SOUTHERN NEW HAMPSHIRE UNIVERSITY

AND

OPEN UNIVERSITY OF TANZANIA

MASTER OF SCIENCE IN COMMUNITY ECONOMIC DEVELOPMENT
2005

# PARTICIPATORY EVALUATION OF HEIFER INTRUST PROJECT IN MBINGA DIOCESE: A CASE STUDY OF FARMERS' GROUPS OF MBINGA AND TINGI DENARIES OF MBINGA DIOCESE IN MBINGA DISTRICT, RUVUMA REGION, TANZANIA.

CHINYUKA HARRISON CHRISTOPHER

# PARTICIPATORY EVALUATION OF HEIFER INTRUST PROJECT IN MBINGA DIOCESE: A CASE STUDY OF FARMERS' GROUPS OF MBINGA AND TINGI DENARIES OF MBINGA DIOCESE IN MBINGA DISTRICT, RUVUMA REGION, TANZANIA.

A SUPERVISED ENTERPRISE PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN COMMUNITY ECONOMIC DEVELOPMENT IN THE SOUTHERN NEW HAMPSHIRE UNIVERSITY OF AMERICA AT THE OPEN UNIVERSITY OF TANZANIA

## ABSTRACT

This study was conducted in Mbinga and Tingi deaneries of Mbinga Diocese in Mbinga District, Ruvuma region. The study was conducted in five villages namely Kilimani, Mhekela, Tukuzi, Burma and Mateka. The main objective of the study was to evaluate the efficiency; effectiveness and sustainability of Heifer Intrust Project in Mbinga Diocese. The specific objectives were to determine the efficiency and effectiveness of the project; economic contribution of the project to both men and women involved; to examine smallholder farmers' perception to the project and to identify the evolvement of gender roles, responsibilities and ownership in sustainable development of Heifer Intrust Project. The study comprised a random sample of 50 project farmers, 25 non-project farmers and 17 key informants. Thus involved 92 respondents, (23 women and 69 men). Primary data were obtained through personal observation, administering of structured questionnaire and focus group discussion. Secondary data was obtained from diocese office, district agriculture/livestock office, Southern New Hampshire University (SNHU)/Open University of Tanzania (OUT) library as well as Sokoine National Agriculture Library (SNAL). Descriptive statistics as frequencies and percentage were used in analysis. The results from this study showed that an introduction of improved dairy cattle through Heifer In trust Project (HIP) not only have positive impact on incomes of households and food security but have also social and environmental impact.

Livestock play diverse economic and social roles in the economy of household in the study area. They produce milk for subsistence, supply manure for cropping and sales of livestock and milk provide farmers with cash to purchase household necessities and farm inputs. The Project, increased material assets and financial ability to meet various social services after the introduction of improved diary cattle. As far as gender roles and responsibilities in

HIP are concerned, there is a clear division of labour, access and control of resources in study villages. Farmers' accept HIP as a beneficial project to them and the components of the project has great influence and contribute significantly on poverty reduction proceess. The major conclusion is that the project has contributed a lot to poverty alleviation in the study area and is sustainable. Therefore, it is recommended that similar development projects be promoted in other villages but attempts should be made to make sure that they target poor strata, especially women. The major constraints to the implementation of HIP were found to be high input prices, low priced produce, lack of credit facilities, shortage of extension services and unreliable input supply. The study identifies several possible research areas. It is therefore recommended that, further research include more focused studies in connection with labour demand by season and division of labour by gender as well as assessment of demand and marketing system for diary products.

## DECLARATION

I, **Harrison Christopher Chinyuka,** do hereby declare to the Senate of Southern New Hampshire University of America (School of Community Development) at the Open University of Tanzania that, this supervised enterprise project report is my own original work unless where cited and that has never been submitted for a similar higher degree award in any other University.

**Student**

Signature.....

Date...15th September, 2005

**Supervisor**

I have read the supervised enterprise project, and found it to be in a form acceptable for review.

Signature.....

Date...15th September, 2005

## COPYRIGHT

## AKNOWLEDGEMENT

A number of people have either directly or indirectly contributed towards successful completion of this report. I wish to extend my sincere appreciation to all individuals and public organizations whose support, encouragement and assistance made it possible to complete this report. And in particular the offices of District Executive Director (DED) for granting me the study leave. During my study, I was attached to the office of Bishop of the Mbinga Diocese and, I am grateful for assistance given to me by these offices.

Special thanks should go to Mr. George A. Mhina (DALDO, Mbinga) for commitment in supervising the whole research and report production. This work could not have been possible without his generous guidance, invaluable suggestions, constructive criticism and the rich and tireless encouragement in the process of sharing up this report. Appreciation should also go to Mr. Richard N. Magaka (DLDO, Mbinga) for good cooperation, encouragement, advice and counseling he gave me during the entire process of the study.

I am also grateful to all individuals, especially the staff members of the OUT – Community Economic Development (CED) Programme; staff of District Agriculture and Livestock Development Office (DLDO's office Mbinga); staff of Mbinga Diocese – Caritas Office; Village authorities, livestock group leaders, agriculture field officers (AFOs) and farmers in Kilimani, Mateka, Mhekela, Tukuzi and Burma who facilitated the whole process of data collection. Moreover, I appreciate the moral and material support extended to me by Ms. Elmerinda Faustin Mukungu during the course.

Lastly but not least, I wish to express my reserved lovely gratitude to my wife Eusebia Adam Ngongi and our children David (Goliyama), Adam (Baraka), Louise (Napwata), and Benetha (Faith) for bearing with me as I denied them of their basic right of fatherly care they deserve during my absence, for their patience, understanding, heartfelt encouragement and support during my study. Thank you very much for your endurance.

I find difficult to mention all of those who participated effectively in one way or another but their contributions are utmost importance to this work.

## DEDICATION

This work is dedicated to my redeemer Lord Savior Jesus Christ and my parents Mr. Christopher Kassian Mpangala and Maria Joseph Kayombo whose fountain of aspiration and love made them spend their merger and precious resources to care for me to this stage of academic achievement.

# TABLE OF CONTENTS

## LIST OF TABLES

# LIST OF FIGURES

## LIST OF APPENDICES

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| CBO | Community Based Organization |
| DALDO | District Agriculture and Livestock Development Officer |
| DCDO | District Community Development Officer |
| DED | District Executive Director |
| DLDO | District Livestock Development Officer |
| DSMS | District Subject Matter Specialist |
| e.g. | for example |
| ECF | East Cost Fever |
| FAMOs | Farmers Motivators |
| FAO | Food and Agriculture Organization |
| FFS | Farmers Field Schools |
| GDP | Gross Domestic Product |
| GM | Gross Margin |
| GNP | Gross National Product |
| Ha | Hactare |
| HBS | Households Budget Survey |
| HIP | Heifer Intrust Project |
| HPT | Heifer Project Tanzania |
| HRDS | Human Resource Development Survey |
| IFAD | International Fund for Agriculture Development |
| IGA | Income Generating Activities |
| Kg | Kilograms |
| $Km^2$ | Square kilometer |

| | |
|---|---|
| MOA | Ministry of Agriculture |
| MOAC | Ministry of Agriculture and Cooperatives |
| MVIU | Mtandao wa Vikundi Utiri |
| MVIWATA | Mtandao wa Vikundi vya Wakulima Tanzania |
| NGDO | Non Governmental Development Organization |
| NGO | Non - Governmental Organization |
| PhD | Doctor of Philosophy |
| PRSP | Poverty Reduction Strategy Programme |
| SNAL | Sokoine National Agriculture Library |
| SNHU | Southern New Hampshire University |
| SPSS | Statistical Package for Social Science |
| SSDP | Small Scale Diary Production |
| SUA | Sokoine University of Agriculture |
| t | tonne |
| TSH | Tanzania Shilling |
| TSHZ | Tanzania Shorthorn Zebu |
| UMADEP | Uluguru Mountain Agricutural Development Project |
| URT | United Republic of Tanzania |
| USA | United States of America |
| VEO | Village Extension Officers |
| WEO | Ward Extension Officers |

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 An Overview of Agriculture Development

Agriculture is the most important sector in many developing countries and this has no exception to East African. The sector contributes more than one third of the foreign exchange and more than 70% of the Gross Domestic Product GDP (Lele, 1995). Available literatures show that Governments of many developing countries put a lot of efforts in developing rural areas because the majority of their people live in rural areas where agriculture is the main economic activity (Lugeye, 1991; Wambura, 1993; Mlambiti, 1994). According to Todaro (1989), about 70 percent of Asians, over 75 percent of Africans and 50 percent of Latin Americans live in rural areas.

Therefore, the emphasis of developing rural economy is of paramount importance (Lele, 1975; World Bank, 2000). In the case of Tanzania, whose economy is heavily dependent on peasant agriculture, the rural sector has a significant role to play on national development. Available statistics indicate that about 85 percent of the total population live in rural areas and most of them are employed in agricultural sector. It is also estimated that 55 percent of the foreign exchange earnings and about 50 percent of Gross Domestic Product (GDP) are derived from rural areas. Moreover, the sector accounts for the livelihood of over 90 percent of the population and is a source of raw materials to the agro – allied industrial sector and market for manufactured goods (Bagachwa, et al., 1995; World Bank, 1996; Amani, 1996; Moshi, *et al.*, 1997; Turuka, 1998; Mbiha and Mdoe, 1998; Mlambiti, 1985; Kisusu, *et al.*, 2000).

In this study, agriculture means crops and livestock production which is the foundation of the economy of Tanzania as it supports employment, food production, raw materials for local industries and export (URT/ World Bank, 1994; Howlett and Nagu, 1997). Various socio-economic surveys in Tanzania confirm the existence of high degree of poverty in rural Tanzania. Among these is the poverty reduction strategy paper (PRSP), which reported that only 68 percent of the urban population and 45 percent of rural population have access to safe water (URT, 2000). The house hold budget survey (HBS) carried out in the year 1991/92 in the country found that 57 percent of rural people could not afford to get basic needs, while 32 percent were unable to get food requirements.

The human resource development survey (HRDS) conducted in the year 1993/94 also found that within the rural areas, most farmers are poor because their main source of income is subsistence agriculture which faces a lot of constraints such as small acreage's, inefficient production techniques, poor marketing system and lack of agricultural credit facilities (Lazaro, 1996; Berdgene and Escober, 1997; Moshi, *et al.*, 1997). In Tanzania, 80% of the counting export earning is contributed by agriculture and forest sectors, and employs about 80% to 90% of the population (Mlambiti, 1994). Smallholder farmers, mainly shoulder the economic growth and development of Tanzania that heavily depend on agriculture. Agriculture contributes about 61% of the Gross Domestic Product (GDP) and smallholder farmers, who also produce 90% of the country's food, produce about 80% of the exports. Over 80% of the population live in rural areas and derive their livelihood from the land, and the agriculture sector provides food and employment for the growing rural and urban population. Also is the source of income to most farmers (World Bank 1994).

Despite the vital role played by the sector, the majority of rural people in Tanzania are poor (URT, 2000). URT (1998) reported that 92 percent of the poor reside in rural areas while only 8 percent are in urban centers. The report by the International Fund for Agriculture Development - IFAD (1998), cited by Bagachwa (1994); Kisusu, (2000) disclosed that the majority of Tanzanians living in rural areas are very poor. This is because their income levels are low, making them unable to acquire basic needs which varies according to location and economic status but, the common ones include availability of food, clothing, shelter, health care, necessary material assets, good environment, safe water, education and freedom (URT, 1998, 2000; Kisusu, 2003).

### 1.1.1 Livestock production (Dairy industry issues)

According to Luziga (1993), most of smallholder dairy farmers own 1 – 10 cows. About 70 percent of dairy animals under smallholder which comprise of about 0.2 million heads. About 65 percent of dairy animals under smallholder farming are found in Kilimanjaro and Arusha regions along the slopes of Mount Kilimanjaro and Mount Meru. The rest 35%t are found in other places (URT, 1999). Nearly 705 liters of the milk is produced by minimally supported traditional small producers in the rural areas where the bulk of the commodity is being consumed in the rural areas with small surpluses filtering into growing urban centers. Dairy farms contribute only 30% to the total milk production of which, 140 million liters are produced by smallholder dairy farms while large – scale dairy farms deliver 30 million liters annually. Total cattle population under these two commercial systems is estimated at 212, 299 of up - graded dairy cows. In the mean time the country has dairy products imports, which are estimated to be equivalent to 15 million liters annually (URT, 1999). The dairy industry has the potential of creating employment to both rural and urban areas, provides food and cash income to households involved in keeping dairy cattle throughout

the year. However, for the dairy industry to realize full potential, the following constraints have to be removed or minimized: low production and productivity, non – availability of rural credit and extension services for smallholder dairy farmers, poor organization of milk transportation. It is unlikely that targeting smallholder can solve all those problems.

### 1.1.2 Importance of Diary production in the economy

The livestock sector is an integral part of Tanzania's economy. According to 1994/95 agriculture census results, the sub sector contributes about 18% of the National GDP, of which beef, dairy and other livestock provided 40%, 30% and 30% respectively. The subsection as a whole contributes about 30% to the GDP. However, there are other benefits obtained from the livestock sub - sector. It provides food, which is consumed in the form of meat, (246000t), milk (600million litres), and milk products and eggs (320000t) annually. Further more, 40% of the 3 871 277 agricultural households in Tanzania are involved in crop and livestock production where as, 0.4% are keeping livestock only. The animals are source of manure, hide and skins. Livestock are potential source of draught power (800 000animals) for cultivation and transport (URT, 1999).

Dairy production is a sub sector in livestock sector. It is comprised of traditional cattle herds, which are dual purpose and few graded and pure breed's dairy cattle. Tanzania's livestock population, the third largest in Africa, is estimated at 17.7 million cattle, 12.5 million goats and 3.5 million sheep undertaken to a significant extent. The livestock (dairy production sub sector) has a big contribution to food security and poverty eradication at household level. Besides, the sub – sector is an important source of protein food principally in the form of meat and milk. Its proper development could dramatically contribute to GDP and poverty reduction processes. Popular dairy breeds found in

Tanzania include Fresian, Arshire, Guernsay, Sahiwal and their crosses. Improved dairy Cattle are found in religion and government institutions, cooperative farms, private farms and smallholder farmers. Smallholder dairy farming is well developed in high rainfall fertile cropping zones, where stall-feeding and free-range dairy production is incorporated into mixed farming. It is also practiced in and around the urban centers where ready and profitable markets exist (Mlozi, 1995). However, the subsection faces many constraints to its development, the most important of which are: poor rural infrastructures including livestock water facilities, range management and the lack of adequate livestock disease control programmes; inadequate or complete lack of access to livestock development credit; limited public investment in the sub – sector; and poor livestock extension services (URT, 2002). The major challenges currently facing livestock diary subsection is how to improve the economic well being of the community dependent on livestock product and to change the attitude of livestock keepers to modernize the sub sector.

### 1.1.3 Background information of Mbinga District

Mbinga District is situated at the South West of the Ruvuma region bordered by Songea District to the East, the Republic of Mozambique to the south, Ludewa District to the North and Lake Nyasa which borders Malawi and Tanzania respectively to the West. The District has a total area of 11396 $km^2$ of which, 2,979 $km^2$ is covered with water, 2,526 $km^2$ is forest and 5,891-$km^2$ equivalent to 589,100 Ha is an area suitable for agriculture and related activities, which is 51.7% of the total Mbinga District area. Administratively, the district is divided into 6 divisions, 37 wards and 192 villages with 84, 669 households and 1,134 hamlets. According to the National Census Population and Habitant of 2002, the District population were 403, 819 of which, 197, 789 were males and 206,030 were females with an annual growth rate of 2.9 percent.

Over 90% of the population live in the villages while a small percentage 10% is found in small towns (divisional and Ward headquarters) and in Mbinga town. Most of Mbinga district villages are connected with roads thereby making communication and transportation systems to be easy at times. The agricultural potentials together with mining and fishing activities and also the contribution of Regional and District good roads have attracted immigrants from other areas outside the district and this has resulted to the increase of the population as well as the change of behavior patterns due to social interactions and social stratification on development issues (DCDO, personal communication). The area of study, which is the Mbinga Diocese, is divided into 7 Deaneries, 23 parishes with 63 priests, 191 sisters and 198 catechists. There are 383, 761 Christians, 5,970 Muslims and 57,711 Pagans.

Land use in Mbinga District is typical of that of subsistence economy. Agriculture is the main source of income whereby it contributes to 91% of the district income. Cash crops grown in Mbinga district are coffee (appendix 8), tobacco, cashewnuts, while maize, cassava, beans paddy, and finger millet are food crops (appendix 7). Coffee crop is the major source of income in the highlands and the rolling hills areas where as maize and tobacco being the major source of income in the lowland areas. In the lakeshore, cassava is the major staple food crop. Most of farmers in Mbinga district practice both farming and livestock keeping. Livestock kept in the district include cattle, goats, sheep, pigs, donkey and poultry. However the number and quality of the livestock kept has remained low compared to the high population of the district and the consumption rate. To date the consumption rate has remained at 1:8, meaning that, one kilo is for eight people in a household, except in Mbinga town where the demand is high and the ratio has been maintained at 1:3, this is due to the social interaction patterns (DCDO Personal

communication 2004). The districts have good climate with reliable rainfall, high agriculture potential including irrigation systems. However this potential land is still under utilized except in the Matengo highlands. The Mtwara corridor Development programme will stimulate the growth of the possibility of expanding the economic activities to a large number of the population.

The number of livestock in the District (Cattle: Indigenous 75823, Improved 1973; Goat: Indigenous 174350, Improved 239; Sheep: 28300; Pigs: 78434; Donkey: 28 and Chickens: Local 412618 and Layers 33221) is considered as the highest in Ruvuma region but lower when compared to other regions and districts in the country.

**Table 1: Economic Activities in Mbinga District**

| Economic Activity | Value in potentiality (Coverage) | Percentage contribution to the district income | Employment in percentage of total population | Estimated income generated |
|---|---|---|---|---|
| **Agriculture** | | | | |
| Food Crop | 146 510 | 80 | 91 | |
| Cash Crops | 15 245 900 | 84 | | 3 290 941 934 |
| **Livestock** | | | | |
| Cattle | 70 592 | 23 | 2 | 92 019 4 90 |
| Goats | 158 357 | | | |
| Sheep | 25 669 | | | |
| Pigs | 78 434 | | | |
| **Forestry** | 2 526 $km^2$ (22%) | 76.6 | 5 | 2 773 129/95 |
| **Fishing** | 2 979 $km^2$ | 56.5 | 1 | 2 091 860 |
| **Beekeeping** | 22.2 (9576 kg) | 57.3 | 0.7 | 2 775 890/65 |
| **Wildlife/ Game** | 2 526$km^2$ | 13.0 | 0.2 | 26 950 |
| **Tourism** | - | - | - | - |
| **Mining** | 5 Areas | - | 0.1 | - |

Source: DED Office 2002

The table above brings us to the understanding of the District economy. It has been observed over the years that the average household income was Tsh 107 700/=. In 1997, the Household income raised to Tsh 600000/=. This was due to the fact that Mbinga District Authority launched poverty alleviation programme. However, the household income varies with agricultural ecological zones. For instance, in Matengo highlands where coffee is a major cash crop, household income ranges from Tshs 300 000/= to 2,500,000/= (DCDO Person communication, 2004). This however is below the poverty line as defined and stipulated by the World Bank (2000: 4 – 7) as to have the proportion of people living in extreme income of less than USD 1 a day.

**Table 2: Mbinga District in Brief**

| | |
|---|---|
| Male population | 197 789 |
| Female population | 206 030 |
| Total population | 403 819 |
| Annual average intercensal growth rate 1988 – 2000 census | 2.9% |
| Dependency ratio | 89% |
| Sex ratio (number of males per 100 females) | 96 |
| Average households size (persons per household) | 4.7 |
| Percent of population with disability | 2.2 |
| Percent of child orphans | 0.8% |
| Literacy rate, 5 years and above | 75% |
| Net enrolment rate | 81% |
| **Employment in** | |
| Agriculture | 91% |
| Business operations | 5% |
| Office works | 2% |
| Fishing | 1% |
| Elementary occupations | 1% |
| Main materials used for walls (baked bricks) | 89% |
| Main material used for floor (mud) | 82% |
| Main materials used for roofing (grass) | 52% |
| Main sources of energy for cooking (fire wood) | 94% |
| Main source of drinking water (unprotected well) | 41% |
| Main type of Toilet facility (traditional pit latrine) | 98% |
| Main asset owned by most of the private households (hand hoe) | 73% |
| Average number of persons per sleeping room (persons per room) | 1.6% |

Source: DED Mbinga 2004.

### 1.1.3.3 Dairy production in Mbinga district

Dairy sector in Mbinga District comprises of smallholder farmers as well as medium scale institutional farms. The medium scale farms are Utiri dairy farm which is under the District Council, Kitai and Mkwaya dairy farms both are owned by Prisons under the Ministry of Home Affairs, whereas Mbinga diocese owns three small scale diary farms at Mbinga Town, Lipilipili and Lupilo, all are under Sisters' Convents, these farms are the major sources of incalf heifers and –bulls to the community.

There are 24 villages that benefited from Dairy projects through countrywide Dairy Development Program (DDP) launched by then (1992) the Heifer Project International (HPI) and the World Food Program (WFP). In trying to address the problem of rural poverty in the district, the Mbinga Roman Catholic Diocese under CARITAS has also employed different strategies. Among them is the introduction of various rural development projects such as the diary project through Heifer Intrust Project (HIP) and Mbinga Sustainable Agriculture Development Programme (MSADP). The main objective of the HIP project is to alleviate poverty and improve people's welfare in the district by increasing their income through sales of dairy products. Other objectives are to attain household food security so as to enable rural people acquire and consume the required calories per adult/child equivalent, also to enable household to acquire domestic assets as well as support environmental conservation measures (DALDO, 2004; Kisusu, *et al.,* 2000, 2001; URT, 1999). The current average consumption rate is 2.5 liters of milk per year while the national average rate is 23 liters per year this explains that the District has a long way to go as far as milk consumption is concerned.

### 1.1.4 Mbinga diocese as a community based organization

#### 1.1.4.1Overview

**Vision Statement of mbinga diocese**

A World, which Reflects the Reign of God, a World of Justice, Peace and Solidarity.

**Mission Statement of Mbinga Diocese**

Evangelisation and to facilitate participatory community development and relief work by empowering people in respective of race, ethnicity, sex and age.

**Main objectives**

- To look for practical ways of addressing the need of human person created in the image of God following the commandment of our Lord Jesus Christ (Jn 13: 34).
- To inspire, stimulate, harmonize and support all activities aimed at ameliorating living conditions of people.

#### 1.1.4.2Target community in Mbinga Diocese

The economy in Mbinga diocese depends mainly on agriculture and natural resources. Agriculture refers to the combination of crop production and livestock. Apart from crop production and natural resources, livestock contribute a lot in the economy of Mbinga District community. Mbinga diocese comprises seven deaneries. In all these deaneries, the common feature is that agriculture is the main economic activity. Despite the fact that all deaneries rely on agriculture, the economy varies from deanery to deanery. The possible reasons for economic variation could be due to differences in physical features such as climate, soil type, established institutional set up, existing infrastructure, and level of farm and household management.

### 1.1.4.3 Development programmes and projects under Mbinga Diocese

A large number of development projects are implemented in the diocese (appendix 10) with the intention of raising the well being of the community. The development projects and programme, which are executed in the diocese include, Water supply (hydromills), health services, and education, environmental management and sustainable agriculture (Organic Farming), HIV/AIDS (prevention, control and impact mitigation). Among others, HIP deals with improved dairy production. Project is considered to be feasible, and it has been revealed that, the number of improved dairy cattle has increased considerably through HIP. For instance, in 1992; only 20 improved in calf heifers and 2 Bulls were distributed to 2 villages, each with 10 farmers and after a period of 12 years (in 2004), the number of improved dairy cattle reached 633. While the number of household (farmers) owning such cattle increased to 436 in 24 villages.

## 1.2 Problem Statement

Heifer Intrust Project was introduced in Mbinga District in 1992. The project was expected to raise the economic status and improve the quality of life of both women and men of rural communities through provision of incalf heifers, knowledge and skills on zero grazing, environmental management and sustainable agriculture. Mbinga Diocese facilitates the project while farmers manage zero grazing units.

There are several studies on the contribution of livestock in poverty alleviation. For example, Kurwijila *et al* (1994); Rugambwa *at el* (1994); Ashimogo *at el* (1998); Mbasa and Msafiri (1998) and Mdoe *et al* (1998); Isinika and Mdoe (2000); Kisusu *at el* (2000); Mdoe *et al (2000); Kisusu*, (2003); and Boi, (2004).

Despite the wide recognition of the HIP by the community in Mbinga District and other Regions of Tanzania such as Mbeya, Iringa, Tanga, Kilimanjaro, and Kagera; as an effective and efficient economic development project, with a lot of successful outcomes (URT, 1998; Mphuru, 1991; Kurwijila, 2002; Kisusu, 2003 and Boi, 2004.) no scientific study has been done to evaluate the performance of the HIP in Mbinga District.

In this regard, a participatory evaluation of the project merits or need special consideration. Therefore, the study seeks to evaluate HIP through participatory manner, which involves various stakeholders: Farmers, Village Extension Officers, Mbinga Diocese and District Agriculture and Livestock Development Officials.

### 1.3 Justification

This study will conduct a participatory evaluation of Heifer In-trust Project (HIP) with a view of determining its effectiveness, efficiency, new opportunities, important linkages and outcomes to farmers for better recommendation of its sustainability. By so doing, it is possible to shed light on some aspects for improving the project. On the other hand, the results of this study will also highlight the importance of the project as far as the community economic development is concerned. The results will also contribute towards understanding of problems of the community participations in various economic development programmes. This will also be a tool and a guide to planners and decision makers dealing with various rural economic development programs at all levels especially in dairy cattle industry. Furthermore, the findings will help to a larger extent the farmers, implementing agents, NGOs/CBOs, extension staff and other concerned partners in adjusting and redirecting resources to the economic development programmes. It will also

provide opportunities for the active and effective participation of both men and women in the context of goal achievements in development projects.

## 1.4 Objectives

### 1.4.1 Main objective

The main objective of this study was to facilitate farmers to participate in evaluating the relevance, effectiveness, efficiency, importance and sustainability of Heifer Intrust Project under Mbinga Diocese, in Mbinga District

### 1.4.2 Specific objectives

The specific objectives of this study were to:

1. determine efficiency and effectiveness of the Heifer Intrust Project
2. determine the economic contribution of the Heifer Intrust Project on households involved in the project.
3. examine smallholder farmers perception to the Heifer Intrust Project in Mbinga Diocese.
4. identify the evolving gender roles, responsibilities and ownership from Heifer Intrust Project to the community.

## 1.5 Research Questions

- To what extent are farmers aware of the project?
- To what extent are farmers involved in the project?
- Is the number of farmers involved in HIP increased over the years?
- To what extent the authorities supported the Project?
- To what extent are farmers benefited from the project?
- What are the gender roles, responsibilities, and ownership evolved from the project?

## 1.6 Limitation

The Major limitation to project study is time and financial constraints (funding). The study confined to a sample of only five villages due to the fact that time allocated to cover the course and fieldwork, data collection, data analysis and writing of the final report and presentation were limited (appendix 3). Under the cost sharing system, the researcher received a minimum fund from his employer for conducting this study (appendix 4). Most of the costs born have proved to be too high for a self-sponsored person and for such kind of research. This has posed a big limitation on the researcher especially in collecting data in the field, and analyzing them.

## 1.7 Conceptual Framework

Without theoretical framework to bind facts together, knowledge is fragmented into discrete segments. Research performed without the guidance of theoretical frame work is usually sterile for the reason that the researcher does not know quite well which data to collect and when he or she has them, he or she can not put them to use (Kajembe, 1994) cited in Machumu, (2001). In the view of this, much is learned on the logical linkages between knowledge, analysis and practice (KAP) for better end results in income generating and poverty eradication phenomena.

Under normal circumstances, the level of income determines poverty level. It is expected that, the higher the level of income an individual has, the lesser the degree of poverty other factors being held constant. The evaluation of development projects in a given community is tantamount to evaluating income levels in that community. However, changes in income levels are influenced by a host of other factors which affect production efficiency such as climate, availability of inputs, markets for the products, level of education, age of the

individual, availability of extension and credit services. The effects of improvement on development projects are supposed to be reflected in the changes of individual's welfare through increased material assets, food security and overall well-being of those individuals. As such most of rural development projects therefore, aim at among other things, the improvement of people's income through establishing income-generating projects such as the heifer in trust project under Mbinga diocese and hence improving standard of living.

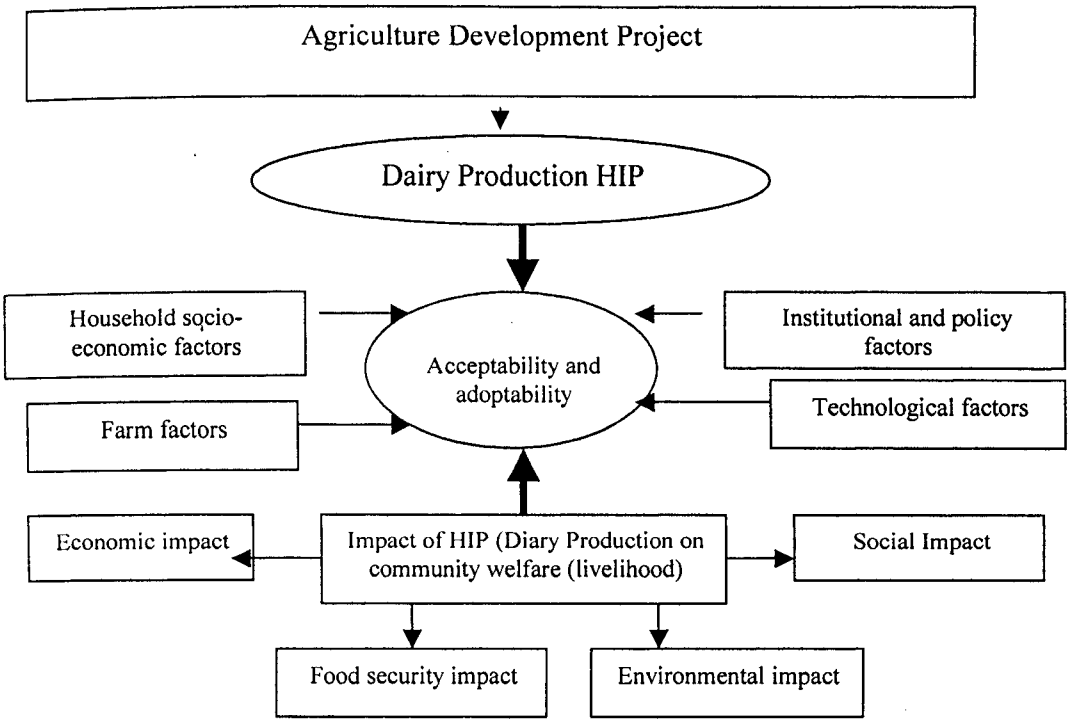


**Figure 1: Conceptual Framework**

### 1.8 Organization of the Study

This study is divided into five chapters. Chapter one covers the introduction, while chapter two reviews literature (theoretical, empirical and policy) related to the participatory evaluation of Heifer In trust Project. Chapter three describes the methodology used and chapter four presents the findings of the study, conclusion and recommendations while chapter five describes implementation of recommendations.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### 2.1 Overview

This chapter reviews the literature of different aspects related to community participation in development programme and projects. The chapter is divided into four sections. The first section offers theoretical review and description of evaluation definition and concepts. The second section reviews empirically the concept of participation followed by the third section, which reviews policy of Tanzania in relation to participation aspect in community development. The fourth section discusses gender roles as important aspect to be considered in community development projects

### 2.2 Theoretical reviews

#### 2.2.1 The concept of evaluation

A comprehensive evaluation is defined in literature as an evaluation that includes monitoring, process evaluation, cost benefit evaluation, and impact evaluation. Yet each of these components is distinctly different. Monitoring will help to assess whether a program is being implemented as it was planned. A programme monitoring system enables continuous feed back on the status of programme implementation, identifying specific problem as they arise. Process evaluation is concerned with how the programme operates and focuses on problems in delivery. Cost-benefit or cost effectiveness programmes costs (Monetary or non-monetary), in particular their relation to alternative uses of the same resources and to the benefits being produced by the programme. Finally, impact evaluation is intended to determine more broadly whether the programme has the desired effects on individuals, households, and institutions and whether those effects are contributable to the programme interventions. Impact evaluations can also explore

unintended consequences, whether positive or negative, on beneficiaries. Of particular interest for this study is the extent to which project benefits reach the poor and the impact that these benefits have on their welfare (Baker, 2000).

Evaluation may mean different things to different people, it is therefore important that we have some working definitions or core perspectives on its meaning. The definition of evaluation given by the Development Assistance Committee (DAC) of the OECD is as follows: "an examination as systematic and objective as possible of an ongoing or completed project or programme, its design, implementation and results, with the aim of determining its efficiency, effectiveness, impact, sustainability and the relevance of the objectives (OECD, 1991). We can add on that an evaluation is principally an activity that answers to a wide array of information needs of various actors in an organization at a specific point in time. So an evaluation does not necessarily only refer to projects and Programmes, but can also refer to the organizational level, strategic level, policy level and co – operation level (OECD, 1991 and OECD, 1998). According to FAO (1985), Evaluation is a systematic process that attempts to assess as objectively as possible the relevance, effectiveness and impact of a project to the context of the project objectives.

Evaluation involves assessing completed activities or programmes to discover what worked and what did not. A clear understanding of lessons learned helps in the development of future programme. According to David and Nagu (1997), evaluation is concerned with the collection, processing and analysis of data for measures of performances. Evaluation assesses the overall project effects, both intentional and unintentional, and their impact. It involves comparisons requiring information from outside the project either in time, area or population (Casley and Lury, 1981). The term

Evaluation means simply to assess the value of something (Feuersten, Marie 1986). According to Imboden, (1978), evaluation is a periodic assessment of the performances, efficiency and impact of the project in the light of its stated objectives. Evaluation is essentially concerned with pinpointing the relationships between outputs, effects and impacts.

In this study, it means helping those who are involved in Heifer Intrust Project to assess the value of what they have done. Systematic investigation of the worth, value, merit, or quality of the Heifer Intrust Project. Assessment of the operation or the outcomes of a project or policy, compared to a set of explicit or implicit standards, as a means of contributing to its improvement. The criteria for evaluation include relevance, effectiveness, efficiency, importance and sustainability. Evaluations fall into a large number of categories depending on the purpose, the timing, the relationship between those initiating, carrying out and undergoing the evaluation. Four types of evaluation can be distinguished:

- The earliest form of evaluation can be characterized as measurement oriented, associated with the scientific management movement. Tests were used to measure progress. The evaluator had a technical role; providing tools and instruments for evaluation measurement;
- The second generation evaluations concentrated more on description, going beyond measurements, it focused more on the achievement of goals and the analysis of strengths and weakness. The role of the evaluator now also included that of describer;
- The third evaluations are characterized by efforts to include judgment as an integral part of the evaluation;

- The fourth generations also involve negotiations. It based on the notion that evaluations are basically social, political and value oriented endeavours. It incorporates stakeholders more centrally into the evaluation process, taking into consideration their concerns, issues and claims. The evaluator becomes much more of an orchestrator or mediator in a negotiations process with stakeholders who participate actively in designing, implementing and interpreting the evaluations. Stakeholders (beneficiaries and target groups) are not viewed as objects of study but rather as participants in the process (AEA, 2001, AES, 2002 and Newman *et al.,* 1994).

### 2.2.2 Concept of participatory evaluation

The mid of 1970s saw the beginning of a fundamental shift in developmental thinking, a way from a domination of the modernization paradigm and instrumental intervention, towards a systematic search for alternatives. The reason for these searches were that development was considered to be too capital policy oriented as opposed to people oriented. Gradually, the view emerged that although physical development was important, development programs had to allow people to play a control role and to have some control over it. This has resulted in the development of alternative approaches that are often referred to as "people centered" or participatory approach (FAO, 1985). In early days, extension focused on how to convey the technical messages developed by research station to farmers. Since the adoption rate of these technical messages were often below expectations, extension services began to realize that it would be more effective to involve the target group in the definition of message and the communication channel used to transfer it. The emergence of people centered development approaches and the changing of perspective of agricultural extension have imposed alternative approaches to evaluation

and different methodology that embraces the dwelling of procedures and values of all actors involved in the development process and raises awareness. Participatory evaluations are often referred to as balanced contribution of all actors involved. This is a particular type of evaluation in which the local people concerned evaluate their own activity or program. The objective of the evaluation, the methods and indicators to be used, the collection and the analysis of the data and information, and the drawings of conclusion are all carried out by local people themselves (FAO, 1985).

## 2.3 Empirical review

### 2.3.1 Function of evaluation

The Primary function of evaluation, after project completion, is to use data on the performance of projects in such a way that new projects can be learned from experiences. This is part of the project cycle where evaluation of a project is fed into identifying and preparing the next set of projects. Evaluation is essentially a backward looking assessment. The questions like, did the project achieve the expected objectives, effects and impacts, and if not why not has a place in evaluation. However, it may also have an interim function, which is a form of midterm review, where progress is assessed and possible revisions to objectives and targets are formulated. An associated function of evaluation is an audit of the project, particularly of the management and implementation, and this can include an environmental audit of the project (David and Joseph, 1997).

Evaluation has been carried out mainly as a way of looking at project activities, human resources, material resources, information, facts and figures; in order to: monitor progress and effectiveness, consider cost and efficiency, show where changes are needed, and help to plan more effectively for future (Feuersten, Marie 1986). The main purpose of

evaluation is to provide feedback, a non – automatic process of transmitting information on current projects to designers of future projects and programmes. Evaluations need to assess both the design features and the management performance of the project in terms of why a project was more successful or less successful. In terms of indicators the evaluation should be looking for both positive and negative indicators of both relative success and relative failure and the causes of all these.

Some common purposes of evaluations are:

- Improving design and / or performance of policies, linkages, services, programmes and projects.

Evaluation can identify problems that explain why certain activities do not render the expected results. The evaluation process itself may also improve performance by clarifying objectives, improving communication between all concerned parties, highlighting obstacles, and it may lead to accelerated implementation. This type of evaluation can be planned ahead of time in terms of a foreseen mid – term review, or it can be an ad – hoc evaluation due to unforeseen problems that arose.

- Making choices.

Providing input into decision making regarding programme/ organizational (financial) performance is necessary in order to make an overall judgment about effectiveness/ efficiency. It can be used to review the choice between alternative activities, or strategies. This kind of evaluation is particularly useful to operating staff. Further more, it helps policy makers in the development of national policies and programmes by identifying efforts with the great impact. It is also useful for making decisions to donors whether to continue funding. In some but limited cases, it can also be a stop – go moment

- Learning lesson for future application.

Evaluation can be conducted for the lessons they provide to partner organizations, other donors, and or those responsible for similar services/ programmes and projects. An evaluation may look at the programme/strategy / organization to learn what foster development replication (expanding a programme to a larger area, "going to scale") or sustainability. It can be used to learn something from the past experience for future application. What worked, what didn't work, is it replicable in another area, at another scale or a different moment in time.

- Accountability.

Evaluation are often required for accountability, to find out whether programme managers are using limited resources in the ways planned and are bringing about the intended results. Donors and other stakeholders use evaluations to make funding decisions (OECD, 1991 and OECD, 1998).

### 2.3.2 Participatory evaluation

Participatory evaluations involve the community in defining the aims of the evaluation, assessment of indicators and in analyzing the findings. They draw upon the wide range of knowledge, values and concerns of the community in assessing implementation progress and effectiveness of individual actions. The extent of participation will depend initially on the political space that is available for the participatory process to start, particularly at the local level, and on the opportunities for an intervention in the existing socio-economic system by those who have a higher consciousness and commitment.

Participation must start at planning stage. Where by a large proportion of the population must know what is going on, so village meeting have a critical role to play on this. On the other hand, it is not possible to involve everyone all the time; so much work will be done

through the village committees. While it is important that respected traditional leaders play a key role, there is also a danger of 'kidnap' of the project by elite few in the village if there isn't adequate participation in key steps and understanding of rights; cases of this have been recorded in a number of places including MEMA in Iringa and the Lushoto Catchement Project (Baker, 2000). The more people know about the project and the more transparent the process, the difficult it is for 'kidnap' to happen.

### 2.3.4 Why participatory evaluation

(Plan and Evaluate with people).

Planning is about achieving a better tomorrow for all the people. Reaching the better tomorrow means understanding the current and future needs of people in our community. It is people themselves who best know these needs. Working together with people and involving them in planning will help us develop plans that better address communities needs (Juliet and Godfrey, 2002). Participatory monitoring and evaluation enables villagers to observe and measure their progress, analyze problems and introduce changes to their action plans when necessary. In the past, monitoring and evaluation was the responsibility of service agencies.

Today however, as with other development activities, monitoring and evaluation is increasingly the responsibility of the community. Participatory monitoring and evaluation allows the community to: follow implementation progress of each action throughout the year, keep all interested parties updated on progress; evaluate results of the actions under way and modify them if necessary and, evaluate the commitment of both village and agency staff in executing the ongoing activities. Monitoring is a continuous process during

implementation. In contrast, evaluation is carried out periodically, perhaps once per year or when activities are completed (Julie and Godfrey, 2002).

It has been noted that, farmer's knowledge, inventiveness and experimentation have long been undervalued (Chamber, 1989). But participation show that farmers and scientists can and should be partners in the real and full sense in designing and finally evaluation of different types of technologies and projects this stems from the following key issues:

Participatory evaluation means working together with people, which brings many benefits.

- Increased sense of ownership of local plans by communities and project staff. This means that plans are more likely to be implemented since they better reflect local needs and circumstances.
- Understanding one another. By working together people understand how Government/Project staff work and project staff (Government) understand peoples needs and expectations. This leads to:
- Improved working relationship between communities and project staff (Government). Planning, working and evaluating together create trust and openness.
- Better use of resources. Involving people helps government and project staff to identify what are the real issues and needs in the community. This means that Government and project staffs are able to better target their limited resources to address real needs and problems. Improved working relationship, trust and understanding between the communities are more likely to mobilize funds to support their development activities.
- Sustainability: Since people have been involved and their own needs and ideas are better reflected in plans, the plans are more likely to be implemented

### 2.3.5 Contribution from beneficiaries

The role of project beneficiaries in monitoring and evaluation of the project is still in its infancy. While participation in other aspects of the project cycle and design are now well developed, the practices of the participation by project beneficiaries still use much clarity. However, the logic of increasing participation in projects to achieve more sustainable results applies equally to monitoring and evaluation as to any other area. A key element in agricultural development projects is the active participation by farmers and their communities.

It is being admitted that one of the contributing factors to poor project performance in the past has been the lack of participation of the beneficiaries. Objectives were generally perceptions of the appraisers and very often objectives were ill defined and were stated vaguely. The objective was not seen as an end to enable the poor to control more of what, but rather by what technicians perceived they wanted and need (David and Nagu, 1997).

This act resulted in an increasing consensus at both National and Donor levels that involvement of the beneficiaries in the project design is of crucial importance for sustainability of projects. Putting peoples first (Corner, 1985) and putting the last first (Chambers, 1992) are examples of this correct thinking and recognition of community participation. This had also been reflected in the development of agricultural research towards farming system and farmer participatory research, farming system research and on farm client oriented research (Merril, 1986; Collinson, 1987; Farrington and Martin, 1988). The HIP in Mbinga district has not been an exception. It is of much interest to consider the importance of involving the communities in all steps so as to have an effective move towards economic development (appendix 9).

## 2.4 Policy review

### 2.4.1Community Development, Gender and Children Policy

The National Policy on Community Development Gender and Children (1996) aims at ensuring that the community at all levels are involved and participate effectively in development issues through participatory methodologies for the betterment and development of all. Also the policy aims at involving the community, NGOs/CBOs, religious institutions and very various institutions to participate in effective identification of key issues, planning, implementing and evaluating the implementation of the development plans in their respective areas for sustainable development.

The community development is one of the oldest professions in our country, dating back to 1940s and has contributed immensely to the country's socio – economic development since then through effective mobilization of communities and promotion of self-help spirit. In the present context too, greater emphasis is given to the attainment of sustainable "people centered development" which seeks to maximize the use of local resource promotion of community participation and self-help initiatives.

The Community Development Vision states that; community development as a process, movement and programme should be participatory and involving, demand driven, carefully targeted, gender sensitive and provided in collaborative and coordinated way involving various stakeholders including the beneficiaries that is the communities so as to enable communities to utilize the available resources in an effective and sustainable manner in order to improve their incomes and overall standards of living (URT, 1996).

### 2.4.2 Agriculture and Livestock Policies

The National Agriculture and Livestock Policy of 1997 aims at "enhancing and bringing extension services close to the people. Also is to provide excellent services where by farmers themselves, stakeholders and donors participate fully and effectively in promoting the agriculture and livestock sectors" (URT, 1997). The National Agricultural Extension Services Vision statement states: "the agricultural extension services in Tanzania should, by the year 2010, be participatory, demand driven, carefully targeted, cost effective, gender sensitive, and provided in collaborative and coordinated way involving various stakeholders, including the beneficiaries so as to enable the farming and pastoral communities to utilize available resources in an effective and sustainable manner in order to improve their incomes and overall standard of living" (URT, 1997).

### 2.4.3 Natural Resources and Tourism Policy

The overall National policy on the Natural Resources and Tourism of 1998 aims at "developing, managing and protecting the natural resources and tourism on sustainable concepts and methodologies". One of the overall objectives of the sector, forestry sector for example; is to conserve, protect, develop and manage forests resources through participatory methods for sustainable development. The National Environmental Policy aims to "raise public awareness and understanding of the essential linkages between environments and to promote individual and community participation in environmental actions". National Beekeeping Vision Statement too put more emphasis on enabling participation of all stakeholders in conserving and managing honeybees. Individual beekeepers and organized communities are encouraged under government guidelines, to establish, manage and own bee reserves for carrying sustainable beekeeping activities. Greater emphasis also placed on decentralization of authority to local level and promotion

of social services through increased cost sharing. Broader involvement of the private sector and communities is encouraged in order to improve social welfare; an enabling environment for private sector, NGOs and community participation will be created (URT, 1998).

### 2.4.4 Land, Trade and Industry Policies

The National Land Policy of 1995 aims at "the promotion and achievement of proper allocation of the urban land for sustainable economic development and environmental protection". The objectives of the sector are many including to promote participation of various stakeholders in planning, development and management of lands. The National Policy on Trade and Industry of 1996 is to "transform the economy from a supply constrained one into a competitive export led entity responsive to enhanced domestic integration and wider participation in the global economy through national trade liberalization". Objectively, aims at transforming the economy towards an integrated diversified and competitive entity capable of participating effectively the multilateral trading system.

### 2.4.5 Planning and Health Policies

The National Planning Policy of 1995 emphasizes the implementation to be led by all development stakeholders with emphasis to private sectors whose participation and investment in productive and social sectors is very crucial. The government role is to put in place the good environment conducive to the participation of all stakeholders for the total development of all. The National Health Policy of 1990 aims at ensuring that there is availability of medicines, medical equipment's and other essential medical materials in hospitals, health centers, dispensaries and other health facilities. Also the policy aims at

involving the communities, stakeholders and donors to participate effectively in managing, planning and evaluating health activities in their respective areas. The National Education Policy of 1996 aims at providing quality education by involving the communities, local and central government, the donors and NGOs/CBOs in all the stages of education development.

### 2.4.6 Rural Development Policy

The LGAs will provide support to research and extension to improve its effectiveness, and to promote private sector participation in production, processing storage, input supply and marketing. Both the Central Government and LGAs will create conducive environment for private sector participation in the agriculture sector in farming and marketing. Rural development policy has a major role to play in enabling the government to realize its development agenda. Another dimension related to this aspect is about fostering people's participation in their fundamental development at all levels of the society/ community in the country.

### 2.4.7 Policy issues in relation to water supply

The 1991 Water Policy indicates a clear departure from the era of free water launched in 1967 by introducing the principal of cost sharing in the Operation and Maintenance (O& M) of water schemes (URT, 1991) cited in Mpangala (2005). The revised water policy puts emphasis on a demand responsive approach and community participation in the planning, management, maintenance and evaluation of water schemes (URT, 1999) cited in Mpangala (2005). The policy reemphasizes the importance of community involvement in the planning and provision of water services to the population. It also opts technologies that require low costs and that with least operation and maintenance costs.

## 2.5 Gender roles on development projects

Gender inequalities have been shown to reduce economic growth, which in turn has an effect on the well being of the whole society. Gender inequality has adverse impacts on a number of valuable development goals (Clansen, 1999). First, gender inequality in education and access to resources may prevent reduction of child mortality, fertility and expansion of education to next generation as well as prevent an increase in agricultural productivity (Barro and Lee, 1994; Barro and Sala-I-Martin, 1995; King and Hill, 1995) cited in Njuni, 2001. The customs and traditional beliefs subordinate women to do more work than men in daily life. In actual practice women contribute a lot in the welfare of the family. Unfortunately, they are deprived of their rights and nevertheless they are mistreated in the following ways.

- The participation of women in decision making as regards to the control of family incomes is negligible
- Women have no right in land ownership
- There is still a problem of involving the family properties and in particular to the widows after the death of their husbands. Others include diseases, and the use of poor technology.

For these reasons, gender inequality is a core agriculture development issue and a development objective in its own right. Gender equality also enhances development by strengthening the ability to grow, reduce poverty and governs effectively. It is thus an integral part of an inclusive development strategy that seeks to enable all people, women and men alike, to escape poverty and improve their standards of living.

In many societies, the processes of implementing development projects are not complete without the participation of both women and men. However, this interdependence is not common to all societies and in many cases the degree or extent of participation of each differs considerably. In Tanzania, women who constitute 51 percent of total population contribute about 75 percent of labour force in agriculture with ranging degree of involvement in livestock keeping, crop production and, are wage earners on top of their other roles on mothers and unpaid household managers (Maeda, et al., 1999). Whenever women live, they are bound together by the common fact of tremendous work burden. In rural areas, time budget studies show that women not only perform physically heavier work, but also work longer hours than men for example, in Tanzania, women work on average of 3,069 hours per year, men work on average of 1,829 hours (Taylor, 1985).

Women's responsibilities vary according to customs of different regions and also a social, cultural and economic status within the household setting (FAO, 1989; MoA, 1996). In rural Africa, women play a decisive role in the production of crops and livestock. Women have important role in animal production, which vary according to the type of animals, cultural factors, economic constraints and production systems (Dey, 1998) cited in Elias 2003. Women have important role in animal production, which vary according to the type of animals, cultural factors, economic constraints and production systems (Dey, 1988). For dairy cattle, poultry, goats, pigs and rabbits, women have substantial responsibilities.

This chapter has summarised the information about participatory evaluation of Heifer In trust Project. The literature has shown that participatory evaluation of Heifer In trust Project could be influenced by the involvement of the community in defining the aims of the evaluation, assessment of indicators and in analysis of the findings in their context.

# CHAPTER THREE

## 3.0 METHODOLOGY

### 3.1 Overview

This chapter covers methodology used in this study and has eight sections. The first section offers the description of the study area with regard to location and the criteria used for selection of villages. The second section covers the research design used, while the third section is about the sampling procedure used. Section four presents method of data collection and section five describes preparation and instrument used in the study. Section six offers description about measurement of variables. Section seven narrates data processing and analysis. The last section offers generalization of the findings.

### 3.2 Location

Mbinga Diocese is among the three Dioceses of Tanzanian Roman Catholics in Ruvuma Region. Others include Songea and Tunduru / Masasi Dioceses. Mbinga district is located between longitude 34° 24' and 35° 28' East and Latitude between $10^0$ 15' and $11^0$34' South. The District covers an area of 11,396 Square Kilometers and is bordered with Songea District to the East, Lake Nyasa to the West, Njombe District to the North and Mozambique country to the South. It is typically characterized by highlands reaching to an elevation of about 2000 meters above sea level (Litembo Parish) and a series of low-level hills at a lower elevation of between 900m and 1500m (Msanya, *et al.*, 1998) cited by Mhina, 2000, Chinyuka, 2001, Mlyuka, 2002 and Semwaiko, 2003). Appendix 14 gives locations of Mbinga district within Tanzania. Mbinga District is divided into three distinct agro – ecological zones. These are: Matengo Highlands, the Lake Zone and Lower plateau. The Matengo highlands are further divided into four sub –zones, namely the Mountain area, Hagati plateau, North and South rolling hills. These sub zones resemble in

topography, vegetation and soils. The mountainous landscape is highly dissected by very steep slope gradients generally exceeding 45% (Msanya, *et al.*, 1998).

### 3.3 Research design

A cross sectional survey research method was used to collect data. In cross – sectional design data are collected at a single point in time (Creswell, 1994). This design considered favorable because of the limited time for collecting data. According to Babbie (1990) and Bailey (1978) this method is suitable for a descriptive study as well as for the determination of relationship between and among variables used in the study.

### 3.4 Sampling procedures

The list of all participating farmers in HIP in all five villages was prepared from records kept by the diocese and district authorities up to 15 June 2004. At the time of the study there were 19 villages participating in HIP out of 182 villages in the diocese. Consequently, all five villages were involved in the study. A sample of names of heads of households was obtained through application of a multi – stage cluster sampling techniques as follows. Stage I: purposive sampling of five villages, namely: Mhekela, Kilimani, Mateka, Tukuzi and Burma. These villages were obtained from a list of 19 villages involved in HIP.

Stage ii: given the researchers limited time and financial constraints, 75 heads of households in all five villages were involved in the study. A table of random numbers was used to select 75 heads of households from the selected villages. Extension officers and village leaders were selected by using a snowball technique: after interviewing a respondent, the researcher asked him/her to recommend other respondents considered were

very knowledgeable about the Heifer Intrust Project. In this way 17 respondents were identified and involved in the study.

### 3.4.1 The population

The population of the study consisted of all farmers participating and non-participants of Heifer Intrust Project in Mbinga diocese aged 18 years and above from five purposively selected villages in Mbinga diocese. The list of all farmers of Mbinga diocese constituted the sampling frame, extension officers and village leaders were also interviewed so as to get more information relevant to the study.

This study sought to collect data on Heifer Intrust Project (HIP). Data was collected from 75 farmers. The participating farmers were chosen because they are a category of people involved directly in HIP at the grassroot level. In addition, data was collected from those 75 farmers who were household heads. Since household heads make day-to-day decisions in the family and are more likely to communicate with field officers than any other member of the family, they were considered to be rich source of data. In order to validate some source of data of the information given by farmers, qualitative data were also collected from 17 respondents. The respondents comprised Head of departments and extension officers who were working at district level as District Subject Matter Specialists – DSMS, Extension officers who were working at diocese head quarters as well as village leaders.

### 3.4.2 Sampling frame

From purposively selected villages, a list of all farmers was obtained from the Mbinga Diocese leaders. From that list, it was possible to prepare a sampling frame. The

researcher compiled a list of all those farmers who have been involving in the project. It was from this sampling frame that a random sample of respondents to be interviewed was taken using a table of random numbers.

### 3.4.3 The sample size

Given the constraints of time and financial resources a sample of 50 participants and 25 non-participants farmers was picked from the sampling frame mentioned above using a table of random numbers. The units of analysis were individual farmer. From the seven Deaneries in Mbinga Diocese, five villages in two Deaneries were selected purposefully based on the existing project, the accessibility and possibility of getting information. Stratified random sampling technique was employed in grouping the small-scale farmers into those participating in the project and those non-participating at the village level. From each stratum, simple random sampling was employed in selecting 10 smallholder farmers from the project in each village. They were selected randomly using a table of random number. Finally, having a sample size of 50 farmers participating in the project, 25 others non-participants five from each village and 17 key informants working with them, two from each village and seven from district level was also included in the sample (Key informant interviewed are those 'who know', and are not necessarily representative of a population), they are chosen for their knowledge or distinctive viewpoint. The key informant interview method forms part of focused interview techniques (as distinct from sample survey interviewing) and is governed by the need to identify a wide range of different viewpoints). Therefore this study constituted by 92 respondents.

### 3.5 Instrumentation (Preparation and testing of instrument)

Interview schedule designed as instruments for data collection, using open and closed – ended questions. These were used to collect data from farmers in the study areas. Check list of questions were used for informal interviews and discussions with various officials in the study areas. The validity and reliabilities of instruments was established through pre - testing.

Data were collected using two types of interview schedule, involving field extension officers, key informants (appendix 2), farmers' questionnaire (appendix 1) and researcher's diary. The key informants interview schedule were prepared to measure the following in relation to respondents: major field activities, efforts in advising farmers, opinions towards farmers' with whom they work, views concerning Heifer Intrust Project, knowledge of implications of selected diary production technology through HIP, opinions and views on the problems that hinder the implementation of HIP.

The farmers' interview schedule was prepared to determine the following aspects in relation to respondents: extend of implementing HIP, views on selected diary production techniques and practices, nature of advice from field extension officers with respect to HIP, level of continuous use and or sustainability of HIP and perceived reasons for their continuation of HIP practices. The researchers' diary was used to record information from: extension officers and village leaders about the project in general, research reports and other relevant information from diocese and districts official files, and observation of some dairy stables and respondents farms in surveyed villages.

### 3.5.1 Pre – testing of instruments

Pre- testing was done under field conditions. Twenty farmers were randomly selected from two villages of the sampled area and were not included in actual survey. This was done to check for any ambiguities in the wording of items, redundancy, clarity and comprehensiveness, to ensure that the amount of time required for completing the interviews was not excessive and to discover the reaction of the respondents with respect to certain items. After pre – testing, it was found that no major changes in content was necessary, except that there were one item concerned with involvement was modified. The interview schedule was revised and later on used for data collection.

Prior to pre - testing of interview schedule, consultation was sought from SNHU/OUT of community economic development subject matters and research scientists as well as from agricultural professionals who had worked in the field of extension. Their suggestions were incorporated into questionnaires and study design. Finally, all questionnaires were subjected to careful pretests under field conditions and revisions were made accordingly. In all the items in key informant questionnaire pre - tested, only one item, which involved level of involvement, was revised. The researcher, being cognizant of the farmers' difficulties with language, took much care in pre - testing the farmers' questionnaire. Schedules for interviewing farmers were carefully tested for convenience of common meaning in Kiswahili, for all the items in the farmers' questionnaire. There was no item that was revised or deleted in this case.

### 3.6.1 Primary data

A structured interview schedule was used to collect primary data from respondents (appendix 1 & 2). The interview schedule consisted of closed ended questions for items

like age, sex, marital status, educational level and occupation. The open-ended questions were used for soliciting respondents' views and / or opinions pertaining to the Heifer In trust Project. Focused group discussion with farmers and key informants were also sources of primary data.

### 3.6.2 Secondary data

Secondary data were collected by going through relevant documents which were obtained from the study village's office, Mbinga diocese, Mbinga district agriculture and livestock office, Sokoine University of Agriculture Center for Sustainable Rural Development (SCSRD), Sokoine National Agriculture Library (SNAL), Community Economic Development (CED) / Open University of Tanzania (OUT) library and the headquarters of the Ministry of Water and Livestock Development. These involved collecting information from different sources including books, journals and official reports, in Libraries, NGOs, relevant government offices and other institutions. The electronic database such as the CD – ROMs and Web sites were also explored.

### 3.6.3 Data collection procedure

Fieldwork was conducted during the period of June 2004 by the researcher. Much care and foresight were given to legitimizing the research in the eyes of the relevant village leaders, farmers as well as party and government leaders in the district. Since the researcher had worked as livestock officer about 14 years ago in the district, it was not difficult to establish rapport. The approval and promised support of the diocese, district agricultural office, village leaders and farmers were obtained prior to conducting interviews. The researcher attended one quarterly meeting of village chairpersons of farmers participating

in HIP in diocese head quarters and five monthly district agricultural meetings for all extension workers (DSMS).

These provided him with opportunity for making the research programme known to the farmers participating in the project and field extension workers. After the five meetings, the majority of the field extension workers involved in the study had completed the key informant questionnaires. Of the 20 administered questionnaires meant for them, 17 were properly completed, constituting a return rate of 85 percent.

The researcher managed to be in each of the five villages (appendix 5 & 6). Eligible respondents were interviewed (table 3 and 4) through guidance of project participants and or leaders who introduced the researcher to the respondents. Of the 75 interviewing schedules meant for farmers' household heads, all of them were properly completed, constituting a return rate of 100 percent. As much as possible the interviews were conducted in privacy at respondent's home compounds and lasted for an hour each. When the interviewing process was completed in one village the researcher moved to the next, usually was spending one day in each village. Further more, data was collected from 17 respondents including extension officers, DSMS, DCDO and DED through direct discussions with the researcher. The researcher also reviewed research records and other relevant information from Mbinga diocese and district agricultural and livestock development files. It was also necessary to compile data from observation of some of participant home fields and animal stables in surveyed villages.

### 3.6.4 Measurement of variables

The main variables, which are relevant to the study, were identified as follows:

- The farmer's awareness of the message was determined by asking the respondents to mention the actual message and ideas received.
- Farmer's perceptions on the HIP were determined by asking each respondent how HIP is important to her/him.
- The efficiency of HIP was measured by asking farmer's on the use of labour and land as a result of having participating in the project.
- The effectiveness of HIP group members was determined by asking the respondents if they used any of the knowledge and skills gained as a result of being involved in the project.
- Economic contribution of HIP to both men and women and family welfare were assessed by asking respondents whether there is any change in household associated with HIP.
- The evolvement of gender roles, responsibilities and ownership were determined by using gender analysis tools

**Table 3: Household heads interviewed**

| Variable | Frequency | Percent |
|---|---|---|
| Participants | 48 | 64 |
| Non Participants | 27 | 36 |
| **Total** | **75** | **100** |
| Age groups | | |
| 18 – 27 | 3 | 4 |
| 28 – 37 | 24 | 32 |
| 38 – 47 | 21 | 29.3 |
| 48 – 59 | 22 | 6.7 |
| 60 > | 5 | |
| **Total** | **75** | **100** |
| Sex of Respondents | | |
| Female | 23 | 30.7 |
| Male | 52 | 69.3 |
| **Total** | **75** | **100** |

Source: Survey Data 2004

Table 3 above indicates that the majority 69.3 percent of the house holds heads were male in each group. It appears that there was a fair distribution of household heads in different age groups. Such distribution reflected various individual feeling and experiences in the use of HIP practices and technologies. Table 4 below gives a summary of the distribution of all respondents involved in the study according to the source of information

**Table 4: Distribution of respondents according to source of information**

| Variable | Respondents | | |
|---|---|---|---|
| **Source of information** | **Male** | **Female** | **Total** |
| Household heads | 52 | 23 | 75 |
| Extension officers | 10 | 0 | 10 |
| Heads of departments | 2 | 0 | 2 |
| Village leaders | 5 | 0 | 5 |
| **Total** | **69** | **23** | **92** |

Source: Survey Data 2004

### 3.7.1 Data processing

A major concern in preparing data for analysis was to summarize the data from the bulky key informant's questionnaire, farmers' questionnaire and researcher's diary to single sheet of paper. To this, data were paraphrased while preserving the original details and original meanings as accurately as possible. Data originally reported in Kiswahili were translated into English and those written with obvious grammatically mistakes were corrected.

Frame work for data processing and analysis: In this study, the researcher chose to view the HIP as involving two types of people: field extension officers who by profession or practice advocate the acceptance of HIP, and farmers who are potential users of such practices. These two types of people must be in communication with one another directly or indirectly for the implementation of the HIP activities and practices to take place. To be meaningful and, for this purpose, the communication must be in reference to a particular new idea or a practice (diary production technologies). Focus on new diary production practices influenced the kinds of questions about the responses in the communication process. The study also attempted to determine whether a new practice (diary production practices), once accepted in optimum manner, had desired effect and impacts on the farmers' livelihood. This section was devoted to discussion on the ways that were used in assembling data and organizing them into forms that could be arranged to address the questions raised in the study. Specifically, the following operations are presented.

### 3.7.2 Data analysis

Data collected from primary sources was edited, coded and analyzed using the Statistical Package for Social Science (SPSS) computer programme. In this statistical package, descriptive statistics as frequencies and percentage were used to analyze the effects

(positive and negative) of Heifer Intrust Project. This analysis was used to obtain the variability and central tendencies of variables.

Data from all sources in this study were examined. Numerical data were summarized in tables by using descriptive statistics of percentage to facilitate evaluation and assessment of the HIP in the study area. Clues were sought in each source with a view to determine: efficiency and effectiveness of the project; the economic contribution to both women and men involved; examine small holder farmers perception; and investigating the evolving gender roles, responsibility and ownership of HIP.

### 3.7.2.1 Qualitative data analysis

Qualitative data was collected with the intent to determine impact by the reliance on something other than the counterfactual to make a causal inference (Mohr, 1995). The focus instead is on understanding processes, behaviors, and conditions as they are perceived by the individuals or groups being studied (Valadez and Bambergeer, 1994). Participants observation for example, provide insight into the ways in which households and local communities perceive a project and how they are affected by it.

Consultation with Mbinga diocese project supervisor helped to identify some of the information and data required. With a help of officers from agriculture/ Livestock department at Mbinga district and officers of community development identified other information and data. Preliminary analysis of data was done in the field. The record of each interview was inspected for its accuracy immediately after it was completed, that is, before proceeding to another respondent. The researcher himself immediately after the field data collection verified data in order to make sure that the interview schedules had

been filled accurately and completed. Open-ended responses were summarized; similarities as well as differences in responses were reviewed and noted. The completed interview schedules were coded for further analysis.

Data collected through focused group discussion (FGD) were analyzed with the help of villagers and results were communicated back to them for verification. Content and structural functional analyses were used to analyze qualitative data and information. This helped the researcher in ascertaining values and attitudes of the respondents. Structural functional analysis helped to explain social facts as they were related to each other within the social system and to the physical surroundings. This analysis helped the researcher to distinguish between latent and manifest functions. Latent functions are those consequences, which are neither intended nor recognized by actors in the system. Manifest functions are those consequences which are intended and recognized" (Kajembe and Luoga, 1996). Content analysis technique was used to analyze qualitative data and information. Content analysis is a set of methods for analyzing the symbolic content of any communization and the basic idea is to reduce the total content of communication to a set of categories that present some characteristics of research interest (Sigletion et al., 1993). The information collected through verbal discussion with different respondents (e.g. Views/suggestions) was thus analyzed in detail where the recorded dialogue broke down informants into smallest meaningful units of information or themes and tendencies.

### 3.7.2.2 Quantitative data analysis

All quantitative analysis reported in this study was conducted using statistical procedures from the statistical package for social sciences (SPSS) accomplished with the aid of computer facilities at SUA. Descriptive statistics such as frequencies, percentages and

reasons were used to obtain the variability and central tendencies of variables. The data collected through structured interview schedule were compiled, summarized and analyzed. Moreover, inferential analysis were done to find relationships between some variables and to provide an idea about whether the patterns described in a samples were likely to apply in the population from which the samples were drawn (Kajembe, 1994) cited in Nyigili 2003. In this regard, cross tabulation were applied. Cross tabulation is both the commonest and powerful method of data presentation, Casayed Kumar, (1988) cited in Nyigili (2003).

### 3.8 Generalization of findings

This study was conducted in only five villages in Mbinga diocese and district. However, it is felt that the findings generated can be generalized beyond the villages studied and indeed beyond Mbinga diocese in Mbinga districts and Ruvuma region. This is because the situation from which the findings were derived is not unique to the five villages or Mbinga diocese only. Specifically, with the respect to the dairy production practices through HIP:

i. The structure in the villages studied reflects the situation which is prevalent in most villages' all over Tanzania;

ii. Dairy cattle through HIP were the key reflects livestock/ animals which are kept in villages elsewhere in Tanzania;

iii. The dairy production practices and technologies introduced by the HIP basically apply in other districts as well;

iv. The extension services and methods applied in the study villages are not specific to the district but applicable all over the country depending on the project and situation and;

v. The variations of the respondents as given in tables 3 and 4 are sufficiently broad to reflect a district, regional or national pattern.

Therefore it is considered that the implications drawn from this study will have direct reference to the study villages and beyond. In summary, chapter three has described the methodology including location of the study area, research design, data collection and analysis. The findings of the study are presented in the fourth chapter.

# CHAPTER FOUR

## 4.0 DISCUSSION OF RESULTS

### 4.1 Overview

This chapter presents and discusses the results of the study. The findings of the study are presented in the following sections:

1. Social economic characteristics of respondents
2. Farmers problems in agriculture production
3. Strategies to cope with problems in agricultural production
4. Implementation of HIP in Mbinga Diocese
5. Problems facing implementation of HIP
6. Suggestions given by farmers on improving implementation of HIP activities
7. Importance of HIP at household level
8. Sustainability of the HIP

### 4.2 Social demographic and socio economic characteristics of the respondents

The social demographic characteristics of the sampled households are summarized in Table 3. These include village, sex of respondents, age, education level, and marital status. The study assessed whether these parameters had any influence on the knowledge, skills and perception towards the Heifer Intrust Project. While the socio – economic characteristics included were, the major source of income, crops grown, livestock kept, acreage of land cultivated and the average estimation of the total income of an individual farmer per annum.

About 85.3% of interviewed respondents in the study areas were male-headed households. The domination of the male-headed household in rural areas has been observed by different studies including that of Lazaro (1996), Ishengoma (1998) and Philip (2001). Results from focused group discussion indicates that, majority of people in Mbinga diocese follow the patrenial culture where male children are the ones expected to inherit from their parents. As a result, a de jure, household heads in Mbinga diocese are men although de facto women are also household heads, particularly the widows and the singles.

The same table shows that 80% of total sampled respondents were married monogamous and 12% married polygamous. Studies done by Lazaro (1996 and Ishengoma (1998) observed similar trends. The advantages of married household heads managing development projects are several but the major one being to provide required labour force, using effectively the owned funds and sharing managerial skills within the family.

**Table 5: Social demographic characteristics of the respondents (N = 75)**

| Variable | Frequency | Percent |
|---|---|---|
| Villages | | |
| Kilimani | 15 | 20 |
| Mhekela | 15 | 20 |
| Mateka | 15 | 20 |
| Tukuzi | 15 | 20 |
| Burma | 15 | 20 |
| **Total** | **75** | **100** |
| Status | | |
| Participants | 48 | 64 |
| Non participants | 27 | 36 |
| **Total** | **75** | **100** |
| Age | | |
| 18 – 27 | 3 | 4 |
| 28 – 37 | 24 | 32 |
| 38 – 47 | 21 | 28 |
| 49 – 59 | 22 | 29.3 |
| 60 and above | 5 | 6.7 |
| **Total** | **75** | **100** |
| Sex of respondents | | |
| Female | 23 | 30.7 |
| Male | 52 | 69.3 |
| **Total** | **75** | **100** |
| Marital status | | |
| Married monogamous | 60 | 80 |
| Married polygamous | 9 | 12 |
| Widowed | 6 | 8 |
| **Total** | **75** | **100** |
| Sex of head of household | | |
| Father (male) | 64 | 85.3 |
| Mother (female) | 11 | 14.7 |
| **Total** | **75** | **100** |
| Education level | | |
| Adult education | 11 | 14.7 |
| Primary education | 56 | 74.7 |
| Secondary education | 4 | 5.3 |
| Post secondary education | 4 | 5.3 |
| **Total** | **75** | **100** |

Survey Data 2004

### 4.2.1 Age and family size

In smallholder farmer's household, the family is the main source of labour for agriculture and related activities. The average family size per household was six persons. Some of the family members in all villages were working part time or full time on the farm while others were not working on the farm at all. Averages of two household members were working on fulltime basis on Heifer Intrust Project.

Age distribution varied from 18 to above 60 years with majority of respondents (32%) lying between 28 – 37 years and 29.2% between 38 – 47 years, the two categories adding up to 60%. Age grouping was done based on the idea that one is considered economically productive from the age of 15 years to 64 years old (Mandara, 1998; Mtenga, 1999). Hence, majority of the farmers were in the age category of 28 to 59 years. The average age for the farmers is 39 years.

### 4.2.2 Education level

Table 5 indicate that majority of the respondents 74.7 percent attained primary education level, 14.7 percent had adult literacy while 5.3 percent had post secondary education. In all five villages, only 5.3 percent of farmers had a secondary education as well as post secondary education. The cause of differences in education levels of household heads in the five villages is not clear. Education background of the farmers is an important factor in determining the readiness to accept and properly apply an innovation (Swanson, at el., 1984). According to Madulu (1995), education broadens horizons beyond habits and traditions of individuals, encouraging involvement of an individual becomes more critically aware of the need and scope for social change. The result indicates that, there is some association between education levels and perception towards the project (HIP). It can

be postulated that more educated farmers can have better chances of expressing their attitudes than less educated ones as they have enhanced information and education activities. It is possible then for farmers in different educational levels to make different decisions and/ or given different opinions on certain new technologies such as dairy production through HIP.

### 4.2.3 Sex and marital status of respondents

The findings in Table 5 indicate that 69.3 percent of the farmers were males and 30.7 percent were females. Females had smaller representations, yet they are the key players in agricultural activities (Bwana, 1996; Mtenga, 1999). Due to the women's many responsibilities, they are often not available during meetings, interviews, and promotions and training on new technologies (Mtenga, 1999). Out of 75 farmers interviewed, results indicate that the highest percentage 80 percent were married monogamous, 12 percent were married polygamous and few were widowed 8 percent. The number of households headed by women on the fact that they did not have husbands either due to death, divorce or had never been married was 11, which was equivalent to 14.7 percent of the total households studied. Of the 11 female heads of households, eight were widowed while three were divorced. All eleven women heads of households had education levels of primary and below with no one having gone to secondary school. The female heads of households however did not include women whose husbands were living away from home.

There are several disadvantages of female-headed households as far as HIP is concerned. At a minimum, household labor power is reduced since women, rely in many cases on single adult, the women, while households headed by men usually have available labor at least two adults, the husband and the wife.

Labor and capital shortages are intimately linked because labour is a commodity in all societies. Often the availability of capital is associated with an absence of husband who sends remittances to the wife. The female-headed households with remittances from the husband are more similar to male-headed households than to the female-headed households without remittance. It is widely accepted that female-headed households are more likely to be poor than male-headed households (Folbre, 1991). Divorced women were found by the World Bank study to be particularly vulnerable to poverty and lack resources.

### 4.2.4 Farmers' sources of income

The major source of farmer's income is farming, by 94.7 percent of the sample as indicated in table 6 below. Farming which includes crop production and livestock keeping was found to be the major source of income in the study area. Very few individuals 5.3 percent are engaged in both farming and off farm income generating activities such as brewing, baking, casual laborers, petty trading, and carpentry and milling machine. It was generally observed that most of these smallholder farmers doing off farm income activities were women who engaged in activities such as local brewing, baking, selling of food stuff and vegetables, they earn extra income to ensure household food security and livelihood. The major crops grown in the area of study are Maize (94.7), Beans (94.7) and Coffee (45%).

**Table 6: Crops grown in the study area (n = 75)**

| Variable | Number of farmers | Percent |
|---|---|---|
| **Crops grown** | | |
| Maize | 71 | 94.7 |
| Beans | 71 | 94.7 |
| Sweet potatoes | 66 | 88 |
| Coffee | 45 | 60 |
| Cassava | 26 | 36.6 |
| Yams | 2 | 2.7 |
| Sunflower | 1 | 1.3 |
| **Major source of income** | | |
| Farming (livestock + crops) | 71 | 94.7 |
| Farming + off farming | 4 | 5.3 |

Source: survey Data 2004

**Table 7: Income of Farmers Per Annum (n=75)**

| Income Tsh | Number of farmers | Percent |
|---|---|---|
| From crop farming | | |
| 100,000 | 10 | 13.3 |
| 100,000 – 300,000 | 27 | 36 |
| 300,000 | 34 | 45 |
| From animal | | |
| 100,000 | 13 | 17.3 |
| 100,000 – 300,000 | 13 | 17.3 |
| 300,000 | 60 | 63.4 |
| From non farming activities | | |
| 100,000 | 1 | 1.3 |
| 100,000 – 300,000 | 3 | 4 |
| 300,000 | 4 | 5.3 |

Source: Survey Data 2004

The results indicate that 13% of farmers earn a total income of Tsh 100,000/= or less per year, where as about 36 percent are in the range of between 100,000 – 300,000/= from crop farming, and about 63.4 percent earn Tsh 300,000/= or more from animal farming (diary production) through HIP. This study also established an average income of Tsh. 600,000/= per annum per farmer from sales of livestock, milk, crops and other sources. This income is relatively high compared to the national average of Tsh 147,026/= (URT, 1999). On the introduction of Poverty Reduction Programme in Ruvuma Region in 1997 it was indicated that the per - capita income should rise from Tsh 101,700/= to Tsh 600,000/= by the year 2005; and this has come true.

### 4.3 Farmers problems in agricultural production

Respondents mentioned various factors that affect their agricultural activities. Many farmers mentioned more than one problem. Basing on the number of times as mentioned by the sampled farmers in order of ranking, high input prices, low priced produce/products, lack of capital to purchase inputs, shortage of extension services and unreliable input supply ranked as major constraints for smallholder farmers. Other constraints mentioned were insect pest problem, shortage of land, soil fertility problems, problem of transporting harvested crops, and lack of market. Sendeu (1995) pointed out that smallholder farmers neither have the cash nor access to credit to purchase the inputs, and this is likely to limit the extent to which smallholder farmers can make use of project practices and recommendations. Table 8 below summarizes the aspect of major problems faced in agricultural production as evidenced from the farmers.

**Table 8: Problems in Agricultural Production (N = 75)**

| Problem | Number | Percent |
|---|---|---|
| Expensive inputs and low priced produce | 43 | 57.3 |
| Pest, diseases and shortage of extensionist | 15 | 20.0 |
| Unavailability of inputs | 10 | 13.3 |
| Expensive inputs and lack of capital | 7 | 9.3 |

Source: Survey Data 2004

On the problem of inadequate extension services it was mentioned that, there are only one extension officer responsible for the supervision of HIP in all 24 villages under the project; and that extension officer pay few or no visits to farmers. Generally, the results concur with Rivera (1991) that public sector extension is blamed for not doing enough, and for not doing it well.

This study also observed that almost all farmers from the five villages involved had similar problems, but the most commonly voiced cry was on the prices of inputs of which majority of farmers 66.6 percent can not afford, as a result, farmers are using traditional ways or methods in their production hence getting poor yields. Farmers, further more pointed out that, lack of markets for their produce was another frustrating problem. There is no stable and reliable market where they can sell their produce (from crops and animals), especially for the coffee growers whose markets are determined by the World market (outsiders), and added that along with instability of markets, prices are also very low ranging from tsh 300 to 500/= per kilogram of parchment coffee in 2004 and tsh 150 – 200/= per liter of milk.

### 4.3.1 Agriculture input supply

Several surveys on farming systems in Tanzania have observed that poor supply of inputs to farmers is the most limiting factor to agriculture productivity (Mlambiti, 1988). The supply of agricultural inputs is a private sector operation and the government has removed

the subsidies on agriculture inputs. The removal of subsidies, coupled with high marketing costs has led to a drastic increase in prices of important agriculture inputs such as fertilizers, agro – chemicals and improved seeds. The increase in prices of inputs has led to a decrease in their use by small and medium scale farmers. The problem of access to agricultural inputs has been compounded by the collapse of cooperatives, which were supplying the inputs on credit. In the livestock sub sector essential inputs such as veterinary drugs, vaccines, accaricides, land development equipment and implements, pasture seeds, fodder – planting materials, commercial feeds and improved livestock breeds have a limited supply (URT, 1999).

### 4.3.2 Extension services

Extension services are important as far as productivity of agricultural enterprises is concerned. Survey results in table 9 indicate that 20 percent of the respondents interviewed had access to extension services 6.7 percent accessed once per week, 1.3 percent once per month while 12 percent once in three month and the remaining 58.7 percent claimed to have difficulties in getting extension services. The inefficiency on agriculture services can be attributed to the shortage of necessary infrastructure, lack of competent field staff, inadequate funding and poor research extension – farmer linkages that has also been reported by URT, (1999).

**Table 9: Visits and advises by the extension officer (N=75)**

| Variable | Number | Percent |
|---|---|---|
| Visits by extension officer | | |
| Once a week | 5 | 6.7 |
| Once a month | 1 | 1.3 |
| Once in three months | 9 | 12.0 |
| Non | 44 | 58.7 |
| Rating the advice by extension officer | | |
| Adequate | 3 | 4.0 |
| In adequate | 2 | 2.7 |
| Undecided | 65 | 86.7 |

Source: survey data 2004

### 4.4 Strategies to cope with problems in agricultural production

**Table 10: Strategies to cope with problems in agricultural production (N=75)**

| Solutions | Number of farmers mentioning | Percent |
|---|---|---|
| Use local/traditional methods | 65 | 87.7 |
| Use of farm yard manure/organic farming | 10 | 13.3 |
| Use of lower rates of inputs | 65 | 87.7 |

Source: Survey Data 2004

Despite all these problems, farmers have not given up, they are striving hard to find some copying strategies to the problems so that they continue to make their lively hood out of agriculture. Results in table 10, show that farmers use traditional methods such as the use of local herbs to control pests and diseases 87. 7 percent use farmyard manure where inorganic fertilizers are not available or too expensive 13.3 percent. Farmers form groups for helping each other in getting information and advice where extension workers are not available. It was also noted that farmers use lower rates of inputs than what is

recommended 87.7 percent. During the focused group discussion farmers itemized coping strategies to alleviate mentioned agriculture problems (Table 11).

**Table 11: Identified and itemized problems and copying strategies during focused group discussion**

| Problem | Copying strategy |
|---|---|
| Coffee marketing is hampered by:<br>Delayed payment<br>Fluctuation in price<br>Poor services provided by the primary cooperative societies | There are companies (TECHNOSERVE, SOOCHAK & BUSH, MCCCO and individual buyers<br>Villagers are being made aware of the world market situation and its effect on the local situation.<br>Farmers groups join together and sell their coffee direct to auction market e.g. UJIJITAMA GROUP |
| Insecurity, theft,of assets, crops and animals | Village watch – vigilantes (Militia people)<br>Keeping dogs |
| Agriculture inputs are not available or too costly or of dubious quality | Little or no use of agrochemical, seed are collected on farm Use of traditional methods (indigenous knowledge) |
| No access to agricultural advisory services. The agricultural extension officer is one in one to three villages | Farmer to farmer advice – horizontal relations: now days officially through Farmers Field School (FFS). |
| Lack of capital/ low income | Women, men and youth groups exists in the villages involving such projects like dairy cows (HIP), pigs, organic farming. Income generating activities tree and fruit plating, |
| Declining soil fertility | Courses and seminars supported by DALDO office, MBIDEA, and Mbinga diocese through organic farming practices.. Advises also are provided in farmers field school meeting day. |
| HIV/AIDS, death due to HIV/AIDS | Link with on going projects, awareness campaign, behavior change and communication as well as impact mitigation by (MBIDEA, Diocese and Mbinga District Council) |
| Collapse of input supply and market system for main cash crops, | Encourage companies and private stockist to provide inputs to farmers on credit. |
| Population pressure, diminishing farm size, and disappearance of grazing | Family planning, spontaneous out migration (farmers do not want forced resettlement as in the past) |

Source: survey data 2004.

### 4.5.1 Economic aspects of participating farmers (through gross margin analysis)

Since benefits from dairy cattle normally accrue over several years (over their useful economic life), the appropriate analytical approach for analyzing economic returns to dairying is to use the approach that takes into account future benefits and costs associated with dairy production (Johnson, 1985). Such approach was not used in this study. Instead, benefits were estimated as average monthly / yearly incomes from sales of milk, live animals and manure. The costs of dairy production included in the analysis are costs of feeds, transport, drugs and labour utilization.

The results indicate that milk is a major source of income, accounting for more than 80 percent of the total monthly income from dairy cattle for project participating farmers. Despite high costs of production incurred by the project participating farmers, their monthly gross margin is almost 5 – 7 times more than the non-project participating farmers. The results suggest that HIP as a community development project has the potential of increasing income and hence reduce poverty among resource poor farmers.

Johnson (1985) defines the gross margin as the difference between the value of an enterprise's gross output and the marginal cost of that production. For a diary enterprise, the value of the gross output (gross revenue) includes the value of sales of milk consumed on the farm and products transferred to other farm enterprises. Enterprise variable costs such as feeds need to be calculated on the basis of financial prices, while non priced particulars such as the use of farm produce for feeding cattle are calculated using economic prices and opportunity cost principle (Hill, 1990).

Calculations for gross margins for livestock enterprises were done for cattle. Farmers had an average of two cattle. The total income from cattle was Tsh 101,300/=. The variable costs for the cattle enterprise were Tsh 32,000/=. This gave an average gross margin of Tsh 68,780 per enterprise, which was equivalent to Tsh 35,630 per livestock unit. The gross margin of an enterprise is not an indicator of its profitability; its essence is the return to capital, labour, management and risk for the household, which engaged in a given enterprise. Study shows that, Mbinga dairy enterprise output is milk, heifers, bull calves and cow yard manure. Variable costs are veterinary services and concentrate feeds.

#### 4.5.2.1 Livestock kept

Tanzania small-scale dairy industry has a good number of graded cattle. These cattle have very low productivity. Respondents' cows show that their average production is at 3.5 to 5 liters per cow per day. This level is very low compared to the potential of about 15 to 20 liters per cow per day for improved breed. Smallholder diary farmers own about 70 percent of improved dairy cattle (MALD, 1985). According to Mdoe and Nyange (1995) small-scale dairying is an important part of farming system to the people in smallholder economics, particularly in places where land for agriculture is a limited factor. Studies on small-scale dairying in southern highlands zone show that this type of dairying management is economically viable compared to crop enterprises. Dairy has six times more returns to land higher than that of coffee, this has been reported by (Mwakyembe, 1996). The majority of farmers (81.3 percent) in the study area in Mbinga district have cattle with the mean number of two with a standard deviation of 1.07. The maximum number of cattle kept is six. Sixty-four 64 percent of Dairy cattle are mainly reared in zero grazing units. Where 5.3 percent of traditional cattle are tethered. In all five villages, they're no opportunities for free range or extensive cattle rearing.

**Table 12: Types of animals and the system under which they are kept in all five villages**

| Variable | Number of house holds | Percent |
|---|---|---|
| **Grazing system** | | |
| **Diary cattle** | | |
| Zero grazing | 48 | 64 |
| Semi zero grazed | 27 | 36 |
| **Local cattle** | | |
| Tethering | 4 | 5.3 |
| Zero grazed | 3 | 4 |
| Grazing | 3 | 4 |
| **Pigs** | | |
| Stall fed | 52 | 69.3 |
| **Chicken** | | |
| Free range | 70 | 93.3 |
| **Rabbits** | | |
| Stall fed | 12 | 16 |
| **Goats** | | |
| Grazed | 2 | 2.7 |
| Tethering | 36 | 48 |
| Free range | 1 | 1.3 |
| **Sheep** | | |
| Tethering | 2 | 2.7 |
| Free range | 1 | 1.3 |
| **Livestock kept,** | | |
| Cattle | 61 | 81.3 |
| Goats | 51 | 68.0 |
| Pigs | 50 | 66.7 |
| Sheep | 3 | 4.0 |
| Chicken | 71 | 94.7 |
| Ducks | 14 | 18.7 |
| Rabbits | - | - |
| **Types of feeds to animals** | | |
| Home ration | 12 | 16 |
| Crop residues | 11 | 14.7 |
| Natural pasture/ crop residues | 6 | 8.0 |
| Natural pasture/crop residues/concentrates | 36 | 49.3 |
| **Source of feeds to animals** | | |
| Own farm/field | 48 | 64 |
| Neighbors farm/ field | 4 | 5.3 |
| Own farm and local supplies | 14 | 18.7 |

Source: Surveyed Data 2004

The results from table 12 indicate that, the majority of farmers 94.7 percent interviewed keep chicken and cattle 81.3 percent, while 66.7 percent and 68 percent of respondents

keep pigs and goats respectively. In the study area, all respondents keep at least one type of livestock, however, crop production and livestock keeping is done for foods and as a earning of family income through sales of the produce (crops). The later is used to purchase farm inputs among other uses. Farmers keep cattle for several reasons, majority of the farmers keep cattle for milk production, whereas others keep them for earning cash, and collecting manure. The manure is mostly used in coffee and vegetable production (gardening). Other uses of cattle include bride price and for traditional ceremony, now days pigs are also used for the same purposes.

Makeham and Malcolm (1986), have indicated that, apart from providing output in terms of products for subsistence consumption and cash income, cattle also perform other functions such as to provide input asset, and security( they are tradable), social and cultural functions, for example in paying bride price and determining a family's social status in some communities

**4.5.2.2 Comparison of dairy cattle distribution and composition**

Most of the surveyed farmers keep graded cattle. Tropical animal scientists recommend these types of cattle due to their relatively high resistance to tropical disease as compared to exotic pure breeds. Further more, crossbreed cattle have a higher milk production potential than over indigenous cattle breeds.

Also, the surveyed households were found to contain all categories of animal's i.e. milking cows, heifers, bulls and calves. The average number of cows was found to vary from about 1 to 6. Proportion of cows in a household is of paramount importance in dairying as

it contributes a large proportion of the revenue obtained in any dairy enterprise (Makeham and Malcolm, 1986).

#### 4.5.2.3 Milk production level

The comparison of milk yields levels achieved by diary project farmers and non-project participating farmers. On average 87 percent of participating farmers achieved higher milk yields (7.5 liters per cow per day) than non-project participating farmers (3.5 liters per cow per day). The maximum yield achieved by project participating farmers is also higher (15 liters per cow per day) than non-project participating farmers (6 liters per cow per day). The minimum yield achieved wasequal both to participating and non-participating farmers (3 liters per cow per day). Most of the project participant's (87 percent) produced between 6 to 12 liters per cow per day while most non-participants (96 percent) produced below 5 liters per cow per day. In general, cattle kept by project participating farmers yielded more milk than those raised by non-project participating farmers. This difference can be explained by differences in cattle breed kept as well as difference in management practices.

### 4.5.3 Gender roles and responsibilities in HIP

There is a clear division of labour, access and control between males and females of resources in the study villages. The household chores are the responsibility of women as reported by all 75 respondents whereas only 28 out of 75 respondents reported that, traditionally, men own and control land, build houses, control and sell cash crops (coffee) and animals. Generally, women control and sell food crops like Beans, maize, sweet potatoes, Yams and cassava as reported by 66 respondents. Both men and women share such activities as hoeing, weeding and harvesting of crops in homestead farms, these

results were obtained from all 75 respondents. Seventy-five (75) of interviewed respondents reported that, even though men are responsible for house construction, women cut and collect grass for roofing. Researcher observed that, participation in community activities is confined to men and women, the increasing thrust for horticultural production, this is also predominantly the responsibility of men, women and youth, and firewood collection is in the domain of women.

Concerning the HIP, women contribute a substantial amount of labour in intensive dairy production system as compared to men in Mbinga diocese. All 50 project participating respondents reported that women are almost fully involved in all activities and practices concerned in HIP like feeding dairy cattle, cleaning cow bans and milking (feeding activities involve cutting and ferrying grass and feeding the animals). Crop residues are carried by women on head from the lowland zone to their homestead., this, is the most time consuming activity because of the long distances that women have to walk from home to the feed sources. This observation agrees with Mbura, (1987) who observed that, women in Nkuu Ndoo village were found to spend an average of 5 hours a day in cutting and transporting fodder.

Cleaning of cow barns include removal of cow dung, urine and provision of dry materials for animal bedding is a task of women, this activity was ranked second on time-consuming activity schedule, it also this conforms with Mburas, (1987) observation who found that, women in Nkuu Ndoo spend an average of 2 hours per day cleaning a cowshed and collecting cow dug to prepare compost. The cowsheds were normally cleaned once or twice a day. Women mostly perform milking the lactating cows. This is normally done twice a day, early in the morning and late in the evening; the milking activity consumes

relatively very little time. Although men tend to work hand in hand with women in HIP but in reality, through observation and discussion with non-project members and key informants, women contribute more labour than men in dairy production activities through HIP. The results conform with that of Samjee and Simjee, (1976) who reported that; Since most of the HIP activities and practices for instance; animal husbandry practices on a small scale are undertaken in the vicinity of households, this can always be combined with other household chores and is therefore primarily a women activity.

Other studies (Dey, 1984) have indicated that women have important labour roles in animal production, which vary according to the type of animals and the type of production system i.e. nomadic, semi nomadic, mixed farming and intensive. Cultural factors and economic constraints also affect those roles. Women's contribution at household animal production enterprise is closely interrelated with their own personal investment and marketing activities in this sector. The roles which women play in sustaining this sector is not necessary related to the ownership of animals or animal products. It is their labour input that is of great significance.

Thirty eight (38) out of 50 participants reported that although men provide help in feeding the animals, they are responsible for looking for bulls when such services are needed, milking and mainly milk marketing. The time spent by men in marketing milk depends on the distance of the market from the homesteads. Milk is sent to market in the form of fresh milk. The main constraint men face here is lack of transport. They have to carry the milk on their heads, bicycles or board cars and walk all the way to the markets. The time spent per day in marketing vary from four to six hours depending on the distance from the market and marketing system.

### 4.6.1 Constraints encountered by farmer motivators

Farmer Motivators (FAMOs) interviewed in five study villages one from each village mentioned lack of incentive as major constraints to their daily duties. Other constraints pointed out were inadequate drugs and working facilities particularly buddizo, disbudding irons, and drenching guns (in general, lack of well-equipped veterinary kits). Additional information indicates that, participation in village self – help activities denied them enough time to deliver extension services to farmers. Further investigation revealed that, the link between farmer motivators, project supervisor, and district subject matter specialist at district level and village leadership was weak. Despite all these constraints, all five-farmer motivators agreed to continue providing extension advice and services to both project participants and non-project members now and even after termination of donor support. Willingness of FAMOs to provide advice and services implies that the HIP will probably be sustained after the withdrawal of donors.

### 4.6.1 Constraints encountered by VEOs, WEOs and project supervisor

Project supervisor and village extension officers in study villages pointed out that, delivery, follow-ups and supervision of extension services to farmers was hindered by a limited number of factors like limited number of extensionist, lack of working gears, transport facilities, and funding. Further investigation indicated that the distribution of motorcycles to professional extension officers in the district was uneven. Nevertheless there is weak linkage and involvement of VEOs, project supervisor and the coordinator. This implies that lack of transport facilities hindered VEOs and WEO to reach farmers and FAMOs in their homes or fields. Similar results by Mattee (1989) and Mensah (1994) as cited by Dulle (1999) indicate that lack of transport facilities to extension workers has frequently been cited as one of the major obstacles to extension in Africa.

### 4.6.3 Farm size and land ownership

Most respondents 63 (84 percent) showed that the owned land was acquired through various ways. About 33 of the interviewees (46.5 percent) had their land acquired through inheritance, and 12 respondents' (6.9 percent) farmed lands were acquired from their late husbands. The study found that 32 farmers' (42.7 percent) men farmed land were acquired by inheritence, while most women farmed land were owned by their husbands. The results of this study conform to that of Wan – Sinkam (1994) who found that customary practices to a large extent limits women to own land as only few women were observed to inherit land. Farm size may dictate the type of HIP practices to be accepted. The average farm size of homesteads of respondents range from one to five hectares.

The remaining 12 (16 percent) interviewees showed to have no areas specifically set-aside for pasture establishment. The results comply with those of Nkonoki (1994) who found that resources such as farm size and animal ownership may make easier for a farmer to alter practices. Jamison and Lawrance (1982) also discovered a significant relationship between farm size and adoption of an innovation and that there was a positive correlation between farm size and adoption of new technologies.

## 4.7 Suggestion given by farmers on improving implementation of HIP during stakeholders analysis

The main suggestion given by farmers on improving the implementation of HIP activities and practices was involvement of all stakeholders that have been identified through focused group discussion during stakeholders' analysis (table 13). Stakeholders may be defined as all those people and institutions that have an interest in the successful, design, implementation and sustainability of the project. These include those positively and

negatively affected by the project. Stakeholder participation involves processes whereby all those with a stake in the outcome of a project actively participate in decisions on planning and management. They share information and knowledge, and may contribute to the project, so as to enhance the success of the project and ultimately to their own interests. The basic feature of stakeholder is that it aims at inclusive and not exclusive phenomena. That is, it recognizes that close cooperation between all interested parties yield better results than planning and management that is distant, exclusive, bureaucratic or based on power relations. Table 14 below shows the other stakeholders in the project as viewed by the farmers in the field of study.

**Table 13: Identified different stakeholders during focused group discussion**

| Stakeholder | Description | Category |
|---|---|---|
| Donor | HPT and Mbinga diocese – funding agencies providing in calf heifers, Bulls and training support. | Primary, key contributor |
| Ministry of Agriculture | At national, regional and district level. Involvement may be divided between - policy and administration and services such as extension and research | Primary, key contributor, implementers and beneficiary. |
| Mbinga District Council | At district level, involvement may be divided between administration and services such as extension | Primary, key contributor, implementers and beneficiary. |
| Project team | The project management team include contracted diocese staff and seconded government staff | Primary, secondary, key implementers |
| Farmers/households | Small farmer's groups/ households who benefit from project activities but who may be required to make significant contributions. | Primary, key beneficiaries, contributors. |
| Traders | Private enterprises (stockiest) involved in trading of crop and farm inputs | Secondary, key implementers |
| Farmers organizations | Association or cooperatives involved in marketing, credit, supply of farm inputs and services. Community organizations for managing HIP (village committees) | Secondary, key implementers |
| Commercial organizations | Large private or public commercial organizations such as Mbinga Community Bank | Secondary, key implementers |

Source: Survey Data 2004

Table 13 shows the identified stakeholders in HIP by project participating farmers during focused group discussion. All 50-project respondents agreed that their project needs should involve other stakeholders for the betterment of the project.

### 4.8 Importance and benefits of HIP at Household level

The link between the livestock and poverty is brought about by the broad roles that livestoclplays to the society. The livestock sector in Tanzania fulfils a vital fuction nutritionally, economically and socially (URT, 1998). Livestock could be seen on the one hand as a means of alleviating poverty, and on the other hand as an economic activity to be supported because of the contribution it makes in meeting rapidly growing demand.

#### 4.8.1 Importance on crop production

Importance and benefits of the introduction of HIP on crop production was assessed by comparing crop yields before and after the introduction of improved dairy cattle in the study area. The results show that crop productivity (coffee, maize and garden vegetables) has increased with the introduction of the project. Evidence for increased crop productivity is provided by the increase in crop yield after the introduction of dairy cattle when compared with the yields before introduction. Maize production around home compound field has increased from three to five bags before the project to 8 - 12 bags of 100kg after the introduction of the project while coffee has increased from five to eight bags of 50 kg before the project to 10 – 15 bags after the project. There is no specific unit used to measure the increase of horticultural crops/products but almost all project participants 39 out of 50 they had horticultural crops in their field, specifically vegetables on valleys. The increase in crop yields with introduction of improved dairy cattle is possible due to several reasons. These include: availability of manure/ urine which were used for crop production, and increased income from improved dairy cattle that might have been increased farmers' access to other improved crop husbandry practices. Increased income led to increased household's ability to hire labour and purchase other inputs for crop production. Other

studies reveals that dairy development projects contribute to an increases in crop yields (Turuka, 1995; URT, 1997; Mlambiti, 1998 and Manyong et al., 2000).

### 4.8.2 Importance of HIP on household income

The average income and purchasing power of the project participating households has increased after the introduction of the HIP (from 150,000/= to 600,000/=). Although some other factors might have contributed to the increase in income and purchasing power of the households in the study area, HIP has also contributed to that increase. Further evidence of the contribution of improved dairy cattle is provided through increased milk production (yields), daily income, and increase in crop yields among the project participating farmers. As indicated earlier, average milk yield after the introduction of HIP of about 7.5 liters/Cow/ Day is higher than the average yield before the introduction of improved dairy cattle of about 1.5litres/Cow/day. Prior to the introduction of improved dairy cattle, farmers in Mbinga diocese were raising indigenous Zebu cattle with low milk production potential. Comparison of monthly incomes from milk with and without improved dairy cattle has had impact on household incomes and consequently, higher income and purchasing power. Several studies also provide evidence of impact of improved dairy production on household incomes (Greenhalgh, 1993; Stall and Thorpe, 1999).

### 4.8.3 Importance of HIP on food security

The impact of the introduction of HIP on food security was examined by milk consumption before and after introduction of the project. Increased milk intake (consumption) alone does not ensure food security among household members. Food security is improved if all household members have access to safe, adequate and nutritious food to maintain healthy life. Household raising improved diary cattle might sell all the milk and purchase starch

food items. In this case members of the households are denied consumption of milk, which is the one of the nutritious food items. Sixty seven (67) out of 75 respondents indicated that milk consumption was higher after than before the introduction of improved diary cattle. This consumption level of one liter of milk per day per family was even above the Tanzania national average of 23 liters per capita. The results conform with previous studies in Tanzania which have also found that raising improved dairy cattle enables consumption of more milk compared with traditional cattle (MOAC and SUA, 1998; URT; 1999).

### 4.8.4 Importance of HIP on social aspects

Evidence of the social impact is provided by comparing possession of material assets, ability to meet costs of social services and amount of leisure before and after the introduction of HIP. Material assets acquired after the introduction of improved dairy cattle are radio, bicycles, houses, and iron sheet. The results indicate that 35 respondents out of 50 project participating households had more material assets purchased after introducing improved diary cattle. Even 17 out of 25 non-project participants agreed that project members acquired more material assets after the introduction of HIP. Studies done by various researchers had similar findings (Tyler, 1983; Sanginga, 1998). Although income from sources other than the improved dairy cattle might have been used to acquire assets, the fact that the material assets owned after introduction of the project are higher than before, this suggests that income from the project has enabled household to acquire more assets.

#### 4.8.4.1 Ability to meet cost of social services

Respondents were asked to mention the tangible benefits after the introduction of the HIP. The results indicates that over 80 percent of respondents replied that HIP have increased their financial ability to meet social services such as medical expenses, paying school fees, purchasing school uniform, renovation of their houses, buying of iron sheet for their houses' roofs and various development contributions. Several studies had similar results (URT, 1998; Nichoison *et al.,* 1999).

#### 4.8.4.2 Leisure time

During the focused group discussion respondents were asked to indicate the number of hours used for leisure before and after the introduction of improved dairy cattle. The results showed that all 50 participating farmers used to have more leisure hours prior to the introduction of improved cattle than after the introduction during both rainy and dry seasons. The results suggest that introduction of improved dairy cattle through HIP has reduced leisure hours from 6 to 3 hours. The reduction of leisure hours could be due to the fact that improved dairy cattle is a labour intensive enterprise.

### 4.8.5 Importance of HIP on environment

One of the main conditions for a farmer to receive an incalf heifer from the diocese is to accept and practice agro forestry activities (organic farming). The results show that all 50 respondents project participants accepted one or more of the practices. Agroforestry is a collective name for land use systems and practices where woody perennials are deliberately integrated with crops and / or animals on the same land management unit (Assomo and Erikson, 1994). It is an approach to land use based on intentional integration of trees and shrubs in agricultural crop and or livestock production systems with mutual

benefits to all systems. The integration of trees and shrubs in a farming system can improve the use of natural resources on a sustainable basis (Assmo and Eriksson, 1994). It offers solutions to farmers to meet most of their daily need in terms of fuel wood, poles, shade, fodder, food and timber and contributes to soil conservation and improves fertility.

### 4.9 Sustainability of the Heifer Intrust Project

The concept of the sustainability is often reduced to the question of whether local institutions will be able to continue providing the services that have been provided by the donor-aided project. Other important aspects of sustainability are institutional sustainability; economic sustainability and social sustainability CATAD (1998). In this study, the sustainability of HIP is assessed by investigating recommended practices implemented without external support, management of farmers livestock groups, market situation for produce and constraints encountered by farmers.

***Practices implemented without external support.***

All farmers involved in the project (50 respondents) were performing almost all recommended practices themselves without material and financial support from diocese. With exception of the incalf heifer they received at the beginning of the project by contributing 10,000/= and training for the first phase of farmers in each village. All other preparations, procedures and training for the second batch of farmers who receive female calves from their neighbours were under the village livestock committee. Farmers have implemented the recommended practices for over twelve years now. This implies that these practices will probably sustain even after termination of the project contract. UMADEP (1997) found that, the sustainability of the results of the development efforts depends on participation of farmers and that farmers must feel responsible for the success

or failure of the program and they must be able to carry out the activities emanating from the programme without depending too much from outsiders.

*Farmers sustainability on financial capacity*

In order to generate their own funds, project farmers designed a number of strategies including agreement to contribute one female calf to Mbinga diocese as a source of revolving fund to their project and they put an entry fees for new members (10,000/=) for managing their project day to day activities being treatment of animals and training conducted by Mbinga diocese. This implies that the funds would probably keep on increasing because more funds are still being generated from group member's contributions. The presence of self-generated funds ensures financial sustainability in farmers' groups. Funds generated will probably support operational activities such as purchase of stationery for keeping records and meeting transport costs for supervisor and group leaders when attending training at diocese headquarters or outside the diocese.

### 4.9.1 Stability and management of farmers groups

According to Mbinga Livestock Development Annual report (DALDO, 2004) the number of project farmers involved in HIP activities has increased from 50 families in 1992 to 426 in 2004. This implied that non-project farmers kept on joining in the project activities after knowing the benefits obtained from the project. Although the number of farmers in HIP was increased with time, key informants reported that not all activities and practices were implemented. Farmers pointed out that zero grazing components enabled them to produce milk, improve soil fertility on coffee field, nutritional status and improved household food security and family incomes. Since non- project farmers are continuing to join HIP (valid

applications from 28 villages) it implies that, the project activities will continue to be accepted and adopted by non – project farmers after the withdrawal of the donor aid.

**Table 14: Trends of farmer's membership in study areas**

| Village | Year | Founder member families | Current member families 2004 |
|---|---|---|---|
| Mateka | 1992 | 10 | 25 |
| Kilimani | 1992 | 20 | 34 |
| Mhekela | 1992 | 20 | 29 |
| Burma | 1994 | 10 | 22 |
| Tukuzi | 1994 | 12 | 23 |
| **Total** | | **72** | **133** |

Source: Survey data 2004

Regarding farmers group organization and management, information from focused group discussion, key informants and researcher observation reveals that all farmers' groups have chair person, secretary and treasurer as well as village livestock committee, these were democratically elected by group members. Farmers themselves have informal bylaws that act as guidelines for convening meetings and submitting contributions to the groups. Continued stability and rapid growth of members in the project imply that these groups are likely to exist after withdrawal of donors. Farmers are still requesting to join with the established project groups after realizing its benefits.

### 4.9.2 HIP practices that farmers intend to continue practicing

Table 15 shows the choices of smallholder farmers and preferred type of HIP practices in their farms. Although a good number (34) of smallholder farmers had agreed to learn all four practices of HIP, (construction of contour bunds on their fields, pasture and fodder planting, Zero grazing and composting) only 12 respondents (16 percent) agreed to

continue practicing them all. 45.3 percent of the interviewees had chosen to continue with the practice of zero grazing and compost making. Others, 15 respondents (20%), showed to have decided to abandon all other practices with the exception of zero grazing. The study findings conform to those of Anim (1999) who found that, farmers with small farms may adopt soil conservation measures to match with the farm demand for increased subsistence production.

**Table 15: Respondents' preference of HIP practices to continue**

| Types of HIP practices | Total number of respondents | Percent |
|---|---|---|
| All Practices Accepted | 12 | 16 |
| Zero Grazing + Composting | 34 | 45.3 |
| Zero Grazing | 15 | 20 |

Source: Survey data 2004

### 4.9.3 Spillover of the recommended HIP activities and practices

It was further revealed that 21 out of 50 project participant respondents in the study area did not pass on calves to other farmers due to one of the following reasons: cows were still pregnant and thus there were no calves to be passed on, calves were still too young to be passed on to other farmers who were in the waiting list, the calves were male and thus did not deserve to be passed on to other farmers (according to the project set up) and female calves were there to be passed at required age but the supervisor was not there for approval. Nevertheless, 29 participants out of 50 have paid the full support.

**Table 16: Support on HIP (n= 75)**

| Variable | Number /Frequency | Percent |
|---|---|---|
| **Ability to pay back support** | | |
| Yes | 37 | 49 |
| No | 7 | 9.3 |
| Undecided | 14 | 18.7 |
| **Paid to date** | | |
| Full support | 35 | 46.7 |
| Part of support | 2 | 2.7 |
| Not paid at all | 21 | 28.0 |
| **Nature of the condition of support** | | |
| Reasonable | 32 | 18.7 |
| Too tough | 27 | 36 |
| Undecided | 16 | 21 |
| **Satisfaction with the support** | | |
| Very satisfied | 14 | 18.7 |
| Satisfied | 15 | 20 |
| Not satisfied | 29 | 38.7 |
| Undecided | 17 | 22.7 |
| **Why not satisfied** | | |
| The poor can not sustain the support | 10 | 13.3 |
| Expensive to keep the dairy animal | 3 | 4 |

Source: survey data (2004)

Regarding technologies spillovers, all interviewed respondents (75) observed and pointed out that of the three programs involved in the project, practices in zero grazing were highly accepted and even adopted by non – project farmers. Other practices which were copied by non – project farmers include; construction of contours, planting of fodder grass and trees together with compost making and use of manure, others were keeping indigenous cows by zero grazing, upgrading indigenous cattle using improved bull from the project and use of feeding trough to feed indigenous cows. Spilling over of recommended HIP practices to non-project farmers within and outside project village's reveals the effectiveness of HIP to farmers.

## 4.10 Conclusion and Recommendations

This section provides major conclusions from the results of the study and offers recommendations, based on the findings.

## 4.11 Conclusions

i. The major conclusion that can be drawn from the findings of this study is that: the introduction of improved dairy production technologies through Heifer Intrust Project has positive impact on incomes of household, food security and improvement of the environment around home compounds. Overall as a development project it has contributed to the efforts of alleviation of poverty in the study area.

ii. Findings of the study further show that, although most farmers in the study area are currently using improved diary production technologies introduced by HIP as a community based development project, the rate of technologies as a package is still low. It was observed by this study that, the major problems to most of the farmers are inadequate agricultural extension services (many farmers do not have access to extension services). In addition, expensive inputs, unstable markets and low market prices, lack of capital/credit facilities and unreliable weather conditions are also among the other problems hampering dairy production through HIP and other agricultural production development programmes as a whole.

iii. Smallholder farmers show willingness and contribution to share the cost of inputs for HIP and that they can afford to pay for the inputs and services if well organized and informed. However, what they need is to have subsided inputs and or loan through credit facilities, stable markets and good market prices for their produce so

that they can purchase inputs and sell their produce (crops and milk) at profit and therefore be able to share the cost of managing HIP

iv. The results of the study have shown that most of the project participating farmers are raising crossbreed cattle such as Friesian and Ayrshire with a high potential for milk production. Furthermore, the results have shown that improved diary production technologies are increasingly diffusing to farmers who were not originally involved in the Heifer Intrust Project under Mbinga Diocese. The implication from this is that the project is accepted and there is sustainability of the project and therefore, milk output is likely to increase in quality and quantity beyond those, which can be sold locally in the villages.

### 4.12 Recommendations

The following are recommendations emanating from the major findings of the study:

i. The finding of this study has shown that annual income, and household food security after the HIP was higher than before the project. The findings suggest that rural poverty can be reduced substantially if rural development projects are encouraged and executed in partnership and participatory manner. Therefore, the technologies and approaches introduced through improved dairy project HIP by Mbinga Diocese should be promoted in other rural areas of Mbinga District. It is however, recommended that they should really target the poor and marginalized community groups, especially the rural women, and the youth.

ii. Given the fact that, a large number of farmers join with the project and market for milk is not reliable, it is recommended that short and long term strategic plans should be analyzed, also farmers should be given training on how to process milk into various products and by - products. Furthermore, Mbinga District Authority,

Mbinga Diocese and beneficiaries should work out on a long-term solution to solve the problem of markert.

To avoid future problems of marketing surplus milk that cannot be absorbed locally, it is important to establish an organized system of marketing the surplus milk to distant markets outside villages and towns. The best strategy is to establish a system of collecting milk from individual smallholder producers and transport the milk in bulky to take advantages of scale.this strategy will reduce transactions costs that would have been incurred if individual producers were to look for buyers for their small quantities of milk.

Therefore, mbinga diocese, local government, agriculture and livestock office and NGOs/CBOs operating in the area should encourage formation of strong farmers groups, farmer's networks and /or associations. The groups, networks or associations should be voluntary rather than mandatory through creating awareness about the benefits of such associations. Once the networks/associations are formed, training of leadership and management should be conducted because experience shows that failure of most farmer organizations or cooperatives is due to poor management including financial management.

Besides ensuring that milk from members and other producers is marketed, farmer groups/networks/associations have the advantage of collective bargaining power and therefore can purchase dairy inputs from their associations and or from suppliers at discounts. Not only that but also will have an advantage of networking with other farmer's groups inside and outside the district.

iii. Mbinga diocese should recognize that stakeholders identified by farmers during focused group discussion have varying degrees of power and access to information.

Smallholder farmers in particular may not consider themselves as active stakeholders until steps are taken to involve them through consultation leading to partnership and active involvement rather than participation. Obtaining information from traders may be difficult unless they are treated as active participants and potential beneficiaries.

iv. To increase productivity in dairy production requires use of all the technologies associated with improved dairy cattle (improved feeding, animal health, services etc) not partial adoption of the packages. In most cases, the use of these technologies by smallholder farmers is constrained by their unavailability, high cost of inputs and lack of extension advice on how to use them properly. Therefore, the role of Mbinga Diocese and Mbinga District Council in intervention to the problem is crucial in terms of the following: investment in infrastructure, extension and delivery of good services; prices of agricultural inputs and products and credit facilities to smallholder dairy production groups.

v. There are threats to livestock biodiversity in Mbinga diocese and Tanzania as a whole. The diversity of domesticated animals is under threats for the following reasons:

- Intensification of animal agriculture tends to lead to over reliance on a few specialized breeds of higher productivity and subsequent neglect and in some cases eventual extinction of the less productive but which may have several positive genetic attributes such as resistance to diseases, heat tolerance and small size.
- The indiscrimination use of cross breeding coupled with upgrading of local breeds to exotic breeds poses a serious threat to the diversity of indigenous genetic resources.

- Diseases and Poor management results in high mortality rates, which exacerbates the decline in number of breeds and strains of high productivity or adaptability.

While a wide genetic diversity is important for sustainable economic development on a global scale, it is equally important to preserve local genetic diversity of existing exploited or overexploited breeds and promote the use of less well-known and less utilized animal species.

vi. Farmers Field Schools (FFS) is strongly recommended for the case of inadequate agricultural extension services to farmers

## 4.13 Suggestions for future research

i. Improved dairy production (technologies) through HIP is labour intensive and would likely increase women's workload than the workload of men in the study area. Since the current study did not examine labor demand in detail, it is suggested that further research be carried out to assess labour demand by season and division of labour by gender before and after introduction of dairy technology through Heifer Intrust Project.

ii. This study did not examine the demand for dairy products as well as marketing systems for dairy animals and products in the study area. Improved dairy technologies through Heifer Intrust Project would likely increase production to the extent of exceeding local demand and in nearby towns. It is therefore suggested that further research be carried out to assess demand and marketing systems for dairy products.

In summary, the findings of this study show that the Heifer In trust Project play diverse economic and social roles in the economy of household. They produce milk for subsistence, supply manure for cropping and sales of animals and milk provide farmers with cash to purchase household necessities and farm inputs. As far as gender roles and responsibilities is concerned, there is a clear division of labour, access and control of resources in the study villages. The implementation of recommendation is reported in fifth chapter.

# CHAPTER FIVE

## 5.0 IMPLEMENTATION OF RECOMMENDATIONS

### 5.1 Overview

Researcher in collaboration with other stakeholders initiated the formation of Farmers' Groups Network in Mbinga Diocese, which is part of the implementation of the study recommendations.

*Vision Statement of Mbinga Diocese*

A World, which reflects the reign of God, a World of justice, peace and solidarity.

*Mission Statement of Mbinga Diocese*

Evangelisation and to facilitate participatory community development and relief work by empowering people in respective of race, ethnicity, sex and age.

*Main objectives*

- To look for practical ways of addressing the need of human person created in the image of God following the commandment of our Lord Jesus Christ (Jn 13: 34).
- To inspire, stimulate, harmonize and support all activities aimed at ameliorating living conditions of people.

#### 5.1.1 Activities taken by Mbinga Diocese through formed community groups

1. Promote use of improved indigenous knowledge in crop and livestock production (Organic farming)
2. Provision of dairy animals (Goats and cattle) and training.
3. Supply of water services and provision of hydro Mills

4. Empowerment of women economic groups.
5. Provision of moral and material support to the needy
6. Education programmes: kindergarten, primary and secondary schools and VETA

### 5.1.2 Study recommendations

Mbinga Diocese through HIP should:

- Form strong farmers (community) groups, Networks and Associations,
- Target the poor especially the rural women,
- Invest in infrastructure (marketing facilities) and extension in delivery of goods and services,
- Preserve local genetic diversity of existing indigenous animals (cattle and goats) and plants.

## 5.2 Formation, development and management of strong farmers groups and networks

In 2003/04 we have formed four Farmers Field School (FFS) groups specifically for livestock, (dairy cattle and pigs) in the following villages: Mhekela and Buruma for cattle, Zomba and Lipumba for pigs. Through FFS session members plan and work together and discuss production problems, prioritize them and chart proper strategies to solve those problems using available resources. The researcher was involved and participated fully in these FFS sessions as a facilitator and giving advisory services in implementing action plans/activities (back stopping).

Problems that were beyond my capacity (researcher) had to be sorted out with Districts Agriculture/ Livestock and Community Development offices for appropriate solutions. Besides that looked for institutions national wide that could be of importance in solving those constraints.

Due to the above fact, I decided to act as a bridge between the Mbinga farmers groups and the registered National Network of Farmers Groups (Mtandao wa Vikundi vya Wakulima Tanzania - MVIWATA). MVIWATA management welcomed the idea of forming farmers' groups networks, not only in Mbinga District but Ruvuma region as a whole.

Hence, I was entrusted by MVIWATA to coordinate activities still being carried. Two farmers' group leaders and researcher were invited to attend MVIWATA general meeting in 2003. These participants from Mbinga and Songea had to report activities done by their respective groups. The reports covered production strategies, income generating activities, achievements, problems and the way they solve problems using available resources. Finally, they were registered by MVIWATA and then given a task of facilitating formation of farmer's group networks in their respective areas.

Through coordination with MVIWATA, three farmer group leaders (UJIJITAMA, Ujamaa -Myangayanga, Jiendeleze – Zomba and Jiendeleze – Mkumbi) together with the Agriculture field officer specialized in Farmers Field School and researcher made a study tour to Morogoro and Dodoma respectively under the sponsorship of MVIWATA and France. Lessons learnt from this tour were how MVIWATA has empowered farmers groups in solving their problems especially on capital for purchase of in puts and market for their produce. This was possible first by the formation of farmers groups in the villages, and then farmers group networks at ward level. Facilitated the formation of Income Generating Activities (IGA) to individual farmers and groups as whole. As a result of the study tour, the beneficiaries conducted training for their respective groups, and looking forward to legalizing their groups.

In collaboration with MVIWATA, we conducted districts workshop, which involved all stakeholders dealing with farmers groups Mbinga Diocese, Community Development and Agriculture/Livestock departments, NGOs/CBOs and 32 Farmers Groups sent their representatives. The major objective of the workshop was to introduce MVIWATA in the district and how to form farmers' groups network. The executive committee member presented the workshop topics from MVIWATA, researcher, agriculture and community development officers. The group members who attended the workshop agreed on the way forward as to form Ward networks by June 2005.

Researcher developed strategy of getting eight regional representative members of farmers groups networks from Tunduru, Namtumbo, Songea and Mbinga. The farmers attended the next MVIWATA general meeting, which was held in march 2005 at Tanesco Conference Hall in Morogoro. Researcher as a coordinator attended the meeting. The representatives were able to meet with other farmers group networks from Tanzania mainland and Island and from different parts of the world (Africa and Europe) including France who is the main sponsor of MVIWATA programmes and projects in Tanzania.

The three-day workshop made thorough discussion of farmer's problems in-groups, networks from village to national level and development strategies to solve those problems using the available resources from within their locality. Also provided opportunity to farmers to exchange ideas, experiences from farmer to farmer and farmer to their leaders in different levels of farmer's networks.

In solving market problems of farm produces in Mbinga districts, farmers were advised and facilitated to form groups and sell their crops straight at auction market, instead of

selling crops (especially coffee) to middlemen. In response to this advice nine farmers groups joined and sold 104, 701kg of coffee in 2004/5 season, which was equal to 1.44% of total coffee sold in 2004/05 season. The member of those groups had benefited by getting reasonable high price of 950 to 1180/= per kg compared to 400 to 650/= per kg for sold coffee to private buyers.

**Table17: Table below shows farmers groups who sold straight their coffee at the auction (Moshi) 2004/05**

| Number | Name of the group | Kilograms | Villages | Price |
|---|---|---|---|---|
| 1 | AKSCG | 796589 | Groups from (37) different villages | Range from 950 to 1180/= depending on the price during the auction. |
| 2 | Nguzo Ya Maskini | 38725 | Mhongozi | |
| 3 | Jiendeleze | 22423 | Mkumbi | |
| 4 | Ngaka | 101146 | Kindimba | |
| 5 | Amani | 4590 | Lukarasi | |
| 6 | Ujijitama | 11397 | Myangayanga (ward) | |
| 7 | Mhilo | 55282 | Kipapa | |
| 8 | Mkuyu | 5289 | Kipapa | |
| 9 | Ukuli | 9603 | Mkoha | |
| **Total** | | **1047701** | | |

Source: Quatery/ Annual Report (DALDOs Office), 2005

### 5.3 Networking

In recent years, farmer's networking had been used as a tool for communication in community development programme and projects. This is due to the fact that conventional assumption of extension communication achieved little impact. In this section, types and definitions of networking, how networking evolves, the role of networking in extension and importance of networking have been reviewed.

### 5.3.1 Types and definitions of networking

There are several definitions of networking depending on the perspective taken. Alders *et al* (1993) have defined networking as any group of individuals and/or organizations who, on voluntary basis, exchange information or goods or implement joint activities and who organize themselves for that purpose in such a way that individual autonomy remains intact. Farrington and Nelson (1994) have defined networking as the motor of the work of groups with a common goal or need; it exists solely to provide organizational structure in addition to providing information and inciting groups to act. In addition to this definition, the meaning of networking may become clear by listing some of its most important characteristics:

- Members take part on voluntary basis; networking assumes the willingness to share information and other resources in an environment of mutual trust and respect
- Members carry out joint activities that can not easily be performed alone
- Members individual autonomy remains intact
- Networks can have different forms and use different procedures depending on the specific situation. There is therefore considerable diversity in networking experiences.
- The network's structure is often 'light' and not very formal

There are several types of networks according to different perspectives. Haverkort *et al* (1991) classified networks according to the pattern of flow of information. For example, in a hierarchy type of network, information flow is controlled by the top levels while in horizontal network information flows directly between members. They also classified

networks according to membership composition and activities involved. In this case, networks can be formed by farmers groups / organizations, researchers and extension workers, with a variety of activities (e.g. information exchange, training and awareness rising). Pluknett *et al* (1993) give a classification based on operational styles. Other network classifications are based on scope of geographical coverage and subject matter focus (Pluknett *et al.*, 1993).

Analyzing the different forms and types of networks that have evolved or have been chosen by members reveals certain patterns. Alders *et al* (1993) gave advantages and disadvantages of different network types as shown below. This may help people define the most appropriate networking model for their situation.

**Table 18: Advantages and Disadvantages of Different Network Types**

| Type | Advantages | Disadvantages |
|---|---|---|
| Local Level | Allows fact to face contract, Eco-specific, Informal. | Limited scope and means. |
| National level | Represent large number of people, Allows stronger policy voice, Acquire more resources for large tasks | Require formalization and core funding, Limited interaction between members |
| Specialized | Well focused | Too narrow focus |
| General focus on LEISA | Holistic | Too dispersed. |
| Horizontal membership | Deeper contact | Information is controlled |
| Vertical membership | Allows contact between levels | |
| Centralized organization | Executive power<br><br>Easy for donors to deal with | Alienation from grassroots |
| Decentralized organization | Democratic Commitment | Difficult to maintain cohesion |

Source: Alders et al. (1993)

### 5.3.2 How Networking Evolves

Every individual and organization builds relationships with others in networking. Most of these activities remain informal and rather incidental. Some, however, become so relevant to the life and/or work of these individuals and organizations that they decide to institutionalize them in order to guarantee a more permanent facility. Engel (1990) claiming that, networks should always remain informal is like saying that people should eat, but never build a kitchen.

There seems to be a common denominator with which all networks start. All seem to begin with a phase of planned activism (Manrique *et al.*, 1993). This is a phase in which the first exchange of ideas takes place, when concrete activities facilitate the recognition of the value of sharing and support, one or a small group of enthusiastic prime movers (Padron, 1991 as cited in Alders *et al.*, 1993) promotes the idea of networking and a meeting with prospective network members is prepared. A lot is done during this phase, but often in a rather unplanned fashion. The result is generally a workshop or a meeting where the idea of forming a network is discussed and evaluated, together with other more immediate interests (Korten, 1990).

A number of recurrent issues emerge during the phase of planned activism. This first to emerge is the importance of communication and participatory methods. These must be allowed to play a major role in the formulation of its objectives, approach and organization in order for the network to be carried by a wide group of Non Governmental Development Organizations (NGDOs) and their staff. This is easier said than done: for those working in often isolated rural areas, it is not automatic to take time and develop a custom for sharing

ideas and experiences with others from elsewhere, as enriching as it may be. Also, the time and energy required for doing this often competes with already overloaded agendas. However, the more difficult yet essential task seems to be the development of shared conceptual framework that facilitates the exchange of ideas, experiences, and knowledge. Kolman (1993), describes the experience and notes the unrealistic goal setting and the extensive theoretical discussions during the first year of preparations. But he also indicates why they were necessary: to overcome ignorance and the lack of information on the topic of interest amongst prospective members; to integrate social ways of thinking with insight into technical processes; and, last but not least, to explain to donors and other supporters the actual needs of rural people. Kolman (1993), seems to be referring to a process of making sense out of the idea of setting up a network to stimulate sustainable development, checking the actual need for it, and defining its potential in supporting its members in doing their work better. It takes a lot of time, yet it seems to be an essential ingredient of networking. In a way, it helps to transform a diverse set of people and organizations with an "ill-defined" group with many interlocking relationships and a shared perspective, thus enabling them to effectively learn from each other.

This process of achieving a common understanding and shared purpose is in all cases linked closely to concrete activities that the members of the network are already performing in their respective areas. The immediate needs arising from the fieldwork of each of the institutions are the basis and reason for being a network (Manrique *et al.*, 1993).

## 5.4 The Role of Networking in community economic development

Networking is an activity in which people positively indulge in dialogue, encouraged to exchange ideas and experiences, urged to take the time to listen to each other and to work towards a new way of understanding old problems. This actually provides opportunity for reflection, for breaking down barriers and stimulating creativity (Engel, 1990). In economic activities, such as agricultural development, farmers' networking plays the following roles in the adoption and diffusion of innovations:

### *Risk sharing*

A basic function of farmers' networking is to build confidence among member farmers and to provide support and encouragement. Compton and Joseffson (1993) as cited in Alders *et al.* 1993) contend that new farmers can learn from experienced ones and so avoid the unnecessary repetition of mistakes. Network builds confidence among member farmers and to provide support and encouragement in risk-taking. Especially in risk-prone areas, it is common for families to look after each other in difficult times. Self-initiated and self-directed farmer networks can provide a safety net and a buffer at such times.

### *Experimentation and demonstration*

Experiments conducted by farmers' networks can effectively and efficiently serve to develop farming practices that respond to local conditions. This avoids duplication of practices and enables farmers to investigate a proposed new practice more completely and more quickly. Also they take into consideration the risk, labour requirement and community values, which are rarely considered by extension workers. Networks allow participating farmers to discuss and analyze each other's observations and experiences.

*Empowerment*

Farmers networking can focus around many areas of common interests and needs. As farmers join together and begin to support and learn from each other, a network develops strength. It becomes increasingly able to promote the common interests of its members and of the larger community. Practical outcomes can be cooperative purchasing of supplies, cooperative selling and marketing of produce. Well established networks can become effective advocates of policy change, claim improved access to public services for their member, and help to enlist public services for, or at least interest in, the issues of environment and development which affects farmer's lives (Alders *et al.*, 1993).

During a workshop on networking for low-external-input agriculture held in Philippines in 1992, it was generally agreed that the most essential ingredient for the promotion of low external input and sustainable agriculture is the existence of strong farmer-based networks in the rural community (Alders et al. 1993). Development support networks, such a those of NGOs or research institutions, should therefore aim to cooperate with and/or support the needs of farmer-based networks. Recent research has provided important insights in this area, which is one that is frequently overlooked by development organizations (Alders *et al.*, 1993).

*Extension and communication*

Farmer's networking can obtain and disseminate agricultural information from outside the network. Networks have often emerged in response to absence of an adequate extension service. Yet the existence of such networks can facilitate the work of extension workers and researchers provided that these accept the network for what it is (Compton and Joseffson, 1993 as cited in Alders *et al.*, 1993).

## 5.5 Importance of Networking

At first sight, Non Governmental Development Organization (NGDO) Networks seem to surge from situations where the NGDOs themselves, or members of their staff, perceive a critical lack of access to relevant knowledge and experiences from others. Yet, at the same time, this lack is not looked upon as absolute or irrevocable. On the contrary, it is perceived as being surmountable when ideas, experiences, and information are shared among relevant parties, in other words, if information sharing and learning among relevant NGDOs is improved. In India, NGOs and farmers agreed that there are many sound traditional practices that need to be brought to light and are worth disseminating (Quintal, 1993). In India, the ecological breakdown due to modern agricultural techniques, the ensuing crisis, and the lack of appropriate and sustainable alternatives raised awareness that a local network would enhance the adoption and diffusion of innovations and motivate others who are interested (Quintal 1993).

### *Motivation to Networking*

It may be suggested that networking efforts are triggered when three types of perception gain sufficient momentum amongst NGO leaders, staff and clientele. In one way or another, they reflect a genuine concern with improving the quality and impact of NGO work, and their contribution to grass root development. However, each network as such clearly reflects a very particular brand, or combination of the foregoing, from the local network of science-oriented NGOs, which are mostly interested in upgrading their performance vis-à-vis their clients, to the global strategic networks (Korten, 1990) which almost entirely embrace advocacy and up streaming, focusing their efforts on a very particular care or issue. The following seem to be major motivations to networking among the NGOs/CBOs/FBOs.

i. *Desire to upgrade*

The desire to upgrade encourages networks to place a great deal of emphasis on documenting and sharing ideas, experiences and knowledge from such people. NGO or otherwise, as are deemed relevant to the purpose of the network. Its main concern is with improving collective learning and the quality of NGO work (Engel, 1990). Likewise, farmers networks follow the same reason.

ii. *The wish to upstream*

This involves the wish to upstream analysis and action. It takes on the relevance or efficacy of the field operations themselves within the prevailing social and political context in a country or region. It goes beyond the evident consequences of the problem at hand to address its source (Korten, 1990), It emphasizes shared diagnosis, reflection clarification and coordination at a strategic level. Its main concern is achieving a better understanding of complex development situations, an achievement that is seen as being beyond the power and scope of any one of the single agencies alone.

iii. *An up shift amongst NGOs/ CBOs/ FBOs*

This leads to what may be labelled an up shift amongst NGOs. It emphasizes the need for articulating and advocating alternative development proposals. It leads networkers to engage in communication activities to reach a broader public, and to influence governmental and private actors in the society at large (Korten, 1990). So is the case with MVIWATA, which stands for Farmer's Group Network in Tanzania. It was formed during a workshop organized at Sokoine University of Agriculture, where farmers representatives decided to institutionalize the exchange of information between farmers, farmers groups and research and extension, throughout the country. Farmers representatives held a

meeting where they agreed on a constitution, elected leaders and chose the name MVIWATA. The following principles guide its functioning.

- The network enrol members on their own free will
- A member is free and he/she is entitled to protect this freedom.
- A network cannot force another organization to do something and cannot be forced by another organization to do something.

It is evident from the proceeding discussion that extension communication is a complex process, which requires a well established system. A system that firmly links senders of extension messages to research and to farmers through efficient communication channels. A system which is active, reciprocative and efficient in conveying message to and from farmers. However, the conventional extension communication set-up has failed to deliver extension messages, due to inefficiency and lack of links at some points in its totality. To date, many extension communication expertise think that networking can improve on the conventional extension communication system. That is why many government, NGOs development programmes have ventured into promoting farmers' local networks. In the same spirit, researcher initiated a farmers' groups network in Mbinga district, which is the implementation of the recommendation of the study.

## 5.6 Formation of Utiri farmers' group network (Mtandao wa Vikundi vya Wakulima Kata ya Utiri – MVIU )

MVIU network acts as a link in disseminating extension messages concerning the innovations used by farmers, including group members. However, networking occurs if regular communication exists between the various groups, even and especially if their activities differ. By confronting the various interests and experiences, each group is influenced in the same way that it can influence the other groups for the global interest of

the Community. In the **MVIU** network, representatives from different farmers' groups share experiences and exchange technical information in the network meetings.

After each of these meetings, group representative usually gives feedback from the local network to the individual group members using different methods of education. Verbal methods are commonly used because the network is informal and personal speaking directly to another person is the quickest and most efficient way of sharing information. Farmers are at the centre of communication process. They are the ones who need to communicate with other farmers within their groups, with other farmers groups and with professionals. The role of the network secretariat (which is made up of network chairperson/vice chair person, network secretary/vice secretary, and three groups representatives elected after one year) is to visit individual groups to seek information on various success and problems encountered.

### 5.6.1 Precondition of MVIU networking

Not all experiences with networking have been positive. Many initiatives have failed. Experiences suggest that the following questions need to be considered before starting a network:

- Is there a common vision and a set of common goals among potential members?
- Do potential members face common problems and constraints?
- Are potential members aware of these problems and constraints and of their important influence on their work?
- Do potential members, especially NGOs, CBOs, FBOs, and farmers groups have sufficient managerial and organizational skills?

- Are there relevant results/experiences that can be shared?
- Do potential members have a good idea of what a network is and what it could mean to them?
- Are they prepared to spend the necessary time and energy in sharing and networking at the expense of time spent with members of their own programmes?
- Is there an atmosphere of openness among potential members which allows them to admit mistakes and learn from them?
- Can the coordination of a network be ensured, especially during its first place of emergence?
- Is there enough commitment to overcome the problems of the network's establishment phase?

### 5.6.2 Development stages of MVIU network

Given the great diversity of network members, it is obvious that there is no blueprint for their development. In reality, networks usually, evolve slowly and follow a development path dictated by their own internal logic. Farmers' networks tend to be less formal than networks among other groups. However, the analysis of different experiences enabled some stages to be identified, which appear relevant for most networks. These are:

*Preparation*

During this stage researcher as initiator identified a topic of common concern, formulated the idea of a network, and assessed the interest of potential members. For any network it is important that this stage be based on the perceived needs of the potential members (appendix 12). These assessed through a preliminary survey. In informal networks these activities take place spontaneously.

In formal networks, however, the initiator plays a catalytic role, which requires time, thought and financial resources. In research networks the host organizations generally provide these resources. In return, they are able to influence the network in a direction they deem important.

*Establishment*

During this stage the decision is taken to form a network, typically at a founding meeting of all potential members (appendix 15). The members also determine the mechanisms and structure for information exchange and collaboration. In some cases networks draw up formal rules and regulations, with a central committee and a well defined membership, and then organize funding. In other cases, establishment occurs informally, with the mechanisms and structure evolving according to need. Whether formally or informally, it is essential that members participate in planning activities at this stage. The relationship of the network with the initiators, the host institution and the donor has to be defined.

*Operations*

After establishment the network gradually becomes fully operational. It adapts according to environmental change and internal dynamics. The latter will be greatly influenced by personalities. A clear identification of the network's goals, strucure and procedures and some training in network management will help guide the Network through this stage, which will probably be punctuated by various crises. Some redesign of the network's structure and management may be necessary to allow the membership to become more fully active. The stage is, of course, the most important one in terms of programme implementation. Several difficult issues may arise in the course of implementation. These

are generally not related to how to make a workshop, but more often to internal cooperation and the management of resources.

*Dissolution*

Acconding to Plucknett *et al* (1990) most networks should eventually disband, allowing members to regroup and confront new problems. Networks set up to tackle specific problems can dissolve once the task has been accomplished or the problem proves intractable. Instead of dissolving a network, it may make more sense to transform it to address new issues, or to merge it with other networks. The following questions have to be asked before a network is disbanded or transformed. Has the task been completed? If not, what parts of the task remain to be done? Do opportunities for fruitful collaboration still exist in some areas? What changes are necessary to meet the needs of the new situation? If the network is to be phased out, what final concerns should it address, and how will its residual responsibilities be met after dissolution?

### 5.6.3 Managing MVIU as a network

Management issues in MVIU networking relate, for example, to the way information is handled, the issue of leadership, the handling of differences between members, and the maintenance of members' commitment. MVIU network considers rotation of leadership, which is important to avoid monopolization. The internal processs of management agreed, should be evaluated periodically, preferably with the help of outsiders.

## 5.7 Network activities

Experiences show that networks pursue a great variety of activities to achieve their objectives. However, some activities are common to almost all networks. Managing some

kind of documentation or information centre or service is one of these. Here information is pooled, processed and made accessible to all members. Information exchange is often promoted. Further, common instruments in networking are meetings, seminars, workshops and exchange visits. It goes beyond the scope of this implementation part of the study to describe these activities in detail and to say how they should be planned and implemented so as to become effective networking tools. The book: Information exchange networking for agricultural development. A review of concepts and practices, by J. Nelson and J. Farrington published in 1993 by the Technical Centre for Agricultural and rural cooperation (CTA) in English and French contains valuable information and guidelines of networking and network management.

### 5.8 Potential Benefits of Farmer Networks

It is important to recognize who benefits from farmer networks. In addition to the participating farmers, the rural community as a whole benefits from the improvements in agriculture promoted by a network's influence. Agricultural research and extension organizations can benefit in two ways. If they establish a relationship of confidence with the network's farmers, they will gain a local partner that will participate creatively and critically, bringing a qualitative improvement in the research programme. In addition, farmer networks can take on more responsibility for local agricultural experiments and demonstrations, helping to disseminate the results of research and so bringing a quantitative gain in impact. In both cases, the cost- effectiveness of research is improved. Compton and Joseffson (1993) mention the following advantages of farmer networks.

*Sharing experiences*

New farmers can learn from older farmers and inexperienced farmers can learn from experienced ones. All farmers can learn from each other and so avoid the unnecessary repetition of mistakes.

*Extension and communication*

In addition to generating and exchanging knowledge based on farmers' experiences, farmer networks can obtain and disseminate agricultural information from outside the network. They can service as a link not only between individual farmers but also between farming communities and the agricultural extension system. Networks have often emerged in response to the absence of an adequate extension service. Yet the existence of such networks can facilitate the work of extensionists and researchers provided these accept the network for what it is- namely a forum for the articulation of collective needs.

## 5.9 Lessons learnt

Several conclusions can be drawn from these attempts to encourage farmers networks:

- Seed money is vital if a network is formally to come into being
- Support at the national level requires good understanding of the local situation, of the network, and the people. Both personal contacts and financial support appear to be necessary.
- Face to face contact between members is essential when the network is seeking to emerge. The geographical area covered by a network should be such that informal and /or formal meetings are possible fairly frequently. This lead to more emphasis on small scale (farmers network) rather than sub national, national, regional or international networks, depending of course on, the size of

the country and its communications infrastructure. Farmers Network emerge most strongly when the initiative for starting them come from grass roots farmers groups. Other organizations should be invited to join on the basis of their complementarity with these grass roots farmers groups. National and regional networks may start to emerge more strongly once sub national networks are in place.

- It seems important that at the early stages the idea of launching a networks should be shared by several people rather than just one person or group
- The process of establishing a network takes time rather more than one year. The bottlenecks are communication up and down the institutional hierarchy, and the workload of the community/people involved in the initiative.
- To prevent overlap and duplication of work and efforts, it is important to inform partners within the locality, district, regional and national level at an early stage of plans to support an emerging network.
- Researcher does not aim to be in the front line of support to emerging networks all over the district. He sees his role rather as a promoter of the idea, as a developer of the methodology to be followed and as a source of information for those groups who want to start a network. He should gather and disseminate information on how to establish a network.

  He also sees a role for himself in developing a better understanding of networking – how it works and what it can add to development efforts in Mbinga district. For this reason, a workshop on this subject was organized in 2004 in Mbinga district, in collaboration with Mbinga Diocese and MVIWATA and later in Utiri Ward in 2005 (appendix 11).

## 5.10 Conclusion on networking

- Farmer to farmer communication of agricultural knowledge offers more opportunities and incentives for farmers to experiment for themselves and strengthens farmer feedback loops in research and extension. This influences farmers to perceive the importance of networking through participating in networking activities such as attending meetings and extension seminars. Generally, farmers find the local network as important as a means for technology dissemination, for mutual support, as well as for material support.
- Group representatives play major roles in the existence of the network. They allow members to make decision, take them in the local network and give them feedback.
- Although it took some time for the majority of farmers to be aware of the existence of certain innovations, similarly in adopting them, the farmers' groups' network will play a major role in the adoption of the innovations, through giving information concerning the innovations and provision of technical advice to members.
- Belonging to groups enhances the level of communication amongst farmers belonging to the groups and also between group members and change agents. The enhanced communication can facilitate awareness of extension messages received.
- The source of information is a critical factor in adoption and diffusion of technologies. Farmers belonging to the network will have more access to different sources of information compared to those who will do not belong in the network. Although most information originates from change agents, the farmers groups act as man distributors of information amongst farmers themselves.

## 5.11 Recommendations on networking

- Not only group representatives should participate in network meetings but also the group members should be involved so that they can participate fully in the sharing and exchanging of information.
- Change agents (extensionist) should regularly monitor group activities and due benefits. This will enhance increased adoption amongst group members and non-group members.
- In working with farmers' groups, change agents and group representatives should also consider the need of non-group members who do not belong in groups. They can assist and give them information concerning the innovations. They should develop a programme to visit, talk to them, get their opinions and advise them to join groups.
- There should be a regular monitoring by change agents of whether those who participate in local network meetings deliver the message to other members, and if they distribute the documents from the network, such as the network agreements. Farmers should be trained and encouraged to look for new information by themselves instead of waiting to receive it from change agents.
- There is a need of encouraging farmers' groups in other Wards to establish Network in their wards and eventually to form, a District Farmers' Groups Network.

## REFERENCE

AEA (2001). The African Evaluation Guide Lines 2000: A Checklist to Assist Evaluators. Draft Version 1.2.Nairobi. http: //www. afrea. org/ documents /document. cfm? docId=16

AES (2002). Guidelines for ethical conducts of evaluations. AES. The code of conduct of the Australasian evaluation society contains in its code of conduct aspects related to setting up the TOR.

Alders, H., Haverkort, B. and Veldhuizen, L. (1993). ILEIA readings in Sustainable agriculture. Intermediate technology publications 103/105 Southamption, Row, London. pp 48-53.

Ashimogo, G. C., Mbiha, E.R., Turuka, F.M., Mlambiti, M.E., Mdoe, N.Y S. and Hella, J. P. (1998). Contribution of Livestock to Cash Income and Income Distribution in Tanzania: The Case of Arusha and Kilimanjaro Regions. Tanzania Veterinary Association 18(4): 9 – 18.

Assomo, P. and A. Eriksson. (1994). Soil Conservation in Arusha Region – Tanzania. Manual for Extension Workers with Emphasis on Small-Scale Farmers. Soil Conservation, and Agroforestry Project of Arusha Regional Soil Conservation Unit/ Swedish International Development and Cooperation Agency. pp 99.

Babbie, E. (1990). Survey research methods. Wadsworth Publishing Company, Belmont, California 94002, 2nd edition pp 56/ 395.

Bailey, K.D. (1978). Methods of social research. Free press collier Macmillan publisher, London.

Baker J. L. (2000). Evaluating The Impact of Development Projects on Poverty. A Hand Book for Practitioners. The Word Bank Washington D.C

Boi, I.R.M. (2000). Income Contribution of Local Chickens to Farmers in Handeni District. Unpublished Special Project Report Submitted in Partial Fulfillment of the Requirement for a Degree of BSc. Animal Science at Sokoine University of Agriculture, Morogoro, Tanzania, pp 9 – 14.

Bwana, E. N. (1996). An Assessment of the Adoption of Improved Food Grain Storage Structures in Mara Region. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, pp118.

Casley, T. F. and Lury D. A. (1981). A handbook of monitoring and Evaluation of agriculture and rural development projects. World Bank 1981.

CATAD (1988). The Sustainability of the Impact of the Integrated Rural Development Programme (RDP) In Northern West Zambia. Technical University of Berlin, Berlin German. pp 283.

Chamber, R. (1989). Farmers First. Farmers Innovation and Agricultural Research Edited by Robert Chambers, Arnold Pacey and Lori Ann; Thrupp Intermediate Technology Publication.

Chamber, R. (1992). Rural Development: Putting the Last First, Longman, and London.

Chinyuka, H. C. (2001). Participatory Evaluation of Farmers Field School (FFS) A Case Study of Mbinga Town Division in Mbinga District. A Supervised Enterprise Project Report Submitted for The Degree of Bachelor of Science in Agricultural Education and Extension of Sokoine University of Agriculture. Morogoro, Tanzania pp 45

Collinson, M. P. (1987). Farming System Research in Eastern Africa: The Experience of CIMMITY and Some National Agricultural Research Services 1976 – 81. International Development Paper No. 3, Michigan State University, East Lasing.

Compton, L.J. (1991). The Role of Farmers Networks in Minimizing Risk in Rain Fed Agriculture. Department of Continuing and Vocational Education, University of Wisconsin, USA.

Copton, J. L. and Joseffson, K. G. (1993). Farmer Network for Sustainable Agriculture. Draft, University of Wisconsin, Madison, USA. Cited in ILEIA readings in sustainable Agriculture. Linking with farmers. Networking for low – external input and sustainable Agriculture. (Edited by Alders, H., Haverkort, B. and Veldhuizen) Intermediate Technology Publications 103/105 Southampton Row, London, QC1B4HH, UK.pp

Cresswell, J.W. (1994). Research Design. Qualitative and Quantitative Approaches. Sage Productions. London. Pp.228.

David Howlett and Joseph Nagu. (1997). Agriculture Planning in Tanzania. A hand Book on cycles and sequences, participation, identification, planning and design, economic and financial analysis, and environmental assessment of agricultural projects. IDM Mzumbe and Development and project planning center University of Bradford, United Kingdom.

DED (2004). Regional Administration and Local Government. Report on data analysis on service delivery. Mbinga district.

Dey, J. (1984). Women in Food Production and Food Security in Africa. FAO, Rome.

Dulle, F.W. (1999). The Extension Trial Approach in Disseminating Agricultural Information to Extension Workers: Some Experiences from the Southern Highlands Diary Development Project, Tanzania. Journal of Information Science, 200(26), 121 – 128.

Elias, E. (2003). The Role of Women in Urban Agriculture: A Case Study of Morogoro and Mbeya Municipalities. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, Morogoro. pp 2 – 10.

Engel, P.G. H. (1990). Knowledge Management in Agriculture: Building Upon Diversity. Knowledge in Society: The International Journal of Knowledge Transfer 3 (3): 28 – 35.

FAO (1985). In Judith, Nisolf (1985). Agriculture extension in Africa. Proceedings of an international workshop. Younde, Cameroon, 27 November 1985. 120pp.

Farrington, J. and Martin, A. (1987). Farmer Participation in Agricultural Research: A Review of Concepts and Practices. Agricultural Administration Occasional Paper No. 9, Overseas Development Institute.

Feuerstein, Marie Therese. (1986). Partners in Evaluation. Development and community programmes with participants, London (U.K).

Folbre, N. (1991). Women on Their Own: Global Patterns of Female Leadership. In: Gallin, R. S; Ferguson, A. And Harper, J. (Eds), The Women And Development Manual. Westviews Press. 46 – 79.

Greenhalgh, J.F.D. (1993). Animal Production in the Tropics: An Outsider's View. In: Proceedings of the 20th Scientific Conference of the Tanzania Society of Animal Production.

Haverkort, B. and Ducommun, G. (1990). Synergy and Strength through Networking. In: ILEIA News Letter 6(3): 28 – 30.pp

Haverkort, B., Van Der Kamp, J. and Waters – Bayer, A. (1991). Joining Farmers' Experiments. ILEIA/ Intermediate Technology Publications, Leusden and London. Pp 38 –42

Haverkort, B., Veldhuizen, L. and Alders, H. (1993). Networking for Low External – Input and Sustainale Agriculture. In: ILEIA readings in sustainable agriculture. (Edited by Alders, H., Haverkort, B. and Veldhuizen, L.) Intermediate Technology Publications 103/105 Southampton Row, London, QC1B4HH, UK.pp 1- 22.

Haverkot, B. (1993). Farmers Networks: Key to Sustainable Agriculture. In: ILEIA readings in sustainable agriculture. (Edited by Alders, H., Haverkort, B. and Veldhuizen, L.) Intermediate Technology Publications 103/105 Southampton Row, London, QC1B4HH, UK.pp 38 – 42.

Hill, B. (1990). An Introduction to Economic for Student of Agriculturre. Pergamon Press. pp 381.

ICRA, (1991). Analysis of coffee base farming system in Matengo highland, Mbinga district, Tanzania. Working document service pp120.

Ishengomaa, C. G. (1998). The Role of Women in Household Food Security in Morogoro Rural and Kilosa Districts. Unpublished Dissertation for Award of PhD Degree at Sokoine University of Agriculture Morogoro, Tanzania pp280.

Isinika, A.C. and Mdoe, N. Y.S. (2001). Improving Farm Management Skills for Poverty Alleviation: The case of Njombe district. Research on Poverty Alleviation, Research Report No. 01.1, 57pp

Jiggins, J. (1993). Networking with Women Farmers. In: ILEIA Readings in Sustainable Agriculture. (Edited by Alders, H., Haverkort, B. and Veldhuizen, L.) Intermediate Technology Publications 103/105 Southampton Row, London, QC1B4HH, UK.pp 110 – 114.

Johnson, D. T. (1985). The Business of Farming: A Guide to Farm Business Management in the Tropics. Macmillan Publishers Ltd. pp126.

Juliet, T. and Godfrey, K. (2002). Working together for a better tomorrow. Experience in District community planning Mbarali District council. Tanzania Printers Limited. 5pp.

Kisusu, R.W. (2003). Adoption and Impact of Dairy and Irrigated Rice Technologies in Poverty Alleviation in Dodoma, Tanzania. Unpublished Dissertation for Award of PhD Degeree at Sokoine University of Agriculture, Morogoro, Tanzania, pp 1 – 59.

Kisusu, R.W., Mdoe, N.S.Y., Turuka, F.M and Mlambiti, M.E. (2000). Contribution of Smallholder Dairy Production to Food Security, Household Income and Poverty Alleviation: The Case of Mvumi Dairy Development Project Dodoma. Tanzania Veterinary Journal 20: 89 – 100.

Kurwijila, L. R., Minga, U. and Kyomo, M. L. (2002). The Challenge of Research in Improving Livestock Productivity in Tanzania. In: Proceedings of the Second University – Wide Scientific Conference. Edited by Matovelo, J.A *et al* 9 – 10 May 2002, Morogoro, Tanzania, and pp 29 – 63.

Kurwijila, L.R., Minga, U. and Kyomo, M. L. (2002). The Challenges of Research in Improving Livestock Productivity in Tanzania. In: Proceedings of The 13th Scientific Conference of The Tanzania Society of Animal Production Conference Series, (Edited by Kurwijila, R.L.). 18 – 21 November 1986, Arusha, Tanzania, pp 1 – 13.

Kurwijira, R. W., Crees, J., Lamosai, A. S. and Kakala, S. M. (1994). The Role of the Livestock Industry in Tanzaania's National Economy: Potential and Limitations. In: Proceedings of The 21st Scientific Cofference of The Tanzaania Society of Animal Production Coference Series, (Edited By Kurwijila,R. L. and Muhikambele, V.R.). 16 – 18 August, Arusha, Tanzania, pp 1 – 18.

Lazaro, E.A. (1996). Women in the Household Economy: The Case of Agricultural Plantations in Morogoro Region, Tanzania. Unpublished Thesis for Award of PhD Degree at Sokoine University of Agriculture Morogoro, Tanzania Pp 69 – 161.

Luzinga, A.P. (1993). Evaluation of Poultry Waste and Lucaena Leaves As Supplementary Feeds for Growing Bos Taurus Dairy Cattle. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 112.

Lymo, J. G. and Kangalawe, R.Y.M. (1997). The role and dynamics of traditional farming system in agricultural sustainability. Publication CRD/ERC/IDS/IRA. Joint research committee, Dar es Salaam pp 44.

MAC (1999). The National Agriculture Extension Project Phase II (NAEP). Mid Term Review Dar es Salaam pp 55.

Madulu, N.F. (1995). Contraception prevalence under rural poverty: The Case of rural areas of Kondoa district, Tanzania Reserch report number 89. Institute of Resource Assessment, University of Dar es Salaam pp 11.

Makeham, J. P. and Malcom, L. R. (1986). The Economics of Arm Management. Cambridge University Press, Cambridge. pp 178.

Mandara, E. G. (1980). Assessment of Factors Influencing Women's Participation in off Farm Income Generating Activities. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 101.

Mbasa, G. K. and Msafiri, P. A. (1998). Causative factors of poverty among pastoralists of shinyanga and Morogoro regions. Veterinary Association, Volume 18 Supplementary 4, 1998, pp 142 – 147.

Mbura, J.H. (1987). Women's Role in Cattle Production: A Case Study of Nkuu – Ndoo Village, Hai District Kilimanjaro. Unpublished Special Project for Award of BSc Degree at Sokoine University of Agriculture Morogoro, Tanzania.

Mchau, J.J. (1993). Evaluation of Agroforestry adoption in Mbinga District, Tanzania. Unpublished Dissertation for Award of MSc Degree at University college of north Wales Bangor.

Ministry of Agriculture (2000). Basic Data – Agriculture and Livestock Sector. Ministry of Agriculture Library, Dar es Salaam, Tanzania, August 2000. pp 66.

Ministry of Agriculture and Cooperative and Sokoine University of Agriculture (1998). The Tanzania Dairy Sub Actor. A Rapid Appraisal. Vol. 3 – Main Report Published By Swiss Agency for Development and Cooperation, Switzerland. pp 48.

Ministry of Agriculture and Livestock Development (MALD), (1998). Taarifa ya Maendeleo ya Mifugo Mwaka 1986/87, (MALD Annual Report 1986/87), Dar es Salaam, Tanzania, 56 pp

Mlambiti, E.M. (1994). Introduction to rural economy for east Africa – student. Mzumbe Project, Morogoro. pp167.

Mlambiti, M. E. (1985). Planning Regional Agricultural Development Using L P: The Case of Kilimanjaro Region Tanzania. PhD Thesis, University of Dar Es Salaams. pp 421.

Mlozi, M.R.S. (1995). Information and problem of urban agriculture in Tanzania. Interaction and realization,. Victoria University of British Colombia.

Mlyuka M H. (2000). A Study of Malonga Mound Ridges as an Indigenous Farming System: A Case Study of Illela Village, in Mbinga District`. Unpublished Special Project for Award of BSc Degree at Sokoine University of Agriculture Morogoro, Tanzania.

Mohr, Lawrence B. 1995, Impact Analysis For Program Evaluation, 2nd. Thousand Oaks, Calif: Sage Publications.

Mpangala, F. K. (2005). Factors Causing Low Copliance in the Formation of Community Theatre for Development Approach (COTDA) Kimanzichana Vijana Troupe, Mkuranga district. Unpublished Special Project report, for Award of MSc Degree at Southern New Hampshire University of America at the Open University of Tanzania. pp 16 – 18.

Mphuru, A. N. (1991). Sustainable Livestock System in Tanzania. In: Proceedings of the 18th Scientific Conference of Tanzania Society of Animal Production Conference Series, (Edited by Kurwijila, R. L. and Kifaro, G .C). 24 – 26 September 1991, Arusha, Tanzania, pp 200 – 211.

Mpiri, D.B. (1990). Advances in Cattle Breeding in Tanzania. Ministry of Agriculture, Tanzania.

Msanya, B.M., Araki, S., Kimaro, D. N., Moggogo, J.P; Nobuch, T; Rubbufo, C. and Hani, J. (1998). Integrated agro- ecological research of miyombo woodland in Tanzania, Final report.

Mshana, S. S. (1987). A Description and Analysis of Distribution Channels Of Diary Products in Hai District of Kilimanjaro Region. Unpublished Special Project, for Award of BSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 23 – 33.

Mtenga, K. J. (1999). Small Holder Seed Production in Tanzania. Potential and Limitations. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 132.

Mtenga, L.A., Makungu, P.J., Muhikambele, V.R., Maeda, G.K And Nnko,S.M(1998). Rapid Rural Appraisal of Morogoro and Dar –Es Salaam City. Slaugher and Meat Markerting Systems SUA Norad Project Publication No. 1. January, 1998.pp 4 – 12.

Mwajombe, K. K. (2000). Factors Influencing Farmers with Dairy Cattle to Cease Agroforesty Practices After Pull Out of Donor Assistance: The Case of Arusha Peri Urban, Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 7.

Mwakyembe, C. M. A (1996). A Study of Economics of Small Sale Diary Farming in Iringa and Mbeya Regions, Mbeya Tanzania.

Nelson J. and Farrington, J. Forthcoming. (1990). Information Exchange Networking for Agricultural Development: A Review of Concepts and Practices. CTA, Ede – Wageningen, Netherlands.

Newman, D., M.A.Scheirer, W.Shadish and C. Wye. (1994). Guiding Principles for Evaluators. Report of AEA Task Force on Guiding Principles for Evaluators.AEA.

NGO Management Network. (1989). Institutional Development of NGOs: An Annotated Bibliography. International Council of Voluntary Agencies, Geneva, Swizerland.

Nicholson, C. F., Thornton, P. K., Mohamed, L., Muinga, R.W., Mwamachi, D. M., Elbasha, E. H., Stall, S. J and Thorpe, W (1999). Smallholder Dairy Technology in Coastal Kenya: An Adoption and Impact Study. Nairobi Kenya, ILRI Impact Series No. 3 pp 69.

Njuki, J. M. (2001). Gender Roles in Agroforestry: A Social Economic Analysis of Embu and Kirinyanga District, Kenya. Unpublished Dissertation for Award of PhD Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 24 – 25.

Norayan, D., Patel, R., Schafft, K., Rademacher, A., and Koch – Schulte, S. (2000). Voices of the Poor: Can Any One Hear Us. Oxford University Press pp 343.

OECD. (1991). DAC Principles for Evaluation of Development Assistance. OECD report. paris: OECD/DAC.

OECD. (1998). Review of the DAC Principles for Evaluation of Development Assistance. OECD report. Paris:OECD/DAC

Pardon, C. (1991). Networking and Learning. In: ILEIA News Letter 6(3): pp 12 – 18.

Philip, D. (2001). Economic Analysis of Medium Scale Agricultural Enterprises in A Predominantly Smallholder Agriculture Sector. Unpublished Dissertation for Award of MSc Degree at Sokoine University of Agriculture Morogoro, Tanzania. pp 60 – 120.

Plucknett, D. L., Smith, N. J. H. and Ozgediz, S. (1990). Networking in International Agricultural Research. In: Food System and Agrarian Change. Cornell University, Ithaca / London.

Plucnett, D.L., Smith, N.J.H and Ozgediz, A. (1990). International Agricultural Research: A Data Base of Networks. CGIAR Study Paper No. 26, the World Bank, Washington D.C., USA.

Rivera, W. M. (1991). Agricultural Extension Worldwide: A Critical Turning Point. In: W. M. Rivera and D. J. Gustafson (eds) Agricultural Extension: World Wide Institutional Evaluation and Forces for Change. Amsterdam Elsevier. pp 3 – 11.

Rugambwa, V.K., Muttagambwa, T.J. and Houterman, J.F. (1994). Economic Contribution and the Economies of Smallholder Dairy Production in Kagera Region, Tanzania. In: Proceedings of the 21st Scientific Conference of the Tanzania Society of Animal Production Conference Series, (Edited by Kurwijila, R.L. and Mwikambele, V.R.) 16 – 18 August, 1994, Arusha, Tanzania, 36 -50.

Rutatora, D. F. (1993). Agriculture and Environment. The Need For Continuous Farmers Education. In: Proceedings of the a National workshop TSEE and CSE (Edited by Rutatora, D. F., Lugeye, S.C., Morell, N. M.). Held In Dodoma Tanzania. 22 – 24 November, 1993.

Samjee, A. H. and Somjee, G. (1976). Managerial Shift: Indian Women Acquire New Role in Diarying. World Animal Review 18: 28 – 33.

Sanginga, C. P. (1998). Adoption and Social Impact Assessment of Agricultural Technologies. The Case of Soybean in Benue State, Nigeria. Unpublished Dissertation for Award of PhD Degree at University of Urbadan, Nigeria. pp 13.

Semwaiko B. E. (2003). Adoption of improved dairy technologies by small scale farmers. A case study of Mbinga district. Unpublished Special project report for Award of BSc Degree at Sokoine University of Agriculture Morogoro, Tanzania.

Sendeu, D.M. Z. (1994). The Role of NGOs in Training Farmers For Higher Agricultural Production. In: Proceedings of National Conference on the Role of NGOs in Agricultural Extension. (Edited By A .Z Mattee and M. S Ngetti). 22 – 30, November 1994, Dodoma Tanzania. pp 94 – 107.

Swamson, B.E., Rolling N. and Jiggins J. (1984). Extension strategies for technology utilization. In: B.E. Swanson (ed). Agriculture extension A reference manual 2nd edition, FAO.

Tyler, G.J. (1983). Somalia: A Case Study on Rural Poverty. Food and Agriculture Organization of the United Nations. pp 42.

UMADEP (1997). Farmers' Groups Approach: UMADEP in Morogoro. TSAEE Newsletter, Issue No. 7. pp11.

URT (1989). Livestock Development Programme 1989 – 2000 Main Report. Subsector Summaries. Ministry of Agriculture and Livestock Development, Dar es salaam, Tanzania, 115pp

URT (1998) The National Poverty Eradication Strategy. Vice Presidents Office, Dar es Salaam. pp 54.

URT (1998). Ministry of agriculture and livestock development. National community development policy. Government Printer, Dar es Salam

URT (1998). Ministry of Natural Resource and Tourism. National Beekeeping Policy. Government Printer, Dar es Salam. pp 3

URT (1998). The National Poverty Eradication Strategy Draft, Vice Presidents Office, Dar es Salaam, Tanzania, 54pp

URT (1999) Livestock Sub Sector Policies in Tanzania Government Printers. pp 121.

URT (1999). The Economic Survey 1998. Tanzania Government Printer. Dar Es Salaam. pp 2113.

UTR 2003. Presidents office. Regional administration and local government. Rulal development policy. Government printer, Dar es salam. Tyanzania.pp10 – 12

Valadez J. and M. Bamberger, Ed 1994. Monitoring and Evaluating Social Programs In Developing Countries. Economic Development Institute of the World Bank Series, World Bank, Washington, Dc

World Bank (1994). The challenge of reforms: Growth, Income and welfare. Oxford University Press. pp 120.