

THE IMPACT OF AGRICULTURAL MODERNIZATION ON
WOMEN'S ACTIVITIES

by

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TABLE OF CONTENTS

	<u>PAGE</u>
DECLARATION	i
APPROVAL	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
 <u>CHAPTER</u>	
I INTRODUCTION	1
1:1 Review of Literature	5
1:2 Rationale	13
1:3 Methodology	15
1:3:1 Sampling	15
1:3:2 Data Collection	15
1:3:3 Data Analysis	16
 II BACKGROUND TO THE STUDY AREA	
2:1 Location	17
2:2 Infrastructure	17
2:3 Population Characteristics in General	19
2:4 Sample Characteristics	20
2:4:1 Marital and Family Sizes	20
2:4:2 Education	21
2:4:3 Age and Sex distribution	23
2:4:4 Economic Sources	24
2:4:5 Summary	26

	<u>PAGE</u>
III WOMEN AND FARMING ACTIVITIES	29
IV WOMEN AND DOMESTIC ACTIVITIES	47
V AGRICULTURAL MODERNIZATION AND FERTILITY ISSUES	60
VI CONCLUSION	68
APPENDIX	73
REFERENCES	83

LIST OF TABLES

TABLE

2:1 Mean Distances to Services Available In the Area	18
2:2 Marital Status of Head of Households	21
2:3 Education of Head of Households	22
2:4 Age Distribution of Heads of Households	23
2:5 Sex Distribution of Heads of Households	23
2:6 Main Crops Grown	24
3:1 Division of Labour in Stumping by Farm Types	30
3:2 Division of Labour in Hoeing and Planting	31
3:3 Division of Labour in Ploughing by Farm Types	33
3:4 Division of Labour in Weeding	35
3:5 Division of Labour in Application of Fertilizer	37
3:6 Division of Labour in Harvesting of Crops	39
3:7 Division of Labour in Shelling and Bagging	41

TABLEPAGE

4:1	Division of Labour in Food Preparation	47
4:2	Division of Labour in Collection of Firewood	49
4:3	Division of Labour in Cleaning of House	50
4:4	Division of Labour in Water Drawing	50
5:1	Reasons for Desire of More Children	60
5:2	Child Labour	61
5:3	Total Number of Desired Children	63

DECLARATION

I, Harriet Munamoono Ntalasha, solely
declares that this dissertation has not
previously been submitted for a degree
in this or any other University.

Signed: H. Ntalasha.....
Date : ...14-05-86.....



APPROVAL

This dissertation of Ntalasha is approved
as fulfilling part of the requirements for
the award of Master of Arts in Sociology.

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ABSTRACT

This work is based on the data from a research project: The Population Consequences of Agricultural Modernization, funded by the International Development Research Centre, Ottawa, Canada. I wish to express my gratitude to this organization.

The prime concern of this study is to investigate the impact of agricultural modernization on women's workload. Most studies such as those of Mabeza (1977), Muntemba (1979), Achola (1976) have concluded that improvements in agriculture lead to the displacement of women from farm work into almost entirely domestic tasks. The present study, on the other hand shows that agricultural modernization places more demand on female labour. Agricultural modernization makes it possible to open up more land due to the use of ploughs and tractors. This means more time and labour is needed for hoeing, planting, cultivation and harvesting of large fields. In the absence of hired labour, this places more work on women who provide much of the labour needed for these tasks. The study further shows that women under farms that have experienced agricultural modernization perform additional tasks such as ploughing, application of fertilizers and pesticides, shelling, bagging and

and transporting the crop to the markets. This study, therefore, concludes that agricultural modernization leads to an increased involvement of women in agriculture.

Finally, the study also shows that agricultural modernization, in the absence of outside labour favours high fertility, as children assist in performing the increased workload.

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CHAPTER ONE

INTRODUCTION

The aim of this study is to investigate how agriculture modernization affects women's workload, both domestic and farm tasks. Farm tasks include weeding, planting, hoeing, harvesting and the storing of crops. Among domestic tasks, are child bearing and rearing, gathering of firewood, water drawing, food preparation and cleaning of inside and outside the house.

In this study, indicators of agricultural modernization include the adoption of modern equipment such as the plough, tractor, the use of modern inputs such as pesticides, fertilizers, improved seeds, the growing of cash crops and **an increase in** the area undercultivation. For the purpose of this study, therefore, agricultural modernization is defined as the shift from subsistence farming where hoes and axes are the main tools of production to the use of modern implements such as the ploughs or tractors, harvestors and cultivators for clearing the land, levelling, planting, cultivation, harvesting and improvements in storage facilities of homestead crops. This term further refers to the adoption of the use of modern inputs such as fertilizers, pesticides, improved seeds, an increase in the area under cultivation and increase in yields per hectare.

In order to be able to examine the effects of agricultural modernization on women's workload, the sample of this study is

divided into four groups of farmers namely, peasants, semi-peasant, improved and more improved farmers. Peasant farmers are those who have not experienced any of the above indicators of agricultural modernization. Their aim is to produce enough for subsistence, and the hoe and axe remain **their main** tools of production. The semi-peasants are those farmers who have adopted the use of ploughs, pesticides, fertilizers and improved seeds but at a very low level and their area under cultivation only ranges from 6 and 10 hectares. These farmers, because of the adoption of modern techniques may produce a surplus for sale but their main aim remains that of producing enough for home consumption. The improved farmers are those who have adopted the use of these modern techniques at a higher level than the previous group of farmers and have increased their area under cultivation to twenty hectares. Their main aim is to produce a surplus for sale but they are not yet at the level of more improved farmers **who have** adopted these modern techniques at a much higher level. The minimum area under cultivation for the more improved farmers is twenty-one hectares.

The main purpose for dividing the sample into the four groups above is **to help** us see the situation of women before and after the introduction of agricultural modernization. In this way, we will be able to see **the effect** of agricultural modernization on women's workload.

Since the central theme of this study is to investigate the effect of agricultural modernization on women's workload,

the study poses the following questions: -

- a) Does agricultural modernization lead to an increase or decrease in women's farm work?
- b) How does agricultural modernization affect women's time and labour allocation to both farm and domestic tasks?
- c) How is agricultural modernization related to fertility and women's child bearing role?

At independence, Zambia had largely subsistence **farming**. There were only a handful of **commercial farmers**. The latter were mainly white settlers. There were very few African emergent farmers. The new government, therefore, saw the need to develop the rural areas through the programmes of rural development (ILO, 1977). These policies and programmes were aimed at curing the rural-urban imbalances left by the colonial administration, increasing the rural populations' productive activities and raising their standard of living. One method was through cooperatives set up in 1965 (Klepper, 1979). These cooperatives included producer societies, farm settlement **societies** and consumer cooperatives.

Intensive development zones was another method started through the aid from the Food and Agricultural Organization and the International Bank for Reconstruction Development. Tractor hire schemes were introduced in 1966 and village reconstruction

centres were introduced in 1977 and by 1976, extension service had been introduced. In addition to this, improvements of feeder roads and market system followed (ILO, 1977 : 101). Credits and loans were also introduced through the Agricultural and Finance Company (Maimbo, 1980; Due, 1978; Marter and Honeybone, 1976).

The government's aim for introducing these programmes was to help the rural population increase their crop production so as to improve their living since agriculture is the main source of income for most rural households. Increased production would also help the country to achieve self sufficiency in food production and to feed the urban population which has been rising rapidly since independence. The data available indicate that the urban population of Zambia has almost double since independence (1980 census). Mwanza (1979 : 28) points out that :

"It is evident that the proportion of urban population has grown rapidly rising from about 20% of the total population in 1963 to 29% in 1969, 35% in 1974 and 38% in 1977. This makes Zambia one of the most urbanized countries in Africa".

Such a big population requires more food production within the country if the country is not to import food from other countries. By **agricultural modernization** or the introduction of the above mentioned programmes, the government also aims at diversifying the economy from dependence on copper as the only source of foreign exchange.

These policies and programmes of rural development have resulted in some degree of agricultural modernization in Zambia. Most of the studies carried out in Zambia to-date only show how women have been left out by these programmes and policies. Very little has been done on how modern agriculture affects women's workload. The present study therefore, aims at examining this effect.

1:1 Review of Literature

Africa has been a region of subsistence farming, a type of farming in which women have played an important role especially when men migrate to towns (Vletter, 1982; Kennedy, 1972; Watson, 1974). According to Boserup (1970), in Asia, where the plough has been the main tool for production, men, not women play a major role in agriculture. In Africa, on the other hand, the hoe culture places more work on women. Under the hoe culture, division of labour tends to be gender based. Men do mostly the clearing of virgin land while women are responsible for the burning of logs, planting, weeding, harvesting, and preparing of the crop for consumption (Boserup, 1970; Irnon, 1981; Richards, 1939; Mbilinyi, 1976; Hayfkin and Bay, 1971; UNDP, 1980).

However, Boserup (1970) shows that there were **exceptions** to this general rule for sometimes women may also help in the felling of trees. Using data from Central African Republic, Boserup (1970) also shows that women were not always exempted from hard **work** in some of the hoe culture regions. From the same

data, Boserup shows that women do most of the tasks in subsistence farming while the performance of the men is sometimes limited to being present in the fields to supervise the work of women.

Literature on rural development indicates that women do a lot of work in the domestic and child rearing activities. In her study of Ghanaian village women, Bukh (1976) shows how women combine agricultural, domestic and child bearing and rearing activities.

"The women are working too hard. In the morning, first they cook and then go with refuge, then they go to the farm and work, carry back firewood and food crops which is very heavy work. Then they go for water, then they pound fufu - all the time pregnant or with children on their backs, and also the selling at the market for hours. Then the men just come back from the farm and take their baths and sit down. And even if one asks them to go for water, they would refuse. Only a few men help their wives carrying firewood".

The question this study raises is, "What happens to women's labour organization with the shift from subsistence farming to improved farming"? This issue has been least researched on. Some studies from different countries focus on how agricultural modernization leaves out women by introducing farm training, credits, machinery, improved seed, fertilizer, techniques and knowledge to men only (Dumont, 1975; Spring and Hansen, 1979; Muntemba, 1976; Achola, 1977).

According to such studies, the introduction of implements such as the plough and tractor which tend to be male-operated, women's labour is less needed. Other studies such as that of

Mabeza (1977) show that women as a result of agricultural modernization, have been excluded from "development process". In her Mumbwa study, Mabeza classifies farming in three categories namely, most advanced where women's labour is not needed on the farm because such farms are highly mechanized, medium-sized category, which are in the process of transition where women are in the process of being squeezed out and third subsistence, in which both men and women are incorporated.

Many researchers such as Pala, 1976; Muntemba, 1979; Mabeza, 1977, focus on the issue that both in the colonial and post colonial periods, agricultural programmes and policies aimed at improving agriculture tend to favour men. In these studies women are shown to be excluded from farming knowledge. They argue that in this way, women are being displaced from commercialized agriculture and are being pushed more and more in subsistence and household tasks. Young's (1980 : 4) writing is a representative of this school. She argues that:

"There seems to be almost a universal agreement that one of the most common effects of development is to relegate women to the subsistence sector. Technology, credit and knowledge are concentrated in the hands of men while women are assigned the no-modern subsistence sector. In other words, production for consumption" (Young, 1980 : 4).

Other studies such as those of Boserup, 1970; Mead, 1976, underscore the view that the introduction of new techniques such as the plough mainly operated by men lead to the displacement of women from improved agriculture. Mead (1976 : 10) concludes that:

"Hence women are converted from producers to consumers only".

Boserup (1870) cites the situation **in Asia** where the plough is the predominant tool. She argues that in these regions women do not do much agricultural work because work is almost exclusively done by men with the help of draught animals. Her study shows that in the regions of plough culture, even in cases where women take part in agriculture, women are less active than men. In Zambia, studies such as those of Spring and Hansen (1876) among the Lovale people, North-Western Zambia, stress the same point that women are being displaced by agricultural development. According to these two, women are being underdeveloped instead of being developed.

However, a few studies such as those of Long (1968), among the Lala people of Serenje District, **Central** Province of Zambia and Mbulo (1980) among the Tonga of Southern Province of Zambia, Mazabuka District, discuss the extent to which women do participate in handling of modern technology such as the plough. In his study Long (1968 : 22) mentions that:

"Though the plough is mostly considered a male task, frequently a wife or an elder daughter **lend** a hand if no other males are available".

His analysis also shows that where a man has more than one wife the women assist each other in ploughing. Similarly Mbulo (1980) in his Mazabuka study found out that women do handle a number of modern implements not only the plough. He shows that in addition women operate cultivators and planters.

Mbulo argues that this becomes more evident where men are absent most of the time looking for inputs, meeting extension officers for advice. He points out, therefore, that

"Although women in the settlement schemes are given scope to participate in the agricultural production, this is only at the level of direct physical labour while the tasks relating to the skills of financial and technical and management of the farms are still monopolized by men".

He concludes that most of the work in the settlement schemes is done by women and children of both sexes.

The above conclusion reached by Mbulo implies that since women have increased workload due to agricultural modernization they prefer to produce more children who can assist them. This may be more pressing among monogamous families where there is usually only one elderly female. In such cases the more children the woman has, the more assistance she will have. This can lead to high fertility.

"the value of child labour can be a powerful incentive for poor women to have large families" (Ceres, 1983 : 44).

Modernized agriculture such as the use of the plough, tractor and improved seeds can lead to the need of increased women's labour in farm work even in cases where women do not necessarily operate the modern implements. This is likely to occur in a transitory stage highly mechanized farming. In this case, agricultural modernization implies more work for women as they will be required for weeding big fields opened up through the use of plough or tractor. This may also involve

The above argument indicate that women participate in commercial farming contrary to the earlier studies (those of Muntemba, Spring and Hansen, Pala) which show that women are displaced from agriculture with the introduction of modern technologies. This study further shows that women's work-in farming increases and that on top of this, women still have to carry out their domestic tasks and child care.

Studies such as those of Hopkins (1967), Drasse (1981); Brian (1976); Ahme (1983); UNECA (1981) also indicate that women do participate in cash-crop production. Brian and Bukh (1976) indicate that women do not only participate in commercial farming but that they have to combine it with food crop production. Bukh's (1976) findings from rural Ghana show that about 50% of women married to commercial farmers had separate farms of their own from which they got private incomes used partly for household expenses and school-going children. The study also shows that since women have their own plots and at the same time required to work on commercial farms, the time they have to work on their own fields competes with the time they have to work on cash crop farms. This conflict may work against women because they are usually given plots by their husbands and the husbands who need their wives for commercial production may not be willing to allocate them plots.

These findings show that agricultural modernization leads to increased workloads on women as they must work on both cash-crop and food crop farms in addition to their domestic activi-

harvesting more produce due to the use of high yielding seed. Women's labour will also be required for the preparation of the produce for sale (Ahmadi, 1980; Loufti, 1980; Tinker and Bramsen, 1976; Ahmed, 1983; O'Kelly, 1977; Isaacman and Stephen, 1980). The above studies show that the introduction of modern technology has created new inequalities between rural men and women. Ahmadi (1980 : 430) mentions that:

"In many cases, the introduction of modern techniques has increased already heavy burdens of work for women especially during peak period".

She further remarks that:

"At the same time the jobs which women perform on the farm and in the household such as weeding, transplanting, harvesting and household chores generally gathering firewood, fetching water, finding cereals and spices) has not been materially lightened by new technologies even though it is recognized that these tasks are especially time consuming and physically tiring" (Ahmadi, 1980 : 430).

Palmer's study (1971) points out that except in cases of women who are the wives of successful capitalist farmers, rural women fill their day with a wide range of activities which sustain the households. Palmer (1971 : 99) argues that

"In addition to five or six hours of labour, intensive preparation and cooking of food, of household cleaning and child care, they may spend several hours fetching and carrying heavy loads of water and fuel without which they cannot wash and cook. If animals are used, women, sometimes children are usually responsible for taking them back, giving them food and keeping them clean. On top of all this women work up to eight hours a day cultivating crops. They invariably rise at 04.30 and 05.00 hours perhaps several hours before their husbands and usually are the last to retire at night".

ties. This leads to women being over-worked and this may lead to low life expectancy among rural women. UNECA (1974), Fagley (1970), Carr (1968), Loutfi (1874), ECA (1980) are in line with this argument. For example, Fagley points out that:

"In Zambia, the working day of rural women is estimated to be as long as 16 hours during planting season ... There is some evidence that such over-work can affect the life expectancy of rural women.

Loutfi also mentions that:

"The green revolution in a village may expand total output considerably. But higher land productivity, intensive application of fertilizer involving pesticide and water increase certain labour intensive activities which often women carry out such as weeding, harvesting, and for which they have additional time only at the expense of their health and that of their children! Because of the amount of work, these women and their children fail to maintain their nutrition value".

Available literature also indicates that despite the fact that women do most of the farm work even in the case of improved farming, credits, loans, extension services and other inputs for increased crop production are directed to the household head, the man (Carr, 1968; Greenstreet, 1981; UN Policy Roundtable, 1978; Boserup, 1970; UNECA, 1974). These studies further indicate that the exclusion of women, the main agricultural producers from modern agricultural knowledge can lead to the failure of agricultural programmes. Carr (1980 : 40) points out that:

Thus in one West African country, although extension workers had shown men the correct depth to dig holes, coffee continued to die due to bent tap roots because it was women who were doing the digging".

The above finding implies that there is every need to incorporate women in development programmes if rural development is to succeed. These studies also indicate that because of the channelling of credits, loans, training through men, women automatically lose decision making over cash from the sale of crops. In this way, women become unpaid labourers.

In order to have a source of income over which they can decide, women usually engage in petty trading such as the sale of food and drink (Lawson, 1976; Carr, 1968; Ahmed, 1983). The cash gained is used for buying household goods such as soap, salt, paraffin, relish and other domestic necessities. These studies imply more additional work for rural women. Thus, rural women have to participate in cash crop production, maintain their food crop fields, still carry on their domestic activities and on top of all this, carry out trading activities so as to have a separate source of income.

1:2 Rationale

Women have a key position in African productive systems. Despite this key position, research on agriculture in Africa to date has largely ignored the impact of modern agriculture on their workload. Such kind of information is lacking yet it is very essential. It is hoped that this study by providing some concrete information, will provide data for policy-makers and planners so that in planning, the consequences of improved agriculture on women is noted.

It is also hoped that this study will show the need for new directions in research which will provide a basis for implementation of practical programmes. This study, as already mentioned above, aims at drawing the attention of planners and researchers in Zambia to the above problem.

In addition, it is felt that the conceptual and methodological conclusions drawn from the Zambian experience can be of use for development efforts in other African countries despite variation in structural positions.

1:3 Hypotheses

From the review of literature, the following hypotheses have been generated:

1. Agricultural modernization does not lead to women's exclusion from farm work.
2. Under conditions of agricultural transition from subsistence to mechanized farming, women's workload in farming increases.
3. Agricultural modernization, at the level of household labour leads to high fertility.

1:4 Methodology

1:4:1 Sampling

This study is based on a sample of 200 households chosen from four agricultural camps: Moon, Leya, Keezwa,

Kabwanga and one settlement scheme, Mulungushi in Mumbwa District. From one site, a total of 40 households were chosen. 20 households were randomly selected using random numbers from the lists of return sales which are kept at the depots of NAMBOARD and Lint Company. The other 20 were selected on the nearest neighbour basis.

1:4:2 Data Collection

This study uses part of the data collected by a larger survey on population consequences of agricultural modernization funded by the International Development Research Centre, Ottawa, Canada. Data were collected through the use of a structured questionnaire. There were five research assistants, one is the author of this work. All the research assistants were fluent in both English and the main local language in the area, Ila. The questionnaire was in English but the interviews were in the vernacular language. The assistants were trained for some days in the technique of interviewing.

1:4:3 Data Analysis

The data collected in this study was analysed using Computer. Very basic computations were used based on

frequencies and cross-tabulations.

The variables relevant in this analysis of data were division of labour, type of farm work, farm types, work loads and family sizes in both subsistence improved farms.

CHAPTER II

2. BACKGROUND TO THE STUDY AREA

2:1 Location

Mumbwa district is situated in the North-West of Lusaka, the capital city of Zambia. The study area itself stretches from Kabyanga in the east on the Lusaka-Mongu road, Keezwa in the west, Kabwanga in the north and Moono in the south.

2:2 Infrastructures

The whole district has one tared road, the Lusaka - Mongu road, which passes through the southern part of Mumbwa town. There are, however, a number of all-weather roads connecting agricultural depots to the tared road. There are 4 clinics, one district hospital, 8 agricultural depots, one secondary school and 29 primary schools in the district. Both the secondary school and the hospital are in Mumbwa town. There is also quite a number of groceries and shops, mainly in the shopping complexes of Mumbwa town.

The mean distance to the roads from households in the sample is 2.2 km, to the schools 2.9 km and agricultural depots 3km. Shops/groceries and health centres are the most scattered or very far from interviewed households. The mean distance to clinics was 21.0 km and to shops 23 km. This indicates that people have to walk long

distances to clinics and shops. The mean distance to the grinding mills is only 2.8 km.

Table 2:1 gives a summary of mean distances from the interviewed households to the different infrastructures available in the area.

Table 2:1

Mean Distances to Services Available in the Area

Services	Mean distances in Kilometres
Central Province Cooperative Marketing Union	3.7
Agricultural Camps	3.5
Schools	2.9
Clinics/Health Centres	21.0
Shops	23.0
Mills	2.8
Roads	2.2

2:3 Population Characteristics in General

According to the 1980 Census, Mumbwa district has 41,055 males and 40,291 females, a total population of 81,976. Mumbwa township, the only urban centre in the district has 3,811 males, 3,759 females, a total population of 7,570.

The area is ethnically, heterogeneous with Lenjes, Ilas, Salas, and Kaondes as the main ethnic groups. The Lenjes are mainly found in the eastern part, the Ilas are a dominant group in the west. The central part of the study area is characterized by a mixture of all these ethnic groups. The area, especially the western and eastern parts, has a considerable number of people of Zimbabwean origin, mainly the Ndebeles and Shonas, locally known as the Zezulus. These came to the area during the 1950s as a result of the colonial government's land reform measures in Southern Rhodesia. In addition to the above ethnic groups, there is also a considerable percentage of Lozi and Lovale people, from Western and North-Western provinces. These people migrate to the area mainly in search of wage employment from rich farmers in the area. Within Mumbwa township, there are people of other races, Asians who make up the largest group, coloureds and Europeans (1980 census).

2.4 Sample Characteristics

2.4.1 Marital and Family Sizes

There are both monogamous and polygamous families in the study area with a high frequency of polygamy among the improved and the more improved farmers. There are also extended and nuclear families. However, the extended family systems were found to be higher than the nuclear ones, 66.4% and 33.6% respectively. The household sizes are large, an average of ten persons per household. Household sizes were also found to be larger among farmers who had experienced agricultural modernization than those who haven't. One contributing factor to the larger household sizes among the improved farmers is as already mentioned above, the higher frequency of polygamy among these farmers than peasant farmers. More wives may mean more children and hence large household. Extended family obligation is another factor leading to large family sizes and finally, the system of adopting children of absent and dead relatives was very common.

Most of the households interviewed were married couples with quite a high rate of divorces. Table 2.2 gives a breakdown of marital status of households interviewed.

Table 2:2

Marital Status of Heads of Households

Marital Status	Percentages
Single	5%
Married	63.5
Divorced	24.5
Separated	3.5
Widowed	3.5
Total	100.00%

N = 200

The above table indicates that while most of the farmers interviewed are married, divorce rate is also high (24.5%). Separation and widowhood are also not uncommon in the area (3.5%) for both. Most of those married at the time of the study have been married more than once. The single category, 5.0%, consisted of young men and women who have never been married before but running their own households. Some of the single women had children, mainly with different men. Because most of the households interviewed were married, most of the households were therefore male headed. The female headed households consisted of single women, divorced,

separated and widowed.

2.4.2 Education

A considerable number of farmers, especially the improved and the more improved farmers were able to read and write. Table 2:3 gives distribution of the 200 household heads interviewed and their educational status.

Table 2:3

Education of Heads of Households

Total number of years in School	Percentage
No formal education	42.0
Grades 1-2 formal education	34.5
Grades 3-4 formal education	15.5
Grades 5-7 formal education	4.5
Grades 8 and above formal education	1.0
Not applicable	2.5
Total	100 . 0 %

N = 200

The table indicates that 42% had no schooling, at least 24.5% have spent a maximum of 2 years in school, 15.5% spent a maximum of 4 years, 4.5% spent a maximum of 7 years while only 1% spent over 7 years in school.

2.4.3. Age and Sex Distribution

Table 2:4

Age Distribution of Heads of Households

Age	Percentage
0 - 14	0.0
15 - 30	26.5
31 - 40	42.5
41 - 59	21.0
60+	10.0
Total	100.00%

N = 200

Table 2:5

Sex Distribution of Heads of Households

Sex	Percentage
Males	60.0
Females	40.0
Total	100.00%

N = 200

Table 2:4 gives age distribution while table 2:5 gives sex distribution of the heads of households interviewed. The data in table 2:4 shows that most of the household heads in the sample fell between the ages of 31 and 40 years (42.5%), 26.5% fell between 15-30 years, 21% were between 41 and 59 years and only 10% were over 60 years old. The table on sex distribution (table 2:5) shows that most of the household heads interviewed were males (60%) and that 40% were females. This means that most of the households in the sample were headed by males.

2.4.4 Economic Sources

In Mumbwa district, the main source of income is agriculture and the main crop grown is maize. This crop is grown by nearly every household. Maize is grown both as a food and cash crop. Cotton and sunflower are the other crops grown in the area. Table 2:6 gives a breakdown of the main crops grown by the sampled households.

Table 2:6

Main Crops Grown

	Maize	Cotton	Sunflower
Yes	97.5%	60.0%	32.5%
No	2.5%	40.0%	67.5%
Total	100.0%	100.0%	100.0%

N = 200

The above table indicates that 97.5% of the households interviewed grew maize and only 2.5% did not grow maize. For cotton, it was grown by 60% of the households while sunflower was grown by 32.5% of the households interviewed. Cotton, though grown more than sunflower is more time and labour consuming. This crop needs a lot of pesticides, more spraying and weeding has to be done more than once. Picking of the crop also needs more careful attention as any dirty will reduce the value and hence economic returns from the crop. Besides, seeds for planting have to be tested, hence to be bought every season from Lint Company. Despite these expenditures, people grow it mainly because cotton is marketed by an efficient institution, Lint Company of Zambia. The farmers who grow cotton are paid on the spot which is not the case with maize and sunflower which are marketed by the Central Province Cooperative Marketing Union. Prompt paying acts as an incentive to farmers who grow cotton despite its demands.

For most peasant farmers and semi-peasant farmers, maize is sold directly to the marketing union. Cash from maize is realized indirectly through the brewing of beer. In this way, they hope to secure higher cash returns and also a continuous source of cash for households' necessities such as soap, salt and lighting fuel.

Apart from crop growing, animal husbandry is another source of income. About 96% of the households interviewed owned cattle and only 4% did not own cattle. Cattle are sold from time to time to Cold Storage Board of Zambia. Cattle, however, have other purposes apart from economic. They are traditionally valued for inheritance purposes, status, bride price, milk and other purposes such as slaughtering at funerals and initiation ceremonies. Most of the cattle are even attained through inheritance or bride price. Other animals reared include goats and pigs. Also chickens and ducks are kept for their meat and eggs. These are also sold for cash returns.

2.5 Summary

It is to be stressed that, Mumbwa is a multi-ethnic area consisting of mainly the Ilas, Salas and Kaondes as the original groups of people in the area. The Shonas and Ndebeles from Zimbabwe also make up a considerable part of the population in the area. The area also consists of the Lozi and Lovale people from the nearby Western and North-Western provinces.

There are both nuclear and extended family systems, polygamous and monogamous families in the area. Average size of households is 10 persons. Most of the households

are headed by males as the sample consisted mainly of married couples. Divorce rate and widowhood are not uncommon among the interviewed farmers. Most of the household heads interviewed fell between the age of 31 and 40 years.

Illiteracy rate among the interviewed households was quite high though there were some farmers who could read and write. Most of those who could read and write were those farmers who had experienced some modern agriculture.

Farming is the main source of income for the sampled households with the main crops grown being maize, cotton and sunflower. Beer brewing is also an important source of income especially for peasant and semi-peasant farmers. This gives them a continuous source of income throughout the year. Brick laying, fishing, charcoal burning, basket and mart making, making of hoes and axes are other sources of income. Cattle, chickens and eggs are also sometimes exchanged for cash.

Facilities in terms of clinics, depots, roads and schools are available though health centres and shops are rather far away. This involves people walking long distances to reach the nearest shop or health centre. Where communication is concerned, there are many all weather roads to depots making the marketing of the agricultural

produce easier compared to other areas in the country.

CHAPTER III

WOMEN AND FARMING ACTIVITIES

This chapter focuses on two hypotheses. The first is that, "with the introduction of modern techniques, women are not excluded from agriculture". The second hypothesis is that, "the introduction of agricultural modernization increases women's farm work". In order to be able to test these hypotheses, four types of groups of farmers were considered, peasant farmers, semi-peasant, improved and the more improved farmers. These different categories of farmers represent different levels of agricultural modernization. It was hoped this categorization would help us see the situation of women in subsistence economies and of those who have experienced some agricultural modernization.

In order to see the effect of agricultural modernization on women's workload in farming, the different farming activities are examined. The first farm activity considered is stumping and clearing of new fields. Table 3:1 gives the relationship between the division of labour in stumping by farm types and gender.

Table 3:1

Division of Labour in Stumping-types and Gender

	Farm - Types			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Male	4.5%	57.1%	60.9%	60.0%
Females	0.0	26.6	21.7	26.6
Employees	0.0	4.1	2.9	0.0
Relatives	0.0	2.0	0.0	0.0
Children	0.0	2.0	5.8	6.7
Not applicable	95.5	8.2	8.7	6.7
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 152.93 with 20 degrees of freedom
significance = 0.00

This table shows that there is no clear relationship in participation of females, employees and relatives in stumping with the increase in acreage under cultivation. However, there is an increase in children's participation with the increase in acreage. No woman took part in stumping among peasant farmers. The data in the table indicate that under all types of farming, stumping and clearing of new fields was almost exclusively carried out by males. This finding is in line with that of Levine

(1980) who shows that clearing of new fields was mainly carried out by males. These relationships are significant at 0.01.

Hoeing and planting was another farm activity examined. This task is carried out by females. Table 3:2 gives percentage distribution of the different members of households responsible for this task for the different types of farming.

Table 3:2

Division of Labour in Hoeing and Planting by Farm Types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Males	0.0%	8.2%	13.0%	20.0%
Females	4.5	69.4	66.7	46.7
Children (males)	0.0	2.0	4.4	6.7
Children (females)	0.0	4.1	4.1	13.3
Relatives	0.0	2.0	1.4	0.0
Not appli- cable	95.5	16.3	10.1	13.3
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square - 144.19 with 20 degrees of freedom significance = 0.00

This table shows that under all types of farming, the participation of females in this activity is higher than that of males. Among peasant farmers, there are 4.5% of the households where females plant and hoe and no men do so. Among semi-peasant farmers, there are 69.4% of the households in which women hoe and plant compared to only 8.2% of the households where men are found to do so.

Among improved and more improved farmers the participation of women in this activity is similarly higher than that of men (66.7% females as compared to 13% males among improved farmers and 46.7% females as compared to 20% males among the more improved farmers).

The table also shows that the level of participation of children of both sexes generally increases with the increase in acreage under cultivation. There is also an increase in the level of participation of males with the increase in acreage.

The above findings indicate that under all types of farming, the tasks of planting and hoeing are mainly carried out by women. This is shown by the higher level of participation of females than that of males. The findings are significant at 0.01. This shows that there is a significant statistical relationship between farm-types and the responsible members of households for hoeing and planting.

When ploughing is related to farm-types, it is found that the participation of males in this activity is higher than that of females. Table 3:3 gives a percentage distribution of the different members of households responsible for this task for different farm-types.

Table 3:3
Division of Labour in Ploughing by Farm-types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	0.0%	16.3%	21.7%	26.7%
Males	0.0	44.9	51.0	53.3
Employees	0.0	0.0	1.4	0.0
Relatives	0.0	0.0	1.4	0.0
Children (Females)	0.0	2.0	5.8	6.7
Children (Males)	0.0	16.3	11.6	13.3
Not appli- cable	100.00	20.4	1.4	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi - square = 176.11 with 28 degrees of freedom signi-
ficance = 0.00

This table shows that under both peasant and improved farms, ploughing is mainly carried out by males. Under

peasant farming, the table shows that there is no household in which either males or females participate in ploughing. Under semi-peasant farms, there are 44.9% of the households in which men participate as compared to 16.3% of the households where females do take part in ploughing. Male children make up 16.3% under the semi-peasant farming compared to only 2% where female children are concerned. Relatives' and employees' participation is nil.

Under improved farms, 51% of the households have male participation in ploughing as compared to 21.7% of the households where females take part. There are 53.3% of the households where males participate and only 26.7% of the females took part in ploughing under more improved farming. Children's participation in general is also increasing with the increase in acreage and so is that of older females.

The findings indicate that ploughing is mainly found under improved farming. This is why there are neither males nor females participating in ploughing under peasant farming. The findings, however, indicate that ploughing is mainly a male's job and that it is brought about by agricultural modernization. Though ploughing is mainly a man's task, females assist as acreage under cultivation increases. The data in the

table also shows that female participation increases with increase of acreage under cultivation. Thus women under improved farming have an additional task which those women under peasant farms do not have. These relationships between farm types and responsible members of households for ploughing are significant at 0.01.

Weeding is another farm activity examined. The findings indicate that the participation of women in this activity is higher than that of males in all the farm types (see table 3:4).

Table 3:4

Division of Labour in Weeding by Farm-types

	FARM - TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	3.0%	77.7%	71.0%	80.0%
Males	0.0	6.1	13.0	6.7
Children (females)	0.0	2.0	4.3	6.7
Children (Males)	0.0	2.0	2.9	6.7
Notaappli- cable	97.0	12.2	8.7	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 149.91 with 20 degrees of freedom significance
= 0.00

Table 3:4 shows that the proportion of households in which females do weeding is higher than that of males. The table shows that there are 3% of the households where females take part in weeding and cultivation of crops as compared to non for males among the peasant farmers. Among semi-peasant farmers, there are 77.7% of the households where women weed as against 13% of households where males participate. Under more improved farming, there are 80% of the households where women participate in weeding as compared to only 6.7% of households where males participate in this activity. The table also shows an increase in the participation of children of both sexes.

These findings indicate that weeding and cultivation of crops is done mainly by women under both peasant and improved farming. The data also shows that despite the very low participation of males, improvement in farming leads to increased male participation. The pattern of male participation increases with the increase in acreage. It can be concluded that increases in acreage under absence of outside labour leads to utilization of the labour of all members of the household : older males and females, relatives and children.

Applying of fertilizer and pesticides is mainly done by women (see table 3:5).

Table 3:5

Division of Labour in the Application of Fertilizaer and pesticides by Farm-types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	0.0%	65.3%	72.5%	80.0%
Males	0.0	14.3	13.0	6.7
Children (Males)	0.0	2.0	2.0	6.7
Children (females)	0.0	4.1	4.4	6.7
Not applicable	100.0	14.3	7.2	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 144.16 with 16 degrees of freedom significance = 0.00.

The table above shows that among peasants, there is no household in which either males or females are found participating in the application of fertilizer and pesticides. Among semi-peasants, the percentage of households where females take part in this activity is 65.3% as compared to only 14.3% of the households where males participate in the same activity. In the last two farm-

types, the same trend appears, female participation is higher than that of males. The data show that in 72.5% of the households, females take part in applying fertilizer and pesticides as compared to only 13% for males.

In larger farm types of 21 hectares and more, in 80% of households females participate in this activity as compared to only 6.7% for males. Under peasant farming, there is no participation of children in this activity. From the peasant farming, there is a general increase in the utilization of child labour, 2% for males and 4.1% for females under semi-peasant farming, 2.9% for males and 4.4% for females under improved farming, and 6.7% for both sexes under more improved farming.

The above findings show that putting of fertilizer and pesticides is mainly done by females in all types of farming and this increases with increases in farm-sizes. This task is another additional task for women under improved farms. This task comes about as a result of agricultural modernization. The women under peasant farms do not or very rarely have the activity. Further, female participation increases with increases in acreage under cultivation. These relationships between farm-types and division of labour in the application of fertilizer and pesticides are significant at 0.01. It can be concluded,

therefore, that there is a significant statistical relationship between farm types and responsible members of households for the application of fertilizers and pesticides.

Another activity examined is harvesting and storing of crops. Table 3:6 shows distribution of members of households for this activity by farm types.

Table 3:6
Division of Labour in Harvesting of Crops by
Farm-types

FARM TYPES				
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	3.0%	69.4%	73.8%	73.2%
Males	0.0	16.3	1.8	6.7
Children	0.0	4.1	5.7	6.7
Relatives	0.0	4.1	5.7	6.7
Not appli- cable	97.0	6.1	13.0	6.7
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 151.59 with 16 degrees of freedom
significance = 0.00

From this table, the percentage of households where women participate in harvesting and storing is much higher than that of males. The table shows that among peasants, there is 3% of the households in which women do the harvesting and no men are involved. Among semi-peasants, there are 69.4% of the households in which females participate in harvesting and storing of crops as against 16.3% of the households where men take part. Among more improved farmers, the proportion of households where females participate is 73.8% as against 1.8% of male participation. In the last farm type, there are 73.2% of the households where females participate as compared to 6.7% of males.

While the participation of women is generally increasing with the increase in acreage under cultivation, that of men is inconsistent. The general trend indicates a fall of male participation with the increase in acreage. On the other hand, the participation of relatives and children in general increases with increases in acreage. For both relatives' and children's labour, there is a rise from no participation among improved farmers to 6.7% among the more improved farmers.

The above findings illustrate that harvesting and storing of crops is an activity which is mainly carried out by females. Though males do participate, their parti-

cipation is minimal. These relationships between the household members responsible for harvesting and storing are significant at 0.01.

Shelling and bagging was also examined and table 3:7 gives the responsible members of households by farm types.

Table 3:7
Division of Labour in Shelling and Bagging by
Farm-types

FARM TYPES				
	Peasant farmer	Semi peasant farmer	Improve farmer	More Improved farmer
Females	3.0%	75.6%	79.8%	82.0%
Males	0.0	10.2	11.4	4.7
Children (Females)	0.0	0.0	2.9	6.7
Children (Males)	0.0	2.0	2.9	6.7
Relatives	0.0	2.0	2.9	0.0
Not appli- cable	97.0	10.2	0.0	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 160.76 with 24 degrees of freedom significance = 0.00.

Findings in the table shows that shelling and bagging

is mainly women's work. 3% of the households under peasant farming have women participating in this activity compared to no household in which men take part in the same activity. Among the semi-peasants, the households where women participate make up 75.6% as compared to 10.2% where men take part. For improved farmers, there is a higher participation of females than males, 79.8% of females and 11.1% of males, 82% of females and 4.7% of males participate in this activity under improved and more improved farms respectively. The level of participation of females in this activity under peasant farming is relatively low compared to other types of farming. This is due to subsistence farming, an increase in acreage under cultivation, use of pesticides and fertilizers, use of implements such as plough or tractor and an increase in yields are some of the indicators of agricultural modernization. With an increase in acreage under cultivation, more area require to be weeded, planted, cultivated and harvested. All these tasks as we have seen from the above findings are carried out mainly by female members of the households. These tasks, unlike land clearing and ploughing mainly carried out by males, are still performed by hand. This indicates that the workload of females who perform these activities is increased with intensification of agricultural modernization. These females as already seen from above are those under improved farms.

We have also seen from the findings that women under farms that have experienced agricultural modernization have additional tasks which include helping their husbands with ploughing, and providing almost all the labour needed for application of fertilizer and pesticides, shelling and bagging. These activities do not or ~~are~~ very rarely exist under peasant farming. These women under improved farms still provide nearly all the labour needed in weeding and cultivation, planting, hoeing, harvesting and storing of crops. Shelling and bagging indicate a higher level of agricultural modernization and is mainly a function of cash crop farming.

Under peasant farming, shelling is usually in connection with food preparation while for improved farming, shelling and bagging in preparation for sale of crops is necessary. There is also an increase in the participation of children and relatives because the pressure of work under improved farming forces parents to utilize child labour and also because the improved farmer has more influence over poorer relatives. The poorer relatives are often willing to work for their richer relatives in return for food or clothes.

Summary

This chapter has shown that in farm activities, women provide the bulk of the labour in hoeing, planting,

weeding, harvesting and storing while men do most of stumping and clearing of new fields and ploughing. The findings underscore the point that, women under farms which have experienced modern agriculture have additional tasks brought about by the introduction of agricultural modernization. The additional tasks for these women include putting of fertilizers and pesticides, shelling, bagging and ploughing.

We have seen from above that the findings indicate that these women apart from the labour of their husbands, usually turn to child labour for assistance with the increased pressure of work under modern farms. The findings further show that the level of participation of children in nearly all the activities above increases with increases in the level of agricultural modernization. This indicates that women under farms that have experienced more agricultural modernization will demand more child labour than those from farms that have experienced little agricultural modernization or none at all.

The findings in the study are in line with those of Boulding (1975), FAO (1980), Sequest (1983), Lawson (1976), Sene (1976), Ceres, FAO (1982); Boserup and Lijencrantz (1975). These findings demonstrate how the workload of women increases with the introduction of agricultural

modernization, in which cash crops are grown, ploughs and tractors are used and chemicals such as fertilizers and pesticides are applied. The Ceres report for example shows that:

"Medium-sized Farms where mechanization is only introduced at primary levels of production makes large holdings possible but because of division of labour within the family, mechanization only alleviates the man's activity while weeding, caring of crops are not mechanized; and she works much longer and harder and her husband gets more free time".

The FAO Report (1980 : 47) also came up with similar findings. The report states that:

"The man may plough larger acreage with a tractor giving a large area to hand weed by women".

The statement made by Loutfi (1980 : 34) is even closer to the findings of the present study. She points out that:

"Alternatively, the introduction of high yielding varieties of grain 'The green revolution' in a village may expand total output considerably. But the higher land productivity, extensive application of fertilizer, pesticides and water also leads to increase certain labour intensive activities which women often carry out, such as weeding, harvesting, and for which they have the additional time only at the expense of their health and that of their children".

These findings confirm the findings of the present study that the introduction of agricultural modernization leads to increased farm work for women. The findings show that the participation of females increases with the introduc-

tion of agricultural modernization.

These findings differ from Mabeza's study of 1977 which was carried out in the same area. Mabeza concluded that, under improved farming, women are in the process of being pushed out of agriculture into purely domestic activities. The present study's findings show increased women's involvement with improvement in agriculture. From the findings it has been shown that agricultural modernization does not lead to the displacement of women from farm work. On the contrary, agricultural modernization placed more demand on female labour.

CHAPTER IV

WOMEN AND DOMESTIC ACTIVITIES

Like farm tasks, domestic activities are also examined in relation to workload for women. The activities to be examined include cooking, pounding, taking maize to the grinding mill and food preparation in general. These were grouped as food processing and preparation. The table gives the distribution of responsible members of households for this activity by farm types.

Table 4:1

Division of Labour in Food Preparation and Processing
by Farm-types

	FARM TYPES			
	Peasant farmer	Semi Peasant farmer	Improve farmer	More Improved farmer
Females	50.8%	83.8%	88.5%	80.7%
Males	16.4	6.2	2.9	13.3
Children (Males)	0.0	2.0	0.0	0.0
Children (Females)	13.4	2.0	1.4	6.0
Children (General)	0.0	2.0	4.4	0.0
Relatives	10.4	2.0	1.4	0.0
Not appli- cable	9.0	2.0	1.4	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 46.79 with 24 degrees of freedom
Significance = 0.00

The table shows that women do most of the cooking and preparation in all farm types. Among the peasants, the households where women take part reach 50.8% as compared to 16.4% of male participation. In the semi peasant group, there is 83.8% and 6.2% of the households where females and males do so respectively. Under the third group, improved farmers, there is 88.5% of the households where females participate in cooking as compared to only 2.9% of males who participate. Under the fourth group, more improved farmers, in 80.7% of the households females prepare and process food compared to 13.3% of the households where males do so. Similarly, the participation of female children is found to be higher than that of male children. Relatives's participation in food preparation is mainly substantial under peasant farming (10.4%).

These findings show that the participation of women in food preparation and processing is higher than that of males in all the groups of farming. This underscores the claim that food processing and preparation is an activity which is mainly carried out by females. The findings are significant at 0.01 significant level. From the table, preparation of food by males is higher among peasants. This could be mainly attributed to the existence of single men among this group of farmers compared to the other farm types.

Tasks such as collection of firewood, drawing water and cleaning inside and outside the house are examined in relation to farm types (tables 4:2; 4:3, 4:4).

Table 4:2

Division of Labour in Collection of Firewood
by Farm-types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	40.3%	77.6%	81.2%	73.3%
Males	3.0	2.0	1.4	0.0
Children (females)	29.8	10.2	8.8	26.7
Children (males)	0.0	2.0	4.3	0.0
Not appli- cable	26.9	8.2	4.3	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square 103.71 with 20 degrees of freedom
Significance 0.00.

Table 4:3

Division of Labour in Cleaning of House by Farm-types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improved farmer	More Improved farmer
Females	29.8%	10.2%	5.8%	20.0%
Males	0.0	4.2	2.9	0.0
Children (females)	11.9	4.1	4.4	0.0
Children (Males)	3.0	0.0	0.0	0.0
Relatives	1.5	0.0	0.0	0.0
Not applicable	53.7	81.5	86.9	80.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square = 96.72 with 16 degrees of freedom significance 0.00.

Table 4:4

Division of Labour in Water-drawing by Farm-types

	FARM TYPES			
	Peasant farmer	Semi peasant farmer	Improve farmer	More Improved farmer
Females	41.8%	75.5%	84.1%	73.3%
Males	0.0	8.2	7.2	6.7
Children (F)	34.3	4.1	2.9	13.3
Children (M)	1.5	2.0	0.0	6.7
Not applicable	22.5	10.2	5.8	0.0
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square 67.89 with 24 degrees of freedom significance 0.00.

The three tables show the level of participation of females to be higher than that of males in all tasks. Similarly the data in the tables indicate that the proportion of households where female children participate is higher than that of male participation.

These findings demonstrate that the tasks of collecting firewood, drawing water and cleaning the house, (which include sweeping inside and outside the house, washing of plates and pans, plastering of houses and nursing of children) are mainly done by females. In these tasks, adult females are largely assisted by female children. The high participation of females in these activities occurs in all groups of farming types.

Despite male participation in these tasks, the data demonstrate that women provide most of the labour for carrying out of these tasks. The findings also show that women engaged in improved farming who are already overburdened are not spared from domestic tasks. Both men and women regard these domestic tasks as traditionally women's tasks. Most women when asked if they did not get tired of carrying out these tasks said, "Even our great great grand mothers did these tasks, so we just have to do them also. There is nothing we can do".

Some of these domestic tasks are time consuming and need a lot of labour. To draw water and fetch firewood, the women interviewed in the study were found to be walking long distances. In the dry season, the distance to wells was even more, as the shallow wells and small streams nearby dried up. In one village, Mulungushi settlement, women had two choices, either to wait almost the whole day for their buckets to be filled by drops of water from the settlement tank which had broken down or to walk to the nearest borehold in the next village about five kilometres away. Women also had to walk long distances for firewood because most of the surrounding area had been cleared for farming.

Grinding maize is another time-consuming task. There are two ways to grind maize. One is using grinding mill and the other is using mortar and pestle. Most poor women pounded themselves because they could not afford to pay the prices set up by the grinding mill owners which are often very high, K1.00-K1.50 per four gallon bucket.

A striking feature is the way women under improved farms managed to play their domestic roles on top of their increased farm work. There was a very big difference in the organization of work, time and labour allocation to farm and domestic activities between women in peasant farms and those under improved farms. A comparison of two women from two different farm sizes makes this clear. The

would rush to the house and put relish on the fire for lunch (mainly vegetables and dry fish or meat), and then she goes back to the field. Mrs. Shandenga would keep going to the house to check on the relish, to put more fire and water to the pot. She breast fed her baby in the same way. Whenever she heard the baby cry, she rushed from the field to the house and then go back to the field after breast feeding. When it was lunch hour, she went home and prepared lunch. At least for the two days we stayed with her, the family never missed lunch. Never did we see Mrs. Shandenga go back to the field after lunch either. She spent the whole afternoon doing domestic tasks such as carrying water, collecting firewood, cleaning the house and other tasks including laundry and bathing children.

Supper for the Shandenga family was ready by 19.00 hours. Mrs. Shandenga would sometimes then clean the plates and pans used at supper and by 21.00 hours she went to bed. The rest of the family went to bed earlier than her on most occasions.

When asked why she could afford to spend only a very few hours in the field, Mrs. Shandenga answered us that, "There is no need for me to panic because the field is very small. I can still finish my work even if I were not to go to the field everyday.

Mrs. Moyo, married to a Shona more improved farmer was our second observation. She like Mrs. Shandenga, also woke up earlier than the rest of her family around 05.00 hours or even earlier sometimes. She also started off by making fire to boil water for her husband. She would then prepare breakfast. When it was daylight enough to distinguish crops from the weeds, she would go into her food crop field which surrounded the house. By 07.00 hours, her husband had woken up and after he had finished washing his face, she started off with him and the rest of the family to the main household farm about 2 km away. All the children above 10 years were taken to the field leaving at home only the very young ones. Because it was very far, Mrs. Moyo had to carry her baby with her and work with it on her back until the time she knocked off. Though she had daughters of over 10 years, these could not be spared from farm work to look after the baby as this would mean a reduction in farm labour. Mrs. Moyo also mentioned to us that it was not all the time that her husband went to the field with the family. Mrs. Moyo pointed out that even if Mr. Moyo did go, he spent most of the time supervising the family.

On the second day of our stay with the family, we

decided to accompany them. On this day, the family was spraying pesticides in a cotton field. We were touched by the way Mrs. Moyo worked. In order to carry the sprayer which has to be put at the back, she put her baby in front and the sprayer at the back. Mr. Moyo was standing at the edge of the field. All the older also carried sprayers. When we tried to move closer we were warned by Mr. Moyo that the chemicals involved in spraying were highly poisonous. We just wondered if Mrs. Moyo and her children including the baby could not be affected by these chemicals.

The Moyo family never had any proper lunch. Usually their lunch consisted of boiled dry maize and some cold drink made of maize meal and sugar. In Shona they call it Maheu and Chibwantu in local languages. This drink is usually prepared the previous day. On the other hand, Mr. Moyo himself would go home with one of his older daughters who would cook him proper lunch. The family only knocked off at around 16.00 hours or 16.30 hours depending on the time Mr. Moyo instructed them to go home. Mrs. Moyo and her daughters had to carry firewood on their way home and as soon as she arrived home, she had to go to the well for water. When she came back, she had to start washing plates and making fire and then start cooking.

When her daughters were away for school, she would have to carry out all these tasks entirely alone. But when they were around, Mrs. Moyo at least got assistance in most of these tasks. her husband would just sit or sleep waiting for meals.

Supper, and the only meal for the family only became ready at around 21.00 hours and by this time the youngest children would be sleeping, hence missing both meals for the day. After he had finished his meal and bath, Mr. Moyo went to sleep while his wife would still have a lot more to do before she could finally go to bed. After her meals, she had to start boiling dry maize and preparing the drink for the next working day. By the time she finished all her day's work, it could be 22.00-23.00 hours. Within the time she was away from the farm, she also had to squeeze in the cleaning of the house and bathing of the younger children. Sometimes, Mrs. Moyo would prepare the meals without herself participating in eating as she complained about loss of appetite after too much work.

The comparison of these two women under two different farm types stresses the difference in workload between women in peasant farms and those in improved farms. The findings from Mrs. Shandenga demonstrate that women under peasant farms have very small fields to plant, weed and harvest and thus very little time is needed for farm work.

These women instead, spend most of their time doing domestic tasks. Their nutrition and that of their children is well balanced as they always have all their meals for each day. The findings also seem to illustrate that because these women only spend a few hours in the field they are able to combine their farm and domestic work very easily.

On the other hand, the findings from the observation of Mrs. Moyo demonstrate that the women under improved farms spend most of their time in the farm. The findings also show that, because of the work on these farms, the women and children have to find additional time at the expense of their health. As we have seen from Mrs. Moyo's observation, this is done by missing their meals.

The findings from Mrs. Moyo's study show that women under improved farms are too over-loaded with farm work, yet they still have to carry out all the domestic work otherwise their families would starve. It is possible that such over load and malnutrition can lead to ill health and lower life expectancy for these women.

SUMMARY

From the findings in this chapter, it can be concluded that women are responsible for almost all the domestic

tasks. These domestic tasks include collecting of firewood, food preparation and processing, drawing of water, cleaning inside and outside the house. Men and women themselves regard these tasks as traditionally female tasks. As a result women do not complain about their husbands not helping them in doing these activities.

The findings in this chapter also show that on top of their already heavy burdens in farm work, women under improved farms still have to carry out all the domestic activities carried out by their fellow women in peasant farms. This makes about and time allocation to farm and domestic work very difficult for these women. In order to be able to do farm and domestic work, these women usually have to find extra time at the expense of their health and that of their children. Extra time is usually possible by missing some of the day's meals, knocking off late and sleeping late especially during peak periods. Such overwork can lead to low life expectancy among rural women.

CHAPTER V

AGRICULTURAL MODERNIZATION AND FERTILITY ISSUES

This chapter examines the hypothesis that "agricultural modernization at the level of household in the absence of outside labour encourages high fertility". The data on fertility was obtained from all women aged 14 years or more from the sample (200 households). The total number of these women was 326. Each woman was asked the total number of children she has ever had, desire for more children, the preferred sex, reasons for wanting more children and also reasons for the preferred sex.

The majority of the women were aged 21-40 years (41%), 29% were aged 41-49 years, 20.2% were in the age group 14-20 years and only 9.8% were 50 years and above.

Most women had a total number of 4 to 8 children (36.5%). 24.2% had 9 to 10 children, 21.8% had 0 to 4 children, 15.2% had over 10 children and 2.3% did not state the number of children that they have. Many women who had 0 - 4 children fell in 14 - 20 years age group.

Many women, 71.8%, wanted more children than the number they currently had, while 28.2% did not want any more children. The reason given by those who did not want more children was that they already had too many. Most of these had more than 10 children. Table 5:1 gives a summary of the reasons given for wanting or not wanting

in chapter three, it can be inferred that many women who wanted more children for farm work came from improved farming households since they are more pressed with farm work.

When the women were asked the sex they preferred, 51.7% said they preferred more girls and 48.3% preferred boys. The common reason given by those who preferred girls was that female children are more helpful both in domestic and farm tasks than male children. The women also indicated that female children usually start at an earlier age helping their mothers in most of these domestic and farm tasks while male children start at a later age. Another reason given was that as soon as male children start considering themselves as men, they stop carrying out the tasks that are defined as feminine. One of the women during our study commented that, "Even young boys refuse to help in domestic activities like cooking, collecting of firewood, drawing water and nursing of children saying that they are not girls". On the other hand, female children become more helpful to their mothers as they grow up.

This finding is in line with those of ECA report on Kivu Province, Zaire. Table 5:2 is a summary of answers showing how female children are more helpful than male children.

Table 5:2

Children Labour

Sex	Work
Children Aged 5 - 10	
Boys	No contribution
Girls	Helping in weeding and carrying water
Children 10 - 14	
Boys	Looking after cattle, help weeding.
Girls	Help mother in all agricultural work

Source: ECA Report, 1975.

On the other hand, many of those women who preferred boys to girls see boys as having an advantage in that they usually stay with their parents when they marry and thus continue helping their parents whereas girls leave their parents' home when they get married. This shows girls are wanted to meet immediate needs while boys offered long term help.

The farm types were examined in relation to the total number of desired children. Table 5:3 summarizes the findings.

Table 5:3

Total Number of Desired Children by Farm-types

FARM TYPES				
	Peasant farmer	Semi Peasant farmer	Improved farmer	More Improved farmer
0 - 4	50.0%	27.4%	17.5%	11.3%
5 - 7	25.0	30.6	18.0	16.1
8 - 9	25.0	25.8	26.9	33.8
10+	0.0	16.2	37.6	38.7
Total	100.00%	100.00%	100.00%	100.00%

N = 200

Chi-square 19.67 with 9 degrees of freedom significance = 0

The table shows that the percentage of respondents who wanted less than 5 children were highest among peasant farmers, 50%, and this decreases with the increase in area under cultivation. It is seen that 27.4% of the semi-peasant farmers wanted not more than four children, the percentage among the improved farmers is 17.5% while among the more improved farmers 11.3%. On those who wanted between

8 or more children, the trend is reversed, an increase in percentage of women who wanted this number with the increase in area under cultivation.

Of those wanting more than 10 children, there

Zeidenstein's (1979) study of an African village with improved farming came up with similar findings: "Women need someone to be able to substitute in agrarian and household tasks". In the same study Zeidenstein (1979) states:

"The most striking aspect of women's response is that for every category of farming, the labour of children is the frequently substituted ...".

Cadwell's studies in Ghana and Nigeria also show that one of the most important value of children is their productivity, or source of labour in general.

These findings of other researchers and those from the present study apply to both peasant and improved farming. The demand for child labour becomes greater with increased farm sizes especially where there is no outside labour.

SUMMARY

The findings in this chapter show that agricultural modernization in Mumbwa where wage farm workers are not available accounts at least partially, why women prefer large families. This desire increases with increases in acreage under cultivation.

The presence of children at home is more desirable by women. As one woman remarked: "There is not much difference whether my husband is around or away from home but there is a big difference when my children are away

was no woman under peasant farming, while there were 16.2% under semi peasant farming, 37.6% under improved farming and 38.7% under the more improved farms. These findings are significant at 0.05. This shows that the relationship between farm types and the desired number of children is not by chance.

As chapter three shows, women under peasant farming have less farm work compared to those under improved farms. Thus, the larger the area under cultivation, the more work in the fields and, the higher the desire for more children. The same chapter also demonstrates the increased workload on women due to modernization in agriculture: growing of more than one crop, application of pesticides, shelling, bagging and transportation of the crop to the market. This increased workload for women accounts for desire for more children. The finding in chapter three that in Mumbwa area farm labourers are very rarely employed, and wherever they are employed they are only employed to help male members of households and usually not females, also supports the desire for more children among women under improved farming. Having more children enables easier division of labour; some children work on the farm, others carry out domestic work such as fetching of water, gathering firewood, grinding grain, cooking, child care and cleaning of the house. Without children means that the woman under improved farming has to carryout all the domestic tasks in addition to the farm work.

during school days for I have to do all the work single-handed".

The study also reveals that women play a double role in improved farming of Mumbwa. They provide labour themselves for agriculture and on top of this, they are also responsible for the creation of new source of labour i.e. children. This means new sources of labour and wealth for the person who controls them, in this case the household-head. Because as we have already seen above that women under improved farms will want more children as a way of relieving themselves from farm work, it means more frequent pregnancies and more and more creation of new workers. These frequent pregnancies and over load can have an adverse effect on rural women - that of ill health.

CHAPTER VI

CONCLUSION

The Mumbwa study shows some relationship between improved farming, women's workload and fertility behaviour. The study shows that women in both peasant and improved farms perform most of the domestic tasks which include cooking, fetching water, collecting firewood, pounding or taking grain to the grinding mill, cleaning of the house and bathing and nursing of children. Since under peasant farming, fields are small, less time is needed for planting, weeding, hoeing and harvesting, and because no hybrid seeds and fertilizers are used the yields are low. Very little time is spent on harvesting and storing. On the other hand improved farming means large fields to plant, hoe, weed and harvest. The use of inputs such as fertilizers, pesticides and improved seeds leads to high yields. Cultivation of large acreages is also made possible due to the use of modern technologies such as the plough or tractor. Thus, women in improved farms are required to put in more time and labour in planting, hoeing, weeding, harvesting, and storing crops produced. In addition to these activities, the women under improved farming take on additional tasks such as ploughing, shelling, bagging of crops and assisting husbands transport produce to the markets. On the other hand, women under peasant farming do not participate in these new tasks.

The findings also show one important finding, that improvement in farming does not lead to displacement of women from agriculture. This finding differs radically from Mabeza's in Mumbwa that the introduction of agricultural modernization leads to exclusion of women from agriculture. On the contrary, women appear to be more involved, this involvement increases with the level of agricultural modernization. This study shows that agricultural modernization does not lead to the exclusion of women from agriculture but their participation increases with the level of agricultural modernization.

While women under subsistence farming can easily combine their farm and domestic tasks, this becomes difficult as farming improves due to increased workload on the farm. Women under improved farming have to put in extra time for the extra acreages under cultivation in addition to domestic work without which their families would not survive. This extra time some time is found at the expense of the women's health due to missing meals, sleeping late, and waking up very early especially during peak periods.

The findings in this study also show that very few households in Mumbwa employ farm labourers and that whenever farm labourers are employed, they do tasks that are mainly to be carried out by male members of the households. These tasks as shown above include stumping and ploughing.

This means that men may be freer while their wives become heavily and seriously over-loaded with farm work. Since women in improved farming do not have outside labour in their tasks, the only other source of labour they can command is that of their children. Children thus become the victims of their 'mother's over-work'. This is true of both peasant and improved farming but the demand for child labour becomes even greater under improved farming. As a result, the women under improved farming put more value on child labour. These women have more pressure to have larger families than those under peasant farming. Thus increased farm work due to agricultural modernization becomes a strong inducement for women to have large families.

The data from the study also demonstrate that even males under improved farming have interest in the fertility of their wives and that of their daughters-in-law. This was seen from the tendency of these farmers of marrying younger and more productive women than their first wives. These farmers also encourage the dependence of their married sons by encouraging them to remain within the main household. All this allows these farmers to control larger household or family labour for their farms. The farmer as the household head will only have the obligation of feeding and buying, occasionally, clothes

for his household members. To these farmers, this is cheaper than employing farm labourers who would have to be paid in monetary form every month.

The study has shown that in Mumbwa, agricultural modernization is related closely to large households or families. This determines the success of an improved farmer. It was also observed during the field work of the study that some women were handling ploughs with babies on their backs, a task which is very physically demanding. On the other hand, it was found out that men attended most of the courses and meetings on farming. This may suggest that women are given scope to participate in agricultural modernization more at the level of duty involvement of their physical labour power. Very rarely are women given scope to use their brains as well.

The data from this study highlight the need for agricultural modernization to go hand in hand with technological innovations that will help make the work of women less burden-some. These tasks include planting, weeding, harvesting, shelling, and bagging. These also include domestic tasks such as pounding, fetching of water, collection of firewood and child care. The Mumbwa findings show that there are quite a number of grinding mills in the area but due to the high charges fixed by the grinding mill owners, many women are forced to continue pounding grains themselves. Control of prices can greatly assist women to use grinding mills. The

construction of wells and taps nearer to households can also assist women. The introduction of labour saving devices such as wheel barrows can also reduce the burden on women.

The data further highlight the need for the government to give more loans to improved farmers which can allow them to hire farm labourers instead of depending on women and children's labour. This may lead to reduction in women's workload and reduce their desire for large families. There is also need to give rural women scope to use their brains by their increasing involvement in development programmes instead of their physical labour only.

Where agricultural tasks are concerned, there can be a lot of time saved if the technological innovations are not introduced only at primary levels where men participate. Innovations should also be introduced at secondary levels where women participate more. This means technological innovations should not only be introduced in ploughing of the land while leaving the tasks that follow such as planting, weeding, harvesting to be done by hand. Such kind of innovation only makes the work of men easier while making that of females and children even more difficult. Therefore, technology in agriculture should be introduced at all levels if it is to alleviate women and children as well.

Finally, the present study only covered a small sample and was only limited to one area. This was due to limited funds and time. It is possible that a wider and comparative study of two or more areas would come up with more findings than the present study. There is, therefore, a need for wider studies to be carried out on the same subject.

APPENDIX

THE IMPACT OF AGRICULTURAL MODERNIZATION ON WOMEN'S
ACTIVITIES

Chief's Area

Household Number

Card Number

Village / Settlement

Information on situation (nearest service centre/facility
in Kilometres).

i) C.P.C. Market Depot in kilometres

ii) Agricultural Camp

iii) All weather Road

iv) Grinding Mill

Line Number	Member of Household	Relation	Residence	Sex	Age	Education	
	Give the names of everyone in this household both usual members and visitors (starting with the head of household).	Relationship to the household head	Does this person usually live here Yes = 1 No = 2	What is sex of this person Male=1 Female=2	How old is she/he	Can he/she read and write	If yes how many years of schooling were completed?
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
01							
02							
03							
04							
05							
06							
07							
08							
09							
10							

MAIN HOUSEHOLD FARM

						Types of Farm Equipment	
Crops Grown	Area in hectares	Purpose Food=1 cash sale=2 Mixed 3 Beer Brewing = 4	Output amount Harvested	in bags sold	Amount of money obtained	Expenditure on input labour equipment	
(8)	(9)	(10)	(11a)	(11b)	(12)	(13)	
Maize							
Cotton							
Sunflower							
Other crops							

Hoe = 1 Who operates the
plough equipments (identi-
= 2 fied by relation-
Tractor ship to the house-
= 4 hold head e.g.
Culti- wife).
vator=
4
Planter
= 5
(14) (15)

Type	No. at present	Ownership	How obtained	Who looks after them	function
(16)	(17)	Own wife relative non-relative other	bought loaned bartered inherited entrusted lobola	own wife, relative non-relative, other	food/milk security, social status source of cash bride wealth mixed
(18)	(19)	(20)	(21)		

NON FARM INCOME GENERATING ACTIVITIES

Line No.	What non-farm-income generating activities do you engage yourself in?			Decision making over income gained
	income generating activity	season	income gained	
	(22)	(23)	(24)	(25)

Agricultural Activity	List of responsible member	Household activity non income Generating Activity	Name of household members responsible
(27)	(28)	(29)	(30)
Stumping, burning logs		cooking	
Hoeing		collecting firewood	
Ploughing, harrowing			
Ridging		Laundry	
Planting		Sweeping inside house	
Application of fertilizer and pesticides		Sweeping outside house	
Harvesting		Boiling water	
Storage		Nursing, bathing children	
Shelling, bagging		Drawing water	
Transporting to the market		Pounding, taking grains to the grinding mill, others	
Herdng cattle, goats			
Milking			

FERTILITY ONLY WOMEN AGED 14 AND OVER

All women aged 14 and over	Does (name) have any children of her own living with her? How many sons ? daughters ?	Does she have any children of her own who do not live with her? sons = ? daughters = ? If none, enter 00	Has she ever given birth to a child who later died? sons = ? daughters=? If non, enter 00	In what month and year did her last birth occur If not applicable draw a horizontal line	Sex of this child male = 1 female = 2
	S D	S D	S D	Month Year	

DESIRED FAMILY SIZE (Women aged 14 - 50) (For those with Children)

Line No.	Do you want more children	Sex of children preferred	Give reasons for chosen preference	If your were young again, indicate the number of children you would have and state preferred sex	Give reasons for chosen preference
	Yes No	Boys Girls Both		Total No.	
			Boys Girls Both		

WOMEN'S CONTRIBUTION TO FARMING

Instructions: (If more than one woman answered earlier questions continue remaining topics with woman who gave most best information. Tell her that from her on , she is going to answer questions about herself).

Write in name of the woman who answers these questions

1. In what way do you work in the fields
clear and prepare fields, plough, plant seeds, weed, harvest, strip crops, shell?
.....
(circle appropriate activity) other

Personal crops and animals

2. Do you have a field, garden, or tree of your own? Yes/No
3. (If yes) what do you grow? maize, cassava, peas, cabbage, rape, sweet potatoes,
banana, pawpaw, other.
4. Which do you grow for food only?
5. Which do you grow also for sale?
6. (If any for sale) when and where was the last time you sold some?
.....

How much money did you get?

7. How did you spend your money (give detail, e. g. soap, salt)

.....

8. Do you ever brew beer for sale? Yes/No

If yes, when did you last brew, how much money did you get?

.....

9. How did you spend the money?

10. Do you have animals of your own? Yes/No

11. (If yes), what do you have? and number Cattle pigs

chickens ducks other

12. Any for sale?

13. Money obtained?

14. How did you spend the money?

Food preparation and Household work

15. How many times do you fetch water? any other one who helps you?

16. Who

17. (If more than one woman in household ask)

Do you cook together, separately or take turns?

18.

How do you grind maize, own labour, own labour and help, grinding mill usually, grinding mill if I have money, daughter do it, other

.....

END. Thank you very much for sparing some time to talk to me.

Interviewer rating the interview, cooperation, willingness to answer =

Excellent, good, average, very negative, poor, unreliable.

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