



MANAGEMENT PRACTICES IN AFRICAN EGG PLANT CULTIVATION: A CASE STUDY OF WOMEN FARMERS IN MVOMERO DISTRICT, MOROGORO REGION TANZANIA.

A Research Project submitted to Van Hall Larenstein University of Applied Sciences in partial fulfillment of the requirements for the award of Professional Master Degree in Management of Development with specialization: Social Inclusion Gender and livelihood (SIGAL)

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DEDICATION

I dedicate this thesis
To my beloved departed Father Elisamia Lyimo and my lovely departed daughter
Upendo Geoffrey.

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LIST OF ABBREVIATIONS

AVRDC-RCA	Asian Vegetable Research and Development Centre -Regional Centre for Africa
FAO	Food and Agriculture Organization of the United Nations
NGO	Non-Governmental Organization
TSH	Tanzanian Shillings
WHO	World Health Organization of the United Nations
CM	Centimeter

ABSTRACT

This report is about management practices of the African egg plant by women farmers of Mvomero District recommended by the Mvomero extension department. The recommended management practices include variety selection which is Tengeru white or (Yeboyebo) seed are sown in the nursery in rows 15-20 cm apart and 1 cm between seed and regular watering is needed. After 3 weeks, watering is reduced and in 4 to 6 weeks the crop should be transplanted to the spacing of 0.75 between rows and 50 cm between plants. Crop rotation is done by rotating the crop with other crops, which is not from Solanaceae family like tomato, sweet paper and egg plant among others, to avoid re-occurrence of the same diseases and pests. Irrigation is needed frequently. Fertilizer application is recommended to combine inorganic and organic fertilizer in order to increase yield and maintain soil fertility. Pesticide application is recommended against red spider mite (most disturbed pest to the African egg plant) by using *decis* or *selecron*. Weeding is done 2 to 3 times before first harvest. Herbicide or manual weeding is recommended although herbicide can reduce time and labor cost. Soil conservation practices are required to improve soil for higher yield. And harvesting practices are done two month after transplanting and the crop continues to grow for 6 to 7 months. Harvesting is done in the morning and fruits are picked in the sisal bags and transported to the market the same day since the fruit can be suitable for consumption within few days.

Despite of the effort done by Mvomero extension department to provide recommended practices to farmers, women farmer are not able to follow them, this justify the need to pay attention to the management practices of African egg plant to women farmer of Mombo village, Mvomero District.

Primary data were collected using structured questionnaire and by interviewing (22) women farmers of Mombo village, Mvomero district. Field observation and secondary data supplemented the questionnaire. Data collected were analyzed using Microsoft excel.

The findings show that women farmers are not able to follow the recommended management practices for producing African egg plant. Although advise by the extension department can lead them to obtain better yield. The research found that women follow some of the recommended management practices, but not all. For example recommendations for variety selection is not well followed. Because most of the farmers cannot afford to buy recommended seed which is tengeru white (yeboyebo). Farmers use locally prepared seed from their previous harvest which yield lower than tengeru white. Again fertilizer application becomes a major problem to them because no one is using organic manure. They only depend on inorganic fertilizers and this result in poor yield and soil degradation. Crop rotation is done by rotating the crop from solanacea family which is tomato, sweet paper and egg pant which favour the occurrence of the same species of pests and diseases. Pesticide application becomes a problem to women farmers as they do not have the knowledge of effective use of the *selecron*, although it is available in the shop. As a result the pests develop resistance to the pesticide. Finally women farmers are not able to conserve the soil and water by not apply mulching and contour farming.

Apart from lacking good management practices, women farmers in Mombo village face other constraints which contribute to low production of African egg plant crops. These constraints include: very minimal access to extension services, poverty, low level of education and high prices of Agricultural inputs.

It is recommended that the government specifically identifies women as an integral part of its extension services and develop the way which of make sure that extension service are reaching them.

1. INTRODUCTION

1.1 Overview of the study

Management practices in African egg plant cultivation of women farmer in Mombo village, Mvomero district, Morogoro region Tanzania, preferably, vegetables production (e.g. African egg plant) was supposed to contribute to livelihood improvements for female farmers. Also it is supposed to increase the overall agricultural production of a country including the provision of foreign exchange from export of agricultural products (Haug 1999). This can be made possible if the farmers are supported in terms of inputs and extension service. However, it seems that most women engage in the production of indigenous vegetables, for this case African egg plant, with unknown extent of extension service provided to them. It is also unknown whether there are management practices which may be adopted to improve production of the crop. There is very limited information available about the role of rural women regarding the participation in African egg plant production. This justifies the researcher to explore the management practices of African egg plant production activities of the rural women farmer.

1.2 Organization of the report

This study report is organized into ten chapters: Each chapter contains several themes. Chapter one is an introductory part of the thesis. It provides brief overview of the Agriculture in Tanzania, Description of the study area including geographical description, climate, topography, soil and drainage and administration. Chapter two covers the overview of the women farmers and management practices. Chapter three gives information on extension services. This present information on the extension services which offered by the government and the extension strategies. Chapter four shows the management practices of the African egg plant production, Management practices definition, African egg plant description, consumption issue of the crop and recommended management practices of the African eggplant.

Chapter five covers the research problem definition, research objective, main research question and sub research question. Chapter six presents methodology used in carrying out the research. It consists of the research design, selection of the study area, and selection of the respondents, sampling procedures, methods of data collection and data processing & analysis. Chapter seven presents interview outcome. Information from the interviews with the women farmers and observations are presented.

Chapter eight displays the findings from the field interview outcome and discussion. In this chapter results are analyzed and discussed with support of literatures. The findings are Elaborate the management practices of the women farmer in Mvomero district. Chapter nine presents the conclusion, while chapter ten presents the recommendations.

1.3 Overview of Agriculture in Tanzania

In Tanzania, agriculture is the main stay of the economy and for the year 2004 it counted for over 51% of the country foreign exchange earning. It supports about 75% of the total population and contributes 47% of the Gross Domestic Product, GDP (BOT, 2005).

This is partly due to the fact that priority was given to production of export cash crop such as coffee, cotton, cashew nuts and tobacco. As such, little attention was given to

the horticultural sector. This affected the allocation of the resources into research, extension and manpower development for this sector (Weinberger and Lumpkin, 2005).

With the decline in terms of trade of the country main traditional horticultural export crop and the increase in concern about food security, new strategies had to be adopted so as to diversify the country's export while ensuring better healthy for its population. One of the strategies was to promote non-traditional such as horticultural crops. Since then the horticultural sector received more attention and much higher priority in the allocation of resources. In terms of production, there has been a significant increase of in the horticultural products for both domestic and consumption and export in recent years (URT, 2004).

In spite of this increase, indigenous vegetables cultivation has not received attention in terms of research or political advocacy as a result production is declining. In general, a decline in consumption of traditional food crops and increasing consumption of refined and processed foods, including fats and animal food is an observable trend. (Weinberger and Msuya, J. 2004)

In Tanzania horticultural crops are usually grown on a small scale basis how ever they generate higher earning per unit area and represent an alternative for farmers with too small cultivatable land to provide adequate income from field crop(FAO 1998)

1.4 Description of the study area

1.4.1 Mvomero District

The study will be undertaken in Mvomero District which is located in the North East of Morogoro Region Tanzania. The areas lies between 8° 00' and 10° 00' Latitudes south of equator and between Longitudes 37° 00' and 28° 22' in the East. The District has a total area of 7,325 km² with 58,314 households. The total area is 7,325 km² with the arable land size being 5493 km².

Information will be collected from women farmers who grow in one of the village in Mvomero District. The village is called Mombo the study area is within the mountainous zone of Uluguru that covers the whole eastern part and partly in Southern part of Tanzania. The most important farming system in Mgeta division is production of maize and vegetable especially tomato and indigenous vegetable such as amaranthus, pumpkin leaves, African Eggplant, Nightshade, Spider flower, Cowpea, Ethiopian mustard , moringa, and okra.

Other common vegetables include carrots, cabbage, beans & green peas. People in the study area also keep animals like pigs, goats, cattle and poultries.

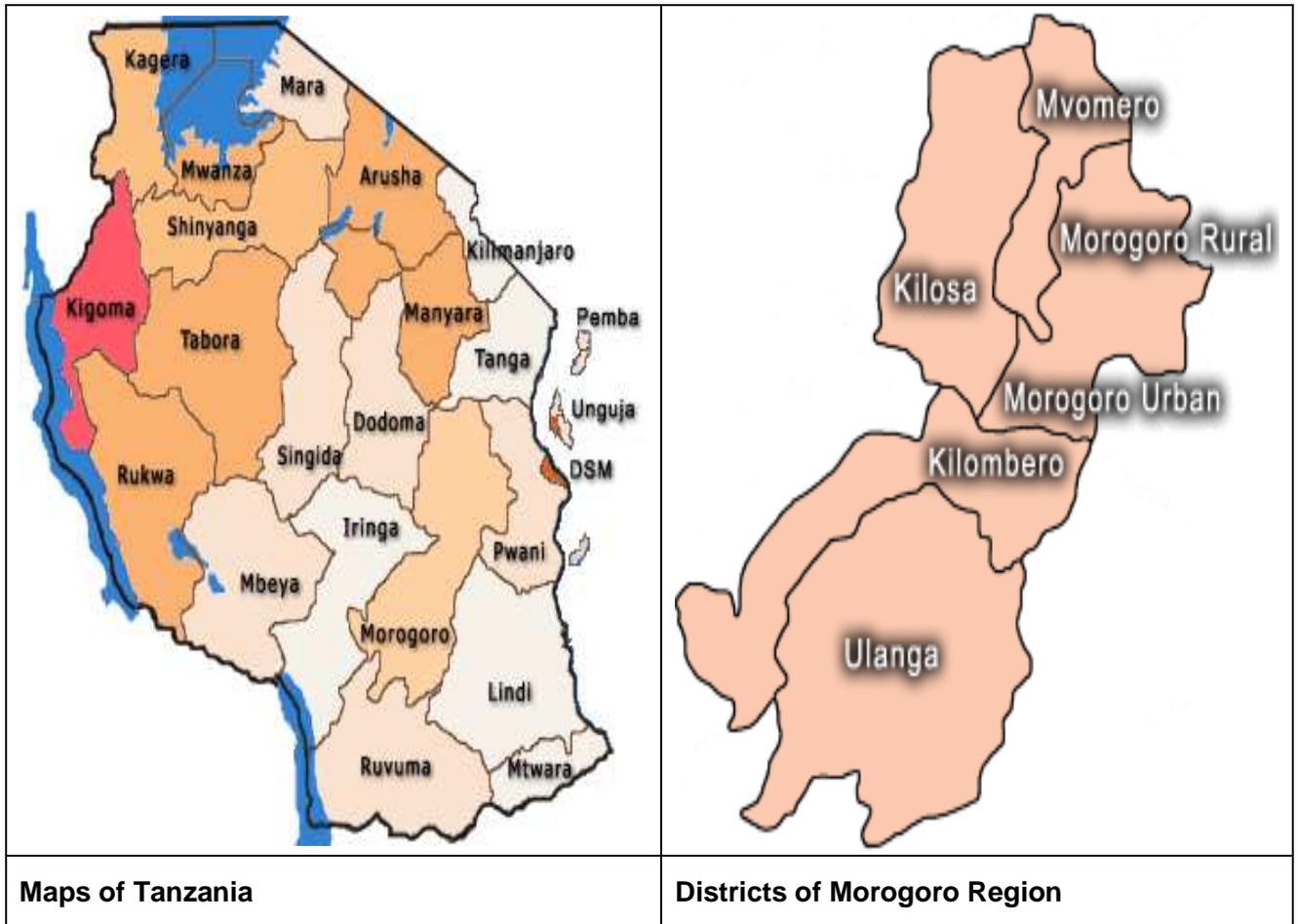


Figure 1: Maps of Tanzania and Morogoro Region showing Mvomero District

Source: <http://www.tanzania.go.tz/census/census/morogoro.htm>

1.4.2 Geographical description of Mvomero District

Mvomero District is among the six councils of Morogoro Region. It is a new District split from the former Morogoro District. Others are the Morogoro, Kilosa, Kilombero, Ulanga, and Morogoro Municipal. The district boundaries are as follows: to the north is Handeni district, to the east is Bagamoyo Dc, to the south by Morogoro Municipal Council and Morogoro District, whereas to the west it is by Kilosa District Council.

Mvomero District is located at North East of Morogoro Region lying between 8° 00' and 10° 00' Latitudes south of equator; and lies between Longitudes 37° 00' and 28° 22' East. The District has a total area of 7,325. km². Number of household 58,314 household's size of grazing land 2,664 km², size of arable land 5493 km².

1.4.3 Climate

Rainfall in Morogoro region lies between the seasonal rainfall patterns of northern and southern Tanzania. Northern Tanzania has bimodal rainfall. The short (*Vuli*) rains start between mid-September and mid-October and continue till December. The long

(*Masika*) rains start in mid-March and last until late May. Southern Tanzania has unimodal (*Msimu*) rains, which start in November and end in April or May.

The annual rainfall ranges from 600mm in low lands to 1200mm in the highland plateau. However, there are areas which experience exceptional droughts (with less than 600mm of rainfall and these areas are in Gairo and Mamboya divisions, which include North of Kilosa District and Ngerengere Division in the East of Morogoro Rural District).

The mean annual temperatures vary with altitude from the valley varies between 18°C on the mountains to 30°C in river valleys. In most parts of the region, the average temperatures are almost uniform at 25°C. In general the hot season runs from July to September.

1.4.4. Topography, soils and drainage

Four major types of soils are closely related to the physiographic and can be identified in

- Well drained, deep to moderately deep, red and yellowish red clays, sandy clays, loams and clays, mainly on Uluguru rock within the mountainous 15 areas.
- Well to medium drained, shallow, moderately deep to deep red and brown sandy loams, loamy sands and clays in the upland areas.
- Well to moderately well drained, light colored sands and yellowish brown to yellowish red loams and clays in the coastal areas.
- Poorly to imperfectly drained, grey to black clays and sands (partly saline) in the alluvial plains as well as minor valleys and depressions.
- Well drained and deep soils are more recommended for vegetable production

1.4.5 Administration

Mvomero district has is divided into 4 Divisions, 17 Wards, and 101 Villages. Mvomero 4 ward, and 31 village, Mgeta 4 ward and 22 villages, Turiani 5 wards and 27 village and Mlali which has 4 wards and 21 villages.

According to 2002 census population of working age group were 137,126; of which males were 68,870 and females were 68,256. In 2007 population of working age group expected to be 153,657 for both sexes; of those males were 77,166 and females were 76,491. The ethnic tribe in Mvomero district is Waluguru and forms the greater part of the population.

2. FEMALE FARMER IN MANAGEMENT PRACTICES

2.1 Women in the vital role as a producer of food

In Tanzania, women participate in vital roles as producers of food, managers of natural resources, caretakers of households and income earners (Kindeya, et al 2005). Even though women participate as a key role in the agricultural sector, they have been neglected in the planning of economic policies. This has exacerbated the subordination of women and diminished the impact of policies intended to raise household output and income. Women farmers play significant contributions in the economic growth of Tanzania. Their input is recognized through being engaged in agricultural production.

Vegetable production is a gender activity, participated by both male and female. In some cases the women farmer participation rate is much high 79.4% as compared to male 60.8% (UNDP, 1997). But, the women work is not considered as paid work (FAO, 1998). Two third of the one billion of illiterate persons in the world are women and girls, and only 5% extension services address to women. Such trainings are mainly on household tasks for women and not on professional crop production activities (FAO, 2003). Women are also uninformed of most of the advanced crop production activities and technologies due to training facilities and lack of resources. If some training is organized by same agencies, then rural females are not permitted to join by the male members due to sex discriminatory society (World Bank, 2001). Their needs, interests, and constraints are not reflected in policy-making. They also have limited access to benefits of research and innovations (Commonwealth Secretariat, 2001).

Recent understandings of poverty put significant importance on the ownership or access to assets that can be placed to productive use as the building blocks by which the poor can create their own routes out of poverty (Moser, 1998; World Bank, 2000b).

2.2 Women and their responsibility in management practices

According to (Mella, 1997) women make significant contributions to agriculture, in management practices of food production. In fact, food insecurity is augmented through women's heavier workload and if involvement of women in decision making and in control of resources is missing (Kauzeni, 1999). Nevertheless, little has been done so far to make them more productive and, in fact, the present extension system does not consider much the participation of women in agricultural production (Mella, 1997).

It is further admitted that men and women have different roles to play in the production process of agricultural goods and that households are normally headed by men and, therefore, men are responsible for decision-making concerning farming activities.

Still, men often lack firsthand knowledge of the experiences, constraints and needs of women who are much more involved in management practices of crop production like planting, weeding, harvesting, irrigation, pest control, fertilization, harvesting, seed selection, varieties changing food habits, processing and preparation of food (Mella, 1997). This firsthand knowledge is due to extension training, division of labour, where women and men develop and generate specialized knowledge. The latter includes not only the knowledge about the activities mentioned above but also knowledge of the diverse plant species, varieties or types, and the whole management practices of crop production system with which women work (FAO, 2003c).

2.3 Women double role

The productive and reproductive roles of women in society, named as double-day" roles, results in a heavier workload for females than males, although this also depends on social class, age or ethnicity group (Peter 2006).

3. EXTENSION SERVICES AND THE WOMEN FARMER

3.1 Government extension service

An extension service which was offered by Government is normally intended to reach all farmers despite of their sexes. The problem remains that most who reaches and uses these services are men. In many occasions where when farmers are invited to attend training the majority who go to these programs are men. Researcher's experience of this study is that whenever there were invitations for extension training, majority of farmers who go to the training are men. High yield in production is attained when many farmers reach and use extension services.

Agricultural extension services are supposed to fulfill many aims, from reducing rural poverty and improved livelihoods for rural households to increasing the overall production and contributing to foreign exchange earnings from export (Haug 1999). Extension services which are important in improving livelihoods of rural communities and contribute to economic growth of Tanzania.

3.2 Extension Strategies

Different extension services (communicative intervention) are geared towards supporting individual farm households in identifying, interpreting and solving problems on their specific farms. In other hand communication services are referred to as communication strategies because they refer to the way in which communicative intervention is supposed to contribute to societal problem solving (Leeuwis 2004). Services which relate to farm management are listed below.

- Advisory communication services: according to (Zuurbier, 1984 cited in Leeuwis 2004) these happen when farmers request or take the initiatives to look for the help of a communication worker in solving management problems. Problems can be immediate and operational or longer time scale. In helping farmers to deal with such problems, communication workers may not only provide related substantive knowledge but also to help farmers become more responsive of what their goals and aspirations are in the first place so that they can define more clearly what is difficult and what is not.
- Supporting horizontal knowledge exchange: These are the services in which farm in contrast groups is an important instrument where farmers become aware of problems and solution through comparison with other farms. It happens through one farmer passing by other farmers' fields, exchange of labor and/or by discuss with farmers in market place.

4. MANAGEMENT PRACTICES IN AFRICAN EGG PLANT

4.1 Management practices definition

According to <http://www.umassvegetable.org/documents/BMPoverview.pdf> Management Practices are a set of voluntary practices designed to reduce negative effects of vegetable production on the environment and water resources. Management practices those farm operations which encourage efficient use of resources, safety for consumers and farm workers, and economic viability of farms.

In vegetable production good management practices considerations for include, water management and irrigation, pest management, pesticide application, nutrient management, organic and inorganic waste management, and soils conservation. Other management practices are safe harvesting, handling, production and packing practices.

4.2 African Egg plant description

The African egg plant (*Solanum aethiopicum*, or *S. macrocarpon*), with the family solanaceae is a vegetable widely produced in Africa. The production of this crop is expanding as its economic and nutritional importance is being recognized (Chadha and Oluoch, 2003). The crop is also known as garden eggs, ngogwe or nyanya chungu (Swahili) whereby the latter means bitter tomatoes (AVRDC, 2003). The crop is grows well in the warm and humidity conditions founds throughout the savannah belt of the west and East Africa. The optimal temperature for the crop is 23'0 to 25'0 C during the day and 18'0 to 25'0 C during the nights. It can be grown in the on a wide range of well drained soils. The optimum pH of the soil is between 5.5 and 6.8 (Chadha and Oluoch, 2003). The crop is fast maturity and yet can be harvested over time so it yield both quick results and extended one hence improving economic livelihood of the women farmer. In many part of Africa there seems to be egg plant a considerable scope for producing egg plant in more quantity. The crop has also notable market potential and could become a corner stone of localized rural economic development. There is also a potential opportunity for exporting the African eggplant to North Africa and Europe to earn some foreign currency (National Research council, 2006). Because of this importance Researcher choose African egg plant as a crop of study.

Recent research (Schippers 2002) led to the winding up that there is one pluriform diploid species of the scarlet eggplant only, namely *Solanum aethiopicum*, comprising many different forms. The latter can be divided into four cultivar groups that adapted to different climatic zones throughout the domestication process:

- Shum group (nakati) - originate in wetter areas of Africa; East Africa, esp. Uganda, mostly used as a leafy vegetable.
- Kumba group (jakatu) - originate in semi-arid zones of the western Sahel up to northern Nigeria; frequently used for both leaves and immature fruit.
- Gilo group (garden eggs) - originate in zones with a more average rainfall; humid zones of West Africa; mainly grown for its immature fruit.
- Aculeatum group - not normally originate in Africa and non-edible, however, used as rootstock for plants such as brinjal eggplant and tomatoes because representatives of the aculeatum group are resistant to a number of soil-borne diseases (Schippers, 2002; Lester & seck, 2004).

A negative aspect for all *Solanum* species is that they have a number of spirosolane alkaloids, together with solanine and solanidine, which are bitter-tasting. These substances are potentially poisonous when eaten regularly, but particularly when eaten raw or not properly cooked but just blanched or steamed. Therefore, leaves should not be eaten raw as a salad. Unfortunately, these alkaloids can not be totally removed by cooking or frying the leaves, however, to organize the cooking water can, at least, reduces them (Schippers, 2002).

4.3 Consumption issues of African eggplant

Consumption issues processing and utilization is discussed in Mvomero district considering the following aspects. Plant part used is only fruit of African egg plant is used for consumption. The preparation of a meal in Mvomero district started normally with the sorting and washing of vegetables, the ends of African eggplants were cut off, they peeled and cut in half, while further vegetables were chopped as well. Onions were fried in oil, tomatoes added and finally eggplants, salt and additional vegetables.

The frying process took about 15 minutes. All vegetable dishes were usually served together with ugali (maize porridge).

African eggplant was neither preserved in Mvomero district. This was due to the vegetable being available throughout the year and, accordingly, there was no need for preservation and storage.

African eggplant was declared to have no medicinal value, in Mvomero District women farmer explained that, by simply eating fruit of bitter African eggplant types (of leafy groups), one could overcome problems of high blood pressure, problems of sight as well as diabetes. Thereby, fruit should be eaten fresh or boiled but without any further ingredients. If fruits were boiled with little salt one could even treat peptic ulcers by eating them. (Lester & Seck 2004)

4.3 The management practices on African egg plant production.

In this research the term management practices is used to refer the production practices on African egg plant production, that is the Researcher's concern on how management practices of African egg plant are performed in Mombo village, Mvomero district Tanzania. When we talk about Management practices in African egg plant production the following are some of the important areas under consideration (see Box 1)

4.4 Management practices of African egg plant

Box 1: Management practices of the African egg plant production (Source Msuya et al 2004) and the Mvomero Agriculture Extension department recommendations

Suitable locations: African eggplant requires less water than tomatoes and prefers Sunny conditions. It will grow on a wide range of soils, including sandy loams. It does not cope with water logging, and intense shading.

Varieties: Bitter, intermediate and sweet varieties exist. AVRDC has selected sweet and slightly bitter fruit types which include lines AB 2 and DB3 which are now being promoted in several countries. However, "Tengeru white (Yebo yebo), Nyanya chungu are frequently used.

Sowing time: African eggplant is not as susceptible to cold temperatures as other African indigenous vegetables like okra. It can be grown throughout the year in most countries provided that water is available. As African eggplant is susceptible to red spider mite during the hot dry season, growing of nursery seedlings and transplanting should be done well before the start of the hot season.

Nursery preparation and characteristics: Land should be ploughed well, mixed with cow dung, chicken or compost manures at a rate of 3-5 kg/m². The nursery should be in a flat area, with well drained fertile soils, free of shade, near to a water source. It should not have previously grown crops such as tomato, nightshades or sweet peppers over the last couple of years. Diseases left over in the soil from these crops can damage young African eggplant seedlings. Seeds should be sown in rows, 15-20 cm apart with 1 cm spacing between seeds within a row. After sowing, cover the seeds with a thin layer of soil followed by watering. Thin the seedlings down to 1-2 cm spacing between plants. Weeding should be done whenever necessary to avoid competition with seedlings. Regular watering is also necessary.

Transplanting and crop management: About three weeks after sowing, harden seedlings by slightly reducing the frequency of watering. The seedlings for transplanting are ready in four to six weeks or when they have 4- 7 true leaves. The soil should be well prepared and if it is fertile the crop can be grown without fertilizer. In other situations mix in cattle or chicken manure, or compost at a rate of 0.2 -0.5 kg per hole. If manure is not available, CAN or urea fertilizers at a rate of 5 grams per plant can be used. The recommended plant spacing for African eggplant is 75 cm between rows and 50 cm between plants in the row. Weeding should be done whenever necessary and watering during the dry season is very important. Additional top dressing with fertilizer after the third harvest improves subsequent yields.

Transplant seedlings by digging a hole deep enough to bury a plant so that its first true leaf is just above the soil surface. Press the soil firmly around the root. Irrigate furrows immediately after transplanting. Watering newly transplanted plants well will give the seedlings a good start.

Crop rotation: African eggplants should not be planted after tomato, pepper, potato, or other solanaceous crops to prevent a recurrence of the same pests and disease pathogens. Rotate African eggplants with other crops. Planting African eggplant after rice reduces the incidence of bacterial wilt and nematodes.

Fertilizer application, Inorganic and organic fertilizer application: To improve African egg plant production will require a combination of inorganic and organic fertilizer, Organic input and good soil and water conservation practices without this, There will be soil degradation.

Irrigation: This is done frequently to avoid wilting of the crop.

Pesticide application: Chemical pesticide use is a common practice to control pests

and diseases in vegetable cultivation in Tanzania. However, besides their beneficial effects, pesticides are accepted as having potential environmental and public health impacts as well. If improperly used, pesticides can cause direct human poisoning, accumulate as residues in food and the environment or lead to the development of resistant strains of pests. These problems can arise from misuse of the pesticides or over-reliance on them, particularly if the users are not aware of these potential problems. Red spider mites can cause problems during hot weather and damage shows up as dead leaves. Look for brownish patches under the leaves. They can be controlled using miticides such as Abamectin or Dynamec.

Weeding and herbicide use: Herbicides use is able to suppress weeds for a longer time and over a wider area than manual weeding with hoe. These together can reduce weeding time and labor cost, especially where there are labor constraints.

Soil Management: Soil is the natural medium for the growth of land plants and is the source of 13 of the 16 essential nutrients. Air and water provide the other 3 essential nutrients (carbon, Hydrogen and oxygen). Plants take up nutrients that are in the soil solution. They do not take up solid, particulate matter. Even initially poor soil will become productive if properly managed. A soil analysis will give a good overview of the nutritional status of the soil.

Soil conservation practices: In African egg plant production there are soil conservation practices that are meant to improve production and those are conservation tillage and residue management, crop rotation, contour farming, manure application and soil and water conservation.

Harvest: For most varieties, farmers should harvest the fruit before the skin becomes tough and changes colour. The exceptions are those varieties that are consumed fresh for the sweet fruit. The fruit should be cut off with a knife or pruning scissors to prevent damage to the plant.

Harvesting should be regular even when there is no market for the fruit, as it is needed to encourage subsequent fruit development. If fruits are left on the plants, seeds will develop and few new fruit will be formed. During warm weather it is advisable to harvest very early in the morning or towards the evening. Keep the produce in a cool, shaded place.

Harvesting is usually done every week starting two months after transplanting and can last 6-7 months. Old plants that are starting to dry off can be cut back at the base (ratooned) and young shoots will grow and produce fruits after 2-3 months. Harvested fruits are packed in sisal bags for transport to market places and can remain suitable for consumption for a few days.

5. PROBLEM DEFINITION, RESEACH OBJECTIVE AND MAIN RESEARCH QUESTIONS

5.1 The Research Problem

Ideally, Vegetables production is supposed to contribute to livelihood improvements for women farmers as well as increase the overall agricultural production of a country including the provision of foreign exchange from export of agricultural products (Haug 1999). This can be made possible if the farmers are supported in terms of inputs and extension service. However, it seems that most women engage in the production of indigenous vegetables, for this case African egg plant, with unknown extent of extension service provided to them. It is also unknown whether there are management practices which may be adopted to improve production of the crop.

There is very limited information available about the role of rural women regarding the participation in African egg plant production. The present project was, therefore, planned to explore the rural women's participation in management practices of African egg plant production activities.

As described above certain data and, African egg plant knowledge can be gained and guide future research, the significance and expressiveness of these data should at the same time, be treated carefully.

5.2 The Research Objective

The main objective of the research study was to investigate on the management practices of women farmers in Mvomero District, Morogoro, Tanzania growing African egg plant.

5.3 Research questions

5.3.1 Main questions

a) What are the management practices employed by women farmers in the African egg plant production?

5.3.2 Sub questions

1. How do the land preparation, sowing and transplanting done by the women farmer.
2. What are variety used and its availability of the African egg plant production
3. What are crop protection practices done to the African Egg plant production
4. How do the soil conservation activities done to the African egg plant production
5. How does the moisture management activities done by the women farmer
6. How the harvesting activities done to the African Egg plant production.
7. How do the female farmers exchange/obtain information about the mgt. practices and what is the role in this of the extension service.

6. METHODOLOGY

6.1 Research design

In order to probe answers for the research questions stated above, the research was designed into two phases: the first phase involved desk study in which theoretical concepts was dealt upon, and the second phase was the collection of qualitative data and partly quantitative data.

The desk study section involved review of theoretical information which was used to understand basic concepts such as management practices for this study. Information based on the desk study was collected through various literatures search by using internet, library books and digital library of Wageningen University.

The second phase involved gathering of qualitative data and partly quantitative data.

In this phase of data collection, a case study method was employed to get empirical data from the field. The checklists with semi structured questions were used to explore information from both extension workers and women farmers. However, in this phase the researcher will also be using observation as a means of getting information i.e. size of the field, available livelihood assets and scale of production (small/large scale). Observation method is important because it enabled the researcher to get first hand information from the actual setting.

6.2 Selection of the study area

This study was conducted in Mombo village, Mvomero District. The choice of this area of study was based on the fact that it is within a newly formed district .A good number of organizations with different interests (Governmental, NGO's and private companies) have been trying to bring social economic interventions to the native people of the area but most of them have overlooked women's roles in the intervention's. As such, this study was sought to take a different approach by focusing at women's role in the management practices of African egg plant. Since the Researcher has an experience in working with people of the chosen area. It is envisaged that such experience was serve social culture barrier including language during data collection.

6.3 Selection of the respondents

Since the study was designed to probe issues from women farmers, a total of twenty (22) women farmers was selected and interviewed to obtain information about their management practices of the African egg plant in the area of study.

6.4 Sampling procedures

Random sampling was employed to obtain the sample of 22 women farmer from Mombo village. The obtained list of women farmers from the registry and their names individual was written in piece of papers and the researcher select 22 pieces randomly in order to avoid biases, the sample of the 22 women were chosen. And select randomly only 22. The women farmers were subjected to interviews to provide an opportunity for the farmer to reveal their management practices of the African egg plant. This study involved one category of samples for data collection and that is women farmers who grow African egg plant.

6.5 Method of Data collection

6.5.1 Primary data

Field data collection started on 19th July and ended on the 13th August 2010. Data were collected directly from the women farmers themselves from their fields and their homes. The pretest interview was conducted to check the duration taken. Adjustment and modification of the question was done according to maximize validity of the items. The interviews was set and conducted in an interactive way between the researcher and the respondents so as to obtain as much information as possible. The interviews was conducted in an open manner to give respondents freedom so as to create environment of revealing own experiences and exhaust as much information as possible that was considered relevant for this study. Each interview took about 45-50 minutes long including 5 minutes for acquaintance. Information that was collected from women farmers was mostly related to the management practices of the African egg plant.

Further more, the researcher also used observations method to aid primary data collection. Observations were used especially in the estimation of size of the farms. The Questionnaire with semi structured item was also be used to capture information from women farmers.

6.5.2 Secondary data

For the background and literature review, the study relied on journals, scientific books, PhD thesis, reports, information books, unpublished materials and internet source. Monthly and annual reports of Mvomero district council were also used in obtaining secondary data.

6.6 Data processing and analysis

The data collected from the field was summarized and rephrased to make the points clear while maintaining their original meaning. Data which collected in Kiswahili was then translated into English for easy analysis. The translated and edited data was analyzed using simple statistical calculation by applying Microsoft excels. Qualitative information was grouped and ranked according to the similar responses from the interviews. Quantitative data was presented in tabular form whereby descriptive statistics was used to describe them.

6.7 Limitations

Poor infrastructure was the main limitation of the study. The area is surrounded with the hills, buses and motorcycle could not reach the African egg plant farms although they become a helper to some extent.

In the interview process the researcher was introduced to the first women farmer and established a rapport with the first women farmer. Then the introduction of the researcher to the subsequent women farmer was done via the farmer already interviewed.

The other limitation were that the women farmer who were first shocked with loan repayment programme which took place in the village few months ago and put some farmers to the jail and other two murdered themselves because of unpaid loans, make

the farmer to be scared of the new comer and hide some information, It took me half an hour to explain the aim of my interview.

7. INTERVIEW OUTCOMES

This chapter presents the interview outcome in three parts, one is the general information of the respondent, second will elaborate the information on the land, the third information on agriculture in general and the last management practices, constraints, contribution and access of the information on management practices of African eggplant production of the women farmer in Mvomero district.

7.1 General information of the respondents

The general information of the respondents includes age group, education level, marital status, number of people in the house hold and the year of their arrival in the village.

7.1.1 Age group

The age group of the many of respondents ranges from 18-60 and the highest number of women were 18-30 which was (9), followed by 41-50(5) followed by 31-40(3) and finally 50-60 which were (3). This concludes that the majority of the respondent are of the age of 18-30 yrs

Table 1: Age group

Age range	Number of women
18-30	9
31-40	3
41-50	5
50-60	3

(Source: field data)

7.1.2 Education level of women farmers

Findings show that, (19) out of (22) respondent have education level of standard seven and below including those who never attended school. (2) out of (22) respondents have education level of above standard 7 to form four. Finally, no respondent was above form four in the study area. It can be learnt that majority of women farmers in the study area had low education background.

Table 2: Education level of women farmers

Education level	No of respondents
No education	2
Adult Education	0
Primary Education	18
Secondary education	2

Source: Field data

7.1.3 Marital status

The marital status of my respondents are (20) of them are monogamous married and one was a widow and another one was a single. So many of the respondents are married.

7.1.4 Number of people in the household

People in the household range from 6-10 (6) and the remains one are from 1-5 (16). This concludes that majority of the respondents are not having big family only average of 1-5 number of the people in the household.

7.1.5 Year of arrival in the village

Majority of the respondents are migrants from the neighborhood village all of them (12) migrate before 1998 and only 7 of them migrate after 1998. This is to conclude that the respondents are new in study area.

7.2.1 Information about Agriculture.

Information about agriculture includes the acreage of the respondent and how they access the land, majority of the farmers having less than 0.5 of an acre (7). Others are having 0.5 of an acre (8) and 0.75 of an acre (1) followed by 1.5 of an acre (3) and finally 2 acre (1) and 2.5 of an acre (1). The research shows that majority of the women farmers grow egg plant in less than an acre.

7.2.2 Access of the land

Women farmers access the land for African egg production through their husband's inheritance (11), bought (5), Rented (3), and freely acquired (3). This is to conclude that majority of the women farmers access the land of their husbands.

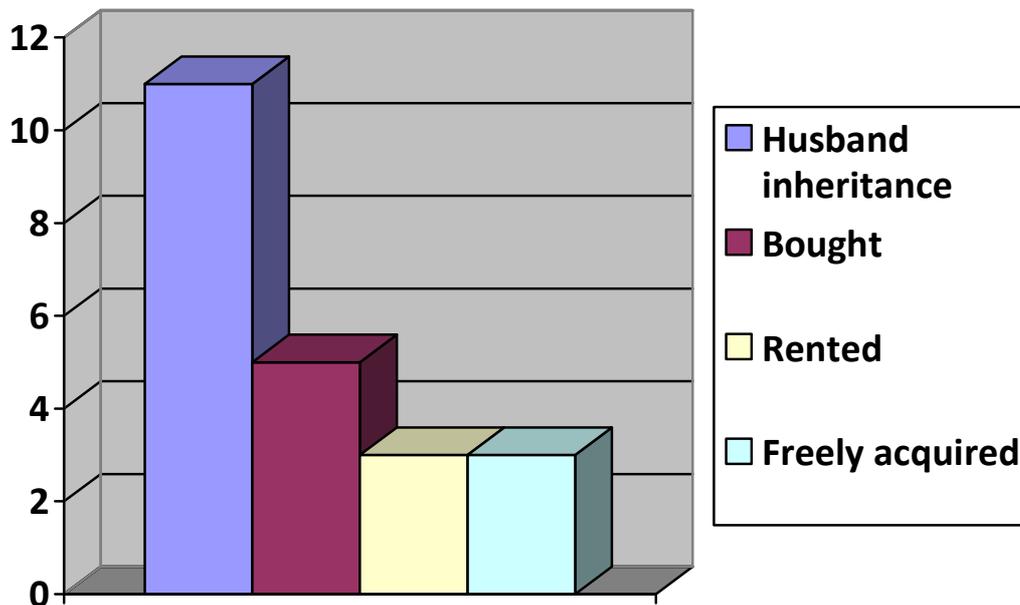


Figure 2: Women farmer and access the land (source: field data)

7.2.3 Source of farm labor

Many of the respondents are using family member (17) and the remaining (5) are using family member as a labor together with hired labor. This implies that majority of the women farmers are not able to hire labor because of the low income.

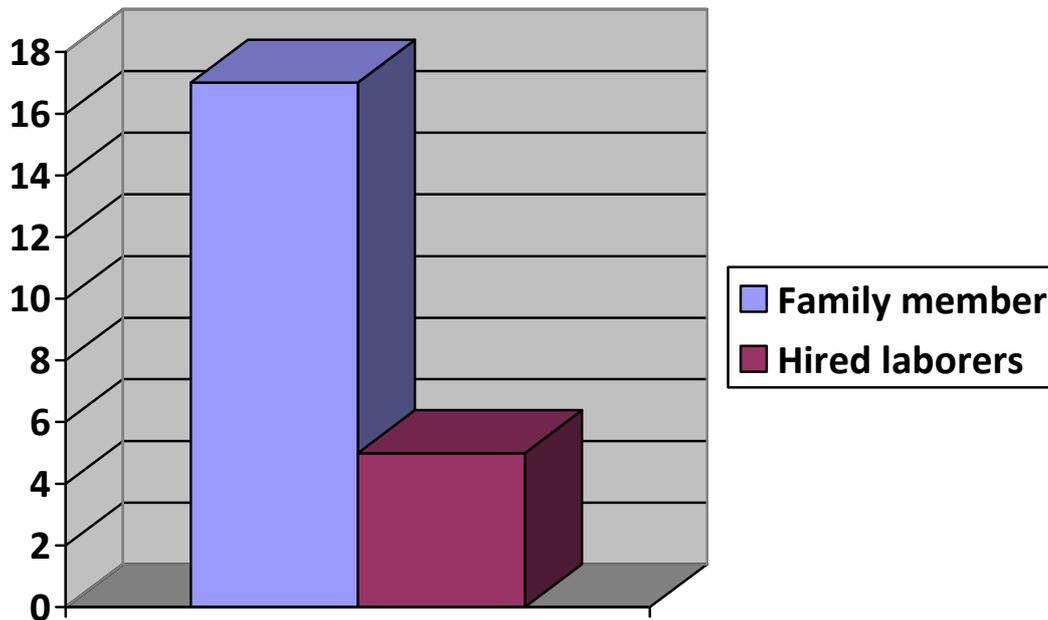


Figure 3: Source of Labor (source: field data)

7.3.1 Information about land preparation and ownership

Information from the respondent about preparation ownership and access and controlling and power of the decision making

- Equipment used in land preparation are hand hoe no one is using machine or oxen.
- All the respondent has an access with these equipments but controlling power of these equipment and ownership are from the Husbands only two of them are controlling them selves
- Household decision making are done by husbands excepts the two of them are doing on them selves. Those two are (1) widow and (1) Single women.

In summary of the outcome on land preparation and ownership is that women farmer do not occupy any of the equipment rather than using it as result of accessing them but not control those equipment and this goes hand in hand with the decision making power in house hold which belong to the men.

7.4 Management practices

This section elaborates the management practices done by the women farmers in Mombo village, Mvomero District. Starting from variety selection, sowing and transplanting, fertilizer application, pesticide application, irrigation, weeding and soil conservation practices among other.

7.4.1 Variety

The (15) respondent are using seeds from the previous crop, which they prepared locally, (7) respondents says that they buy it from the shop (Yeboyebo).Yeboyebo is the only variety of African egg plant sold in the shop, which yield more per acre than the locally

prepared variety. Women say that the yield of the seed sold in the shop (yeboyebo) differ to the locally prepared one by 3:1 respectively.

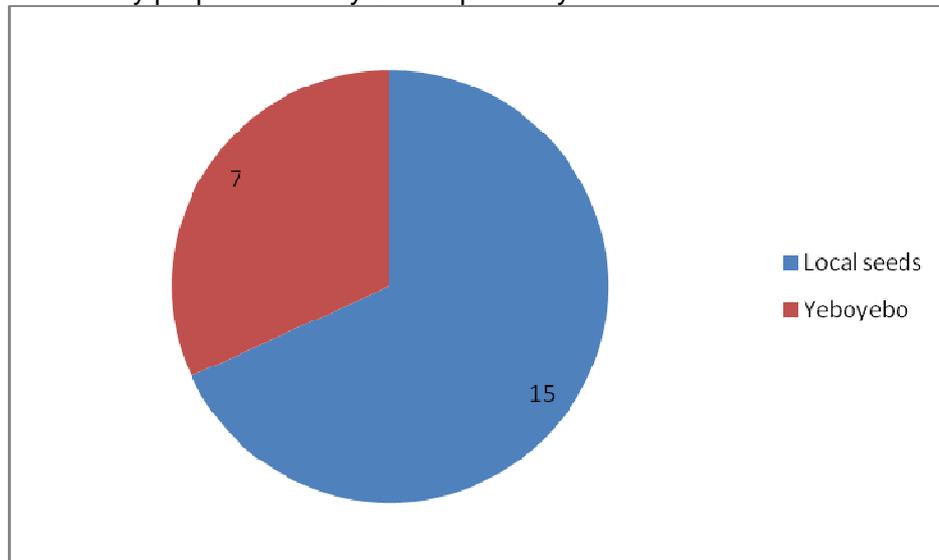


Figure 4: Variety selection (source: field data)

7.4.2 Sowing and transplanting.

The practice of sowing seeds is done by women farmer by sowing the seed in small area prepared as nursery. The women farmers (22) say that they are normally transplanted in the evening to avoid sun burn during the day. Spacing used is 75 cm. between rows and 50cm. between plants.

7.4.2 Fertilizer application, Inorganic and organic fertilizer application

In the research work the findings show that over (22) women farmer no one is using organic fertilizer in the farming rather than they purchase inorganic fertilizer and use in their. The fertilizer used is mainly CAN and Urea.

7.4.3 Pesticide application

According to the result, All of the women farmer (22) complain about pests infestation, researcher found that pests infestation become a big problem in African egg plant production. Pesticides are the most common means of control pests in African egg plant production in Tanzania. The available pesticides to control red spider mites were *selecron*. Red spiders mites become a problem because women farmer do not have knowledge of how effectively use the *selecron* as a result pest develop resistance to such a pesticide.

7.4.4 Weeding

All the (22) women farmer says that they weed their farm using hand hoe (16) of them say that they weeds twice and (6) say that they weed thrice before the first harvest. The action of weeding twice or thrice has not effect on the yield/acre.

7.4.5 Soil conservation practices

The (22) respondent are hardly practice soil conservation therefore soil erosion was evident in their farm.

7.6 Constrains and contribution

According to the research findings the constraints facing women farmers in African egg plant production are poverty, low income, and the expensive management practices. Others are water stress, pests' problems (red spider mites) which develop resistance to the chemical (*selecron*), poor infrastructure and lack of market information.

Contribution of the African egg plant much to the live of the women farmer are income earns, food security, children fees and better standards of living.

7.7 Access of the information on management of African eggplant.

22 women farmers have the same answers on the issue of accessing information. In the probing aspect after the questionnaire was; first place where women farmers get information in the market when they sell their produce and the second place when they do meet with hired labor in the farms they exchange information. And they get little information from the extension services.

8. RESULTS (DISCUSSION ON THE INTERVIEW OUTCOME)

This chapter analyzes the interview outcome from chapter seven and discusses against the recommended management practices of the African egg plant. It covers the analysis of the management practices of the women farmer in Mombo village

8.1 Women education

The education level can influence the production of the African egg plant production to the women farmer. Women with high education status stand better chance to produce African egg plant with the profit as they can understand and use better management practices and they can practice it well.

8.2 Access to land

All (22) farmer say that they don't have the right of control over the land; they are only accessing it and using it. (6) Complain that the land is unfertile and is in the marginal and far away from the water source (14) no complains. only two of them widow (1) and single (1), have an access and controlling the land although their farms are small.

According to (Zibrilla and Salifu, 2004) Land issue has become a major constraints to the women farmer, Under customary law women are not considered to have the right of owning the land, They can access the land but In fact, not controlling it even take it as a collateral when women farmer need a credit, except through male relatives or as widows. Sometimes, they can have user rights unless land is in short supply or they can be pushed towards more marginal plot.

8.3 Variety

Women farmer on African egg plant productions have shown insignificant increases in productivity. This clearly indicates that the new improved variety is unaffordable by women farmer across the country. The improved varieties available to women farmers is also limited because of it's expensively.

8.4 Irrigation

According to (Keraita et al., 2002b, 2003a) water buckets is the useful method in the study area .It is also a precise method in the leafy vegetable. Women farmer using water bucket to fetch water manually and carry water from the water source mostly in the stream and carry it to the field. Women fetching water and application with buckets often transported as head load.

Motorized irrigation pump are available in the village and to hire them need to incur some costs which are; the cost of fueling them and the cost of hiring them, which is approximately 7 euro (10,000 Tshs) per day. This becomes a problem to the women farmers who are having low income. Women face competition for water resulting in shortages of water from the stream where buckets are used. They also compete with men, who are also using the same water source in irrigating their farm.

8.5 Sowing and transplanting.

Sowing seeds practices are done by women farmers themselves by sowing the seed in small beds that are prepared as nursery.

The entire women farmers do it in the evening. It is recommended to do it in the evening because the seedlings need to recover from transplanting. And the spacing of 15 to 20 cm apart was used.

8.6 Fertilizer application, Inorganic and organic fertilizer application

In the research work the findings show that no one is using organic fertilizer in the farming, rather than they are using only inorganic fertilizer. The fertilizer used is mainly CAN and Urea.

In order to improve African egg plant production combination of inorganic and organic fertilizer is required, Organic fertilizer, good soil and water conservation practices without this, There will be soil degradation and the yield will be reduced.

According to (Holmer, 1998; Trüggelmann et. al., 2000), explain that the best yield and quality results for vegetable production are obtained, when there is a combination of organic and inorganic fertilizers is applied. Organic fertilizers such as manure and compost are required to improve the biological, chemical and physical properties of the soil while inorganic fertilizers supply the required amount of nutrients. Organic fertilizers supply the same essential plant nutrients as inorganic fertilizers.

Again (Haynes and Beare 1996) explain that, despite their high inorganic nutrient status, the soils under long-term vegetable production with low soil organic matter content the decline in soil organic matter under vegetables(African egg plant), observed as characteristic of that which occurs when undisturbed forest or grassland sites are converted to continuous arable agriculture. Such a decline is the result of both reduced inputs of organic material and an increased rate of organic matter decomposition. So women farmer in African egg plant are practices land degradation by continuously use inorganic fertilizer without addition of organic fertilizer.

Organic fertilizers in terms of animal manure are not available in the area because no one is keeping animal at lager capacity. In observation majority of the women are keeping one or two chickens or one or two goats and one or two pigs. This results in difficulty to get animal manure in the area.

8. 7 Pesticide application

On average, each farmer had worked on a farm for at least 10 years and applied pesticides themselves on their own farms, with the majority of farmers owning between 0.25 and 0.5 acres of plot.

According to the result, researcher found that pests infestation become a big problem in African egg plant production. Pesticide use is a common practice to control pests in African egg plant production in Tanzania. The availability of the chemical used to control red spider mites were *selecron*, women farmer lack the knowledge of effectively use of the pesticide as result pests develop resistance to the pesticide and this become a problem to the field and yield are affected and reduced.

Pests pose big problems in African egg plant production. The damage caused by them has led to farmers using pesticides. Farmers in Tanzania use chemical pesticides to control pests on African egg plant. All respondents sprayed their crops with pesticides to control pests. In fact, pesticides are used extensively on the African egg plant production.

Damage caused by pests and diseases on African egg plant has led to many farmers in Mvomero using chemical pesticides, even if they have received no training in the choice of chemicals or application technique. The survey has shown much overuse, misuse and abuse of pesticides, without adequate training, farmers are unable to make good decisions: knowledge of pesticide selection, application rates and timing is poor; different pesticides are often combined in the belief that the effect will be greater; re-entry periods after spraying and essential harvest intervals are not known.

One women said *“once I use half a litre of a selecron in my field to spray (half an acre) and the next day the insect appear again”*

8.8 Weeding

All the farmers weed manually. In my research the main methods of weed control were identified as manual weeding with hand hoe. According to the researcher observation weeding are done well by the women farmer.

All the (22) women farmer says that they weed their farm using hand hoe (16) say that they weeds two time and (6) say that they weed 3 times up to harvest. In my research the main methods of weed control were identified as manual weeding with hand hoe. Through observation weeding as one of management practice was done well. The difference is, others do it two times and others three times toward harvesting. It was not a problem. It depends on the area fertile one provide accommodation of many spices than low fertile area.

8.9 Soil conservation practices

In this village, I observe African egg plant production is still on the low side. This is mainly due to the fact that most of the women farmers do not conserve the soil. This mainly due to the amount of labor and money required for improved farming practices, which will improve not only crop yields but that the soil will be improved. Many farmers in Tanzania are not able to conserve the soil and cause soil degradation by encouraging soil erosion activities i.e. not using contour farming. In the sloping areas, there is organic matter loss without replacing it and nutrient run off

8.10 Constraint

Farmers specified the nature of each constraint water shortage mentioned water shortage between December and March as the main problem associated with the available irrigation water sources, ‘lack of adequate supply’ throughout the year and dry season shortage of water were the main problems of irrigation water.

Regarding farm inputs, complained of cost as the main factor, which makes it a constraint, followed by the quality of input e.g. pesticide available. On marketing of produce, farmers in Mvomero labeled the problem as cheap pricing of produce according to season. ‘All of the respondents complain that there is there is the crop pests more often and it results in crop damage (or failure). This, they have tried to control it by using known chemical *selecron*, but have not succeeded.

One of the women farmers says *“thank God as you come because you’re going to give us a solution of this disturbing insect as we continually spray selecron it doesn’t die”*

Low education on the management of the credit become the problem there is the credit union who provide credit to the women farmer “Pride international” this organization

provide loans to women farmer two years ago and repayment become a problem there were two person murdered them selves because of failing of repay the loan.

So upon my visit to the village Women farmers were asking me first *“you come for the credit provision, because we don’t like, because we are afraid of it”*.

This took me like half an hour to elaborate again and again why I went there. So my understanding on this credit issue was only about the education on this credit they lack. Poor infrastructure become a problem to the village there is no road and the area is surrounded by the mountains .This impede social service entrance to the village and the effect is overloading of women during transporting of harvest to the market. They need to walk over 26 km. from their farm to the market. Also no Extension staff visits the place because of that. This also gave me tough time visiting the village. I had to do a normal walk for more than two km.

8.11 Access to technological information

There is a learning process across the farming communities which are formed in a series of social interactions between different groups at various points in time and in different locations. The extension personnel have to understand that the learning among farmers is a process of iterative reflection that occurs when farmers share their experiences, ideas and their environment with other farmers. There is the importance of reflecting on what they know, how they know it which in turn leads to new understanding and as a result the learning processes among the farmers. Among the advantage of it there are the disadvantages of it if they are sharing wrong information. One woman says.

“When we go to the market everyone is complaining about red spider mites and no one has conquered the pest through selecron”.

Here they need information on how this pest can be killed only.

9. CONCLUSIONS

This chapter gives major conclusions and based on the results from the previous chapter (7). However, major points are picked in response to the discussion.

The study has shown that women farmers in Mvomero district are not successful in African egg plant production. This is because of the poor management practices they are practicing in African egg plant production due to difficult in following extension services recommended management practices in African egg plant production.

The recommended management practices that are not well followed among others are; variety selection, this is because most of the women farmers cannot afford to buy recommended seed variety which is tengeru white (yeboyebo). Farmers use locally prepared seed from their previous harvest which yield lower than tengeru white. Again fertilizer application becomes a major problem to the women farmer, because no one is using organic manure. They only depend on inorganic fertilizers and this result in poor yield and soil degradation. Crop rotation is done by rotating the crop from solanacea family which is tomato, sweet paper and egg pant which favor the re-occurrence of the same species of pests and diseases. Pesticide application becomes a problem to women farmers as they do not have the knowledge of effective use of the *selecron*, although it is available in the shop. As a result the pests develop resistance to the pesticide. Finally women farmers are not able to conserve the soil and water by not apply mulching and contour farming.

Apart from lacking good management practices, women farmers in Mombo village face other constraints which contribute to low production of African egg plant crops. These constraints include: very minimal access to extension services, poverty, water stress, low level of education and high prices of Agricultural inputs.

Included in the findings there are points which researcher finds as problem was education level of the women farmer. This can influences the production of the African egg plant to the women farmer. Women with high education status stand better chance to produce African egg plant with the profit as they can understand and use better management practices and they can practice it well.

Most of women farmers had low education level and Low level of education decreased awareness about extension information among women farmers such that they failed to follow recommended technologies. Lack of extension service and low education should equally understand that is a major constraint among women farmer in African egg plant production.

Another one is ownership of the land. Zibrilla and Salifu (2004) elaborate that land issue become major constraints to the women farmer in Mvomero. Under customary law women are not considered to have the right of holding the land. Ownership of the land can serve as a collateral in acquire credit facilities so as to enlarge the capital. This becomes a major constraint of the women farmer in Mombo village in the Mvomero district.

10. RECOMMENDATIONS

This chapter gives recommendations based on the conclusion from the previous chapter (8). However, main points are picked in response of the conclusion.

African egg plant as a one of the wild traditional vegetables is profitable since they are often more resistant to pests and diseases, easy growing, and acceptable to local tastes (AVRDC, 2003).

In addition, it is mainly women who select, propagate, gather, and market these (Price, 2003). As wild vegetables were not often marketed in Tanzania they contributed mainly to the daily domestic consumption. This contribution is highly important especially in terms of vitamins and minerals, yet, historically wild food plants, belonging to the women's field of responsibility, were often overlooked since men's activities received much more attention in research (Price, 2003).

According of the difficult found to the women farmer in following the recommendation advised by the Extension Department, Extension services could put more emphasis on the area of the problem as followed; Variety selection has an impact in increasing yield women farmer should be well taught, In order to reduce soil degradation women farmers could be well educated on the issue of land degradation and could be taught on the profit of organic manure. This goes hand in hand with the improvement of African egg plant production will require a combination of inorganic and organic fertilizer. Organic input and good soil and water conservation practices as recommended. Pesticide problem need an extension package missing on how better pesticide can be used to avoid tolerance of the pest to the pesticide. Crop rotation should be well educated in order to control pests and diseases of the same family crop i.e. solanacea. Water stress can be overcome by develop water right committee in the village so as to serve the right of the women farmer on water competition problem.

Considering the importance of vegetable in human life, there is need to involve government in providing grants, incentives and subsidies to these farmers so as to boost or expand their enterprise, reduce the input cost, derive enough income from it and depends on it as their livelihood.

There is a need for the government to specifically identify women as an integral part of its Extension services and develops gender-specific operational guidelines which will direct the extension activities of women farmers. Government extension workers should promote the formation of groups among women farmers and should target the obtainable women farmer groups to enhance horizontal knowledge sharing.

Consequently, there is the need for further studies on traditional and indigenous crops including African egg plant. Moreover, it is likely that research on traditional vegetables will show the way to new findings to contribute not only to science, women farmers but also to people's general well-being and food security (Schippers, 2002).

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Appendix 1: Photo of the Data collection areas

1. On the way to the farm.



2. In the market



3. In the African egg plant farm





4. Sokoine university of Agriculture, Horticulture unit



APPENDIX 2: HARVARD ANALYSIS TOOL

7.5 Harvard activity profile

This tool was used to organize information from women farmers to find out the Relevant productive & reproductive tasks. It answered the question that who does What.

Harvard activity profile

a) Productive activities				
African eggplant production	Women	Men	both Men & Women	Frequencies
Land preparation, (clearing)			19	
Digging/hoeing(Ploughing)		4	18	
Nursery Management	20		2	
Transplanting	22			
Fertilizer application	18		4	
Weeding	22			
Irrigation	22			
Chemical spraying		21		
Harvesting	12		10	
Transporting to markets	22			
Market the produce	22			
Custodian of earned cash		20		
Income generation				
Poultry keeping	6			
Cattle keeping				
Maize production			20	
Local brewing				
Goats keeping	1			
Pig keeping	3			
Other vegetable production			19	
Employment				
Business		18		
Reproductive activities Household activities (i.e. Child care, food preparation, cleanliness etc.)	22			

Source: Field results

The results from the interview in table 1 above show that all of the African egg plant Production activities are done by women except land preparation (4), and Chemical spraying (21) which are mostly done by men.

Out of 22 respondents, the Following are the respondents who said respective activities are done by women: Nursery management (20) Transplanting (22) Fertilizer application (18) Weeding (22) Irrigation (22) Harvesting (10) transporting produce to market (22).Market the produce (22).

However, vegetable production activities are shared by both men and women as follows
Ploughing (18) Nursery management (2) fertilizer application (4) harvesting (10).

All 20 respondents said that household activities are done by women (i.e. Child care, food preparation, cleanliness etc.),

This is to show that women work load is high compare to the men .these include production activities, and reproduction activities.

APPENDIX 3: FEMALE FARMERS' QUESTIONNAIRE

TITLE: A STUDY OF MANAGEMENT PRACTICES ON AFRICAN EGG PLANT PRODUCTION OF WOMEN FARMER IN MOMBO VILLAGE, MVOMERO DISTRICT, MOROGORO, TANZANIA

Respondent's number:

I: GENERAL INFORMATION

- 1) Age:
(a) 18-30 years: (b) 31-40 years: (c) 41-50 years:
(d) 50-60 years: (e) Above 60 years:
- 2) Marital Status:
(a) Monogamous married..... (b) Polygamous married.....
(c) Single..... (d) Divorced/Separated (e) Widowed
- 3) Number of people in the household
(a) 1-5 (b) 6-10..... (c) 10-15.....(d) Above 15.....
- 4) Level of education
(a) No education..... (b) Adult education(c) Primary education
(d) Secondary education
- 5) For how long have you lived in this village? years.

II: INFORMATION ABOUT AGRICULTURE

- 6) How big is your farm?
(a) Less than 1 acre (b) 1-5 acres
(c) 6-10 acres..... (e) More than 10 acres
- 7) How was your land obtained?
(a) Inherited..... (b) Bought..... (c) Rented
(c) Given by village government (d) Accesses a free land
- 8) What is the source of farm labor?
(a) Family members (b) Neighbors
(c) Work groups..... (d) Hired labor
(e) Other source, specify
- 9) Who in your household is the most responsible for African egg plant production in different stages and the time spent per day?

S/N	Activity	Responsible person				Time hours/day
		Wife	Husband	Children		
				Boys	Girls	
1	Land clearing					
2	Land ploughing					
3	Harrowing					
4	Planting					
5	Pruning					
6	Weeding					
7	Pesticide spraying					
8	Harvesting					
9	Ferrying the produce from the farm to the market					
10	Marketing of produce					
11	Custodian of earned cash					
		Responsible person				Time hours/day
	Income generation	Wife	Husband	Children		
				Boys	Girls	
	Poultry keeping					
	Cattle keeping					
	Maize production					
	Local brewing					
	Pig keeping					
	Other vegetable production					
	Employment					
	Business					
	Reproductive activities Household activities (i.e. Child care, food preparation, cleanliness etc.)					

Access and control profile

	Access		Control	
	Women	Men	Women	Men
Resources				
Land				
Equipment				
Labor				
Cash				
Education/training				
Other				

Benefit				
Outside income				
Asset ownership				
Basic needs(food, clothing, shelter etc)				
Political power				
Other				

10) For how long have you been growing African egg plant? years.

III: INFORMATION ON LAND PREPARATION AND OWNERSHIP

11) (i) Which equipment/machine used for opening and harrowing the land
 a) Tractor..... b) Plough by Maksai.....
 c) Hand hoe..... d) other, specify

(ii) Who owns equipment/machine used for opening and harrowing the land and all activity in the farm?
 (a) Men..... (b) Women.....(c) Both.....

(iii) Who has an access of all farm machine and equipment?
 (a) Men..... (b) Women.....(c) Both.....

(iv) Who has a control over all farm machine and equipment?
 (a) Men..... (b) Women.....(c) Both.....

Decision making

(v) Who has a power in decision making in the household
 (a) Men..... (b) Women.....(c) Both...18.....
 (d) Children.....

IV: INFORMATION ON VARIETIES OF SEED AND ITS AVAILABILITY

12) Do you buy African egg plant seeds in all seasons?
 (a) Yes (b) No.....

13) If the answer in question (15) is "No", then where do you get African egg plant seeds?
 (a) From the neighbors
 (b) Selecting good seeds from the harvested crop

(c) Others, specify

14) Did you grow African egg plant in 2009/2010 seasons?

(a) Yes (b) No.....

15) If the answer in question (14) is 'Yes', then what variety of African egg plant did you grow?
.....

16) In the 2009/2010 season how much yield did you get per acre?

(a) Less than 1 bag (b) 1-3 bags (c) 4-6 bags.....
(d) 7-10 bags..... (e) Over 10 bags

V: SOWING AND TRANSPLANTING ACTIVITIES

17) How do you sow the seed and where.....

18) How do you transplanting the seedling.....Spacing.....

19) At what time regarded are best for the transplanting activities.....

VI: APPLICATION OF INORGANIC FERTILIZER

20) Have you ever applied inorganic fertilizers in your farm when growing African egg plant?

(a) Yes (b) No.....

21) If the answer in question (20) is 'Yes', then what type and amount of fertilizers did you use in your farm in growing African egg plant?

Type	Amount (bag/kg)/ hectare
(1) NPK.....
(2) TSP.....
(3) SA.....
(4) Urea.....
(5) Other.....

22) For how long have you been applying inorganic fertilizers in your farm?

(a) 1-2 years (b) 3-4 years (c) Over 5 years

VII: APPLICATION OF ORGANIC MANURE

23) Have you ever applied organic manure in your field when growing maize?

(a) Yes (b) No.....

24) If the answer in question (23) is 'Yes', then what type and amount of manure did you apply in your farm when growing African egg plant.

Type of manure	Amount (bag/kg)/hectare
----------------	-------------------------

(1) Marejea.....
(2) Compost manure.....
(3) Others, specify.....

25) If you did not use organic manure in your farm, what are the reasons for not using it?

- (a) Manure is not available in the village
- (b) Manure is expensive
- (c) Lack of labor to transport it to the farm.....
- (d) Lack of manure transportation facilities
- (e) Others, Specify.....

26) How much yield did you get in the 2009/2010 season when you applied the organic manure you indicated in question (25)?

- (a) Less than 1 bag
- (b) 1-5 bags.....
- (c) 6-10bags.....
- (d) Over 15 bag.....

VIII: PESTICIDES

27) Have you ever used pesticides in African egg plant?

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

28) If yes, what type and quantity of pesticides do you use in your African egg plant?

Insect pests	Insecticide	Quantity /hectare
1.....
2.....
3.....
4.....

Maintenance of soil fertility

29) Which activities do you use to maintain soil fertility?

- a) Mulching
- b) Others.....

30) Why do you mulch?

- a) For soil moisture maintenance
- b) For soil organism control
- c) Other, specify

IX: HERBICIDES

31) Have you ever used herbicides in African egg plant?

(a) Yes.....(b) No.....

32) What type and quantity of herbicides did you use in your African egg plant?

Type of herbicide	Quantity/hectare
1.....
2.....
3.....
4.....

X: WEEDING

33) Do you weed your African egg plant field?

(a) Yes (b) No.....

34) If yes, how often did you weed your African egg plant fields?

(a) 1 time (b) 2 times (c) 3 timesd) Over 4 times.....

XI: HARVESTING

35) What amount of African egg plant crop harvested in bags per ha (refer to the 2009/2010 season)?

36) How is the utilization of African egg plant used in your family

- (a)Marketed.....
- (b)Consumption.....
- (c)Other, specify.....

XII: INFORMATION ABOUT OTHER SOURCES OF INCOME

37) What other income generating activities do you have?

- (a) Crop production.....
- (b) Livestock production.....
- (c) Petty trade.....
- (d) Other

XIV: OTHER INFORMATION

38) (a)What challenges are you facing now in your production? And what strategy do you have to solve these problems?

b) What is the contribution of African Egg plant to the women farmer livelihood?

39) How do the female farmers exchange/obtain information about the mgt. practices and what is the role in this of the extension service.

Thank you for your cooperation