons for the suggestion are that, with fewer discussants, difficult topics may not be discussed effectively, and with more discussants, some participants do not give their opinions. The FGDs were guided by one facilitator, whose duty was to moderate and guide the discussions and one note taker who was responsible to take note of the discussions. The FGD guide consisted of general questions on important aspects of the study, by exploring the basic objectives behind the study. During the discussions, a checklist (Appendix 2) of key questions was used.

The information gathered included agricultural credit availability, microfinance involved in provision of credit to paddy farmers, reasons which influence some farmers to request for credit and some farmers who do not request for credit, loan disbursement time, the amount of credit given to farmers, behaviour of farmers after receiving credit, effective utilization of credit given for farm work, the impact of credit on paddy productivity, problems facing paddy growers on obtaining and using of credit, proportion of farmers growing paddy in the village, average yield of paddy harvested per hectare, and technologies used in paddy farming. FGDs were useful as they allowed freedom of expression and maximum participation with respect to knowledge, experience, opinions and feelings.

### 3.5.3 Key informant interviews

Key informant interviewees were interviewed to collect in-depth additional information from knowledgeable and informed people on the subject matter under study in the study area. They included the District Agricultural, Irrigation and Cooperative Officer, Village and Ward Extension Officers, village leaders and farmers' group leaders. The information collected included agricultural credit availability, microfinance involved in provision of credit to paddy farmers, reasons which influence some farmers to request for credit and why some farmers do not apply for credit, loan disbursement time, the amount of credit given to farmers, behaviour of farmers after receiving credit, effective utilization of credit given for farm work, the impact of credit on paddy productivity, problems facing paddy growers in obtaining and using credit, proportion of farmers growing paddy in the village, average yield of paddy harvested per hectare, technologies used in paddy farming, extension services availability in the village, and benefits of credit for paddy production. Three key informants were interviewed from three different wards. The informants were

selected based on their training and personal knowledge or experience with the paddy production sector.

### 3.6 Data Analysis

The gathered information was organized, coded, processed and analysed using qualitative and quantitative methods. MS Excel, Statistical Product and Services Solutions (SPSS) Version 20 were used to analyse data. Descriptive statistics such as means, frequencies and percentages were derived using SPSS. The analyses were carried out to achieve the study objectives as described below.

#### 3.6.1 Quantitative data analysis

The Statistical Product and Services Solutions (SPSS) software was used in data analysis whereby descriptive statistics including frequencies, means, standard deviation and percentages were computed to determine distributions of individual variables for objectives i and ii. Moreover, inferential analysis was used using a t-test to compare paddy productivity between farmers who got credit and those who did not get credit, for objective (iii). Moreover, multiple linear regression was used for objective (iv) by determining the influence of credit on paddy productivity. The following multiple linear regression equation was used:

$Y = a + b_1 x_1 + b_2 x_2 + ... + b_{11} x_{11} + E$ (Bryman, 2004), where (in this research):

$Y$ = Paddy yield (kg/ha)

$A$ = Intercept of the equation,

$b_1 ... b_{11}$ = Regression coefficients,

$x_1$ = Credit (dummy: 1=received, 0= not received)

$x_2$ = Marital status (dummy: 1= married, 0 not married)

$x_3$ = Use of improved seeds (dummy: 1 = used, 0 = not used)

$x_4$ = Use of fertilizer (dummy: 1 = used, 0 = not used)

$x_5$ = Technology (measured by method used for land preparation) (dummy: 1 = tractor or ox-plough), 0 = hand hoe)

$x_6$ Labour (category of people involved in production) (dummy: 1 = hired, 0 =family)

$x_7$ = Land size cultivated (ha)

$x_8$ = Household size (number of adults aged 18 to 60 years)

$x_9$ = Distance from home to paddy plot ( km/m)

$x_{10}$ = Sex of the household head (dummy: 1= male, 0 = female )

$x_{11}$ = Age of the household head in years

E = Error term representing a proportion of the variance in the dependent variable that was unexplained by the regression equation.

Before running the model, the dependent variable (paddy yield) and independent variables recorded at the ratio level (land size cultivated, household size, distance from home to rice plot, and age of the household head in years) were checked for normality by computing their distribution curves and checking the curves visually to find whether they were skewed or not. The dependent variable (paddy yield), land size cultivated (ha), and distance from home to paddy plot were found to be skewed; hence they were transformed using base-10 Logarithm to normal distributions. The transformed variables were used in the regression model together with the other variables which were not transformed because they already had normal distributions. Multicollinearity was checked by computing variance inflation factors (VIFs) and tolerances of the explanatory variables. Multicollinearity is an undesirable situation which exists when some pairs of variables are so closely related that if both variables are included in the regression equation, the

resultant regression coefficients will be unstable (Bryman, 2004). Tolerances below 0.1 imply multicollinearity and VIFs values that are greater than 10 denote the presence of multicollinearity (Landau and Everitt, 2004).

### 3.6.2 Qualitative data analysis

Qualitative data from the focus group discussions and key informant interviews were processed using content analysis and structural functional analysis techniques (Thomslison, 1965 as cited by Kajembe and Luoga, 1996), which is done by analysing in detail the components of verbal discussions held with discussants and key informants and open ended questions whereby the recorded dialogues are broken down into smallest meaningful units of information and tendencies.

## 3.7 Limitations of the Study

This study encountered a number of limitations including access to the household head. In some cases, the household heads were not available or not easily accessible because they were busy with their farming activities as the study was conducted in the rainy season. This was solved by interviewing the spouse. In case the head of household and spouse were not available, the researcher opted for another knowledgeable household member. In some cases in Mang'ula village unavailability of respondents was due to funeral ceremonies and interference of some other researchers on the same day of making interview with respondents. This was solved by increasing the number of days of staying in the field to get a complete number of respondents.

In some cases the researchers were viewed as government agents and therefore respondents requested them to provide solutions to their problems such as those related to low prices of various goods, limited access to credit and requesting for government

intervention for good prices and loan availability, to name just a few. To overcome this, the researcher requested the Village Extension Officer (VEO) to accompany them to the respondents' households and explain the role of the researchers.

# CHAPTER FOUR

## 4.0 RESULTS AND DISCUSSION

This chapter presents the results of the study on effectiveness of agricultural credit on paddy productivity among smallholder farmers in Kilombero District, Morogoro Region. The chapter is divided into two sections. Section one covers socio-demographic characteristics of the respondents in the study area in relation to households' access to credit. Section two covers the specific objectives guiding this study.

### 4.1 Socio-Demographic Characteristics of Respondents

Socio-demographic characteristics of respondents have important implications on agricultural production and its ultimate productivity. They have important practical and value attributes towards decision making behaviour. The socio-demographic characteristics of the respondents examined in this study were sex, age, marital status, household size, education and main occupations of the respondents.

#### 4.1.1 Sex of respondents

The study results show that about a half (48.9%) of male headed households were receiving credit for rice production while a slightly more than a half (51.1%) of them were not receiving credit for agriculture or other purposes (Table 1). This indicates that a small number of male household heads were receiving credit for rice production purposes. Nonetheless, 51.5% of female respondents who headed households were receiving credit for rice production while 48.5% were not receiving credit. This reveals that more women were receiving credit for paddy production in the study area. These findings are similar to Girabi *et al.* (2013) who reported that, women are more active in seeking and accessing credit compared to men in private financial institutions which is quite different from the

experience observed in commercial banks where only few women are able to access credit facilities compared to men because of a high proportion of women do not own valuable assets.

**Table 1: Credit allocation by sex of respondents (n = 160)**

| Sex | Credit allocation | | |
|---|---|---|---|
| | Receivers (%) | Non-receivers (%) | Total (%) |
| Male | 46 (48.9) | 48 (51.1) | 94 (100.0) |
| Female | 34 (51.5) | 32 (48.5) | 66 (100.0) |
| **Total** | **80 (50.0)** | **80 (50.0)** | **160 (100.0)** |

### 4.1.2 Age of respondents

Results from the study also show that the average ages of credit receivers and non-credit receivers were 44.00 and 44.01, respectively (Table 2). This indicates that there was hardly any difference in age between credit receivers and non-credit receivers, suggesting that the age of 44 years appears to be of more active group of people for economic production activities. Girabi *et al.* (2013) found that, 36 to 45 years is a group of people consists of the most economic active segment of the population which have more family responsibilities (e.g. raising children, paying for education and health services). However, the non-credit receiving group was more variable (SD = 11.22), compared to credit receiving group (SD = 10.11).

Moreover, the results shows that, on average, the household size of respondents who had received credit against non-receivers were 4.81 and 4.79 people per household, respectively. This suggests that there was almost no difference in household size between household which had received credit and those which had not received credit. However, the non-credit receivers' group showed more variability (SD = 1.78) compared to credit receivers group (SD = 1.41).

**Table 2: Age and household size distribution of respondents across credit allocation (n = 160)**

| Credit category | Mean | | SD | |
|---|---|---|---|---|
| | CR | NCR | CR | NCR |
| **Household size** | 4.81 | 4.79 | 1.41 | 1.78 |
| **Age of head of household** | 44.00 | 44.01 | 10.12 | 11.22 |

**CR means credit receivers*
**NCR means non-credit receivers*

### 4.1.3 Education level of respondents

The distribution of respondents by education level shows that most (82.5%) of them who received credit had attained primary education compared to those who had not received credit (80.0%). This indicates that education, though being at a low level (basic), is important for taking decision about different activities of agriculture. (Hasan *et al.*, 2013) found that, education affects output in positive manner since one educated farmer may know better seeds, farming, low cost source, and quality inputs that affect production. Furthermore, the results indicate that the respondents with secondary education were 5%; no formal education comprised 13.1% of all respondents while those with education above secondary school were only 0.6%of the credit receiving group and none from non-credit receivers (Table 3).

**Table 3: Education level of respondents across credit allocation (n = 160)**

| Education level | Credit category | | Total (%) |
|---|---|---|---|
| | Receivers (%) | Non-receivers (%) | |
| No formal education | 10 (12.5 ) | 11 (13.8) | 21 (13.1) |
| Primary education | 66 (82.5 ) | 64 (80.0 ) | 130 (81.3) |
| Secondary education | 3 (3.8 ) | 5 (6.2) | 8 (5.0) |
| Above secondary education | 1 (1.2 ) | 0 (0.0 ) | 1 (0.6) |
| **Total** | **80 (100.0)** | **80 (100.0)** | **160 (100.0** |

### 4.1.4 Marital status of respondents

Study results show that married respondents from the credit receiving group and the non-credit receiving group were 91.2% and 88.8%, respectively, while among singles credit

receivers and non-credit receivers were 8.8% and 11.2% respectively. However, 90% of the respondents were married, which did not guarantee receiving credit since the difference between credit receivers and non-credit receivers was small. Therefore, single respondents were less receiving credit compared to married people in the study area (Table 4).

**Table 4: Marital status of respondents (n = 160)**

| Marital status | Credit category | | Total (%) |
|---|---|---|---|
| | Receivers (%) | Non-receivers (%) | |
| Married | 73 (91.2) | 71 (88.8) | 144 (90) |
| Single | 7 (8.8) | 9 (11.2) | 16 (10) |
| **Total** | 80 (100) | 80 (100) | 160 (100) |

### 4.1.5 Main occupation of the respondents

The results show that 97.5% and 98.8% of credit receivers and non-credit receivers were engaged in crop production whereby paddy was among the crops (Table 5). This indicates that most of the respondents (98.1%) were engaged in crop production. This also suggests that crop production was the major economic activity in the study area. This is supplemented by some wages from employment (1.3%), obtained by the credit receiving group and income earned from livestock keeping individuals (0.6%) in the non-credit receiving group. The fact that many respondents in the study area engaged in crop production could be attributed largely to the existing nature of the agro-ecological zone, which is suitable for most crops including paddy.

**Table 5: Main occupation of respondents by credit allocation (n = 160)**

| Main occupation | Credit category | | Total |
|---|---|---|---|
| | Receivers (%) | Non-receivers (%) | |
| Crop production | 78 (97.5) | 79 (98.8) | 157 (98.1) |
| Livestock keeping | 0 (0.0) | 1 (1.2) | 1 (0.6) |
| Salaried employment | 2 (2.5) | 0 (0.0) | 2 (1.3) |
| **Total** | 80 (100.0) | 80 (100.0) | 160 (100.0) |

### 4.2 Credit Provided to Smallholder Farmers

The results from the study (Table 6) show that, on average, the amount of credit provided to male household heads was larger (TZS 361 500) than the amount provided to female household heads (TZS 266 118), which differed by TZS 95 382 (15.2%). High proportion of women in most cases does not own valuable assets and therefore fails to fulfil the conditions requirement for collateral to qualify for receiving credit.

On the other hand, the results indicated that, in utilization of credit received, male used more of the credit in their paddy production compared to female by TZS 48 646 (10.9%) on rice production and TZS 31 228 (18.2%) for other purposes (Table 6). In addition, besides the less the amount that women received compared to men, women used the money more reasonably for paddy production (74.8%) compared to men who used only (68.5%) on paddy production.

**Table 6: Credit provided to paddy growers and distribution of their expenses (n = 160)**

| Variable | Sex | Mean (TZS) | SD |
|---|---|---|---|
| Amount of credit received | Male | 361 500 | 46 921.4 |
| | Female | 266 118 | 244 453.1 |
| | Difference | 95 382 (15.2%) | |
| Proportion of credit spent on: | | | |
| paddy production | Male | 247 587 | 260 036.5 |
| | Female | 198 941 | 204 595.8 |
| | Difference | 48 646 (10.9%) | |
| Proportion of credit spent on other purposes | Male | 101 522 | 237 477.2 |
| | Female | 70 294 | 132 584.7 |
| | Difference | 31 228 (18.2%) | |

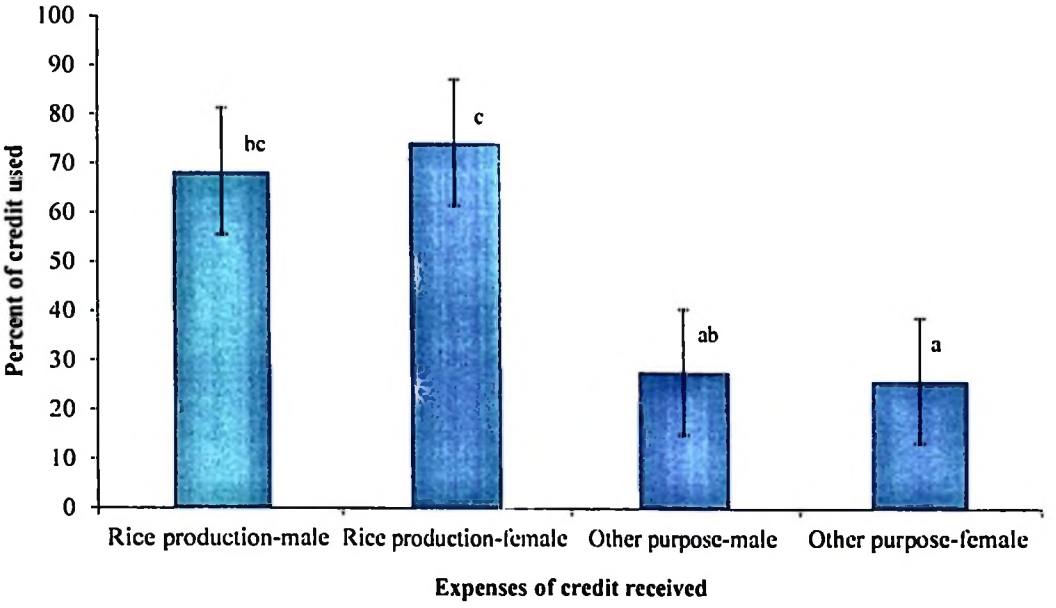


**Figure 2: Percentage distribution of expenses of credit received by rice producers**

Significance of percentages were tested based on the standard error of difference of means = 12.886; least significance difference (LSD) at 5% = 41; t-critical at 3 degrees of freedom = 3.182, and t-statistic = 3.837.

The results show that women had relatively little uses of credit received on other purposes rather than rice production (26.4%) compared to men (28.1%). The amount of credit utilized by women for rice production (74.8%) differed significantly ($p < 0.05$) but this was statistically similar with that used by men (68.5%) for the same purpose (Fig. 2). On the other hand, though numerically different, the amount of credit used by men on rice production (68.5%) did not differ statistically ($p > 0.05$) from that used by them for other purposes (28.1%). In addition, the amount of credit utilized for other purposes by male (28.1%) and female (26.4%) did not differ significantly ($p > 0.05$). Furthermore, the results from the survey show that 50% of the respondents (n =80) did not receive credit. The distribution of non-credit receivers was presented with respect to the reasons provided by non-beneficiaries (Fig. 3).

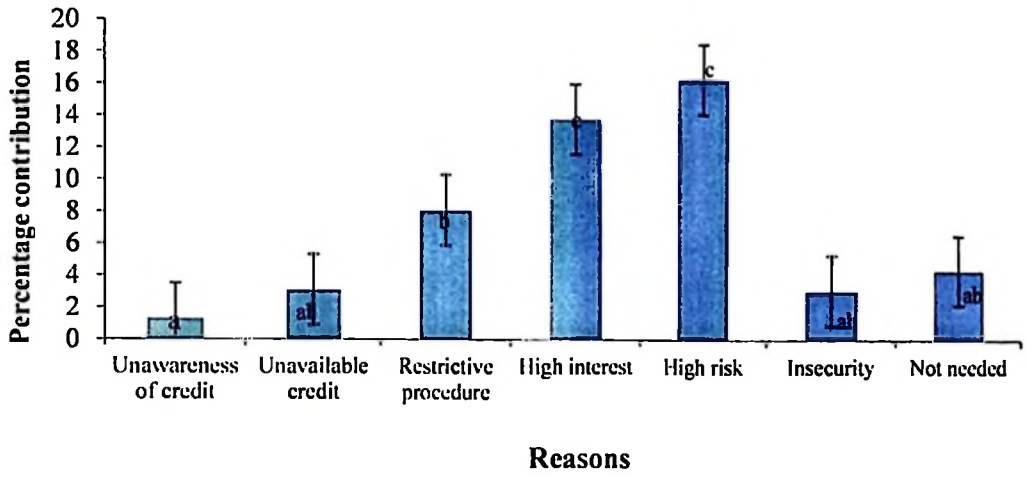


**Figure 3: Distribution of Non-Credit Receivers (NCR) and the reasons for not getting credit**

Significance of percentages was tested based on the standard error of difference of means = 2.20; least significance difference (LSD) at 5% = 5.4; t-critical at 6 degrees of freedom = 2.447, and t-statistic = 3.252.

The results (Fig. 3) indicate that the respondents who did not get credit was contributed by fear of high risk (16.3%), high interest rate (13.8%), restrictive procedure (8.1%), absence of need (4.4%), unavailability and lack of security (3.1%), and unawareness (1.3%).High risks and high interest rates were statistically significant ($p < 0.05$) in hindering access to credit among smallholder farmers in the study area. Sidhu *et al.* (2008) reported that, only due to proper utilization of credit, income of the respondents can increase significantly.

### 4.3 Improved Agricultural Inputs

The results (Table 7) show that, to enhance productivity, inputs were not widely used by farmers who had not received credit compared to those who had received credit. However, farmers who never used improved seeds at all from both groups were many compared to those who used such seeds. A chi-square test showed significant association between the use of fertilizer and receiving credit ($p < 0.000$), use of improved seeds and receiving

credit ($p < 0.01$), and use of pesticides and receiving credit ($p < 0.000$). However, the use of herbicides and receiving credit did not show significant association. This suggests that use of enhancing inputs for agricultural productivity is inevitable for increasing paddy productivity. Previous studies (Hazell *et al.*, 2007; Ajahand, 2012) found that adequate inputs are important for achieving higher agricultural productivity in developing countries. Generally there is a strong concern that in developing countries the agricultural inputs and technological transformations needed to achieve increased productivity are financially unaffordable or unattractive to many farmers who mostly produce for subsistence. Wiggins and Brooks (2010) found that subsidies in agricultural inputs are a potential means of convicting incentives to farmers. Crawford *et al.* (2006) reported that there is evidence that agricultural inputs raise productivity substantially and that they are essential for sustaining intensive agriculture in the long term without depleting soil fertility.

**Table 7: Association between inputs with credit and non-credit receivers (n = 160)**

| Inputs | | Credit category | | Total (%) |
|---|---|---|---|---|
| | | Receivers (%) | Non-receivers (%) | |
| Fertilizer | Yes | 59 (73.8) | 32 (40) | 91 (56.9) |
| | No | 21 (26.2) | 48 (60.0) | 69 (43.1) |
| **Chi-square=18.576***, df 1, p = 0.000** | | | | |
| Improved seeds | Yes | 36 (45.0) | 16 (20) | 52 (32.5) |
| | No | 44 (55.0) | 64 (80) | 108 (67.5) |
| **Chi-square=11.396***, df 1, p = 0.001** | | | | |
| Herbicides | Yes | 60 (75.0) | 54 (67.5) | 114 (71.2) |
| | No | 20 (25) | 26 (32.5) | 46 (28.8) |
| **Chi-square=1.098, df 1, p = 0.295ns** | | | | |
| Pesticides | Yes | 51 (63.8) | 28 (35.0) | 79 (49.4) |
| | No | 29 (36.2) | 52 (65.0) | 81 (50.6) |
| **Chi-square=13.227***, df 1, p = 0.000** | | | | |

**ns means not significant*

Furthermore, the results (Table 7) showed that farmers who used improved seeds from both credit categories were less than a third (32.5%). twice those who had never used improved seeds (67.5%). This suggests that credit receiving does not guarantee purchasing

of important inputs, including improved seeds. Matsumoto and Yamano (2011) found that having access to credit for fertilizers increases yields by 37% in Ethiopia. Because of poorly developed financial markets and high risks associated with providing credit to smallholder farmers, credit is widely thought to be used only minimally throughout SSA and, therefore, this is a major constraint to input use. A study done by Sheahan and Barrett (2014) found that the percent of farmers using credit to purchase seeds is less than one percent, just like inorganic fertilizers.

The distribution of the reasons for not using improved seeds (Fig. 3) showed that expensiveness of improved seeds (51.7%) was significant at $p < 0.05$ hindering rice producers from using improved seeds. Other factors such as unavailability of credit (4.5%), being less required (9%), low market price (8%), and shortage of water (16.9%) were not statistically significant at ($p > 0.005$). This indicates that if improved seeds were affordable, many smallholder farmers could more likely purchase improved seeds. Similar findings related to prices of fertilizers were reported by Minot (2009) who found that the reasons for low uptake of fertilizers among farmers were associated with high price of the commodity (63%).

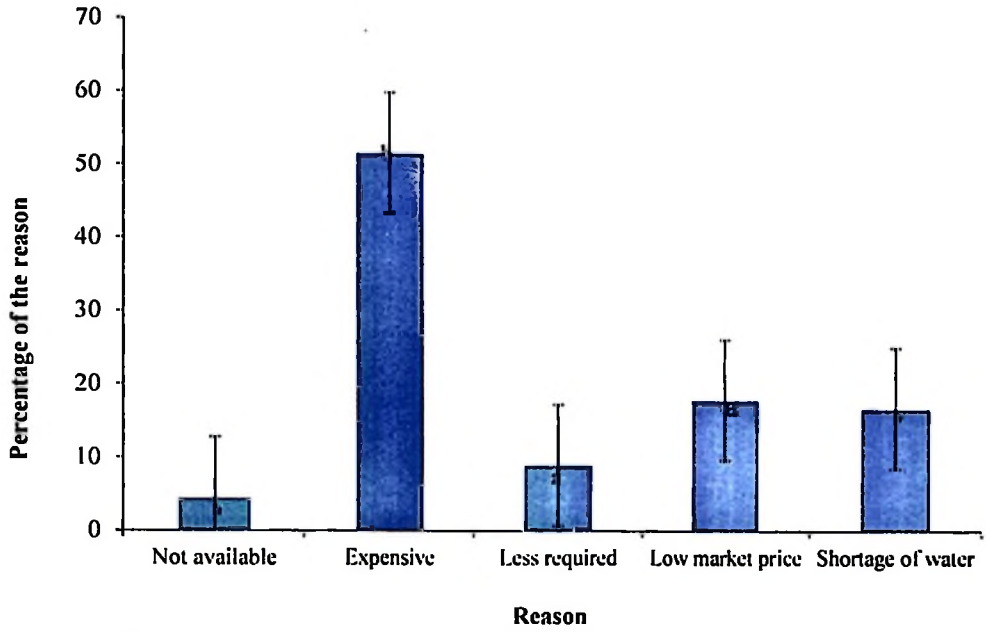


**Figure 4: Reasons for paddy growers not using improved seeds in their production**

Significance of percentages were tested based on the standard error of difference of means = 8.3; least significance difference (LSD) at 5% = 21.4; t-critical at 4 degrees of freedom = 2.776, and t-statistic = 2.410.

Further, analysis of independent samples t-test was done to compare the average amounts of inputs used per ha between the credit and non-credit groups. The results (Table 8) show that the average amount of fertilizer used by the credit receiving group was 20.87kg/ha while for the non-credit receiving group the average was 8.86kg/ha, in addition the mean difference was statistically ($p < 0.05$) significant. However, both credit recipients and non-recipients used fertilizer below the recommended amount which is 50kg/ha. For example, Tanzania could benefit from other Africa initiatives such as AU Abuja Declaration that advocated for enhancing fertiliser utilisation from an average of 8 kg/ha to 50 kg/ha by 2015 and the newly initiated Africa Fertilizer Agribusiness Partnership (AFAP)–a joint project of NEPAD, AGRA, IFDC, AfDB and AGMARK fostering private sector investment and development of partnerships to build sustainable markets and providing smallholder farmers with affordable fertilizers (ACT, 2012).

Tanzanian farmers use on average 19.3 kg/ha, compared to 100 and 120 kg/ha in Kenya and South Africa respectively. Generally few (16.5%) of the rural households use chemical fertilizers despite the National Agricultural Inputs Voucher Scheme (NAIVS) being in place, many farmers cannot to pay the cost of the portion of subsidised fertilizer (ESRF, 2015). Inadequate use of improved seeds and inorganic fertilizers are at the heart of this untapped productivity potential. Despite the implementation of NAIVS, this aimed at improving farmers' access to agricultural inputs through subsidies, the adoption of both improved fertilizers and seeds remains low.

According to the 2010-11 National Panel Survey (NPS), only 16.8% of households used improved seeds and many farmers retain seed from their prior year cereal or vegetable crop and are therefore less likely to buy new seeds every year (ESRF, 2015). According to the World Bank (2012), African farmers use only about 11 kg/ha of fertilizers on average. However, farmers should apply the recommended optimal amounts of fertilizers, paddy yield might increase substantially. The results also showed that the average amount of improved seeds used by the credit receiving group and non-credit receiving group were 3.55kg/ha and 1.16kg/ha respectively; this difference was significant at $p < 0.05$. Nonetheless, the average amount of pesticides and herbicides used by both credit groups were not significant at $p > 0.05$.This indicates that the use of agrochemicals (pesticides and herbicides) is too low in the study area to achieve high yield. Gianessi and Williams (2011) contend that herbicide use, in particular, remains a major unexploited means of increasing yields and saving labour on SSA farms. According to Zhang *et al.* (2011) only 3% of global pesticide consumption is from Africa of which 2% is from South Africa alone, and only 1% from the rest of the continent. Moreover, the average total variable costs used to buy inputs for the credit receiving group was twice as much as that of the non-credit receiving group, and the difference was statistically significant at $p <0.05$.

**Table 8: Means of amount of inputs used per ha across credit allocation**

| Input/Expenses | Credit acquisition | | | | t-test for Equality of Means | | |
|---|---|---|---|---|---|---|---|
| | CR | NCR | Mean difference | t-test value | df | Sig. (2-tailed) | 95% CI |
| Amount of fertilizer used (kg) | 20.87 | 8.86 | 12.014*** | 4.558 | 158 | 0.000 | (7, 17) |
| Amount of seeds used (kg) | 3.55 | 1.16 | 2.382** | 3.197 | 158 | 0.002 | (1, 4) |
| Amount of pesticides (L) | 0.48 | 0.40 | 0.086ns | 0.432 | 158 | 0.667 | (-0.3, 0.5) |
| Amount of herbicides used (L) | 0.71 | 0.89 | -0.172ns | -0.869 | 158 | 0.386 | (-6, 0.22) |
| Total cost of inputs (TZS) | 500 033 | 5713 | 24 320** | 3.005 | 158 | 0.003 | (8336, 40 305) |

*Key: CR = credit receivers, NCR = Non-credit receivers, ns=not significant*

### 4.4 Comparing Rice Productivity between Credit Receives and Non- credit receivers

The results (Table 9) on Objective three show that paddy yields between the two categories of smallholder farmers fell short of the estimated potential in the study area as it was hypothesized. The average paddy yields of credit receiving farmers (1641 kg/ha) was higher, numerically compared to the yields of paddy from their counterparts (1288kg/ha). However, there was no statistically significant difference in case of paddy yields harvested from local variety in rain-fed among those who had got credit (1070kg/ha) and those who had not got credit; (1020 kg/ha) and between those who had used improved seeds in irrigation (2112kg/ha) and those who had not (1773kg/ha) respectively. This suggests that irrigated land is more productive than rain-fed land because of water supply that supplements water deficits as opposed to rain-fed system. Fuglie and Rada (2013) reported that average yields on irrigated fields were 90% higher than rain-fed fields in SSA. By these results, the first null hypothesis which stated that the amount of paddy harvested per ha does not differ significantly between credit receivers and non-credit receivers is accepted.

Furthermore, the paddy yield harvested by those who had received credit and those who had not (1742kg/ha and (1072kg/ha respectively), when improved varieties were used in

rain fed system showed a significant ($p < 0.05$) difference. This suggests that use of improved seed leads to substantial yields. However, there was no significant difference between those who grow paddy using local varieties on rain-fed field and those who adopt improved seeds in the irrigation system. This indicates that low paddy yield below the estimated potential could be attributed to low purchasing power for innovative agricultural inputs due to lack of cash in hand to purchase technologies that require money on hand such as fertilizers, improved seeds, pesticides, and herbicides.

Besides, the high prices of inputs constraining poor farmers from accessing inputs; According to USDA (2012), factors such as low investment in irrigation, technology, low income, poor access to credit and poor access to output market lead to low yields in paddy crop. Nin-Pratt *et al.* (2011) found that there is a vast potential to expand agricultural productivity to reduce the yield gap through appropriate use of improved crop varieties, proper use of fertilizers and/or adequate nutrients, water, pests and diseases.

**Table 9: Independent t-test results of productivity between credit receivers and non-credit receivers in terms of amounts of rice produced per hectare (n=160)**

| Yields (kg/ha) | Credit acquisition | | | t-test for Equality of Means | | | |
|---|---|---|---|---|---|---|---|
| | CR | NCR | Mean difference | t-test value | df | Sig. (2-tailed) | 95% CI |
| Rice harvested (kg) from local variety under rain-fed | 1070 | 1020 | 50.101 | 0.533 | 120 | 0.595 | (-136, 236) |
| Rice harvested (kg) from improved variety under irrigation | 2112 | 1773 | 39.24 | 0.812 | 72 | 0.419 | (-493, 1171) |
| Rice harvested (kg) from improved variety in rain-fed | 1742 | 1072 | 69.643*** | 3.436 | 3 | 0.001 | (281, 1058) |

****Significant at the 0.1% level of significance*

### 4.5 Impact of Credit on Paddy Productivity

### 4.6 Factors influencing paddy yields for smallholder farmers

Factors influencing paddy yield (kg/ha) for smallholder farmers receiving credit were analysed using a multiple linear regression (Table 10). The results obtained from the multiple regression analysis show that age of household head, household size, land size cultivated, distance from home to paddy plot, methods of land preparation (technology), credit receipt or otherwise and marital status influenced paddy yields negatively. However, none of the above was statistically significant. Despite the non-statistically significant influence of access to credit on paddy yield, credit for paddy production is very important for smallholder farmers to alleviate capital constraints. This was said by focus group participants that "*Credit access is of much more important during cropping season because it helps farmers to obtain the farm inputs in time and improve their yields rather than missing it at all*". Similarly, Diagne and Zeller (2001) found that, credit for paddy production is very important for smallholder farmers to alleviate capital constraints by enabling them acquire inputs in production improvement that they would otherwise not afford. By these results, the second null hypothesis that the amount of credit received does not have significant influence on the amount of paddy harvested per ha is rejected. However, the insignificant influence and negative and insignificant influence were not expected; it was probably due to the fact that a sizeable proportion of credit received was used on other things, other than paddy production. 28.1% among male headed households and 26.4% among female headed households.

Further to the above, the results showed that the influence of sex of head of household head on paddy yield was not significant, which means that both male and female headed households are likely to obtain the same or more or less the same amounts of paddy yields. Although the influence of sex on paddy yield was not significant, the fact that the

influence was positive implies that as farm size increases, women (on a per capita basis) allocate more labour to both household maintenance and agriculture, while men work slightly less in agriculture and much less in non-agricultural activities (Doss, 1999). Labour, use of improved seeds and use of fertilizers influenced the paddy yield significantly at the $p < 0.05$, $p < 0.001$ and $p < 0.01$ levels respectively, as shown in Table 9. The significant influences indicate that the three factors significantly account for increase in paddy yield.

The regression result also showed that hired labour had a positive influence on paddy yield and the relationship was statistically ($p < 0.05$) significant suggesting that for every unit increase in labour paddy yield will increase by 0.104kg/ha. Therefore, the more the labour the larger the land cultivated and the more the yield of paddy, other factors remaining constant. The aspect of improved seeds, which positively and significantly influenced paddy yield, means that for every unit increase in improved seeds paddy yield will increase by 0.266 kg/ha. Use of fertilizers, which positively and significantly influenced paddy yield means that, for every unit increase in fertilizer, paddy yield will increase by 0.116 kg/ha.

The results of multiccollinearity testing showed no single variable was observed with a VIF value above 10 and a tolerance value less than 0.1. Based on the fittings of the model, the coefficient of determination suggested that the variables best explained 27.1% of variation in paddy yield. This suggests that the remaining 72.9% of the variations in paddy yields is due to other factors, which were not included in the model so this call for further investigations.

# CHAPTER FIVE

## 5.0 CONCLUSIONS AND RECCOMMENDATIONS

### 5.1 Conclusions

On average, the amount of credit provided to male household heads was larger (TZS 361 500) than the amount provided to female household heads (TZS 266 118), which differed by TZS 95 382 (15.2%). Besides the less amounts women received compared to men, they used the money more reasonably for paddy production (74.8%) compared to men (68.5%). On the basis of these findings, it is concluded that more women farmers and female headed households should be supported strongly in accessing credit to improve paddy productivity.

The findings showed that high risks and high interest rates were statistically significant in hindering access to credit among smallholder farmers in the study area. Therefore, it is concluded that favourable conditions and low interest rates might attract smallholder farmers to access credit and make them able to use it to enhance productivity of inputs to improve paddy productivity.

Enhancing productivity of inputs was not widely used by farmers who had not received credit compared to those who had received credit. However, farmers who used improved seeds from both credit and non-credit categories were about twice (32.5%) those who had never used improved seeds (67.5%). The distribution of the reasons for not using improved seeds showed that expensiveness of improved seeds was a significant reason hindering paddy producers from using improved seeds. Therefore, it is concluded that if the prices of improved seeds were at affordable prices, many smallholder farmers would more likely purchase improved seeds.

Furthermore, the average amount of fertilizer used by credit receiving group was 20.87kg/ha while in the non-credit receiving group the amount was 8.86kg/ha. The average amount of improved seeds used by the credit receiving group and the non-credit receiving group were 3.55kg/ha and 1.16kg/ha respectively. The average amount of pesticides and herbicides used by both credit groups were not statistically significant. This indicates that the use of agrochemicals (pesticides and herbicides) was too low in the study area to achieve high yield. Therefore, it is concluded that farmers need more education on complementarity of these inputs enhancing productivity of yield increase

The average paddy yields for credit receiving farmers were higher compared to the yields of paddy from non-credit receivers. Therefore, to reduce yield gap for paddy between the actual and the potential credit receiving, still is inevitable to enable farmers to purchase technologies that require money on hand.

Hired labour, improved seeds, and use of fertilizers had positive influence on paddy yield. Therefore, it is concluded that availability of appropriate manpower, access to improved seeds and fertilizers are most important in improving paddy productivity.

### 5.2 Recommendations

All agriculture stakeholders should strive to invest their efforts on ensuring that credit support facilities and/or agencies are made readily available to smallholder farmers. This should be in favourable conditions so as to increase availability, accessibility, and timely utilization of credit to enhance agricultural inputs to increase paddy productivity. Extension services should be provided to smallholder farmers in paddy producing areas in form of training, participatory demonstrations, and proper use of agricultural inputs.

The government and policy makers should establish policy-frameworks to guide agricultural extension services.This has to ensure that smallholder paddy farmers have access to high yielding paddy seeds, appropriate agro-chemicals, storage and marketing facilities, which will enable them to achieve high paddy productivity. Further to that, there is a need for more research to explore in details the reasons as to why the majority of smallholder farmers in Kilombero District do not use improved seeds.

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# APPENDICES

## Appendix 1: Household Questionnaire

**SOKOINE UNIVERSITY OF AGRICULTURE DEVELOPMENT STUDIES INSTITUTE**

| Question naire Number |
|---|
| |

A Household Questionnaire for Research on:

**EFFECTIVENESS OF AGRICULTURAL CREDIT ON RICE PRODUCTIVITY IN KILOMBERO DISTRICT**

BY
MAGEKA ROSE
Master Student
P. O. Box 3024, Morogoro, Tanzania

### A. BACKGROUND INFORMATION

1. Name of interviewer----------Date----------
2. Name of respondent----------
3. Region ----------
4. District----------
5. Division----------Ward----------Village----------

### B. HOUSEHOLD COMPOSITION

Please let me ask you about all members of your household including marital status and occupation

6. Household members and their attributes

| Particulars | P1 H'hold head | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Name (Optional) | | | | | | | | | | |
| Age | | | | | | | | | | |
| Sex | | | | | | | | | | |
| Year of birth | | | | | | | | | | |
| Years of schooling | | | | | | | | | | |
| Marital status | | | | | | | | | | |
| Main occupation | | | | | | | | | | |

**Key to Question 6**

| Sex | Marital status | Household head | Main occupation |
|---|---|---|---|
| 1. Male | 1. Married | 1. 1 Adult male | 1. Crop production |
| 2 Female | 2. Never married | 2. 2Adult female | 2. Livestock keeping |
| | 3. Widower | 3 Orphan male | 3. Salaried employment |
| | 4 Widow | 4. Orphan female | 4. Self-employed off-farm |
| | 5. Divorced | | 5. Casual labour on/ off-farm |
| | 6 Separated | | 6. Student/pupil |
| | 7. Too young to be married | | 7. Non school child |

### C. CROPLAND OWNED AND OPERATED BY THE HOUSEHOLD

1. Do you own land for agricultural purposes? 1. Yes ( ) 2.No ( )
2. If No do you rent land? 1. Yes ( ) 2. No ( )

3. Total farm size (ha) cultivated by the household _____
4. Actual farm size _____
5. What type of labour employed in farm work? 1. Family ( ) 2. Hired ( ) 3. Others (specify)
6. If hired labour was used, indicate cost per operation per (ha)

| Operation/ activity (ha) | Crop (rice) Tshs |
|---|---|
| Land preparation | |
| Cultivation | |
| Planting | |
| Weeding | |
| Harvesting | |

7. What type of crops do you grow? Food crops.....
Cash crops .....

8. In average what is the volume of each crop obtained after harvest?

| crops | Acreage (ha) | Total yield kgs/ bags |
|---|---|---|
| Cash crops | | |
| Food crops | | |

9. (a) Did you purchase any inputs for farming 1. Yes ( ) 2. No ( )
(b) If yes, indicate the inputs and cost

| Crop (rice) inputs 1. Yes ( ) 2 .No ( ) | Input cost |
|---|---|
| Fertilizer | |
| Seeds | |
| Herbicides | |
| Pesticides | |
| Ox plough | |
| Hand hoe | |

10. Do you remember on average how much money did you use in in last crop season for buying various inputs including hired labour (Tshs).....

**D: USE OF INPUTS FOR RICE PRODUCTION**

11. Do you grow rice? 1= Yes, 2= No
12. For how long have you been growing rice.....Years?
13. What is the average distance to the rice plot? ----------metres/kilometres
14. Of all the households in this village, what is approximate proportion of households which grow rice?
15. What method do you use to prepare land for planting rice?
1= hand hoe, 2= ox-plough, 3= Tractor, 4= others (specify)
16. When do you plant rice in your field? Month.....?
17. Which type of seed do you use? 1. Improved ( ); 2. Local ( ); 3. Both ( )
18. If you use improved varieties, which improved varieties do you grow? 1) ----------
2).....3) ----------4) ----------5) ----------
19. If you use local varieties, which ones do you grow? 1) ----------2) ----------
--3) ----------4) ----------
20. If not using improved varieties, what are the reasons? 1= Not available ( ); 2= Too expensive( ); 3.=Not easily accessible( ); 4 = Others (Specify)----------

21. (a) Did you purchase any inputs for rice farming? 1. Yes ( ) 2. No ( )
(b) If you did not use inputs, why? 1. Not available 2. Expensive 3. Not required 4. Not easily accessible 5. Others (specify) ----------
(c) If yes, indicate the inputs and cost

| Crop (rice) inputs 1. Yes ( ) 2 .No ( ) | Input cost |
|---|---|
| Fertilizer | |
| Seeds | |
| Herbicides | |
| Pesticides | |
| Ox plough | |
| Hand hoe | |

22. Do you remember on average how much money did you use in for buying various inputs including hired labour (Tshs).....
23. What yield do you normally get from one hectare of rice using; (a.) Improved variety---------
(b) Local variety----------
24. What is your annual household income from rice? ----------
25. What are the main uses of income from rice sale?
1 = Buying other foodstuffs
2= Paying schools fees for children
3= House rehabilitation
4= Paying casual labours
5= Others (Specify) ---------
Example:

a. How much of the harvested rice did you eat with your household members, sell, keep for seeds, give to relatives/friends? (Fill in the answers in the following table)

| Amount harvested | Amount consumed with household members | Amount sold | Amount kept for seeds | Amount given to relatives/friends | Amount for other uses |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

b. Would you kindly tell me the items on which you spent the income from the rice?

| Item | Amount | Item | Amount | Item | Amount |
|---|---|---|---|---|---|
| Maize | | Utensils | | House construction/repair | |
| Tuber crop products | | Health care | | etc | |
| Protein foods | | Agricultural inputs | | etc | |
| Clothes | | Children's education | | etc | |

26. If the income was used to agricultural inputs, what is the proportion used in purchasing inputs?----------
---
27. 33.What are the major constraints related to rice production ----------
---
---

28. 34.Suggest intervention measures to improve rice production in this village ----------
---
---
---

29. Rice production costs (expenditure per hectare)

| S/N | Activities | Amount (Tshs) |
|---|---|---|
| 1 | Hiring land | |
| 2 | Land clearing | |
| 3 | Ploughing | |
| 5 | Planting | |
| 6 | Weeding | |
| 8 | Fertilizer application | |
| 9 | Pesticides (fungicides & insecticides) | |
| 10 | Harvesting | |
| 11 | Harvesting bags | |
| 12 | Sisal twine | |
| 13 | Transport | |
| 14 | Yield per hectare | |
| 15 | Price per bag | |
| 16 | Total income | |
| 17 | Profit/loss | |

30. Give information about rice yield in during the season February 2015 to June 2015

| Area planted | Production/hectare | Total production (kgs) | Quantity sold (kgs) | Price/unit | Total earnings (Tshs) |
|---|---|---|---|---|---|
| | | | | | |

31. Apart from rice farming activities, what other activities bring income into your household? And how much do you get?

| Source of income 1. Yes ( ) 2. No ( ) | Amount |
|---|---|
| Formal employment | |
| Selling charcoal/ firewood | |
| Brewing and selling local brew | |
| carpentry | |
| Brick making | |
| Masonry | |

**E. CREDIT INFORMATION**

32. Do you obtain credit for rice production? 1. YES, 2. NO
33. If yes, fill the following table

| Source of credit (Informal group, Bank, Friends/relatives, government, input distributor, informal money lenders) | Form of credit (Cash, Inputs) | Amount (Tshs) | Interest rate | Terms of payment (cash, in kind, both) |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

35. If no, why 1. Not aware of credit ( ), 2. Not available ( ), 3. Procedure is too restrictive ( ) 4. Not needed ( ), 5. High interest rate ( ), 6. High risk ( ), 7. Lack of security ( ) 8. Others (Specify.....)

36. What reasons influenced you to take credit from that microfinance?
37. 1. Loan size ( ) 2. Interest rate ( ) 3. Both 1 and 2 ( ) 4. Types of collateral required ( ) 5. Others (specify).....
38. (a) Did you receive the amount of credit as you requested? 1 .Yes ( ) 2. No ( )
39. (b) If no, what amount was given to you? .....
40. Were you trained on the utilization of credit before being given? 1. Yes ( ) 2. No ( )
41. What some of credit obtained used for other purposes (consumption) rather than production? .....
42. Are you in the arrears of the above credit? 1. Yes ( ) 2. No ( )
43. What sorts of penalties imposed for late payment or default?.....
44. (a) Where the loan disbursement made in time before the beginning of the season? 1. Yes ( ) 2. No ( )
45. (b) If not, what were the reasons for disbursement to delay.....
46. How many times have you received credit for rice production?.....
47. On average what amount of rice (kgs/ bags) you harvested after receiving credit? .....
48. Before receiving credit what amount of rice (kgs/ bags) were you harvesting?.....
49. Will you continue requesting for credit from there? 1. Yes ( ) 2. No ( )
50. Do you think that the credit you obtained is adequate for rice production needs? .....
51. (a) Do you feel that the existing of such kind of credit facility is adequate for your agricultural production needs? 1. Yes ( ) 2. No ( )
    (b) If no, give your opinion _____
    (c)If yes, give your opinion .....
52. What problems have you faced in obtaining and using credit from that microfinance?.....
53. What is the impact of credit on rice productivity? .....

| Benefits | Explanation |
|---|---|
| a. Additional farm outputs kgs/ha | |
| b. Additional use of inputskgs/ha | |
| c. Additional farm income Tshs | |
| d. No achievement | |
| e. others | |

54. (a) As a rice farmer, do you belong to any organization or farmers group? 1= YES,( ) 2=NO ( )

(b)If yes, fill in the table below;

| S/N | Name of organization/group | Activity | Benefits | Entry conditions |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |

55. Do you usually bulk your produce and sell to customers as a farmer's group member? 1= Yes ( ) 2. No ( )

**F. EXTENSION SERVICES**

56.Do you have access to extension services? 1. YES, 2. NO
57.If yes, where do you get extension services 1.Village extension Officer ( ), 2.NGOs ( ), 3.Research ( ), 4. Others Specify.....
58. Are there benefits from services provided? 1. YES ( ), 2. NO ( )

If Yes, what are the benefits----------

59.How many times per year /season did extension officer pay visit to you?----------

60.Recommendation for improving extension services

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**THANK YOU FOR YOUR COOPERATION**

## Appendix 2: Checklist of Items for Key Informant Interview

**SOKOINE UNIVERSITY OF AGRICULTURE DEVELOPMENT STUDIES INSTITUTE**

**A Checklist of Items for Key Informant Interview with District Agriculture and Extension Officers, Village and Ward leaders and credit lenders for Research on:**

**EFFECTIVENESS OF AGRICULTURAL CREDIT ON RICE PRODUCTIVITY IN KILOMBERO DISTRICT, TANZANIA**

**BY**
**MAGEKA ROSE**
**Master Student**
**P. O. Box 3024, Morogoro, Tanzania**

Village; ..... Status _____
Ward; .....
Division; .....Village population.....

**A :checklist for Key Informant Interview with District Agriculture and Extension Officers, Village and Ward leaders**

1. Number of households in the village
2. Major food and cash crops grown in the village
   a. Food crops----------
   -----
   b. Cash crops----------
3. Agricultural credit availability
4. Microfinances involved in provision of credit to rice farmers
5. Reasons influence some farmers to request for credit and some farmers not
6. Loan disbursement time
7. The amount of credit given to farmers
8. Behaviour of farmers after receiving credit
9. Effectively utilization of credit given for farm work
10. The impact of credit on rice productivity
11. Problems facing rice growers on obtaining and using of credit
12. Proportion of farmers growing rice in the village
13. Average yield of rice harvested per hectare
14. Technologies used in rice farming
15. Extension services availabilities in the village
16. Benefits of credit for rice production

**B: checklist for credit renders**

1. Criteria for selecting farmers to receive credit
2. Requirement to be fulfilled by farmers
3. Forms of credit
4. Time for loan disbursement since application
5. Amount of credit given
6. Duration of repayment
7. Penalties imposed for loan default or late repayment
8. Number of loans issued for past two years
9. Loan performance and repayment

## Appendix 3: Focus Group Discussion Guide

**SOKOINE UNIVERSITY OF AGRICULTURE DEVELOPMENT STUDIES INSTITUTE**

**A Focus Group Discussion Guide for Research on:**

**EFFECTIVENESS OF AGRICULTURAL CREDIT ON RICE PRODUCTIVITY IN KILOMBERO DISTRICT, TANZANIA**

**BY**
**MAGEKA ROSE**
**Master Student**
**P. O. Box 3024, Morogoro, Tanzania**

**A: Credit beneficiaries**

1. Major crops grown in the village
2. Main financial institutions provide credit for farmers
3. Membership in credit associations
4. Range amount of credit given to farmers
5. The total amount used for rice production
6. The amount used for other purposes
7. Amount of rice harvested per hectare
8. Time for loan disbursement
9. Additional cost incurred for purchasing inputs
10. Problems in obtaining and using credit
11. Extension services availability
12. Technology used for farm cultivation
13. Main problems facing rice production
14. The proportion of rice farmers receiving credit in this village
15. Assets required for loan security
16. Impact of credit on rice production

| Benefits | Explanation |
|---|---|
| f. Additional farm outputs kgs/ha | |
| g. Additional use of inputskgs/ha | |
| h. Additional farm income Tshs | |
| i. No achievement | |
| j. others | |

17. The adequacy of credit facilities for rice production needs
18. Comments in regards to credit schemes for farmers

**B: Non-credit beneficiaries**

18. Awareness of sources of agricultural credit
19. Membership in credit cooperatives society in your village
20. Reasons for not taking credit
21. Who has access to credit?
22. Sources of income for purchasing inputs
23. Amount of rice harvested per hectare
24. Extension services availability
25. Technology used for cultivation