# ACCESSIBILITY OF AGRICULTURAL TECHNICAL INFORMATION TO RURAL WOMEN IN MOROGORO RURAL DISTRICT TANZANIA

By

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## ABSTRACT

Rural women are responsible for food cultivation, preservation and storage. Currently, the problem facing them is two-fold. In the first place they do not have ready access to relevant agricultural information even that which is available within their own countries. Secondly, when transfer of agricultural information does occur, it is most frequently directed to male farmers rather than women farmers who are the main food producers. The purpose of this study was to assess rural womens' accessibility to agricultural information in Morogoro rural district. The specific objectives of the study were:

1) to determine the extent to which information on agricultural innovation is available to rural women
2) to determine the types of channels providing information on agricultural innovation to rural women
3) to determine how extension contact, level of education, income, marital status and age influence rural women's accessibility to agricultural information and
4) to identify constraints hampering transfer of agricultural information to rural women.

In the study area,the data were collected by using structured questionnaires and researcher's diary.

A simple random sampling technique was applied to obtain

a random sample of 160 respondents. One of the results of the study was that although rural women generally received information on farm practices from various sources, the impact of these sources to women's access to agricultural information is still low. The results showed further that local sources of information in the form of husbands and neighbours, were the most preferred sources followed by extension agents and mass media, in that order. Age, income, education, extension contact and marital status were found to be significantly related to the frequency of information acquisition behaviour. The study determined that the main constraints in the transfer of farm information to rural women were socio-cultural and extension inadequacies. As a consequence of the results, it was recommended that: 1) extension agents should be provided with transport and be encouraged to reach female farmers; 2) local sources of information should be used more often in order to reach rural farmers, and 3) rural women should be exposed more to such extension teaching methods as demonstrations and frequent farm visits.

# DECLARATION

I, Charles Wakihobi Mwita Wambura do hereby declare to the Senate of Sokoine University of Agriculture that the work presented here is my own, and has not been submitted for a higher degree in any other University.

Signature.....

Date.....21/8/92.....

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# DEDICATION

To my beloved parents, Mwita Magoto and Paulina Weise Mwita who laid the foundation for my education.

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# CHAPTER ONE

# INTRODUCTION

## 1.1 Background Information

In most developing countries, traditional agriculture dominates the economy (Adams 1982). For national progress to occur change in agriculture is essential to produce agricultural surplus for sale and self sustained growth.

Although there is an enormous potential for increasing agricultural production in most developing countries, various combinations of constraints conspire to prevent this potential from being realized. The usual list of constraints includes: hostile climate, often with uncertain precipitation, soil degradation, lack of fertilizers and pesticides, lack of adequate infrastructure and lack of agricultural equipments. However, The impact of most of the above constraints are often aggravated by a serious lack of technical information (Olsen 1989).

The problem facing developing countries that extension systems have failed to solve is two fold. In the first place, farmers do not have ready access to relevant information, sometimes even that produced within their own borders (Lijongwa 1981; Staudt 1984; Stephens 1985; Mascarenhas 1985; Gabriel 1989 and Isinika et al 1989). One of the constraints to introducing such technology is lack of mechanisms to learn what the real main constraints are, the needs of the small farmer, particularly the rural women and the transmission of new practical and relevant

information to them (Benor and Cleaner 1989). Secondly, when the transfer of information does occur, it is most frequently directed to male farmers rather than women farmers who are the main food producers (Berger, et al 1984); Mascarenhas 1985; FAO 1987). The knowledge is not therefore effectively transmitted both ways: from research to farmers and vice versa (Berger, et al 1984). Across Africa and other developing countries, women are reported to be the main producers of food (Shao 1987; Savane 1988; Gabriel 1989). Although women are so deeply involved in agricultural production, their performance is constrained by difficult material, social, technical information and institutional conditions including low level of education, training and skills (Cloud 1983; FAO 1987). According to the Food and Agricultural Organization (1987) technical information helps to create the conditions necessary to improve agricultural production and the rural community. Studies show that technical information is communicated to farmers through a variety of channels. These channels of communication include mass media such as radio and farm magazines, extension services such as farm demonstrations, extension meetings and visits. Others include personal contacts with neighbours, friends and relatives (Wilkening 1950; Sadamate and Sinha 1978; Subbareddy and Channogowda 1982; Cloud 1983; Mattee 1988).

Though these channels of communication have been in operation for a fairly long time, the accessibility of

agricultural technical information to rural women has not changed much (Lijongwa 1981). Today, the majority of rural women who are responsible for the family food supply have remained without much agricultural information (Mascarenhas 1985; Stephens 1985; Gabriel 1989). This has been partly due to a number of factors such as lack of adequate extension contact, limited income to purchase information media such as radio and printed materials. Secondly, failure of the trickle down strategy, that is the assumptions and beliefs that benefits from a male - oriented extension service will "trickle down" somehow from men to women, have been shown to be impracticable (Stephens 1985; Mascarenhas 1985 and Gabriel 1989).

## 1.2 Statement of the Problem

The introduction of new agricultural technology has resulted in an increase in total production in many countries. This truth was brought home by the green revolution technologies which offered the promise of increased production for developing countries (World Bank 1981). In Tanzania, available statistics indicate that food crop production had been increasing at an average rate of 5 percent per annum between 1972 and 1984 (MALDC 1984; BoT 1986). The increase in food crop production came primarily from area expansion, while yield per unit area decreased at the rate of 1.4 percent annually (MALDC 1984).

One of the most commonly discussed problem related to food production has been womens' limited access to resources for agricultural production. These resources include land, capital, credit and extension information (Staudt 1982; FAO 1987; Isinika et al 1989). While much of the recent social research has been targeting on women generally, its emphasis has been on describing how women participate in the development process, identifying constraints to the expansion of employment opportunities, measuring whether women gain or lose in the development process and on the sexual division of labour. Less has been done to identify women's technical information needs.

The present study looked into the extent to which information on agricultural innovation reaches rural women and the socio-economic factors which influence accessibility to agricultural innovation. The general aim was to suggest strategies for effective transfer of information on agricultural innovations to rural women.

## 1.3 Objectives of the Study

The specific objectives of this study were:

1) To determine the extent to which information on agricultural innovation is available to rural women.
2) To determine the type of channels providing information on agricultural innovation to rural women.

3) To determine how extension contact, level of income, level of education, marital status and age, influence rural womens' accessibility to information on agricultural innovation.

4) To identify constraints hampering transfer of information on agricultural innovation to rural women.

## 1.4 Hypotheses

In the course of the study, the following hypotheses were tested:

Hypothesis 1: The claim that rural women are not well informed about improved farming practices is significantly backed by the facts.

Hypothesis 2: Rural women use significantly similar channels of communication which are influenced by age, education and location of the village to obtain various types of information about farm practices.

Hypothesis 3: Rural women's access to agricultural information is not significantly constrained by resistance to non-traditional practices.

Hypothesis 4: Rural women's accessibility to information on agricultural innovation is significantly independent of:

a) level of income

b) level of education

c) Extension contact

d) marital status and

e) age

## 1.5 Definitions of Terms and Acronyms

### 1.5.1 Acronyms

FDC - Folk Development College

UWT - Umoja wa Wanawake wa Tanzania (The League of Tanzania Women).

MALDC - Ministry of Agriculture, Livestock Development and Cooperatives.

BoT - Bank of Tanzania

### 1.5.2 Definitions

Agricultural technical information - For the purpose of this study, agricultural technical information is defined as farm information about agricultural inputs, credit, extension, and farming practices aimed at increasing agricultural production at the farm level.

Extension contact - This refers to the number of times a farm woman comes into contact with her village extension worker to dialogue on matters pertaining to agricultural practices in a period of one year.

Farming practices - A list of recommendations or recommended practices which have to be applied together in a system in order to attain optimum

production. Farming practices comprise a set of innovations, for example, land preparation, seed selection, proper spacing, weed control, pest and disease control.

Channel - This refers to any system used by a communicator to get his/her message across to the audience. It includes such items as demonstrations, extension meetings, radio farm programmes, farm magazines and farm visits.

Clientele - The farmers who are being served by an extension worker are the clientele of that extension agent.

Sample size - The number of elements which make up a sample.

Sample - that portion of the population, which has been selected for observation or interviewing. It is a subset of elements from the target population.

Target population - That aggregate of population about which information is generalized. In this study, the target population comprised all rural women farmers in the survey area.

Sampling frame - The actual list of farm women from which the sample of respondents was drawn.

Rural area - Area of the countryside.

Respondent - An individual who has been sampled for being interviewed to provide information or data. Sometimes

respondents are referred to as observational units or elements.

Questionnaire - A device for securing answers to questions. It is a form with questions which the respondent either fills in directly or answers the questions verbally while the researcher writes in the answers as they are given.

# CHAPTER TWO

# REVIEW OF LITERATURE

## 2.1 Introduction

In Tanzania, the extension service is the primary means by which the government channels information to farmers in an effort to increase agricultural productivity. Reliance on agricultural technical information is increasing among persons involved in agriculture but delivery of appropriate information to end-users challenges agricultural communication systems.

Studies have shown that there is a clear relationship between access to technical information and changes in agricultural practices (Staudt 1982; Olsen 1989). Individual farmers exposed to appropriate agricultural technical information have been shown to earn greater profits (Evans 1985; FAO 1986; Olsen 1989).

Today, when the world is experiencing an information explosion and revolution, small farmers in the rural areas and in particular rural women are generally experiencing a limited access to agricultural technical information, innovations, training and other basic resources that could facilitate their task and increase their productivity (FAO 1986; Olsen 1989). Women have traditionally been neglected in programmes on education and extension in agriculture and rural development. Information on agricultural production is often not designed for, or aimed at women (Evans 1985). The assumption is that men are the decision makers and

income earners in a family and that any information communicated to them will somehow get through to their wives (Stephens 1985; Evans 1985). Studies show that women vary in the degree to which they receive agricultural information from their husbands or other male household members. Some women rarely receive agricultural information from their husbands while others share agricultural information with their husbands liberally (Berger, et al 1984; Stephens 1985; Evans 1985; FAO 1987 Isinika et al 1989).

Today, an overwhelming majority of women carry out numerous agricultural operations like seed selection, manuring, weeding, sowing behind the plough, hoeing, harvesting, threshing, storage and preparation of produce for marketing, without much agricultural technical information from extension services (Cloud 1983; FAO 1987).

The success of modern agriculture depends to a large extent on the ability of the extension services to deliver, direct and ensure a steady flow of useful agricultural technical information to the villagers. A successful extension worker therefore, needs to acquire the knowledge of better communication methods and audio-visual aids (UNESCO 1958).

This chapter is divided into two sections. The first part reviews extension methods such as mass media, farm demonstrations and extension meetings. Factors which influence the accessibility of information on agricultural

innovation to rural women are covered in section two. Among other factors discussed in this section are folk development colleges, level of education, extension contact, socio-cultural and economic factors.

## 2.2 Extension Methods

The history of agricultural information transfer shows that technical information has been communicated to farmers through a variety of channels. These channels of communication include mass media, personal contact and extension services (Wilkening 1950; Sadamate and Sinha 1978; Cloud 1983; Mattee 1988).

### 2.2.1 Mass communication media

Mass communication media are important channel for transmitting agricultural information, ideas and experiences to the rural people. Mass media are divided into two major groups. The written word which covers all press articles such as farm magazines, booklets, pamphlets and leaflets and the spoken word which includes radio broadcasts, film shows, speeches and others (William 1969; Bhatnagar 1978; Ng'wanakilala 1981).

#### 2.2.1.1 Farm magazines

Farm magazines together with other printed materials are now the most favoured and widely adopted media of communication. Their effectiveness depends upon the extent

of literacy and communicative nature of the people (Kauzeni 1979). In areas of high literacy, this medium is very effective if certain preconditions including a good level of education among the farmers are met. In areas where farm magazines are read by farmers, there is some indication that the task of extension workers is simplified a great deal (Subbareddy and Channogowda 1982). A study by Kauzeni (1979) in Tanzania, however, showed that farm magazines and other printed materials have never been effective in imparting farm information to rural peasants because of their inferior education and relative isolation. However, considering the strides in adult literacy that Tanzania has made (Mlekwa 1989), the situation may have changed for the better.

2.2.1.2 Radio Farm Programs

Radio broadcasting is another important source of farm information in the group of mass media. It is an effective medium in developing countries because it reaches the broad masses even when they are illiterate. It plays a very important role in imparting farm information to the farmers (Sadamate and Sinha 1978; Mattee 1988).

Studies have shown that although radio plays such an active role in imparting farm information, it is relatively less frequently used by farmers as a source of information (Wilkening 1950; Sadamate and Sinha 1978; Subbareddy and Channogowda 1982). Another study by Subbareddy and

Channogowda (1982) revealed that in India, only a few farmers had been found to pay full attention while listening to radio farm programmes. After a day's hard work, the majority of farmers were found listening to the radio as an entertainment without attaching much significance to its educational value. In Tanzania, mass media campaigns are used as a method of farmers' training (Institute of Adult Education 1973; Kauzeni 1979). Some of the campaigns are designed to reach more farmers who are in the most remote rural areas, and are geared not only towards information but also toward changes in individual and community behaviour (Kauzeni 1979). The radio can have a good impact, but here again, apart from the problems of coverage, the programme producers have to make sure that the timing is suitable for the people meant to be informed and influenced. It would be the general practice for the media controllers to do periodic evaluations of their programmes and monitor the reception effectiveness of their programmes.

The women, however, have more problems which make it difficult and sometimes impossible, for them to take advantage of available media. The burdens of the rural women do not need stressing, as they have been well documented (Mascarenhas 1985; Stephens 1985). Gabriel (1989) showed that the general complaint of women, especially those involved in farm production, was lack of time. The woman's day was so full that from sunrise to

sunset, she did not find a moment for herself. At the end of the day, she was so exhausted that she could not listen to the radio. It needs to be emphasized here that the busy life that women lead has made it difficult for them to involve themselves not only in training such as attending extension meetings but also to find the time to read farm magazines, even when they are literate.

### 2.2.2 Field Demonstrations

Field demonstrations are the most widely used techniques in imparting farm information (Krishan 1965; FAO 1980; Straudt 1984). The demonstrations can be educational in practical and experiential ways, because farmers visualize new tasks, such as how to apply fertilizer, timely plant protection operations and so on and then later view progress on the local plot. The main emphasis in these demonstrations is to show farmers practically, how to carry out certain farm operations designed to increase agricultural production (Staudt 1984). Demonstrations allow farmers to observe, hear and learn by doing (Krishan 1965); based on the assumption that adult farmers learn best by doing. Therefore learning through the triple processes mentioned above not only produces concentrated results but also helps to internalize the learning process (Krishan 1965; Staudt 1984). Although demonstrations have been found to be among the strong tools for convincing the neutral farmers, it was relatively less frequently used (Keregero

1981). Field observations show that even where demonstrations are used, they seem not to have succeeded in convincing farmers, because extension workers failed to secure and use necessary inputs due to economic hardships they face. Failure to use these necessary inputs make the whole demonstration exercise unsuccessful (FAO 1980). Krishan (1965) showed that a badly organised demonstration, not only fails to convince farmers but causes farmers to build up a resistance to all innovations. This resistance may be so strong that it may even hamper the adoption of a new programme in the future. Farmers in Tanzania, as in other developing countries, are persons of very limited means, and once their purses are touched, they tend to lose confidence with extension workers and develop an indifferent attitude towards all advice given by them (Leonard 1977). The extension agents, therefore, need to be very cautious and vigilant in carrying out demonstrations. If this medium fails, hardly any other will succeed without a lot of effort and waste of time. In Tanzania, for example, Mattee (1988) found that about 67 percent of the farmers in his sample had rarely or never visited an extension demonstration.

### 2.2.3 Extension meetings

Extension meetings constitute another approach which is more effective. Meetings are useful in propagating and spreading agricultural information (Staudt 1984). Meetings

provide a good forum for exchange of views, pooling of experiences, developing a proper understanding, encouraging thinking, acquiring information and ideas, modifying views and getting ideas accepted (Krishan 1965). Meetings are therefore, very effective in changing and moulding the minds of farmers.

Studies show that although extension meetings are effective, rural women very rarely attend them because of time constraints and customs (Mduma 1980). In Kenya for example, agricultural information is disseminated through barazas, the local government meetings attended primarily by men. While women are permitted to listen, it is not customary, and few have the time to attend (Moock 1976; Staudt 1982). In Tanzania, traditionally, attending meetings has been man's responsibility (Staudt 1984; Lijongwa 1981). Women seem not to benefit as much as the men from extension contact and meetings, perhaps due to the marked male orientation of the service, that is why they are reluctant to attend these meetings.

## 2.3 Factors Influencing the Accessibility of Information on Agricultural Innovation to Rural Women

### 2.3.1 Farmers' Training Centres

Rural women, because of their unsound technical information and economic condition, feel very much reluctant in taking a decision about anything unconventional (UNESCO 1958). They need to have a higher

level of farm educational exposure in order to generate the courage to prepare themselves to take the risks involved in a new innovation (Sadamate and Sinha 1978). It is thus obvious that the Farmers' Training Centre is the appropriate medium that can offer rural women the solidarity to acquire agricultural technologies (Lijongwa 1981). Studies on Farmers' Training Centres show that short term training programmes have only a limited effect and that the technical bias of the courses may be too strong for many of the target farmers (Eicher and Baker 1982). Reviewing Folk Development College (FDCs) programmes in Zambia, Honeybone and Marter (1975) found that the short-term training programme (two weeks) had little effect on changing farmers' performance. Training tended to increase disparities between less and more prosperous households. They criticized the technical bias of the courses and noted that the course failed to provide advice on the main food crops other than maize. They did note, however, that most trainers felt that contact with farmers was more effective and easier in the controlled environment of the training centres. FDCs can also be relatively costly, given the limited number of farmers reached. Besides, the FDC approach has two major drawbacks in terms of reaching women farmers. First, because of their dual household and income-earning responsibilities, women often lack the time to attend courses away from their villages. Studies by Gabriel (1989) and Stephens (1985) estimate that in peak seasons

women work six to nine hours per day in the fields, sometimes up to ten hours in Lesotho and Zambia. Also, as men increasingly turn to wage labour and migration, women must devote more of their valuable time to productive tasks, in addition to fulfilling their household responsibilities. Women farmers, therefore, may find little time to participate in agricultural meetings, farm demonstrations and farmer's training courses. Secondly, too often, educational programmes directed at women in these centres have included too many subjects, such as home economics, nutrition, handicrafts together with some form of agricultural education (Lijongwa 1981; Staudt 1982). The result is a superficial layer of information on many subjects of little practical use to the women. There is also a cultural problem on the side of men to grant their wives permission to attend courses in these training centres (Spring 1987; Staudt 1984).

### 2.3.2 Level of education of the farmers

Education of the farmers enhances their ability to acquire accurate information, evaluate new farming practices, and be able to use new agricultural inputs efficiently (Ashby 1981). Therefore, education is considered to be an important factor which enables farmers to gather reliable information through such media as farm magazines, radio and field demonstrations (Osuji 1983). Studies show, however, that farm women with high levels of

illiteracy cannot make good use of such media as farm magazines and/or newspapers (Osuji 1983). Such farmers tend to rely on neighbours and friends as sources of information (Wilkening 1950).

### 2.3.3 Contact with extension agents

The process of communicating agricultural information to farmers involves three basic social systems; the research, the extension and the client systems, (Shete 1978). Organisationally the extension education system serves as a communication link between the research system and the farmers' system (FAO 1987). The extension agents receive new knowledge from the research system and after due processing and modifying, if necessary, pass it on to the farmers. The most common delivery approach is for extension agents to make personal visits to a small number of contact farmers. Most of these visits are initiated by the extension agents themselves (Staudt 1982). Thus the extension workers are the leading repositories of knowledge regarding improved farming practices in the rural areas (Saylor 1975). They are the most usual sources of information for farmers (Wilkening 1950). Although literature supports the view that extension agents are instrumental in teaching peasants improved farming practices, rural women do not benefit from these agents as much as men (Fortmann 1976; Sadamate and Sinha 1978). Evidence shows that rural women are not included in

extension programmes to their full potential in proportion to their contributions to agriculture and rural life (Fortmann 1976; Orivel 1983). Studies indicate further that extension agents, whether male or female, still treat women farmers as housewives. As a result, the agents do not provide rural women the information, assistance and status commensurate with their contributions to farm work (Jacobson 1988).

In a study examining the participation of agricultural extension in village development activities in Mbeya region in Tanzania, Ponjee (1979) found that the extension agents favoured and concentrated on certain categories of farmers. These categories of farmers, labelled "progressive farmers" were wealthy, influential and better educated. They were predominantly male. Besides, the "progressive farmers" were more frequently visited than the poorer and less educated farmers, the majority of whom were women farmers. The extension agents concentrated their efforts on "progressive farmers" because they are the most willing to adopt the innovations provided by the agents. According to Roling, et al (1981, p227)

> ...There are few extension service workers in any country who do not classify their farmers in terms of progressiveness or innovativeness, and make use of this classification to concentrate on those farmers who are quicker to follow their advice, who are of sufficient economic means, more knowledgeable, and more homophilous with themselves.

In Kenya for example, Leonard (1977) found that on average, extension agents spent 57 percent of their visits with "progressive farmers". In contrast, they spent only 6 percent of their visits with "traditional farmers".

In Tanzania, DeVries (1978) reported that the recommendations of the extension agents were geared to a high degree to large scale farmers called "progressive farmers". Another related study was that by Mollel and Malone (1987) in Tanga, Tanzania, which showed that women farmers were not regularly visited by extension workers. Women farmers were often perceived as traditional, poor and unwilling or unable to adopt innovations that were promoted by the agricultural administration (Staudt 1982; Berger, et al 1984).

Some farm women have limited access to resources for agricultural production, including land, capital, credit and extension services (Staudt 1982). Access to credit for example is essential for the purchase of good seeds, fertilizers and pesticides. As a result of lack of access to credit, women face tremendous difficulties in purchasing these inputs or hiring additional labour and draft power which may be crucial in undertaking the agricultural innovations recommended by extension services (Berger, et al 1984). As such, it becomes relatively impossible for women to benefit from available technology (Mickelwait, et al 1976; Gabriel 1989; Isinika et al 1989). This State of affairs results in women having limited resources for

expanding production and limited access to the necessary information when compared to men (Staudt 1982; Berger, et al 1984).

### 2.3.4 Neighbours and friends

Traditionally, farming knowledge has been passed on from generation to generation, taking the form of custom and tradition deeply ingrained in culture so that what innovation or fruits of research are passed on to members of a culture, must fit into their frame of reference. If the innovation does not correspond with their built-in values, it is discarded without even a trial (Khan 1976). For this reason farmers have emphasized the importance of experience on the farm (FAO 1980). Studies show, however, that the exchange of information about agricultural innovation among farmers has been to a great extent supplemented by various sources of information (Sadamate and Sinha 1978; FAO 1980; Staudt 1984). Although various sources of information are in operation, many rural women still seek to promote improved farming practices through the personal acquaintances and contacts with their friends and neighbours (Wilkening 1950; Copp, et al 1958).

Studies by Sandhu and Lal (1976) and Mohammed and Singh (1978) revealed that some farmers are more exposed to a relatively larger number of information sources than others. Some farmers discuss the information received by them from different sources with other farmers more than

others and the extent of farmers exposure to different information sources affects their attitude, knowledge and adoption of improved farm practices.

The search for information on a person to person basis is a characteristic condition of rural life. When other sources of farm information are used with reluctance, the advice of friends and neighbours is often freely sought (Copp; et al 1958). In spite of the fact that farm women seek to promote farming practices through contacts with their friends and neighbours, they are often said to be shy to open up for useful discussion with the opposite sex (ILEIA 1987). Also there is a belief that men do not easily accept suggestions from women and this often results in a "culture of silence" on the part of the women (ILEIA 1987).

### 2.3.5 Socio-Cultural Factors

A married woman farmer is controlled by the husband in patrilineal societies and as such, cannot make appointments easily with a male extension officer (ILEIA 1987). Also she cannot have discussion alone with the officer either on the farm or in the home (Staudt 1984).

Studies show that it is difficult for male extension staff to deal effectively, if at all, with the village women, particularly those who are married, because of customs, cultural and religious constraints which make it difficult for them to contact the women directly (Lijongwa 1981). Thus, in the traditional organization of rural

development in Tanzania, the governmental and national officials have tended to disseminate their policies, schemes and research findings to the population through male officials who usually make contact to a large extent with the village men (Lijongwa 1981).

Kauzeni (1979) emphasized that farmers are conservative and the rural community has certain resistance against non-traditional practices. Kauzeni, further showed that a farmer who starts using a new practice is often criticized and even laughed at, by other members of the community. He revealed that typical coastal zone Swahili farmers are envious of economic or social success. Individual farmers fear, say, to get a bumper crop in a particular crop season due to adoption of certain agricultural innovations, because of public opinion, or punitive sanction in the form of being bewitched. This is one of the likely socio- logical cause for ineffectiveness of some extension methods. The weaker personalities would not take the risk of being labelled "deviants".

### 2.3.6 Socio-economic status of the farmers

It is quite natural that farmers having membership in social organizations, would have a bigger chance of getting exposed to different sources of agricultural information, which in turn can influence them to seek more information on improved farm practices (Rangaiah and Reddy 1988).

Studies show that there is a relationship between socio-economic status and sources of information used (Wilkening 1950; Rangaiah and Reddy 1988). Farmers of higher socio-economic status usually obtain a high proportion of their agricultural information from extension services, farm magazines and radio farm programmes (Subbareddy and Channogowda 1982). Farmers with lower socio-economic status, normally obtain a high proportion of their agricultural information from friends, neighbours and relatives (Wilkening 1950; Rangaiah and Reddy 1988).

Although studies support that there is a tendency for access to extension services to increase with socio-economic status, Staudt (1982) found that women with high socio-economic status were ignored by extension agents the same way as the women with lower socio-economic status. Other studies have shown that farm magazines for example, are utilized more frequently by farm women of higher educational levels and socio-economic status than those of lower levels (Copp, et al 1958). Another study by Kauzeni (1979) in the coastal zone of Tanzania showed that farmers' economic situation influences the effectiveness of the extension method applied. Farmers with limited financial resources have limited purchasing power, therefore, they cannot purchase information media. Kauzeni further showed that because of the weak economic position of women farmers and villagers as a whole, mass media have not been

effective as a means through which farmers in Tanzania could increase their technical knowledge in farming.

# CHAPTER THREE

# METHODOLOGY

## 3.1 Introduction

This chapter deals with the methodological process which generated the data for this study, and outlines the statistical procedures which were used in analyzing the data.

The chapter is divided into three sections: The first section covers the location of the study area, design and sampling procedures. The development of the instruments and methods used to enhance the validity and reliability of the questionnaires are presented in section two. The third section deals with the actual data collection and analysis procedures.

## 3.2 Location of the Study Area

The study was conducted in four villages in Morogoro rural district in Tanzania. Of the four villages selected, two villages, Melela and Mangae are in Mlali division and two others Kiroka and Kikundi are in Mkuyuni division. Figures 1 and 2 show locations of Morogoro region within Tanzania and Morogoro rural district within Morogoro region respectively. Figure 3 shows location of the four villages in Morogoro rural district.

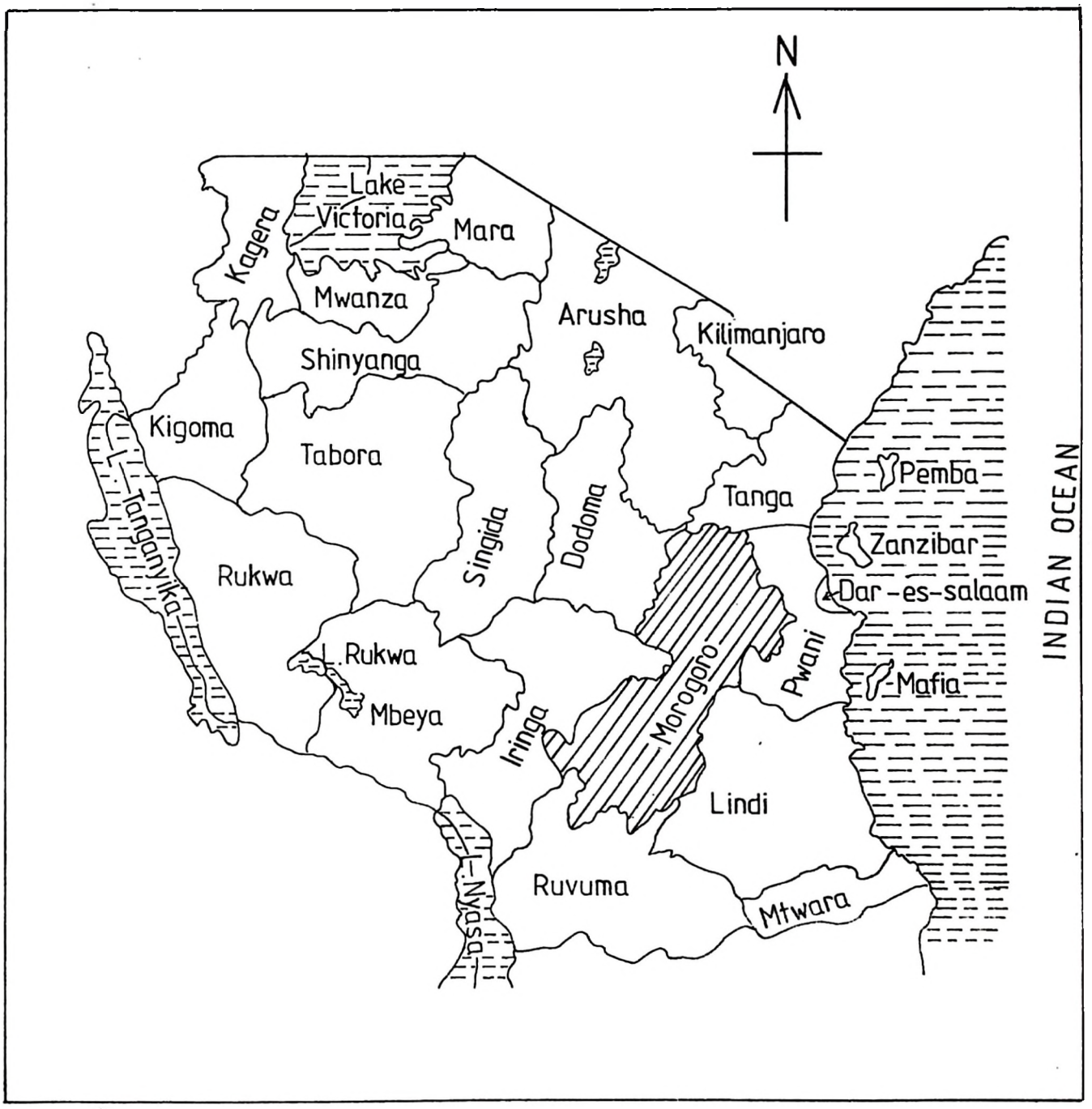


Fig. 1 . Location of Morogoro region within Tanzania .
Source: Atlas of Tanzania. Second edition 1976.

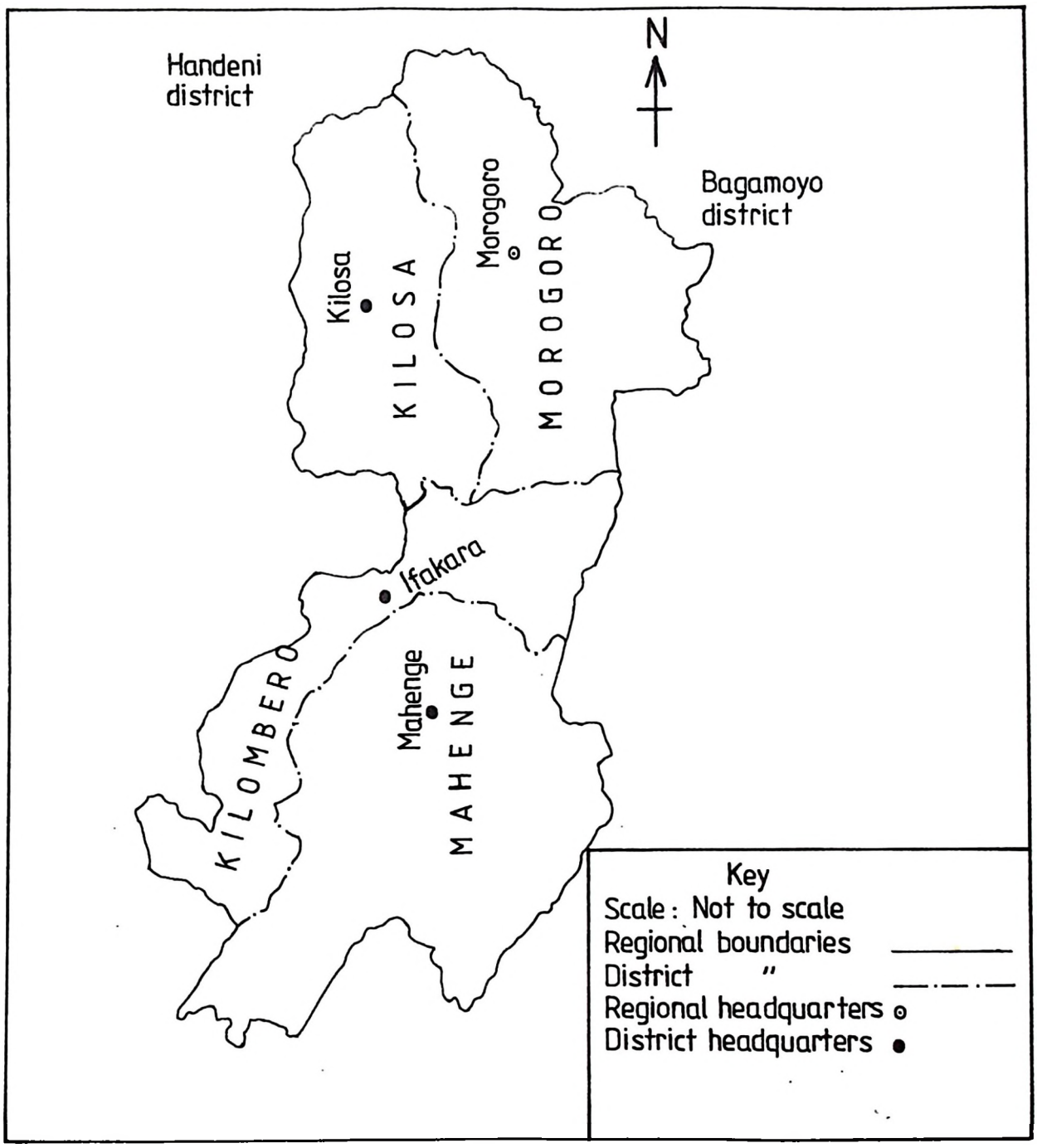


Fig. 2. Location of Morogoro rural district within Morogoro region.
Source: Atlas of Tanzania. Second edition 1976.

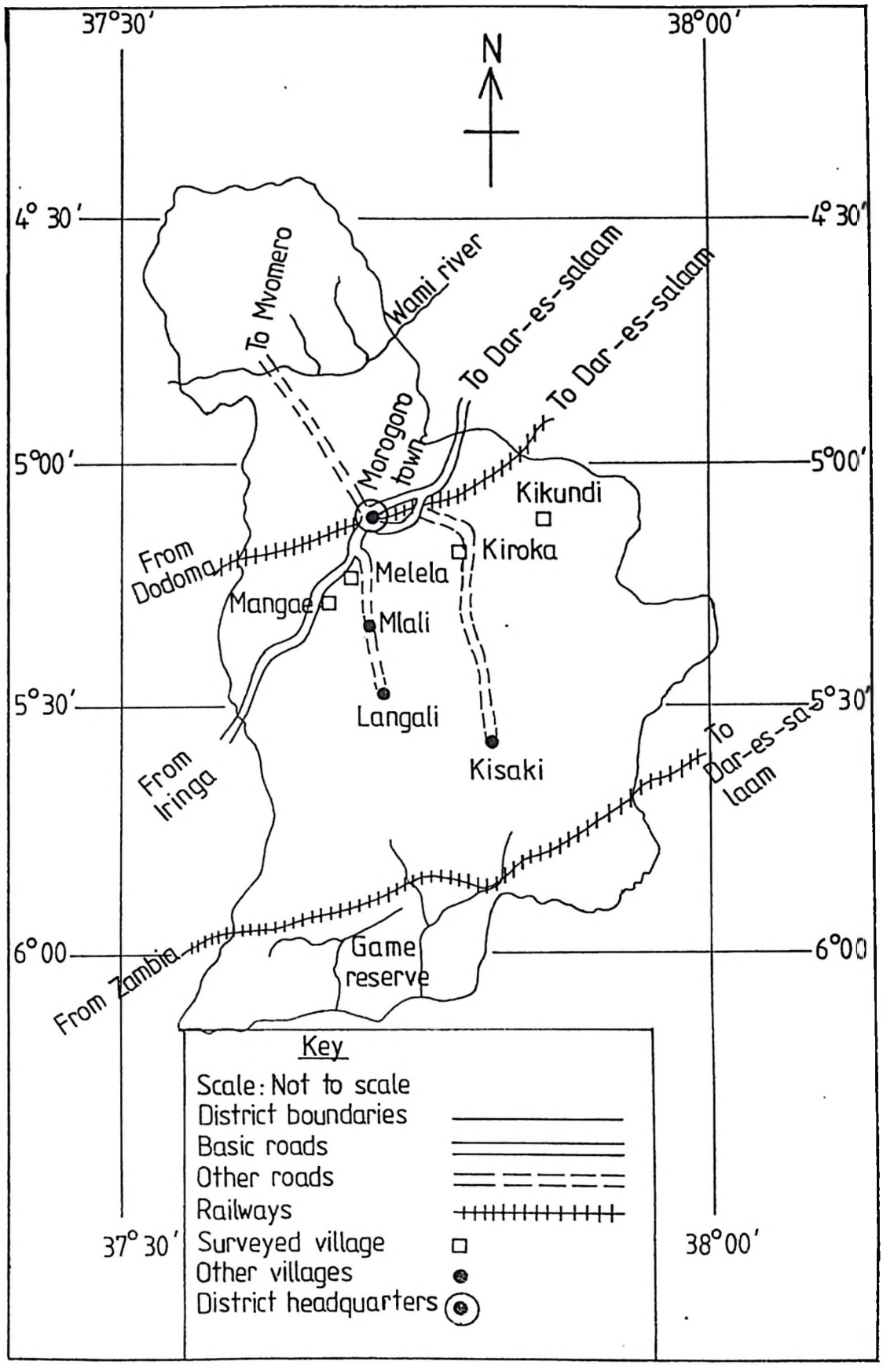


Fig . 3 . Location of surveyed villages in Morogoro rural district .
Source : Atlas of Tanzania . Second edition 1976 .

## 3.3 Research Design

In this study, a cross - sectional design was used. This is a design in which data are collected at a single point in time. Such a design, according to Babbie (1973) and Bailey (1978) is the most appropriate as long as the researcher can identify the population relevant to his interest. It can also be used not only for a descriptive study but also for the determination of relationships between variables. Lupanga (1986) cited the shortcomings of this design by pointing out that whereas the cross-sectional design is good for determining if two or more variables are correlated, it is less reliable for determining causal relationships. In this study the researcher intended to determine if some of the variables were correlated or not, so the design suited the researcher well.

## 3.4 Population and Sampling Procedures

### 3.4.1 Population

The population from about which information was collected consisted of all adult farm women in the four villages who were between 18 and 60 years of age. This is the population upon which generalizations of the results was based. The information collected from the surveyed population focused on two important food crops, maize and sorghum. Both crops are grown in Morogoro rural district. Maize is traditionally the most important staple food crop

in the country (Task Force 1982). It is grown in areas with high and reliable rainfall. In the surveyed area the crop is grown in Mkuyuni division where Kiroka and Kikundi villages are located. This division gets sufficient and reliable rainfall.

Sorghum on the other hand, is grown mainly in drier areas where maize does not do well. In Morogoro rural district, the crop is grown in Mlali division in which Melela and Mangae villages are located. Almost all the women in the sample from the four villages indicated either maize or sorghum as their main food crop.

### 3.4.2 Sampling procedures

A purposive sampling technique was used to select the four villages on the basis of a) existence of a resident village extension worker b) accessibility. From each village selected, a list of farm women was obtained using a corrected village register. This list was treated as a sampling frame from which a random sample of 40 adult farm women was drawn for detailed study (Table 1). A simple random sampling without replacement technique was adopted to get the sample size needed. The farm women were randomly selected by a system involving writing their names on pieces of paper which were then shuffled.

The shuffled pieces of paper with names were then picked randomly one at a time, after each shuffling, until the required sample size was obtained.

Table 1. Sampling frame of farm women - Morogoro rural district.

| Division | Village | Total number of rural women 18 - 60 years of age | Sample size | Percentage |
|---|---|---|---|---|
| Mlali | Melela | 460 | 40 | 8.7 |
| | Mangae | 305 | 40 | 13.1 |
| Mkuyuni | Kiroka | 485 | 40 | 8.3 |
| | Kikundi | 340 | 40 | 11.8 |
| Total | | 1590 | 160 | 10.1 |

## 3.5 Instrumentation and Data Collection Strategies

### 3.5.1 Preparation and testing of instruments

The structured questionnaire was developed both as a basis for recording required background information and as an instrument for measuring the following in respect of the respondents:

a) The extent to which agricultural information was available.

b) Sources of agricultural technical information in respect of selected farm practices.

c) Factors influencing the availability of agricultural technical information to rural women such as level of education, extension contact, level of income, age and marital status.

The structured questionnaires were the main instruments used in collecting the information. The questionnaires were translated into Kiswahili from English by the researcher. This enabled the research assistants to collect the data without much problem. In addition to the structured questionnaires, the researcher kept a diary for recording:

a) Observed farm activities of farm women during data collection. Such observations involved physical checks on how rural women carried out some major field operations, such as land preparation, planting, spacing and other practices.

b) Informal discussions with "Umoja wa Wanawake Tanzania" (UWT) leaders in the surveyed villages, village leaders, village extension agents and other leaders in district headquarters, including the District Agricultural and Livestock Development Officer (DALDO), about the accessibility of agricultural technical information to rural women.

### 3.5.2 Pre-testing of instruments

The preliminary draft of questionnaires was administered to five Sokoine University of Agriculture staff members and to the agricultural professionals who are working in extension section in the Ministry of

Agriculture, Livestock Development and Cooperatives for the purpose of judging the items' content validity. The validity of an instrument here refers to the extent to which it measures what it is intended to measure. Their views and suggestions were based on the criteria of clarity, specificity of the questions and correspondence of the questions in regard to the objectives of the study. On the basis of the insights gained from reviewing the responses of the Sokoine University Staff members, some adjustments were made to some of the items of the instrument.

The instruments were then pre-tested under field conditions. Ten individual farm women in the target population but not included in the final sample, were used to establish the reliability of the instrument. The testing of the questionnaire provided a useful guide particularly with respect to the anticipated reaction of the respondents on questions which required personal views about socio-cultural and socio-economic considerations.

3.5.2.1 Reliability

Reliability refers to the extent to which a questionnaire provides consistent results when applied in repeated measures. According to Ostle and Mensing (1975), for the instrument to be reliable and independent, repeated measurements made by it under constant conditions will give the same results provided there is no change in the basic

characteristics being measured. In order to improve the validity and reliability of the instrument the researcher did the following:

a) Female research assistants were carefully selected from the names proposed by village leaders. Personal interviews were then conducted. Five research assistants were selected from a pool of ten women provided by village leaders. Selection was based on the educational background of the individual and on whether an individual was interested in the job. After some initial training and briefing the candidates were subjected to pre-test interview. Here the actual information given by the respondents were matched for accuracy and completeness with which the data was reported. The pre-test interview therefore, enabled the researcher to evaluate the candidates ability and the accuracy in reporting the information. The best two candidates were finally selected for the job.

b) The two interviewers were then briefed and instructed on how to collect data before the actual data collection started.

c) During the data collection the researcher kept in touch with the research assistants in order to supervise, to respond to potential problems

at the time of interviewing and to keep the interviewers up to the mark thus minimizing interviewer differences in interpreting information given by respondents. Efforts were also made during pre-testing of the questionnaires to carefully test for common meaning and adequacy of conceptualization of intended meaning in Kiswahili for all items. This was done by removing ambiguities from questions that were not properly understood by the farm women and by determining whether any question resulted in uniform responses. On the basis of this pre-test the wording of some questions were altered.

### 3.5.3 Data collection

Data collection was done from late January, 1990 to mid March, 1990 by the researcher assisted by the two female interviewers in each village. The researcher resided in each village for a period of about one week. While in the village, the researcher carefully explained to government officials, village leaders and the farmers themselves, the purpose and scope of the survey. To the respondents the following were emphasized. First, that the enumeration areas and farmers had been selected randomly. Secondly, that information collected would not be released to local leaders in the village or in the district.

Thirdly, the farming problems would be identified and written up for any interested person to see. In addition, the researcher consulted, sought assistance from some village leaders and established the sampling frame and lastly he recruited the research assistants.

In carrying out the actual data collection the respondents were visited one by one at their homes or in their fields. In order to avoid misunderstanding between the womens' husbands and the researcher, the ten cell-leaders were used to introduce the researcher to the respondents and their spouses. Thereafter the ten cell-leader was responsible for outlining to the rest of the family members the objectives of the research to put everybody at ease. The eligible respondents were then separated from the rest of their families to be interviewed privately and individually in order to make them feel more free to respond.

## 3.6 Data Analysis

The purpose of preparing data for analysis was to summarize and condense information from the womens' questionnaires and researcher's diary into a form which was easily comprehensible and integrated. To do this, data originally reported in Kiswahili were translated into English and para-phrased while preserving the original details and meaning as accurately as possible. The gathered data from questionnaires was then coded and recorded on

computer forms before they were entered in the computer and analyzed by the computer services at Sokoine University of Agriculture, Morogoro.

In analyzing the data, descriptive and inferential statistics sub-programme of the SPSS/PC (released January 1980) was used. For the descriptive statistical analysis, frequency distribution, mean, percentages and standard deviations were computed to summarize the data. In carrying out the inferential statistical analysis, cross-tabulation, chi-square test and contingency coefficients were computed to determine correlations and differences between the variables.

The data analysis also sought to test the relationships between the selected variables and accessibility of agricultural technical information to rural women. In order to determine whether or not the variables were statistically related chi-square tests and contingency coefficients were computed.

The hypotheses were rejected or accepted on the basis of the chi-square values computed for the association between selected variables. A significance level of 0.05 was selected as the criterion for determining a significant relationship. The choice of this significance level was a compromise between minimizing type I error ("rejecting a null hypothesis when it should have been the accepted alternative") and at the same time protecting against type II error ("accepting a null hypothesis when it should have

been the rejected alternative"). A smaller than 0.05 significance level would have increased the probability of making type II error while making the significance level bigger than 0.05 would have the opposite effects (Ostle and Mensing 1975). But chi-square values by themselves help only to decide whether or not variables are statistically related. They do not tell how strong a relationship between variables actually is. This is partly due to the fact that the chi-square value is greatly influenced by the sample size and the number of cells in a table.

Contingency coefficients which are really adjusted chi-square values were therefore used as indicators of the relative strength of association between the different variables. Ostle and Mensing (1975) gave the formula of the coefficient of contingency as:

$$C = [X^2/(n + X^2)]1/2$$

where n = total number of observations

$$\chi^2 = \sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

C measures the degree of association between two characteristics where observational data are classified in an r x c contingency table.

Oij = Observed number in the $ij^{th}$ Cell. It is the frequency obtained from the sample

Eij = RiCj/n the expected number in the $ij^{th}$ cell

r = Total number of rows in contingency table

c = Total number of columns in contingency table

Ri = Row total for $i^{th}$ row

Cj = Column total for $j^{th}$ column.

# CHAPTER FOUR

# RESULTS, INTERPRETATIONS AND DISCUSSIONS

## 4.1 Introduction

This chapter summarizes the results and offers some interpretations and discussions of the results. The first section describes the sample. The second and third sections present the results of descriptive and inferential statistical analyses. The last section provides interpretations and discusses the results from both the descriptive and inferential statistical analyses.

## 4.2 Results of the Data Analysis

### 4.2.1 Description of the sample

The backgrounds of members in the sample were as outlined below.

#### 4.2.1.1 Age

This refers to the lifetime of a respondent from birth to the study period. Accordingly, all the respondents were clustered into three groups as follows: 18 to 35; 36 to 45; and 46 to 60 years of age (Table 2).

The majority of the respondents (50.0 percent) were between 18 to 35 years with the actual mean being 27.2 years while 38.8 percent were between 36 to 45 years. The remaining 11.2 percent were over 46 years.

Table 2. Distribution of respondents by age (n = 160).

| Age group in years | Villages | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Melela | | Mangae | | Kiroka | | Kikundi | | Total | |
| | n | % | n | % | n | % | n | % | n | % |
| 18-35 | 23 | 57.5 | 20 | 50.0 | 16 | 40.0 | 21 | 52.5 | 80 | 50.0 |
| 36 - 45 | 11 | 27.5 | 12 | 30.0 | 24 | 60.0 | 15 | 37.5 | 62 | 38.8 |
| 46 - 60 | 6 | 15.0 | 8 | 20.0 | - | - | 4 | 10.0 | 18 | 11.2 |
| Total | 40 | 100.0 | 40 | 100.0 | 40 | 100.0 | 40 | 100.0 | 160 | 100.0 |

4.2.1.2 Education

This refers to the amount of formal education acquired by the farm women. For this purpose, respondents were categorised into three groups, namely; those who had completed primary school education, those who had gone through various stages of non-formal education and those who could neither read nor write. Results in Table 3 show that 44.3 percent of the respondents reported that they had completed primary school education while 31.9 percent said they had attended various stages of adult education. The remaining 23.8 percent of the respondents indicated to have no schooling at all.

Table 3. Distribution of respondents by educational level (n = 160).

| Educational attainment | Melela | | Mangae | | Kiroka | | Kikundi | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| Cannot read or write | 12 | 7.5 | 13 | 8.1 | 6 | 3.8 | 7 | 4.4 | 38 | 23.8 |
| Attended adult education <a | 8 | 5.0 | 7 | 4.4 | 20 | 12.5 | 16 | 10.0 | 51 | 31.9 |
| Completed primary school education<b | 20 | 12.5 | 20 | 12.5 | 14 | 8.7 | 17 | 10.6 | 71 | 44.3 |
| Total<a&<b | 28 | 17.5 | 27 | 16.9 | 34 | 21.2 | 33 | 20.6 | 122 | 76.2 |
| Grand total | 40 | 25.0 | 40 | 25.0 | 40 | 25.0 | 40 | 25.0 | 160 | 100.0 |

4.2.1.3 Marital status

The majority of the respondents (51.9 percent) were married (Table 4). Considering the average age of 27.2 years for the youngest group, the preponderance of married women stands to reason. The remaining 48.1 percent of the respondents comprised the non-married group which was made of singles, (19.4 percent); divorced, (16.2 percent) and widowed (12.5 percent).

Table 4. Distribution of respondents according to marital status (n = 160).

| Marital status | Frequency | Percent |
|---|---|---|
| Married women | 83 | 51.9 |
| Single | 31 | 19.4 |
| Divorced | 26 | 16.2 |
| Widowed | 20 | 12.5 |
| Total | 160 | 100.0 |

4.2.1.4 Level of income

The majority of the respondents (82.5 percent) were in the low income category. This group received income of Tsh 3000 or less (Table 5). 8.1 percent of the respondents had incomes ranging between Tsh 3,001 - 5,000; 5.6 percent had incomes ranging from 5,001 - 10,000 Tsh while the last group consisting of 3.8 percent of the respondents had incomes above Tsh 10,000.

Table 5. Annual income distribution among the respondents (n = 160).

| Income level (Tsh) | Frequency | Percentage |
|---|---|---|
| ≤ 3,000 | 132 | 82.5 |
| 3,001 - 5,000 | 13 | 8.1 |
| 5,001 - 10,000 | 9 | 5.6 |
| > 10,000 | 6 | 3.8 |
| Total | 160 | 100.0 |

4.2.2 Results of the descriptive statistical analysis

The descriptive statistical analysis involved a description of the results of frequency distribution of the analysis of variables.

4.2.2.1 Knowledge about credit

Table 6 shows that 71.3 percent of the respondents knew nothing about bank credit, 28.7 percent knew about credit application procedures or had actually applied for bank credit, but none obtained it.

Table 6. Respondents' knowledge about credit (n = 160).

| Knowledge about credit | Frequency | Percentage |
|---|---|---|
| Knew nothing about bank credit | 114 | 71.3 |
| Knew application procedures or had applied for bank credit | 46 | 28.7 |
| Acquired bank credit | 0 | 0.0 |
| Total | 160 | 100.0 |

4.2.2.2 Respondent's communication patterns

When farm women were asked to indicate the frequency with which they had been in contact with extension agents. The results in Table 7 show that about 7.5 percent of the respondents indicated that they had been in contact with extension agents about once in a mouth; 10 percent reported to have contacted them about once in every two months while 31.9 percent indicated that they had communicated with extension agents about once in 5 - 12 months. About half (48.1 percent) indicated that they had no contact at all with extension agents. In short, less than a quarter of the rural women in the sample (12.5 percent) had sustained contact with extension agents.

Table 7. Frequency of advice received from extension agents (n = 160).

| Received advice | Frequency | Percentage |
|---|---|---|
| Once per month | 12 | 7.5 |
| Once in every two months | 16 | 10.0 |
| Once in every five months | 19 | 11.9 |
| Once in every seven months | 17 | 10.6 |
| Once per year | 19 | 11.9 |
| None | 77 | 48.1 |
| Total | 160 | 100.0 |

With regard to rural women's perception of availability of timely extension advice, the situation is as presented in Table 8. About 17.5 percent of the respondents indicated that they had timely and appropriate extension advice. Of the remaining women in the sample, about 33.1 percent indicated that they had not received timely extension advice from the village level extension agents, while 48.1 percent said that they had never been advised by extension agents. The rest of the women (1.3 percent) did not respond. It appears, therefore, that only a small number of rural women received timely extension advice.

Table 8. Rural women's perceptions about availability of timely extension advice (n = 160).

| Timely and appropriate extension advice | Frequency | Percentage |
|---|---|---|
| Advice available in time | 28 | 17.5 |
| Advice not available in time | 53 | 33.1 |
| No advice was received | 77 | 48.1 |
| No response | 2 | 1.3 |
| Total | 160 | 100.0 |

4.2.2.3 Respondent's comprehension of extension advice given

When farm women who had contact with extension agents were asked to indicate if they understood extension workers' advice, their responses were as shown in Table 9. The responses show that 15.6 percent of the respondents understood the extension agents' advice, while 23.8 percent were undecided. Of the remaining women in the sample, 6.9 percent said they had not understood the agents' advice while 48.1 percent indicated that they did not need extension agents' advice. The rest of the respondents (5.6 percent), did not respond.

Table 9: Respondents' comprehension of extension advice given (n = 160).

| Comprehension of extension advice | Frequency | Percentage |
|---|---|---|
| Advice clearly understood | 25 | 15.6 |
| Undecided | 38 | 23.8 |
| Advice not understood | 11 | 6.9 |
| No advice was required from extension agents | 77 | 48.1 |
| No response | 9 | 5.6 |
| Total | 160 | 100.0 |

4.2.2.4 Respondents' preference for male or female extension agents

On the question of preferences for male or female extension agents, the results presented in Table 10 show that 68.1 percent of the respondents preferred female extension agents, 15.0 percent were undecided and 16.9 percent of the respondents preferred male extension agents.

Table 10. Respondents' preference for male or female extension agents (n = 160).

| Preference for extension agents sex | Frequency | Percentage |
|---|---|---|
| Would prefer female extension agent | 109 | 68.1 |
| Undecided | 24 | 15.0 |
| Would prefer male extension agent | 27 | 16.9 |
| Total | 160 | 100.0 |

4.2.2.5 Respondents' opinions about communication with female agents

When the respondents were asked to give reasons for their preferences for male or female extension workers, their responses were as summarized in Table 11. Those who preferred male extension agents (16.9 percent) qualified their responses by saying that they would prefer a female extension agent only if she was also competent in giving advice on agricultural matters. Those who responded by preferring a female extension agent (68.1 percent) gave the following reasons for their preferences:

1) Female extension agents would understand their problems better (51.2 percent).
2) It would be easy to communicate with women agents even when their husbands were not around (52.5 percent).
3) There would be no barrier to learning (16.3 percent).

4) There would be no need for them to feel shy as they would when advised by male extension agents (33.8 percent).

5) They could discuss anything freely with female extension agents (20.0 percent).

Table 11. Respondents' opinions about communication with female extension agents (n = 160).

| Respondents opinion | Frequency | Percentage |
|---|---|---|
| Female extension agents will understand their problem | 82 | 51.2 |
| It would be easy to communicate with women agents even when their husbands are not around | 84 | 52.5 |
| There will be no barrier to learning | 26 | 16.3 |
| There will be no need for rural women to feel shy as they do when they are advised by male extension agents | 54 | 33.8 |
| They could discuss anything freely with female extension agents | 32 | 20.0 |
| Prefer female if they are more competent in giving advice on agricultural matters | 27 | 16.9 |

4.2.2.6 Respondents' knowledge about farm practices

The respondents were requested to rate their knowledge on nine recommended farm practices, namely row planting, planting according to correct spacing, timely planting, pesticide spraying, type of commercial fertilizers used, commercial fertilizer use, manure use, improved seed

storage, and use of improved farm tools. The ratings are presented in Table 12.

Table 12. Rural womens' knowledge of recommended farm practices (n = 160).

| Recommended farm practices | Knows reasonably well | | Undecided | | Does not know at all | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Row planting | 92 | 57.5 | 9 | 5.6 | 59 | 36.9 |
| Planting with correct spacing | 88 | 55.0 | 12 | 7.5 | 60 | 37.5 |
| Timely planting | 80 | 50.0 | 32 | 20.0 | 48 | 30.0 |
| Pesticide use | 59 | 36.8 | 59 | 36.9 | 42 | 26.3 |
| Types of fertilizers used | 34 | 21.2 | 59 | 36.9 | 67 | 41.9 |
| Fertilizer use | 32 | 20.0 | 57 | 35.6 | 71 | 44.4 |
| Manure use | 50 | 31.3 | 61 | 38.1 | 49 | 30.6 |
| Seed storage (improved) | 60 | 37.5 | 54 | 33.8 | 46 | 28.7 |
| Use of farm tools | 31 | 19.4 | 69 | 43.1 | 60 | 37.5 |
| Average (Percent) | | 36.5 | | 28.6 | | 34.9 |

4.2.2.6.1 On row planting

The majority of the respondents (57.5 percent), indicated that they knew about the farm practice reasonably well. Of the remaining respondents, 5.6 percent were undecided and the rest (36.9 percent) had no knowledge about the recommended farm practice.

4.2.2.6.2 On planting according to correct spacing

With regard to this aspect the majority of the respondents (55.0 percent), knew about the recommended farm practice reasonably well, while 7.5 percent of the respondents were undecided. The rest of the respondents (37.5 percent), had no knowledge about the farm practice.

4.2.2.6.3 On timely planting

Fifty percent of the respondents knew about the recommended farm practice reasonably well, 20.0 percent, were undecided and 30.0 percent, had no knowledge about the recommended farm practices.

4.2.2.6.4 On pesticide spraying

On this aspect over one third of the respondents (36.9 percent), were undecided, 26.3 percent, knew nothing about the recommended farm practices. The rest of the respondents (36.8 percent), knew about the recommended farm practices fairly well.

4.2.2.6.5 On fertilizer use

The majority of the respondents (44.4 percent), had no knowledge about fertilizer use and 35.6 percent, were undecided. Only 20.0 percent, of the respondents knew about fertilizer use and its importance.

4.2.2.6.6 On types of fertilizer used

With regard to this aspect, the majority of the respondents (41.9 percent), had no knowledge about the types of commercial fertilizers used and 36.9 percent, were undecided. Only 21.2 percent, of the respondents knew about the types of commercial fertilizers used reasonably well.

4.2.2.6.7 On manure use

With regard to this aspect, the majority of the respondents (38.1 percent), were undecided while 30.6 percent, knew nothing about the use of manure. Only 31.3 percent, of the respondents knew the value of manure well.

4.2.2.6.8 On seed storage

On this aspect, the majority of the respondents (33.8 percent), were undecided and 28.7 percent, had no knowledge about recommended seed storage practices. The remaining 37.5 percent, of the respondents knew about seed storage practices reasonably well.

4.2.2.6.9 On the use of farm tools

The majority of respondents (43.1 percent), were undecided while 37.5 percent, had no knowledge about the use of improved farm tools. The remaining group (19.4 percent), knew about the use of improved farm tools fairly well.

4.2.2.7 Analysis of agricultural information sources

4.2.2.7.1 Respondents' sources of information

In order to determine the extent to which agricultural technical information is available, rural women were asked to indicate general sources of information for various new farming practices. The results in Table 13 show that respondents rated husbands (89.2 percent), extension agents (51.9 percent), neighbours (40.6 percent), farm demonstrations (33.7 percent), "Ukulima wa Kisasa" farm magazine (14.4 percent), radio (17.5 percent) and Folk Development Colleges (0.6 percent) as their preferred sources of getting farm information.

Table 13. Responses of rural women on sources of information on recommended practices (n = 160).

| | Respondents | | | |
|---|---|---|---|---|
| Source of information | Contacted | | Uncontacted | |
| | n | % | n | % |
| Radio farm programme | 28 | 17.5 | 132 | 82.5 |
| Farm magazine (Ukulima wa Kisasa) | 23 | 14.4 | 137 | 85.6 |
| Extension visits | 83 | 51.9 | 77 | 48.1 |
| Extension meeting | 67 | 41.9 | 93 | 58.1 |
| Farm demonstration | 54 | 33.7 | 106 | 66.3 |
| Neighbours advice | 65 | 40.6 | 95 | 59.4 |
| Husbands advice | 74 | 89.2 | 9 | 10.8 |
| Folk Development College | 1 | 0.6 | 159 | 99.4 |

4.2.2.7.2 Respondents'sources of information on selected farm practices

The respondents were also requested to give their opinions regarding sources of information on land preparation, cultivation, spacing, fertilizer application, insecticide use, weeding, harvesting, seed rates and seed selection. The results are presented in Table 14.

a) On land preparation

The sources were extension agents (37.5 percent), husbands (25.0 percent), neighbours (20.0 percent) and farm demonstrations (19.4 percent).

b) On cultivation

The majority of rural women consulted husbands (31.9 percent), extension agents (28.1 percent), neighbours (19.4 percent) and farm demonstrations (19.4 percent).

c) On spacing

Knowledge on this aspect came from extension agents (41.9 percent), husbands (23.7 percent), farm demonstrations (20.6 percent) and neighbours (18.7 percent).

d) On fertilizer application

Information on fertilizer use was obtained from extension agents (38.7 percent) and farm demonstrations (25.6 percent).

Table 14: Sources of information for rural women on selected farm practices (n=160)

| | Sources of information | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Extension Contact | | Radio | | Ukulima" wa Kisasa | | Extension meeting | | Farm demon-stration | | Neigh-bours advice | | Husbands advice | |
| Selected farm practices | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Land preparation | 60 | 37.5 | 13 | 8.1 | 12 | 7.5 | 18 | 11.3 | 31 | 19.4 | 32 | 20.0 | 40 | 25.0 |
| Cultivation | 45 | 28.1 | 16 | 10.0 | 11 | 6.9 | 24 | 15.0 | 31 | 19.4 | 31 | 19.4 | 51 | 31.9 |
| Spacing | 67 | 41.9 | 15 | 9.4 | 17 | 10.6 | 17 | 10.6 | 33 | 20.6 | 30 | 18.7 | 38 | 23.7 |
| Fertilizer application | 62 | 38.7 | 20 | 12.5 | 17 | 10.6 | 12 | 7.5 | 41 | 25.6 | 12 | 7.5 | 17 | 10.6 |
| Insecticide application | 62 | 38.7 | 24 | 15.0 | 21 | 13.1 | 10 | 6.3 | 35 | 21.9 | 12 | 7.5 | 21 | 13.1 |
| Weeding | 39 | 24.4 | 11 | 6.9 | 15 | 9.4 | 20 | 12.5 | 29 | 18.1 | 40 | 25.0 | 45 | 28.1 |
| Harvesting | 37 | 23.1 | 9 | 5.6 | 10 | 6.3 | 18 | 11.3 | 26 | 16.3 | 50 | 31.2 | 57 | 35.6 |
| Seed rate | 33 | 20.6 | 16 | 10.0 | 18 | 11.3 | 9 | 5.6 | 28 | 17.5 | 14 | 8.8 | 21 | 13.1 |
| Seed selection | 20 | 12.5 | 16 | 10.0 | 20 | 12.5 | 13 | 8.1 | 20 | 12.5 | 12 | 7.5 | 21 | 13.1 |
| Average | | 29.5 | | 9.7 | | 9.6 | | 9.8 | | 19.0 | | 16.2 | | 21.6 |

e) On insecticide use

The majority of rural women consulted extension agents (38.7 percent) and farm demonstrations (21.9 percent).

f) On weeding

Farm women consulted husbands (28.1 percent), neighbours (25.0 percent), extension agents (24.4 percent) and farm demonstrations (18.1 percent).

g) On harvesting

Information regarding harvesting aspect was obtained from husbands (35.6 percent), neighbours 31.2 percent) and extension agents (23.1 percent).

h) On seed rates

The main sources of information on this technology were extension agents (20.6 percent), farm demonstrations (17.5 percent) and husbands (13.1 percent).

i) On seed selection

Information regarding this aspect was obtained from husbands (13.1 percent), extension agents (12.5 percent), farm demonstrations (12.5 percent) and "Ukulima wa Kisasa" farm magazine (12.5 percent).

4.2.2.8 Constraints which limit accessibility of technical information to rural women

When respondents were asked to indicate constraints which limit them from getting agricultural information on new farm practices, their responses were as presented in Tables 15 and 16. The constraints were:

4.2.2.8.1 Lack of extension packages

The majority of respondents (61.3 percent) agreed, 20.6 percent were undecided and the rest of the respondents (18.1 percent) disagreed that lack of extension packages were constraints to them.

Table 15. Perceptions of rural women on the extension agents' oriented constraints which hamper transfer of agricultural information (n=160)

| | Agree | | Undecided | | Disagree | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Lack of extension package | 98 | 61.3 | 33 | 20.6 | 29 | 18.1 |
| Extension agents are inclined to advise more male farmers than female farmers | 60 | 37.5 | 50 | 31.2 | 50 | 31.3 |
| Lack of concerted efforts to contact women farmers | 98 | 61.2 | 36 | 22.5 | 26 | 16.3 |
| Average (Percent) | | 53.3 | | 24.8 | | 21.9 |

4.2.2.8.2 Lack of concerted effort by extension agents to contact rural women

With regard to the above the majority of the respondents (61.2 percent) agreed, 22.5 percent were undecided and 16.3 percent disagreed.

4.2.2.8.3 More extension advice directed towards male farmers

The majority of respondents (37.5 percent) agreed, 31.2 percent were undecided. Of the remaining women in the sample, about 31.3 percent disagreed that extension agents were advising more male farmers than female farmers.

4.2.2.8.4 Heavy household chores on the part of women

On this issue, the majority of the respondents (54.4 percent) agreed, 10.0 percent were undecided while 35.6 percent disagreed that household chores were limiting them from attending farm demonstrations, extension meetings and Folk Development Colleges.

4.2.2.8.5 Husbands' jealousy

With regard to this aspect, 46.2 percent of the respondents agreed, 32.5 percent were undecided and 21.3 percent of the respondents disagreed that husbands become jealous when their wives got in one-to-one contacts with male extension agents.

Table 16. Perceptions of rural women on the constraints (traditional and cultural beliefs) which hamper transfer of agricultural information (n = 160).

| | Agree | | Undecided | | Disagree | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Cultural beliefs hindering women from contacting extension agents | 46 | 28.8 | 21 | 13.1 | 93 | 58.1 |
| Household chores limit women from attending attending extension meetings | 87 | 54.4 | 16 | 10.0 | 57 | 35.6 |
| Husbands are jealous when women farmers are in one-to-one contact with male extension agents | 74 | 46.2 | 52 | 32.5 | 34 | 21.3 |
| Average (Percent) | | 43.2 | | 18.5 | | 38.3 |

4.2.2.8.6 Cultural beliefs

The majority of the respondents (58.1 percent) disagreed, 13.1 percent were undecided and 28.8 percent of the respondents agreed that cultural beliefs were limiting them from getting agricultural information.

4.2.2.9 Factors influencing womens' agricultural information acquisition

4.2.2.9.1 Level of education

With regard to factors which influence rural womens' accessibility to information on agricultural innovation,

the findings are presented in Table 17. While 57.1 percent of respondents who completed primary school education listened to radio farm programmes, only 28.6 percent of respondents who attended various stages of adult education did so. The corresponding rate of illiterate farmers who listened to radio farm programmes is only 14.3 percent.

Similarly readership of "Ukulima wa Kisasa" farm magazine show that 73.9 percent of the respondents who completed primary school education read the farm magazine as compared to only 26.1 percent of those who attended various stages of adult education.

With respect to attending farm demonstrations the results show that 57.4 percent of the respondents who completed primary school education attended such demonstrations as compared to only 24.1 percent of those respondents who had attended various stages of adult education. Only 18.5 percent of the illiterates attended the farm demonstrations.

Table 17. Influence of education on respondents' agricultural information seeking behaviour (n = 160).

| Information sources | Level of Education | | |
|---|---|---|---|
| | Completed primary school education | Attended adult education | Illiterate |
| | Percentage | | |
| Radio | 57.1 | 28.6 | 14.3 |
| Farm magazine | 73.9 | 26.1 | 0.0 |
| Farm demonstration | 57.4 | 24.1 | 18.5 |
| Extension meeting | 50.0 | 30.0 | 20.0 |
| Extension contact | 50.6 | 33.7 | 15.7 |
| Husbands advice | 43.2 | 35.2 | 21.6 |
| Neighbours advice | 36.9 | 38.5 | 24.6 |
| Average (Percentage) | 52.7 | 30.9 | 16.4 |

On attendance of extension meetings, the results show that 50.0 percent of respondents who completed primary school education attended extension meetings as compared to 30.0 percent of those who attended various stages of adult education and 20.0 percent of those who were Illiterate.

With regard to contacts with extension agents, the results show that 50.6 percent of the respondents who completed primary school education contacted extension agents as compared with 33.7 percent of the respondents who

had attended various stages of adult education and 15.7 percent of the illiterate group who did so.

With respect to local information sources, the results show that 43.2 percent and 36.9 percent of the respondents who completed primary school education consulted husbands and neighbours respectively, as compared to 35.2 percent and 38.5 percent who attended various stages of adult education who did so, respectively. For the illiterate group, 21.6 percent and 24.6 percent consulted husbands and neighbours respectively.

4.2.2.9.2 Level of income

The influences of level of income on respondents' information seeking behaviour are presented in Table 18. The results show that 12.9 percent of the low income farmers listened to radio farm programmes as compared to 7.7 percent of those with incomes of between 3,001 - 5,000 Tsh. 55.6 percent of respondents with income of between 5,001 - 10,000 Tsh and 83.3 percent of those with incomes of more than 10,000 Tsh listened to radio farm programmes.

With regard to the readership of "Ukulima wa Kisasa" farm magazine, the results show that 7.6 percent of those in the low income bracket did so. The comparable figures for those in the 3,001 - 5,000 Tsh and 5,001 - 10,000 Tsh income brackets are 30.8 percent and 44.4 percent respectively. Readership of the "Ukulima wa Kisasa" farm

magazine by those with incomes above 10,000 Tsh reached 83.3 percent.

With respect to attending extension meetings, the results show that 29.5 percent of low income farmers attended the meetings as compared to 69.2 percent of those with incomes of 3,000 - 5,000 Tsh and 88.9 percent of those with incomes of 5,001 - 10,000 Tsh. 66.7 percent of those with incomes of above 10,000 Tsh attended extension meetings.

Table 18. Influence of income on respondents' agricultural information seeking behaviour (n = 160).

| Information sources | Income Tsh | | | |
|---|---|---|---|---|
| | < 3000 | 3001-5000 | 5001-10000 | >10000 |
| Percentage | | | | |
| Radio | 2.9 | 7.7 | 55.6 | 83.3 |
| Farm magazine | 7.6 | 30.8 | 44.4 | 83.3 |
| Extension meeting | 29.5 | 69.2 | 88.9 | 66.7 |
| Farm demonstration | 25.8 | 69.2 | 66.7 | 83.3 |
| Extension contract | 46.2 | 76.9 | 66.7 | 100.0 |
| Husbands advice | 47.0 | 30.8 | 44.4 | 66.7 |
| Neighbours advice | 37.1 | 46.2 | 77.8 | 50.0 |
| Average (Percent) | 29.4 | 47.3 | 63.5 | 76.2 |

One farm demonstrations, the results show that 25.8 percent of respondents who earned less 3,000 Tsh attended farm demonstrations as compared to 69.2 percent of those who earned 3,001 - 5,000 Tsh. The corresponding figures for those whose incomes were 5,001 - 10,000 Tsh and above 10,000 Tsh were 66.7 percent and 83.3 percent, respectively.

With regard to extension contacts, the results in Table 18 show that 46.2 percent of low income earners and 76.9 percent of those with incomes of 3,001 - 5,000 Tsh contacted extension agents. Of the remaining income groups, 66.7 percent of those with incomes of 5,001 - 10,000 Tsh and 100.0 percent of those with incomes of above 10,000 Tsh contacted extension agents.

Likewise, the results on local information sources show that 47.0 percent and 37.1 percent of low income earners, consulted their husbands and neighbours respectively. Of those who earned between 3,001 - 5,000 Tsh, 30.8 percent and 46.2 percent, consulted husbands and neighbours respectively. Similarly, for those with incomes of 5,001 - 10,000 Tsh, 44.4 percent and 77.8 percent consulted husbands and neighbours, respectively; while for respondents with incomes greater than 10,000 Tsh, the corresponding percentages of those who consulted husbands and neighbours were 66.7 and 50.0, respectively.

4.2.2.9.3 Age

Age was analyzed in relation to the utilization of sources of information. The results are presented in Table 19. The results show that 50.0 percent of young women listened to the radio while 39.3 percent of middle aged did so. Only 10.7 percent of the older members in the sample listened to the radio. On readership of "Ukulima wa Kisasa", the results show that 65.2 percent of the younger women read the magazine as compared to 30.4 percent of the middle aged and 4.4 percent of the old members.

Similarly, when extension meetings were considered the results show that 50.0 percent of the respondents in the younger age group attended meetings organized by extension agents as compared to 43.3 percent of the middle aged and 6.7 percent of old members.

For extension contacts in general, the results show that 55.4 percent of the younger women contacted extension workers as compared to 42.2 percent of the middle aged members and 2.4 percent of the old members.

With respect to attendance at farm demonstrations, the results show that 66.7 percent of the younger members and 25.9 percent of the middle aged women attended those demonstrations. Only 7.4 percent of the older women attended such demonstrations.

Results on utilization of local information sources show that 44.6 percent and 43.2 percent of the respondents who consulted neighbours and husbands respectively were

young, 46.2 percent and 44.6, percent who consulted neighbours and husbands respectively were middle aged and 9.2 percent and 12.2 percent who consulted neighbours and husbands respectively were old.

Table 19. Influence of age on respondents' agricultural information seeking behaviour (n = 160).

| Information sources | Age 18 - 35 | 36 - 45 | 46 - 60 |
|---|---|---|---|
| | | Percentage | |
| Radio | 50.0 | 39.3 | 10.7 |
| Farm magazine | 65.2 | 30.4 | 4.4 |
| Extension meeting | 50.0 | 43.3 | 6.7 |
| Extension contact | 55.4 | 42.2 | 2.4 |
| Farm demonstration | 66.7 | 25.9 | 7.4 |
| Neighbours advice | 44.6 | 46.2 | 9.2 |
| Husbands advice | 43.2 | 44.6 | 12.2 |
| Average (Percent) | 53.5 | 38.7 | 7.8 |

4.2.2.9.4 Marital status

When marital status was considered, the results presented in Table 20 show that 46.4 percent of the married respondents as opposed to 53.6 percent of non-married listened to radio farm programmes. The results show also that 43.5 percent of married women as compared to 56.5 percent of non married women read "Ukulima wa Kisasa". Attendance at extension meetings was done by 33.3 percent of the married women as compared to 66.7 percent of the unmarried women. Similarly 46.3 percent of the married women attended farm demonstrations as compared to 53.2 percent of the unmarried women. In the case of

extension contacts, the results show that 50.6 percent of the married women consulted extension agents as compared to 49.4 percent of the unmarried women. When husbands' advice was considered, the results show that 90.7 percent of the married women consulted their husbands for agricultural information as compared to 44.6 percent of them who consulted their neighbours. About 55.4 percent of the unmarried women consulted neighbours.

Table 20. Influence of marital status on respondents' agricultural information seeking behaviour (n = 160).

| Information sources | Marital status | |
|---|---|---|
| | Married | Non-married |
| | Percentage | |
| Radio | 46.4 | 53.6 |
| Farm magazine | 43.5 | 56.5 |
| Extension meeting | 33.3 | 66.7 |
| Farm demonstration | 46.3 | 53.7 |
| Extension contact | 50.6 | 49.4 |
| Husbands advice | 90.7 | - |
| Neighbours advice | 44.6 | 55.4 |
| Average | 52.7 | 47.9 |

4.2.3 Results of the inferential statistical analysis

Four hypotheses were tested in this study. The chi-square test for independence was used, to show the

relationship between respondents' knowledge of farm practices with their use of sources of information.

4.2.3.1 Hypothesis 1

The claim that rural women are not well informed about improved farming practices is significantly backed by the facts.

The chi-square test for independence was used to test this hypothesis. The results are presented in Table 21.

The results revealed that there is a significant relationship between extension contact and five of the nine improved farm practices. Similarly, radio use is significantly related to seven of the nine improved farm practices, while "Ukulima wa Kisasa" readership is significantly related to eight of the nine improved farm practices. Extension meetings were significantly related to five of the nine improved farm practices and attendance at farm demonstrations is significantly related to eight of the nine improved farm practices. The results also show that neighbour's advice is significantly related to seven of the nine improved farm practices while husbands' advice is significantly related to only four of the nine improved farm practices.

Overall it can be said, therefore, that improved farm practices are significantly related to extension contact, radio use, reading "Ukulima wa Kisasa" magazines, attending extension meetings, attending farm demonstrations,

neighbours' advice and husbands' advice. Therefore, hypothesis 1 is not backed by the findings and is therefore rejected in favour of the alternative hypothesis, that is, the claim that rural women are well informed about improved farming practices is significantly backed by the facts. At least this was the case in the study area, and certainly, it was a pleasant surprise.

An examination of the contingency coefficients reveals, however, that these relationships were not very strong ones.

Table 21: Chi-square values and contingency coefficients for relationships between variables (n=160)

| Facts | | Improved farm practices | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Sowing | Correcting Spacing | Time of Planting | Pesticide application | Type of fertilizer | Fertilizer Use | Manure Use | Seed Storage | Use of farm tools |
| Extension | $X^2$ | 3.54* | 8.17* | 1.04* | 11.35NS | 8.40* | 3.40* | 7.71NS | 3.71NS | 17.13NS |
| Contact | C= | 0.14 | 0.33 | 0.08 | 0.26 | 0.04 | 0.14 | 0.21 | 0.15 | 0.31 |
| Radio | $X^2$ | 14.40NS | 32.68NS | 0.82* | 0.82* | 0.01* | 1.68* | 1.15* | 0.93* | 1.19* |
| Use | C= | 0.28 | 0.41 | 0.07 | 0.01 | 0.01 | 0.10 | 0.08 | 0.76 | 0.08 |
| Reading farm magazine "Ukulima wa Kisasa | $X^2$ | 11.007NS | 1.56* | 1.11* | 0.05* | 1.18* | 1.67* | 1.19* | 0.58* | 0.34* |
| | C= | 0.25 | 0.09 | 0.08 | 0.01 | 0.38 | 0.10 | 0.08 | 0.06 | 0.04 |
| Extension Meeting | $X^2$ | 15.08NS | 1.93* | 1.21* | 17.42NS | 3.65* | 10.03NS | 0.42* | 9.63NS | 8.41* |
| | | 0.29 | 0.10 | 0.08 | 0.31 | 0.14 | 0.24 | 0.05 | 0.23 | 0.19 |
| Farm demonstration | $X^2$ | 2.22* | 2.61* | 4.16** | 12.3NS | 4.37** | 3.56* | 2.98* | 1.31* | 2.36* |
| | C= | 0.11 | 0.12 | 0.15 | 0.27 | 0.16 | 0.14 | 0.13 | 0.09 | 0.11 |
| Neighbours Advice | $X^2$ | 5.65** | 5.53** | 0.43* | 10.63NS | 3.73* | 7.01NS | 0.94* | 2.68* | 6.20** |
| | C= | 0.18 | 0.18 | 0.05 | 0.24 | 0.15 | 0.20 | 0.07 | 0.12 | 0.19 |
| Husbands Advice | $X^2$ | 0.30* | 21.11NS | 9.27NS | 21.33NS | 3.28 | 25.08NS | 0.74* | 0.22* | 15.31NS |
| | C= | 0.43 | 0.34 | 0.23 | 0.34 | 0.14 | 0.36 | 0.06 | 0.03 | 0.29 |

* Significant at 0.05 level of significance
** Significant at 0.01 level of significance
NS= Not significant

4.2.3.2 Hypothesis 2

Rural women use significantly similar channels of communication which are influenced by age, education and location of the village to obtain various types of information about farm practices.

This hypothesis was tested by chi-square analysis, the results of which, are presented in Table 22.

Table 22. Chi-square values and contingency coefficients for relationship between channels of communication and village, education and age.

| Channels of communication | | | Location of village | Education | Age |
|---|---|---|---|---|---|
| Radio | $X^2$ | = | 3.09* | 6.45* | 0.11* |
| | C | = | 0.14 | 0.19 | 0.08 |
| Extension visits | $X^2$ | = | $31.82^{NS}$ | 10.67* | $13.52^{NS}$ |
| | C | = | 0.41 | 0.25 | 0.28 |
| Extension meetings | $X^2$ | = | $31.66^{NS}$ | 2.91* | $30.42^{NS}$ |
| | C | = | 0.41 | 0.13 | 0.39 |

* Significant at 0.05 level of significance.

NS = Not significant.

The results show that there is a significant relationship between the location of a village and radio channel of communication, while education is significantly related to all three channels of communication. Similarly age is significantly related to only radio channel of communication.

Overall, it can be said, therefore, that radio farm programmes are significantly related to location of village, education and age while extension visits and meetings are significantly related only to education. The results of the chi-square test for these aspects were significant at the chosen significance level of 0.05. Hypothesis 2 is therefore rejected meaning that rural women use different channels of communication depending on a number of socio-economic characteristics.

An examination of the contingency coefficient, however, show that these relationships were not strong.

4.2.3.3 Hypothesis 3

Rural women's access to agricultural information is not significantly constrained by resistance to non-traditional practices.

The results of chi-square tests for independence which were performed to test the relationship between constraints and access to agricultural information about improved farm practices are shown in Tables 23 and 24.

The results of chi-square test for independence presented, shows that there is no significant relationship between traditional and cultural beliefs and access to agricultural information for improved farm practices. The chi-square test on these aspects were not significant at the chosen level of significance of 0.05 and hypothesis 3 was rejected in favour of the alternative hypothesis.

Table 23. The relationship between constraints related to traditional and cultural beliefs and accessibility to agricultural information (n = 160).

| Constraints | Responses set | | | |
|---|---|---|---|---|
| | Agree | Undecided | Disagree | Total |
| Traditional and cultural beliefs | 46 | 21 | 93 | 160 |
| Household chores | 87 | 16 | 57 | 160 |
| Husbands' jealousy | 74 | 52 | 34 | 160 |
| Total | 207 | 89 | 184 | 480 |

$X^2$ = $66.44^{NS}$ df 4

C = 0.54 $\alpha$ = 0.05

The results in Table 24 show also that there is no significant relationship between constraints related to extension agents and access to agricultural information about improved farm practices. The results of chi-square test were not significant at the chosen significance level of 0.05 and the null hypothesis was rejected in favour of the alternative hypothesis.

Overall, it can be said, therefore, that access to agricultural information about improved farm practices is constrained by both traditional and cultural beliefs and access to extension agents.

An examination of contingency coefficients in both cases, show, however, that these relationships were not very strong ones.

Table 24. The relationship between constraints related to extension agents and accessibility to information about farm practices (n = 160).

| Constraints | Responses set | | | |
|---|---|---|---|---|
| | Agree | Undecided | Disagree | Total |
| Lack of extension package | 98 | 33 | 29 | 160 |
| Extension agents advise more male farmers to the neglect of female farmers | 60 | 50 | 50 | 160 |
| Lack of concerted effort to contact women farmers | 98 | 36 | 26 | 160 |
| Total | 247 | 125 | 108 | 480 |

$X^2$ = $25.31^{NS}$ df 4

C = 0.37 $\alpha$ = 0.05

4.2.3.4 Hypothesis 4

Rural women's accessibility to information on agricultural innovation is significantly independent of:

i) level of income,

ii) level of education,

iii) extension contact,

iv) age, and

v) marital status.

This hypothesis was tested by chi-square analysis. The hypothesis was broken into a number of sub-hypotheses as

Table 25. Chi-square values and contingency coefficients for the relationships between variables (n = 160).

| Information Sources | | Characteristics Variables: Income | Education | Extension contact | Age | Marital status |
|---|---|---|---|---|---|---|
| Radio use | $X^2$ = | 29.86$^{NS}$ | 6.45* | 0.18* | 0.11* | 2.61* |
| | C = | 0.39 | 0.19 | 0.50 | 0.08 | 0.13 |
| Farm magazine | $X^2$ = | 37.58$^{NS}$ | 10.16* | 4.25** | 2.86* | 0.98* |
| | C = | 0.44 | 0.24 | 0.18 | 0.13 | 0.78 |
| Extension contact | $X^2$ = | 11.32** | 10.67* | - | 13.52$^{NS}$ | 4.55* |
| | C = | 0.26 | 0.25 | - | 0.28 | 0.17 |
| Extension meeting | $X^2$ = | 21.47$^{NS}$ | 2.91* | 30.42$^{NS}$ | 2.31* | 15.00$^{NS}$ |
| | C = | 0.34 | 0.13 | 0.05 | 0.12 | 0.29 |
| Farm demonstration | $X^2$ = | 21.07NS | 7.92* | 19.63$^{NS}$ | 9.19* | 4.11* |
| | C = | 0.34 | 0.22 | 0.33 | 0.23 | 0.16 |
| Neighbours advice | $X^2$ = | 3.45* | 4.76* | 1.12* | 2.57* | 6.22* |
| | C = | 0.15 | 0.17 | 0.08 | 0.13 | 0.22 |
| Husbands advice | $X^2$ = | 2.35** | 3.58* | 0.19* | 2.58* | 125.76$^{NS}$ |
| | C = | 0.12 | 0.15 | 0.03 | 0.13 | 0.66 |

## 4.3 Interpretations and discussions of the results

### 4.3.1 Interpretations from the descriptive statistical analysis

#### 4.3.1.1 Age

As the results in section 4.2.1.1 show the majority of the respondents in the sample were young. This would imply that this age group utilized more sources of

information than the older members in the sample. One could speculate further that since this age group was active, it would seek more information about improved farm practices from external sources than the older respondents in the sample. In this study, it was found that this age group was more active in contacting sources of information than the older group. This result is in line with what Saylor (1975) observed.

4.3.1.2 Level of education

As regards levels of education of respondents, the results in section 4.2.1.2 has shown that a greater number of rural women in the study area had access to either formal or non-formal education. A possible reason that contributed to this impressive outcome was the literacy education campaign that has been carried out in Tanzania in the recent past. Mlekwa (1989) had the same observation. As a result of this high literacy level, common sense would lead one to speculate that the majority of the respondents in this group would use more formal sources of information than those who had little schooling or no schooling at all. This study found that the majority of the respondents who had completed primary school education used more formal sources of information than the other educational groups.

These findings have also been supported by Ashby (1981) and Osuji (1983) in Nigeria who noted that farmers' ability to use new agricultural inputs and evaluate new

farming practices was higher among educated farmers than among illiterate farmers. This implies that education enables farmers to gather relevant information from reliable sources.

4.3.1.3 Marital status

Since the majority of respondents were married (Section 4.2.1.3) it was expected that such a group would rely more on interpersonal contacts, specifically with their husbands. The results also indicated that the majority of the married rural women (90.7 percent) contacted their husbands as compared to 47.9 percent who contacted

extension agents as sources of information (Table 20). The implication of this finding was that husbands' attitudes on recommended farm practices would probably influence women farmers positively or negatively. Saylor (1975) observed that women farmers relied on their husbands on new farming practices. He further noted that new information was conveyed through male officials to male villagers on the assumption that the male recipients would pass it on to their wives and other women.

4.3.1.4 Level of income

The impression one gets from the results in section 4.2.1.2 is that a great number of respondents in the study area were in low income bracket. The finding is suggestive

of low returns from their farms. This could further suggest that most of the members in the sample were probably not utilizing improved farm practices or they may not have been dealing with the area's cash crop. This was probably so as evidenced by the fact that only 46.2 percent of the low income respondents were visited by extension agents as compared to 100 percent of the high income earners (Table 18). The low income could also imply that rural women in the study area were not in a position to purchase agricultural inputs, and as such, they were unable to adopt innovations. The fact that only 20 percent and 36.8 percent of the respondents were found to use chemical fertilizers and pesticides, respectively (Table 12), was supportive of the ramifications of the low income levels.

4.3.1.5 Credit

With respect to credit, the results in section 4.2.2.1 showed that the majority of the respondents were not aware of the existence of bank credits. This could be a result of most of the respondents not attending local meetings where such matters were discussed. The results showed further, that 28.7 percent of the respondents knew about credit application procedures or had applied for loans, but none of the respondents had acquired the loans. In general the findings show that the majority of rural women had no access to agricultural credit. The major contributing factors to the above state of affairs were probably the

lack of title deeds to land and/or collateral among the women in the study area. The two conditions namely; possession of title deeds and access to collateral, are crucial for successful application for credit in Tanzania.

With regard to the frequency of advice received from extension agents, the results showed that less than a quarter (17.5 percent) of the respondents had contacted extension agents at least once within a period of two months.

This finding seems to suggest that few rural women were being advised by the extension agents. This finding is in line with that of Due, Mollel and Malone (1987), who noted that women farmers were not regularly visited by extension agents. In view of the above it appears that extension agents were failing to capture rural womens' interests or perhaps the extension agents perceived rural women as passive and unwilling to innovate and thus resistant to change. It could also be that, extension agents, perceived rural women merely as farmers' wives rather than genuine farmers in their own right.

From the point of view of the rural women, there could be good reasons for not seeking extension advice. The reasons could include being exposed to criticisms or being ridiculed by other members of the society, especially if the farm practices were new and/or controversial. Kauzeni (1979) observed that farmers are conservative and the rural community has certain resistance against non-traditional

practices. He noted further that a farmer who starts using a new practice is often criticized and even laughed at by other members of the community.

Another explanation as to why women had so little contact with extension agents could be that the latter were almost exclusively male. In this study it was found that male extension agents predominated in the study villages. The imbalance probably meant that women were less likely to get information on innovations due to traditional barriers on male/female interactions.

With regard to rural womens' perceptions about availability of timely extension advice, the results indicated that 17.5 percent of the respondents had received timely and appropriate extension advice. Timely and appropriate extension advice meant correct and suitable advice being given during all major crop production operations. This result appeared to emphasize and support the observation that the flow of technical information to women farmers was really low.

The results on respondents' comprehension of extension advice given showed that 15.6 percent of those who contacted extension agents understood the advice given. The remaining respondents (84.4 percent) did not either contact or understand the advice given by extension agents. These findings seem to show that extension agents' advice was not understood by the majority of respondents in the surveyed villages. Wambura (1988) noted that farmers' failure to

understand the advice given by extension agents was due to such recommendations being inconsistent with past experience, technological complex and not easily triable. This implies that the use of recommendations was not compatible with prevalent values and norms of the farmers' social system. This may be the reason for the majority of farm women not having bothered to learn or understand the extension agents' advice.

Use of technical language by extension agents and failure to demonstrate the performance of farm inputs and new husbandry practices could have contributed to the lack of understanding observed. This study found that demonstration technique was infrequently used in the surveyed villages. It could also be the case that the majority of farm women misunderstood the extension agents' advice for various other reasons which this study did not elicit.

The results on respondents' preference for male or female extension agents showed that 68.1 percent of the members of the sample preferred female extension agents while 16.9 percent of the respondents preferred male extension agents. These results seem to suggest that women farmers in the study area were acting true to traditional customs and cultural factors which inhibit interpersonal interaction between women and men who are not related by family ties, including interactions with male extension agents. However, most of the respondents felt that

communicating with female extension agents would facilitate learning and that their communication with female extension agents would be free from undertones, particularly when their husbands were away. By and large, what is reflected here is that traditional barriers in some societies are still making it difficult for women farmers to contact male extension agents.

With regard to respondents' knowledge of recommended farm practices, the results indicated that for every farm practice studied a different proportion of response by respondents was observed (Table 12). These results seem to suggest evidently that the majority of the rural women in the surveyed villages had little access to information about recommended farm practices. This is consistent with the minimal contacts with extension agents explained above.

On the basis of data analysis with respect to sources of information utilized by respondents, the results summarized in Table 13 show that husbands' advice was rated quite high when compared to other sources of information patronized by women farmers. Perhaps this was an indirect way for married women to contact extension agents considering that the husbands were probably visited more often by extension agents. One could speculate further that rural women had sought consultation from local sources on those farm practices which had a well established body of folk knowledge built around them while those farm practices which had recently been introduced in the community and did

not therefore have an established body of knowledge were the ones sought from other sources of information including the extension agents and mass media. Secondly, there was a possibility that socio-cultural barriers which still exist in many of African's communities such as husbands' jealousy, women being tied down by household chores could have contributed to women farmers' developing a habit of consulting husbands, neighbours and friends rather than more cosmopolitan sources, on matters related to agricultural production.

With regard to respondents sources of information on selected farm practices, the results indicated that for every farm practice studied different responses were given by respondents. Looking at the data, one gets the impression that the majority of the respondents consulted extension agents on technical aspects such as proper crop spacing, right rates of fertilizer application, correct and safe insecticide use and correct seed rates while locality sources were consulted for non-technical aspects such as land preparation, cultivation, weeding, harvesting and seed selection. The implication that may be drawn from these findings is that local sources of information could be used to influence most effectively husbandry practices which do not need technical inputs.

With regard to the use of mass media, poor use of these media which was observed, could be attributed to the scarcity of these media in the rural areas. For example,

the results show that only 30 percent of the respondents in the surveyed villages owned radio sets and about 17.5 percent of them were able to listen to farm programmes. The farm magazine "Ukulima wa Kisasa" was reaching only a tiny minority of the rural women in the study area.

### 4.3.2 Interpretation from the inferential statistical analysis

The chi-square test for independence was performed to determine whether there existed any significant relationship between some variables concerned with use of information sources and farm practices.

The results, which led to the rejection of the relevant null hypothesis seem to imply that the knowledge of improved farm practices is significantly related to the use of sources of information. These findings are in line with those of Staudt (1982) and Olsen (1989), who noted that there is a relationship between access to agricultural technical information and changes in agricultural practices. These scholars revealed that those farmers who were exposed to appropriate agricultural information, earned greater profits in their farming business. This appears to suggest that extension agents could promote the use of new farm practices among the rural women by disseminating agricultural technical information using various techniques such as extension meetings, farm demonstrations, and farm visits.

The other hypothesis which was tested using the chi-square test states that rural women use significantly similar channels of communication which are influenced by age, education and location of the village to obtain various types of information about farm practices. This hypothesis was rejected in favour of the alternative hypothesis. This suggests that women farmers used different sources of information depending on their socio-economic status. In their studies (Wilkening 1950; Rangaiah and Reddy 1988), showed that there is a relationship between socio-economic status and sources of information. It appears that rural women with higher socio-economic status obtained a high proportion of their agricultural information from external sources, whereas
those with lower socio-economic status obtained a high proportion of their agricultural information from local sources of information such as husbands, friends and neighbours. Wilkening (1950); Kauzeni (1979), Rangaiah and Reddy (1988), noted that farmers with lower socio-economic status and limited purchasing power were not in position to purchase information media. As a result, the majority of them tended to rely on local sources of information to obtain their agricultural information.

In assessing the relationship between constraints and accessibility to agricultural information, the results of chi-square test for independence was found to be non

significant to constraints related to traditional and cultural beliefs.

The null hypothesis was therefore rejected in favour of the alternative hypothesis. This means that rural womens' access to agricultural information is significantly constrained by traditional and cultural beliefs. Such constraints like husbands' jealousy, household chores, customs and beliefs are believed to have constrained rural womens' access to information on improved farm practices by preventing them from attending farm demonstrations, extension meetings or getting advice from male extension agents. Gabriel (1989), for example, observed that those women who were involved in farming, lacked time to involve themselves not only in training
opportunities or attending extension meetings but also in listening to radio farm programmes or reading "Ukulima wa Kisasa" magazines.

When constraints related to extension services were assessed, the chi-square test for independence showed that there was non significant relationship between constraints and receiving agricultural information. This implies that lack of appropriate extension packages and concerted efforts to contact respondents limited rural womens' participation in extension programmes. Keregero, DeVries and Gartlett (1977) suggested that cotton growers in Mara resisted adopting extension recommendations because they were inappropriate to their situation rather than because

they were stubborn, traditionalist and naive. It was also observed by Saylor (1975) that most of the recommended practices were not properly tested in different environments to enable farmers evaluate the impact of the practices before their trial. This shows that farmers participation in extension programmes is dependent on a number of factors.

The hypothesis which states that rural women's access to agricultural information is not significantly constrained by resistance to non-traditional practices was tested by a chi-square test and rejected, meaning that both traditional and cultural beliefs and problems related to extension agents play a significant role in hampering rural women's access to new farm practices.

### 4.3.3 Discussion of the results

On the basis of data analysis with respect to sources of information utilized by rural women, it was found that various sources of information were used by respondents to receive agricultural information. Among these sources of information, husbands' advice was ranked high, followed by extension agents. Mass media were least preferred. The results show that personal localite sources are more credible and accessible media for farm women. These results are in line with those of Wilkening (1950); Copp, et al (1958) who showed that traditional farming practices have been passed from generation to generation and in particular

from father to son, mother to daughter and neighbour to neighbour. For this reason, rural farmers have tended to emphasize the importance of experience on the farm. Other studies have shown that women farmers vary in the degree to which they received agricultural information from their husbands (Berger, et al 1984; Stephens 1985). In Kenya and Sierra Leone, for example, husbands were reported to have advised 30 percent of the rural women (Ogotu 1987; Pamela 1987). Other sources from Zambia and Malawi reported about 10 percent of farm women consulted husbands (Elizabeth 1987 and Naomi 1987).

Though the majority of respondents in the surveyed villages contacted their husbands to get agricultural information, communication between husband and wife is not always an effective means of disseminating agricultural information. Apart from information distortion, no one ensures that information transmitted is precise and accurate. This could be harmful where women are left to handle certain farm operations such as spraying pesticides or applying fertilizers without correct and specific recommendations. However, the fact that husbands and peer influence is the most important source of information in rural areas, has significance for the extension service. Change and improvement in farm practices especially those related to traditional crops can be influenced most effectively by working through the local sources of information.

With regard to mass media, the results showed that only very few respondents indicated to have used mass media (Table 13). These findings seem to be in agreement with those of Willian (1969) in Nigeria, Bhatnagar (1978) in India, Kauzeni (1979), Ng'wanakilala (1981) and Mattee (1988) in Tanzania. These researchers revealed that radio and farm magazines were less important than personal contact in disseminating agricultural information to rural women. The negative responses displayed by the majority of the respondents in using mass media were significant. Though the survey could not pinpoint the main reasons for these negative responses, one can speculate that given the scarcity of the mass media in the rural areas, let alone their irrelevance, their generality in the type of information given, the negative responses stand to reason. The mass media do not give attention to specific local needs adequately. Similarly poor timing of the messages delivered by radio and lack of visual component in the process of communication might have contributed to these negative responses. Although the Tanzania government has made strenuous efforts to get agricultural information to the farmers through mass media, rural women still seem not to have benefited from these programmes.

With regard to extension contact, the results show that about half of the respondents (51.9 percent), were contacted by extension agents during their usual farm visits. However, when the respondents were asked to

indicate the frequency with which they had contact with extension agents, the results show that less than a quarter (17.5 percent) had sustained contacts. These findings conform with what Orivel (1983), and Mattee (1988) observed from their respective studies. These researchers found out that only a minority of the farmers in the sample had sustained contacts with extension agents.Most of the extension contacts were usually initiated by the agents themselves. Though the agents claimed that they spend a large proportion of their time visiting farmers in their farms, during the interview, many of the respondents complained bitterly of not seeing the extension agents as often as possible. According to the results of this study, it seems that the majority of the respondents who were contacted by village extension agents belonged to the young, educated and wealthy category. These results more or less correspond with what DeVries (1978) and Ponjee (1979) observed from their respective studies. These researchers found that extension agents favoured and concentrated on certain categories of farmers, the majority of these were young, better educated and wealthy individuals.

The findings of this study also show that more married women were contacted by extension agents than the unmarried ones. This was so perhaps due to the fact that the agents felt more free to visit farms where there were men around rather than women alone, since contacting women in

isolation was likely to create some sociological negative impressions.

Overall, it can be said that sources of information are significantly related to age, education, income level and marital status. However, the type of source and channel utilized is also more related to the type of practice about which the information applies. The older the farm operation with which the practice is associated the more likely information about the practice will be obtained from local sources of information. The findings show that not all channels of communication are effective in passing the information to all categories of rural women at the same efficiency. For example, more young and educated respondents were visited by extension agents than the older and illiterate women. In Kenya, Leonard (1977) found that on average, extension agents spent 6 percent of their time visiting small and traditional farmers (47 percent of all farmers). In contrast, they spent 57 percent of their time visiting progressive farmers (the most advanced 10 percent of all farmers).

One reason that was adduced for this low contact with extension agent was due to lack of reliable transportation. Lack of personal transportation for example, was very evidently a serious problem affecting the capacity of extension services to serve and deliver appropriate and timely agricultural information to women and poor farmers. Due to poorly developed public transportation in the rural

areas, the extension agents tended to make repeated visits to a few favourably located farmers.

The other reason could be the fewness of extension agents. One extension agents is assigned to advice more than four or six villages in the ward. The distance between clients' homes and the extension agents' offices was observed to have influence on the frequency of visits extension agents make to clients. The greater the distance between the two places and the more the difficulty of access, the fewer the contacts made. Another possible reason that might have contributed to less contacts being made could be the preponderance of men among the extension agents as explained elsewhere in this work. Conversations between women and male extension agents who are not related by kinship could arouse suspicion, particularly when husbands are absent. In female-headed households, there seems to be no social problem of contact between the rural women and the male extension agents. However, interpersonal factors do seem to act as communication barriers even in this situation.

Basing on the above results, womens' access to agricultural information and effective communication will probably require that current agricultural extension staffing patterns change to include more trained female extension agents. Wolf (1974) and Harding (1976) observed that this pattern of life prevails not only where women are traditionally secluded but whenever low female status

inhibit interaction between the sexes. Secondly, there is perception that communication is much more effective when the source and receiver of the message have the same characteristics. FAO (1987) also observed that effective extension agents are those who are most like their clients' in all aspects except technical competence about recommended innovation. Moreover, the trustworthiness of the information is greatly enhanced if the potential adopter sees that the communicator shares their situation. This seems to suggest that rural women, para-professionals with practical farming experience could be recruited to help promotion of information dissemination to rural women.

A final possible reason that might have caused extension agents to neglect the majority of the rural women might be a perception that women farmers are unwilling to try new farm practices or are unable to adopt agricultural innovations. Fortmann (1978), observed that the majority of the rural women in Morogoro were not knowledgeable about recommended farm practices. This could be attributed to lower extension contact as discussed above. However, some researchers, for example, Wambura (1988), observed that recommended practices for food crops were complex and not so easily understood by farmers let alone the extension agents. This observation seems to be in line with that of DeVries (1978) who noted that after Tanzania's independence in 1961, the extension agents had continued to focus more

on export crops on which a series of well established recommendations existed.

Basing on the above observations, respondents were asked if they had ever attended farm demonstrations organized by village extension agents. The results indicated that few did. Lack of effectiveness of farm demonstrations in the surveyed villages was partly caused by inadequate inputs to conduct farm demonstrations and lack of practical experience among the village extension agents. At the time of this survey the demonstration technique was infrequently utilized, with at best one demonstration per growing season done at the ward headquarters where the extension agent was stationed.

Although farming is the primary activity of most rural women, women however, have more problems which make it difficult and sometimes impossible, for them to take advantage of available extension recommendations. The many burdens of the rural women do not need stressing as they have been well documented (Mascarenhas 1985; Stephens 1985).

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the results of the study and offers conclusions and recommendations. Suggestions for further research are presented at the end of the chapter.

## 5.1 Summary

The major results of the study were the following:

1) a) With respect to sources of information, the study found that various sources of information were used by respondents to receive agricultural information. Among these sources, the study found that local sources, husbands advice and neighbours advice were ranked high when compared to extension agents. This was an indication that local sources of information were perceived to be more credible and accessible to rural women.

   b) About half (51.9 percent) of the respondents in the sample were contacted by extension agents at least once in a year. However, the study further found that only 17.5 percent of the respondents had received timely and appropriate extension advice.

2) On preference for male or female extension agents, about 68.1 percent of the respondents preferred to

be advised by female extension agents as opposed to 16.9 percent who preferred male extension agents.

3) Respondents' level of knowledge on selected recommended farm practices was found to be low. On average, 36.5 percent of the respondents were found to be reasonably knowledgeable about recommended farm practices as opposed to 63.5 percent who were either undecided or knew nothing about the recommended farm practices.

4) On sources of information on selected farm practices, indications were that for practices which involved technical aspects such as spacing, fertilizer application and pesticide spraying, the majority of respondents consulted extension agents while for those farm practices which do not need technical expertise such as harvesting and weeding, the majority of respondents consulted local sources of information.

5) Mass media (radio farm programmes, and "Ukulima was Kisasa") were least relied on as sources of information by the respondents.

6) Knowledge about improved farm practices was significantly related to the use of sources of information such as extension contact, mass media and local sources of information such as husbands.

7) Channel of communication which are used by women farmers to receive agricultural information about farm practices are significantly related to education.

8) Accessibility of agricultural information about farm practices were significantly related to level of income, educational level, age, marital status and extension contact.

9) The constraints which were identified as hampering the rural women were: household chores, husbands' jealousy and traditional and cultural beliefs. Among these problems household chores were identified as a main constraint followed by husbands' jealousy.

10) Problems related to extension agents which limited the transfer of agricultural information were lack of extension packages, lack of concerted efforts to contact women farmers and extension agents' propensity to advise more male farmers than women. Of those constraints, the lack of extension packages was identified as the major constraint.

11) On availability of farm credit, 71.3 percent of the respondents in the sample were not informed about the bank credits. Of those who knew and made applications for a bank loan not a single one got the loan.

## 5.2 Conclusions

Basing on the results of this study the following conclusions were made.

1. As a source of information, rural women in the survey area contacted their husbands more frequently than their village extension agents.

Husbands seem to be the main source of information to married women.

2. This study has shown that rural women use a variety of channels of communication. However, this seemed to be influenced by a number of socio-economic factors such as income, education, age and marital status.
3. The young, educated and wealthy farm women benefited more from the services of extension agents by having more contacts than the older, less educated and poorer farm women.
4. Rural womens' knowledge of improved farm practices seems to be associated with sources of information such as extension contact, mass media and local sources of information.
5. Rural women in the study area appear to have received untimely extension advice. This was brought about by a number of factors such as inadequate number of extension agents in the rural areas and lack of reliable transport facilities for village extension agents.
6. Rural women in the study area seemed to prefer being advised by female extension agents than male extension agents. According to their opinion, sex similarity facilitated free interaction and thus improved learning.

7. Poor accessibility to agricultural credits was found to be one of the major problems of rural women. This is due to the fact that most rural women lack title deeds to land and/or collateral, which are prerequisites required by the credit institutions.

8. It was found that farm demonstration, as a source of information is infrequently used as a technique to educated farm women about improved farm practices.

9. Extension meetings were also infrequently used as sources of information for rural women.

10. Traditional and cultural beliefs seem to play a role in limiting the rural womens' accessibility to agricultural innovations. The beliefs tend to hinder free interpersonal communications between women and men who are not related by family ties. Male extension agents confront the above problem in the interactions with female farmers.

11. The study established that, in the survey area, mass media were less effective sources of information in comparison to personal contacts, in relation to disseminating agricultural innovations to rural women.

## 5.3 Recommendations

On the basis of the results the following recommendations and suggestions are made:

1. Demonstrations as a teaching technique should be encouraged more vigorously. To that extent:
    a) Extension agents be given necessary agricultural inputs for demonstrations.
    b) There should be at least one demonstration plot per village.
    c) Demonstration plots should be run by the farmers themselves. The work of the extension agents should be to use such demonstration plots for teaching purposes.
2. Lack of transportation reduces the effectiveness of extension agents. It is therefore recommended that extension agents be provided with bicycles or motor bicycles on loan in order for them to increase their mobility and improve their ability to reach all kinds of farmers.
3. Since local sources of information are still important and most preferred by rural women, it is recommended that extension agents should work closely with local sources of information such as local village leaders, peers, influential leaders, religious leaders and reference leaders

as an indirect way of reaching farm women and other rural groups.

4. Since there are only few female extension agents in the villages and since male extension agents face problems in transmitting information to female farmers because of traditional and cultural barriers, it is recommended that women para-professionals with practical farming experiences be recruited from each village inorder to help women farmers adopt and improve their farming practices.

## 5.4 Suggestions for future research

1. Although mass media is believed to have high potential in disseminating farm information to farmers and in particular those who live in less accessible and isolated villages, there is evidence to show that this method is rarely used by farmers. There is a need therefore, to investigate the factors which limit the effectiveness of such media among small farmers.

2. It is suggested that a similar study about the accessibility of agricultural information to rural women be undertaken in different locations in Tanzania in order to generate generalizations which will be helpful to the Ministry of

Agriculture, Livestock Development and Cooperatives in laying down strategies for effective transfer of agricultural information to women and men farmers.

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4. Which of the following food crops did you grow in your farm last year (1989).

..... 1. Maize

..... 2. Sorghum

5. Sources of agricultural information for maize or sorghum. Please indicate sources from which you received information on the following farm practices.

| Farm Practice | Radio | Farm magazine "Ukulima wa Kisasa" | Extension agent | Extension meeting | Farm demonstration | Husbands advice | Neighbours advice |
|---|---|---|---|---|---|---|---|
| Early land preparation | ------ | ------- | ------- | ------- | ------- | ------ | |
| Early cultivation | ------ | ------- | ------- | ------- | ------- | ------ | |
| Sowing according to correct spacing | ------ | ------- | ------- | ------- | ------- | ------ | |
| Fertilizer application | ------ | ------- | ------- | ------- | ------- | ------ | |
| Insecticide application | ------ | ------- | ------- | ------- | ------- | ------ | |
| Weeding | ------ | ------- | ------- | ------- | ------- | ------ | |
| Harvesting | ------ | ------- | ------- | ------- | ------- | ------ | |
| Seed rate | ------ | ------- | ------- | ------- | ------- | ------ | |
| Seed selection | ------ | ------- | ------- | ------- | ------- | ------ | |

6. Do you know extension agent's name?

..... 1. Yes

..... 2. No

7. If yes above what is the agent's name .....

8. How many times did the extension agent visit your food crop farm last year (1989).

..... 1. Once per month

..... 2. After every two months

..... 3. After every five months

..... 4. After every seven months

..... 5. After one year

..... 6. None

9. Do you own a radio set

..... 1. Yes

..... 2. No

10. If yes in number 9 above how frequently did you listen to radio farm programmes?

..... 1. Regularly

..... 2. Occasionally

11. Have you ever read the "Mkulima wa Kisasa" farm magazine?

..... 1. Yes

..... 2. No

12. If yes in number 11 above how frequently did you read the paper?

..... 1. Regularly

..... 2. Occasionally

13. Did you find it useful?

..... 1. Yes

..... 2. No

4. Have you ever attended a short course at a folk development college?

..... 1. Yes

..... 2. No

15. If yes in number 14 above, how often did you attend the college?

..... 1. Once

..... 2. Twice

..... 3. Thrice

..... 4. More than 3 times

..... 5. None

16. Did you receive timely and appropriate extension agents' advice?

..... 1. Yes

..... 2. No

17. If yes in number 16 above did you understand the extension agents' advice?

..... 1. Well understood

..... 2. Undecided

..... 3. Not understood

18. Does extension agent conduct extension meetings in the village?

..... 1. Yes

..... 2. No

19. If yes in number 18 above, have you ever attended an extension meeting in your village?

..... 1. Yes

..... 2. No

20. If yes in number 19 above, how frequently did you attend the extension meetings?

..... 1. Regularly

..... 2. Occasionally

21. Have you ever received advice from neighbours and friends?

..... 1. Yes

..... 2. No

22. If yes in number 21 above, how many times did you receive advice from neighbours and friends

..... 1. Once

..... 2. Twice

..... 3. Thrice

..... 4. Over three times

23. Have you ever received advice from your husband?

..... 1. Yes

..... 2. No

24. If yes in number 23 how many times did you receive advice from husband?

..... 1. Regularly

..... 2. Occasionally

25. Does the village extension agent have a demonstration plot in your village?

..... 1. Yes

..... 2. No

26. If yes in number 25 above how many times did the extension agent conduct farm demonstrations?

..... 1. Regularly

..... 2. Occasionally

27. Have you ever attended farm demonstrations in your village?

..... 1. Yes

..... 2. No

28. If yes in number 27, how many times did you attend the farm demonstrations?

..... 1. Regularly

..... 2. Occasionally

29. In the year 1989, what was your income?

..... 1. Up to 3,000 Tsh

..... 2. 3,001 to 5,000 Tsh

..... 3. 5,001 to 10,000 Tsh

..... 4. Above 10,000 Tsh

30. Question 30 determines level of knowledge based on improved farm practices. Please indicate by placing a check (√) in the appropriate space in each question under either knows reasonably well, undecided or does not know at all.

| | | Knows reasonably well | Undecided | Does not know at all |
|---|---|---|---|---|
| 1. | Row planting | ..... | ..... | ..... |
| 2. | Planting according to correct spacing | ..... | ..... | ..... |
| 3. | Time of planting | ..... | ..... | ..... |

4. Spraying pesticides..... ..... .....

5. Types of fertilizers..... ..... .....

6. Manure application ..... ..... .....

7. Seed storage ..... ..... .....

8. Storage of farm produce ..... ..... .....

9. Use of improved farm tools ..... ..... .....

31. Question 31 deals with constraints which limit you from receiving agricultural information. Please indicate by placing a check (√) in the appropriate space under either agree, undecided or disagree.

| | | Agree | Undecided | Disagree |
|---|---|---|---|---|
| 1. | Cultural practices hinder you from contacting extension agent | ..... | ..... | ..... |
| 2. | Household chores limit you from attending extension meetings | ..... | ..... | ..... |
| 3. | Your involvement with home and children results in very poor attendance at Folk Development College | ..... | ..... | ..... |
| 4. | The husband is jealous when you are in one-to-one contact with male extenson agents | ..... | ..... | ..... |
| 5. | Extension agent make no concerted efforts to contact women farmers who cultivate food crops | ..... | ..... | ..... |
| 6. | Extension agents emphasis more on cash crops to the neglect of food crops | ..... | ..... | ..... |

7. You prefer more advice from male extension agents to female extension agents ..... ..... .....

8. Neighbours have not adopted that is why you don't use improved farming practices..... ..... .....

9. Extension packages for women are lacking ..... ..... .....

# Appendix B

## Opinions of Rural Women: Cross Tabulations

Table B.1. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Row sowing | 19 | 9 | 28 |
| Not row sowing | 64 | 68 | 132 |
| Total | 83 | 77 | 160 |

$X^2 = 3.55$ C = 0.15 $X^2_{0.05}(1) = 3.84$ S

Table B.2. Farmers' opinion about sources of information selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Planted according to spacing | 15 | 12 | 27 |
| Not planted according to spacing | 68 | 65 | 133 |
| Total | 83 | 77 | 160 |

$X^2 = 0.18$ C = 0.03 $X^2_{0.05}(1) = 3.84$ S

Table 8.3. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Timely planted | 28 | 32 | 60 |
| Not timely planted | 55 | 45 | 100 |
| Total | 83 | 77 | 160 |

$X^2$ = 1.044 C = 0.08 $X^2_{0.05}$ (1) = 3.84 S

Table 8.4. Farmers opinion about sources information selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Sprayed pesticides | 41 | 18 | 59 |
| Not sprayed pesticides | 42 | 59 | 101 |
| Total | 83 | 77 | 160 |

$X^2$ = 11.86 C = 0.26 $X^2_{0.05}$ (1) = 3.84 NS

Table B.5. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Know the type of fertilizer | 16 | 18 | 34 |
| Types of fertilizer not known | 67 | 59 | 126 |
| Total | 83 | 77 | 160 |

$X^2 = 0.40$ C = 0.05 $X^2_{0.05}$ (1) = 3.84 S

Table B.6. Farmers' opinion sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Applied fertilizer | 18 | 13 | 32 |
| Not applied fertilizer | 65 | 64 | 128 |
| Total | 83 | 77 | 160 |

$X^2 = 3.40$ C = 0.14 $X^2_{0.05}$ (1) = 3.84 S

Table 8.7. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Applied manure | 34 | 16 | 50 |
| Not applied manure | 49 | 61 | 110 |
| Total | 83 | 77 | 160 |

$X^2$ = 7.71 C = 0.21 $X^2_{0.05}$ (1) = 3.84 NS

Table 8.8. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Knew about better seed storage | 37 | 23 | 60 |
| Knew nothing about seed storage | 46 | 54 | 100 |
| Total | 83 | 77 | 160 |

$X^2$ = 3.71 C = 0.15 $X^2_{0.05}$ (1) = 3.84 S

Table B.9. Farmers' opinion about sources of information on selected farm practices.

| | Contacted extension agents | Not contacted extension agents | Total |
|---|---|---|---|
| Used better farm tools | 26 | 5 | 31 |
| Not used better farm tools | 57 | 72 | 129 |
| Total | 83 | 77 | 160 |

$X^2$ = 17.11 C = 0.31 $X^2_{0.05}$ (1) = 3.84 NS

Table B.10. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Row sowing | 17 | 23 | 40 |
| Not row sowing | 57 | 63 | 120 |
| Total | 74 | 86 | 160 |

$X^2$ = 0.30 C = 0.43 $X^2_{0.05}$ (1) = 3.84 S

Table B.11. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Planted according to spacing | 14 | 46 | 60 |
| Not planted according to spacing | 60 | 40 | 100 |
| Total | 74 | 86 | 160 |

$X^2$ = 21.11 C = 0.34 $X^2_{0.05}$ (1) = 3.84 NS

Table B.12. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Timely planted | 16 | 38 | 54 |
| Not timely planted | 58 | 48 | 106 |
| Total | 74 | 86 | 160 |

$X^2$ = 9.27 C = 0.23 $X^2_{0.05}$ (1) = 3.84 NS

Table B.13. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Sprayed pesticide | 10 | 40 | 50 |
| Not sprayed pesticide | 64 | 46 | 110 |
| Total | 74 | 86 | 160 |

$X^2$ = 21.33 C = 0.34 $X^2_{0.05}$ (1) = 3.84 NS

Table B.14. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Knew types of fertilizer | 24 | 38 | 62 |
| Knew nothing about fertilizer | 50 | 48 | 98 |
| Total | 74 | 86 | 160 |

$X^2$ = 3.28 C = 0.14 $X^2_{0.05}$ (1) = 3.84 S

Table B.15. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Applied fertilizer | 3 | 29 | 32 |
| Not applied fertilizer | 71 | 57 | 128 |
| Total | 74 | 86 | 160 |

$X^2$ = 25.08 C = 0.37 $X^2_{0.05}$ (1) = 3.84 NS

Table B.16. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Applied manure | 16 | 14 | 30 |
| Not applied manure | 58 | 72 | 130 |
| Total | 74 | 86 | 160 |

$X^2$ = 0.74 C = 0.06 $X^2_{0.05}$ (1) = 3.84 S

Table B.17. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Knew about better seed storage | 32 | 34 | 66 |
| Knew nothing about better seed storage | 42 | 52 | 94 |
| Total | 74 | 86 | 160 |

$X^2 = 0.22$ C = 0.04 $X^2_{0.05}$ (1) = 3.84 S

Table B.18. Farmers' opinion about sources of information on selected farm practices.

| | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| Used better farm tools | 5 | 26 | 31 |
| Not used better farm tools | 69 | 60 | 129 |
| Total | 74 | 86 | 160 |

$X^2 = 15.31$ C = 0.29 $X^2_{0.05}$ (1) = 3.84 NS

Table 8.19. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Listened to radio | Not listened to radio | Total |
|---|---|---|---|
| < 3000 | 17 | 115 | 132 |
| 3001 - 5000 | 1 | 12 | 13 |
| 5001 - 10000 | 5 | 4 | 9 |
| > 10000 | 5 | 1 | 6 |
| Total | 28 | 132 | 160 |

$X^2$ = 29.85 C = 0.39 $X^2_{0.05}(3)$ = 7.81NS

Table 8.20. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Read Ukulima wa Kisasa | Not Read Ukulima wa Kisasa | Total |
|---|---|---|---|
| < 3000 | 10 | 122 | 132 |
| 3001 - 5000 | 4 | 9 | 13 |
| 5001 - 10000 | 4 | 5 | 9 |
| > 10000 | 5 | 1 | 6 |
| Total | 23 | 137 | 160 |

$X^2$ = 37.58 C = 0.44 $X^2_{0.05}(3)$= 7.81 NS

Table B.21. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Attended extension meeting | Not attended extension meeting | Total |
|---|---|---|---|
| < 3000 | 39 | 93 | 132 |
| 3001 - 5000 | 9 | 4 | 13 |
| 5001 - 10000 | 8 | 1 | 9 |
| > 10000 | 4 | 2 | 6 |
| Total | 60 | 100 | 160 |

$X^2$ = 21.46 C = 0.34 $X^2_{0.05}$ (3) = 7.81 NS

Table B.22. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Contacted extension agents | Not Contacted extension agents | Total |
|---|---|---|---|
| < 3000 | 61 | 71 | 132 |
| 3001 - 5000 | 10 | 3 | 13 |
| 5001 - 10000 | 6 | 3 | 9 |
| > 10000 | 6 | 0 | 6 |
| Total | 83 | 77 | 160 |

$X^2$ = 11.32 C = 0.25 $X^2_{0.05}$ (3)= 7.81 NS

Table 8.23. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Attended Farm demonstrations | Not attended farm demonstrations | Total |
|---|---|---|---|
| < 3000 | 34 | 98 | 132 |
| 3001 - 5000 | 9 | 4 | 13 |
| 5001 - 10000 | 6 | 3 | 9 |
| > 10000 | 5 | 1 | 6 |
| Total | 54 | 104 | 160 |

$X^2$ = 21.07 C = 0.34 $X^2_{0.05}$ (3) = 7.81 NS

Table 8.24. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Advised by husband | Not advised by husband | Total |
|---|---|---|---|
| < 3000 | 62 | 70 | 132 |
| 3001 - 5000 | 4 | 9 | 13 |
| 5001 - 10000 | 4 | 5 | 9 |
| > 10000 | 5 | 1 | 6 |
| Total | 74 | 86 | 160 |

$X^2$ = 2.34 C = 0.12 $X^2_{0.05}$(3)=7.81 S

Table 8.25. Variables which influence respondents accessibility to agricultural information.

| Income Tsh | Advised by neighbours | Not advised by neighbours | Total |
|---|---|---|---|
| < 3000 | 49 | 83 | 132 |
| 3001 - 5000 | 6 | 7 | 13 |
| 5001 - 10000 | 7 | 2 | 9 |
| > 10000 | 3 | 3 | 6 |
| Total | 65 | 95 | 160 |

$X^2$ = 3.44 C = 0.15 $X^2_{0.05}(3)$= 7.81 S

LEGEND

$X^2$ = Calculated chi-square

$\alpha$ = 0.05

NS = Not statistically significant at $\alpha = 0.05$

S = Statistically significant at $\alpha = 0.05$