

PROFILES OF MEN AND WOMEN SMALLHOLDER FARMERS  
IN THE LILONGWE RURAL DEVELOPMENT PROJECT,  
MALAWI

DR. ANITA SPRING  
UNIVERSITY OF FLORIDA  
MARCH 1984

Women in Development  
Agency for International Development  
Room 3243, New State  
Washington, D.C. 20523  
(202) 632-3992

Date of Acquisition \_\_\_\_\_  
Source \_\_\_\_\_

FINAL REPORT OF THE WOMEN IN AGRICULTURAL DEVELOPMENT PROJECT  
IN MALAWI. SUBMITTED TO THE OFFICE OF WOMEN IN DEVELOPMENT  
USAID, WASHINGTON D.C. CONTRACT NO. AID-OIR 0300-C-2081

PNAAR-386

PROFILES OF MEN AND WOMEN SMALLHOLDER FARMERS  
IN THE LILONGWE RURAL DEVELOPMENT PROJECT,  
MALAWI

DR. ANITA SPRING  
UNIVERSITY OF FLORIDA  
MARCH 1984

FINAL REPORT OF THE WOMEN IN AGRICULTURAL DEVELOPMENT PROJECT  
IN MALAWI. SUBMITTED TO THE OFFICE OF WOMEN IN DEVELOPMENT  
USAID, WASHINGTON D.C. CONTRACT NO. AID-OIR 0300-C-2081

## TABLE OF CONTENTS

	Pages
Acknowledgments.....	1
Abbreviations and Acronyms.....	11
CHAPTER 1 THE WOMEN AND AGRICULTURAL DEVELOPMENT PROJECT AND DISAGGREGATION OF DATA BY SEX.....	1
Introduction.....	1
Malawi's National Rural Development Program.....	2
The Women in Agricultural Development Project.....	5
Involvement of WIADP in Disaggregating NSSA Data.....	8
Involvement of WIADP in LADD.....	13
Lilongwe Rural Development Project.....	14
The LRDP Survey.....	18
Previous LRDP Studies and Findings.....	18
Indicators for the LRDP Survey.....	21
CHAPTER 2 THE NATIONAL SAMPLE SURVEY OF AGRICULTURE .....	25
Description of the NSSA.....	25
Survey Instruments.....	25
Sample.....	26
Administration.....	27
WIADP's Analysis of LRDP NSSA Materials.....	28
Results of the NSSA.....	29
Household Composition Survey.....	29
Resources Survey.....	32
Extension Survey.....	34
Garden Survey.....	40
Yield Survey.....	45
CHAPTER 3 THE LILONGWE RURAL DEVELOPMENT PROJECT SURVEY.....	57
Description of the Survey.....	57
The Survey Instruments.....	57
The Sample.....	58

11

Personnel and Design.....	59
Analysis of the Data.....	60
Demographic and Social Indicators.....	61
Household Composition.....	61
Migration and Residence.....	62
Natality History.....	65
Education.....	65
Status Positions.....	68
Resources and Access to Infrastructure.....	70
Distances.....	74
Extension Services.....	74
Garden and Cropping Patterns.....	76
Garden Inventory and Land Tenure.....	76
Crops Grown.....	79
Maize Production and Inputs.....	84
Farm and Off-farm Income.....	89
Perceived Changes During the Past Decade.....	94
Farm Planning and Maize Knowledge.....	96
CHAPTER 4 COMPARISONS AND IMPLICATIONS.....	111
Comparison of the NSSA and the LRDP Survey.....	111
Household Composition Survey.....	113
Garden Survey.....	117
Profiles of Male and Female Smallholders in LRDP.....	121
Implications of this Report for LRDP.....	125
Sex of Household Head.....	125
Cropping System.....	126
Extension Services.....	127
Interpretation of Sex-Disaggregated Survey Data.....	128
Implications for Other WID Projects.....	129
Appendix A List of WIADP's Reports.....	132
Appendix B Sex disaggregated reporting formats for LADD.....	135
Bibliography.....	140

## LIST OF MAPS

Pages

Map 1	The Agricultural Development Divisions (ADD) in Malawi.....	4
Map 2	The Lilongwe Agricultural Development Division (LADD) and Lilongwe Rural Development Project (LRDP).....	7

## LIST OF TABLES

Pages

Table 1-1	Preliminary Report: NSSA 1980/81 Household Characteristics.....	12
Table 1-2	Clubs and Credit by Sex in LRDP 1982/83.....	17
Table 2-1	Marital Status of Household Heads, LRDP NSSA.....	31
Table 2-2	Number of Years in the Village, LRDP NSSA.....	31
Table 2-3	School Education of Household Heads, LRDP NSSA.....	31
Table 2-4	Attendance of Farming Courses, LRDP NSSA .....	33
Table 2-5	Wage Employment and Status, LRDP NSSA.....	33
Table 2-6	Approximate Distance to Closest Facilities, From Households, LRDP NSSA .....	33
Table 2-7	Types of Household Items Owned By Households, LRDP NSSA .....	35
Table 2-7b	Condition of Main House, LRDP NSSA .....	35
Table 2-7c	Types of Farm Equipment Owned, LRDP NSSA.....	35
Table 2-8	Source of Extension Advice, LRDP NSSA .....	37
Table 2-9	Sources of Advice On Extension Topics of Those Receiving Advice, LRDP NSSA .....	37
Table 2-10	Types of Contact From Extension Agents to Those Household Heads and Wives Receiving Advice, LRDP NSSA.....	39
Table 2-11	Type of Advice Received by Those Receiving Advice, LRDP NSSA .....	39
Table 2-12	Classes of Holding Size For LRDP NSSA.....	43
Table 2-13	Sources of Gardens, LRDP NSSA.....	43
Table 2-14	Areas Planted to Major Crops in LRDP NSSA.....	43
Table 2-15	Major Crops Grown, LRDP NSSA .....	47
Table 2-16	Sources of Maize and Groundnut Seed, LRDP NSSA.....	47
Table 2-17	Crop Mixtures in Groundnut Plots, LRDP NSSA.....	47
Table 2-18	Month of First Soil Preparation for Maize and Groundnut Plots, LRDP NSSA .....	49
Table 2-19	Time of Planting for Maize Plots, LRDP NSSA.....	49
Table 2-20	Time of Planting of Groundnut Plots, LRDP NSSA.....	49
Table 2-21	Time of Weeding for Maize and Groundnut Plots, LRDP NSSA .....	51
Table 2-22	Number of Weedings for Maize and Groundnut Plots, LRDP NSSA .....	51
Table 2-23	Type of First Fertilizer Applied to Maize Plots, LRDP NSSA .....	51
Table 2-24	Plant Populations from Maize and Groundnut Plots, LRDP NSSA .....	53
Table 2-25	Maize Yields from Plots, LRDP NSSA.....	53
Table 2-26	Groundnut Yields from Plots, LRDP NSSA.....	53
Table 3-1	Marital Status of Household Head .....	63
Table 3-2	Husband's Location At Time of Survey .....	63

Table 3-3	Reason for Residing In Present Village .....	63
Table 3-4	Length of Residence In Present Village .....	64
Table 3-5a	Household Composition By Age Categories.....	64
Table 3-5b	Household Composition By Kinship Catagories.....	64
Table 3-6	Average Number of Pregnancies, Births and Deaths.....	66
Table 3-7a	Education Experience of Adults .....	67
Table 3-7b	Current and Previous Children Educated and Average Number of Years of School Attendance.....	67
Table 3-8a	Reading Ability in Chichewa (Vernacular) and English .....	69
Table 3-8b	English Speaking Ability .....	69
Table 3-9	Christianity and Church Attendance .....	71
Table 3-10	Traditional and Non-Tradititonal Statuses.....	71
Table 3-11a	Condition of Main House .....	73
Table 3-11b	Farm Equipment .....	73
Table 3-11c	Household Items.....	73
Table 3-12	Measured Distances To Facilities and Infrastructure...	75
Table 3-13	Training Courses .....	77
Table 3-14	Farming Club/Group Membership .....	77
Table 3-15	Achikumbi (Recognized "Good Farmer") Status.....	77
Table 3-16	Household Head's Report as to Who Farms in Household .....	78
Table 3-17	Extension Agent Visits .....	78
Table 3-18	Number of Gardens.....	80
Table 3-19	Number and Type of Gardens Per Household For 84 MHH and 17 FHH .....	80
Table 3-20	Source of Acquired Gardens .....	81
Table 3-21	Means by Which Gardens Were Acquired.....	81
Table 3-22	Varieties of Maize .....	83
Table 3-23	Miscellaneous Household Behavior.....	83
Table 3-24	Cropping Patterns 1981/82 .....	85
Table 3-25	First and Second Main Crops in 1980/81 .....	85
Table 3-26	Fertilizers Used in 1980/81 and 1981/82.....	88
Table 3-27	Average Number of Bags Per Plot of Various Types of Fertilizer Used in 1980/81 and 1981/82.....	88
Table 3-28	Source of Fertilizer For 1980/81 and 1981/82.....	88
Table 3-29	Time of Fertilizer Application For 1980/81 and 1981/82 Maize Plots .....	90
Table 3-30	Farmer's Knowledge of Fertilizer Application For Maize Plots in 1980/81 and 1980/82.....	90
Table 3-31	Household Selling Crops and Livestock .....	92
Table 3-32	Relative Importance of Cash From Crops and Livestock..	92
Table 3-33	Households Gaining INcome Through Outside Employment..	93
Table 3-34	Households Obtaining Income From Village Industries...	93
Table 3-35	Sources Which Provide the Best Income .....	93
Table 3-36	Relative Importance of Sources of Cash Income.....	95
Table 3-37	Changes in Food Self-Sufficiency as a Result of Project .....	95
Table 3-38	Changes in Cash Income as Result of Project.....	97
Table 3-39	Changes in Use of Introduced Inputs as Result of Project .....	97
Table 3-40	Changes in Use of Credit as a Result of Project.....	98
Table 3-41	Changes in Marketing as a Result of Project.....	98
Table 3-42	Source of Hybrid Seed .....	100
Table 3-43	Souce of Hybrid Maize Seed For Next Season.....	100

4

Table 3-44	Source of Groundnut Seed For Next Season.....	102
Table 3-45	Number of Farmers Who Plan To Use Commercial Fertilizer Next Season .....	102
Table 3-46	Fertilizers Known By Farmers .....	103
Table 3-47	Average Number of Bags of Various Types of Fertilizers Farmers Plan to Use.....	103
Table 3-48	Source of Fertilizer for Farmers Who Will Use It .....	103
Table 3-49	Farmers Knowledge of When to Clear Land For Maize .....	105
Table 3-50	Farmers Knowledge of When to Ridge Land For Maize....	105
Table 3-51	Farmers Knowledge of When to Plant Maize .....	105
Table 3-52	Farmers Knowledge of Recommended Spacing For Maize.....	107
Table 3-53	Farmers Knowledge of When to Apply 20:20:0 to Maize .....	107
Table 3-54	Farmers Knowledge of When to Apply S/A to Maize.....	108
Table 3-55	Farmers Knowledge of Recommended Bags of 20:20:0.....	108
Table 3-56	Farmers Knowledge of Recommended Bags of S/A.....	109
Table 3-57	Farmers Knowledge of Price of Fertilizer .....	109
Table 4-1	De Jure Population by Age and Sex in LRDP from NSSA Data.....	114
Table 4-2	Length of Village Residence of Household Head, NSSA Data .....	114
Table 4-3	Change of the Sex of the Household Head From 1980/81 to 1981/82 .....	116
Table 4-4	Marital Status of Household Head, NSSA .....	116
Table 4-5	Major Crops Grown in LRDP, NSSA Data .....	119
Table 4-6	Major Cropping Patterns in LRDP, NSSA Data.....	119
Table 4-7	Average Crop Area For Producing Households, LRDP From NSSA Data .....	120
Table 4-8	Holding Size For Households Producing Major Cropping Patterns .....	120

#### LIST OF FIGURES

	Pages
Figure 3-1	Established Fertilizer Prices and Government Maize Recommendations.....87

## ACKNOWLEDGEMENTS

Many people helped to make this report possible. In Malawi the staff of the Women in Agricultural Development Project, Mr. C. Smith and Ms. F. Kayuni, worked as supervisors of the interviewers along with the staff of the Farming Systems Analysis Section under the direction of Dr. A. Hansen. Mrs. C. Ndacheredwa, our secretary, kept the office running while we were in the field. Ms. S. Philpott of Bunda College of Agriculture aided in training the students from Bunda College in the techniques needed for the Lilongwe Rural Development Project (LRDP) Survey.

The management and staff of the Lilongwe Agricultural Development Division (LADD) in which LRDP is located aided in allowing the Survey to be carried out and requesting that their field staff work with us. In particular, the Program Manager of LADD and the Project Officer of LRDP lent their full support to the Survey and to WIADP's endeavors. The same holds true for the Evaluation Unit of LADD and other sections such as Animal Husbandry, Credit, Women's Programs, Training, and Land Allocation.

None of this research could have been carried out without the support and encouragement of the Ministry of Agriculture (MOA). The Chief Projects Officer, Chief Agricultural Research Officer and Chief Agriculture Officer guided WIADP's stay in the country and requested that certain documents and studies be undertaken. They were interested in the results and made use of many of the results. Some of the section heads in the Department of Development were of particular assistance. My thanks goes to the Women's Programs Officer, Food and Nutrition Programs Officers, Credit Officer and Training Officer, all at MOA Headquarters.

To the personnel at the National Statistics Office and the Evaluation Officers around the country a word of thanks for listening to the need for sex-disaggregated data. Many of them followed through in producing this type of data as well.

To people who helped in the U.S., I would like to acknowledge the assistance of J. Albert (formerly of PPC/WID) and N. Horenstein of the Women in Development Office, USAID. The computer services of Mr. Evans were indispensable for this report. Ms. C. Harshbarger assisted with the report, and she and Mrs. D. Wilkes and Ms. J. Weston helped with the typing.

Dr. A. Hansen read the manuscript and provided many helpful ideas. However, the contents are solely the responsibility of the author.

Finally, my biggest thanks of all goes to my family who put up with late hours and files lost through computer errors.

A. Spring  
Gainesville, FL. USA  
March, 1984

## ABBREVIATIONS AND ACRONYMS USED

ADD	Agricultural Development Division
ADMARC	Agricultural Marketing and Development Corporation
AES	AgroEconomic Survey
BLADD	Blantyre Agricultural Development Division
FHH(s)	Female Household Head(s)
FSAS	Farming Systems Analysis Section
FSR	Farming Systems Research
GOM	Government of Malawi
KADD	Kasungu Agricultural Development Division
KRADD	Karonga Agricultural Development Division
LADD	Lilongwe Agricultural Development Division
LLDP	Lilongwe Land Development Project
LRDP	Lilongwe Rural Development Project
MOA	Ministry of Agriculture
MHH(s)	Male Household Head(s)
MZADD	Mzuzu Agricultural Development Division
NSO	National Statistics Office
NSSA	National Sample Survey of Agriculture
PM	Program Manager
PO	Project Officer
RDP	Rural Development Project
SLADD	Salima Agricultural Development Division
USAID	United States Agency for International Development
WIADP	Women in Agricultural Development Project
WID	Women in Development

## CHAPTER 1

### THE WOMEN AND AGRICULTURAL DEVELOPMENT PROJECT AND DISAGGREGATION OF DATA BY SEX

#### INTRODUCTION

This report describes some of the activities of the Women in Agricultural Development Project (WIADP) in Malawi. Other activities have been described in previous reports (see bibliography in Appendix A). This report examines some of WIADP's work in studying the contribution of Malawian women to agriculture and in disaggregating social, economic and agronomic data by sex.

In this chapter a general outline of the WIADP Project is given followed by a description of two of its major endeavors:

1. analyses of the National Sample Survey of Agriculture (NSSA) and
2. execution of a large, multifaceted survey of agricultural practices. The subject is an integrated rural development project, the Lilongwe Rural Development Project (LRDP).

LRDP is then discussed briefly in this chapter as are the design, methodology, sample, and indicators used in the LRDP Survey.

Chapter 2 describes the NSSA, its survey instruments, method of data collection, and analysis. The results of the NSSA for LRDP are presented with all data disaggregated by sex of household head.

Chapter 3 describes the LRDP Survey instruments and analysis procedures and gives the results of the Survey disaggregated by sex of household head as well as by sex of the total sample including women in male headed households, male heads, and female heads. Intrahousehold differences in production, labor experience with improved methods, and extension services are presented.

Chapter 4 briefly compares the data from NSSA and the LRDP Survey, discusses the concept of female headedness, and gives a summary of the profiles of women and men smallholder farmers in LRDP. It offers suggestions as to how LRDP more directly can aid smallholders in general, and women farmers in particular, based on the data presented here. Finally, a discussion of how a project such as WIADP and its data collection and analysis methods may enhance future integrated development projects as well as women in development (WID) projects is presented.

#### MALAWI'S NATIONAL RURAL DEVELOPMENT PROGRAM

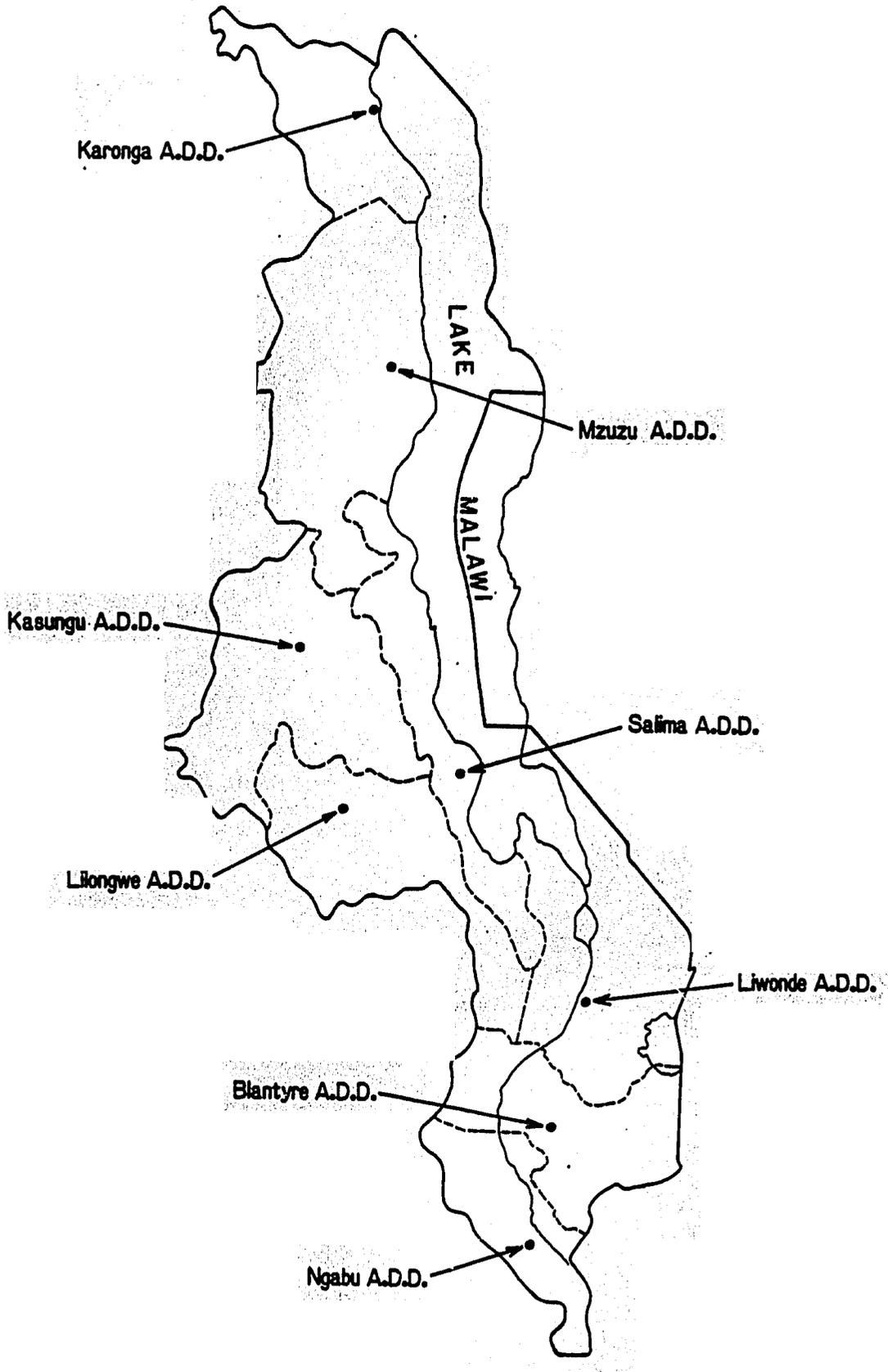
The Republic of Malawi, a landlocked country in south central Africa, is bordered by Tanzania, Mozambique and Zambia. The total area is 118,484 square kilometers, of which 21% is covered by water (principally being Lake Malawi, the 9th largest lake in the world). Malawi has a growth rate of 2.9%. With a population of approximately 6 1/2 million people, there is an average population density of 70, but the range goes from 29 to 103 persons per square kilometer. Land holding ranges from 0.97 hectares in Southern Region to 1.39 in Central Region and 3.45

hectares in Northern Region. People living in rural areas constitute 90% of the population.

According to 1979 figures, agriculture produced 43% of the Gross National Product with 92% of exports deriving from agriculture. Malawi's agriculturally based economy is divided into two sectors. The estate sector contributes approximately 70% of agricultural exports whereas the smallholder sector contributes 30% in addition to feeding itself. Estates manage 25% of the land planted in the major cash crops such as tobacco, coffee, tea and sugarcane. In relation to the total land area, 15% is cultivated by smallholder farmers and 5% by commercial estates. Women's extensive contribution to subsistence and cash crop production has been documented by Clark (1975) and discussed fully elsewhere (Spring 1982 1983b; Spring, Kayuni and Smith 1983b).

Beginning in 1977, the country embarked on a 20 year National Rural Development Program (NRDP) in order to increase smallholder production that was lagging behind the estate sector. The NRDP aims to 1) increase smallholder production; 2) conserve national resources through better crop husbandry, conservation of watershed areas and forests; and 3) provide inputs and services to smallholders (GOM 1978).

To accomplish these aims the country was divided into eight contiguous units called Agricultural Development Divisions (ADDs) for the purpose of administering development projects. There are two ADDs in the Northern Region (Karonga and Mzuzu), three in the Central Region (Lilongwe, Kasungu, and Salima), and three in the Southern Region (Blantyre, Liwonde, and Ngabu) (Map 1). Each ADD



MAP 1 THE AGRICULTURAL DEVELOPMENT DIVISIONS (ADDs) IN MALAWI

has two to six Rural Development Projects (RDPs) under its control. There are approximately 40 RDPs today, 28 of which are funded integrated development projects. The funds come from international donors (19 projects) or general Government of Malawi (GOM) revenue funds.

### THE WOMEN IN AGRICULTURAL DEVELOPMENT PROJECT

The Women in Agricultural Development Project (WIADP) operated in Malawi from 1981-1983 under the auspices of the GOM, Ministry of Agriculture (MOA), with funding from the Office of Women in Development, USAID.<sup>1</sup> Personnel consisted of an anthropologist (who was Project Director) an agronomist, a Malawian agriculturalist, and a secretary. Staff from the Departments of Research and Development (extension) staff of the MOA aided from time to time. The aim of the Project was to study women and men farmers in relation to agricultural development in Malawi in order to strengthen project planning and extension services to rural women. Data on women in diverse agricultural contexts were collected in terms of socio-economic and cultural variables, indigeneous and improved agronomic practices, knowledge and utilization of improved agriculture, and interaction with development processes (activities and personnel).

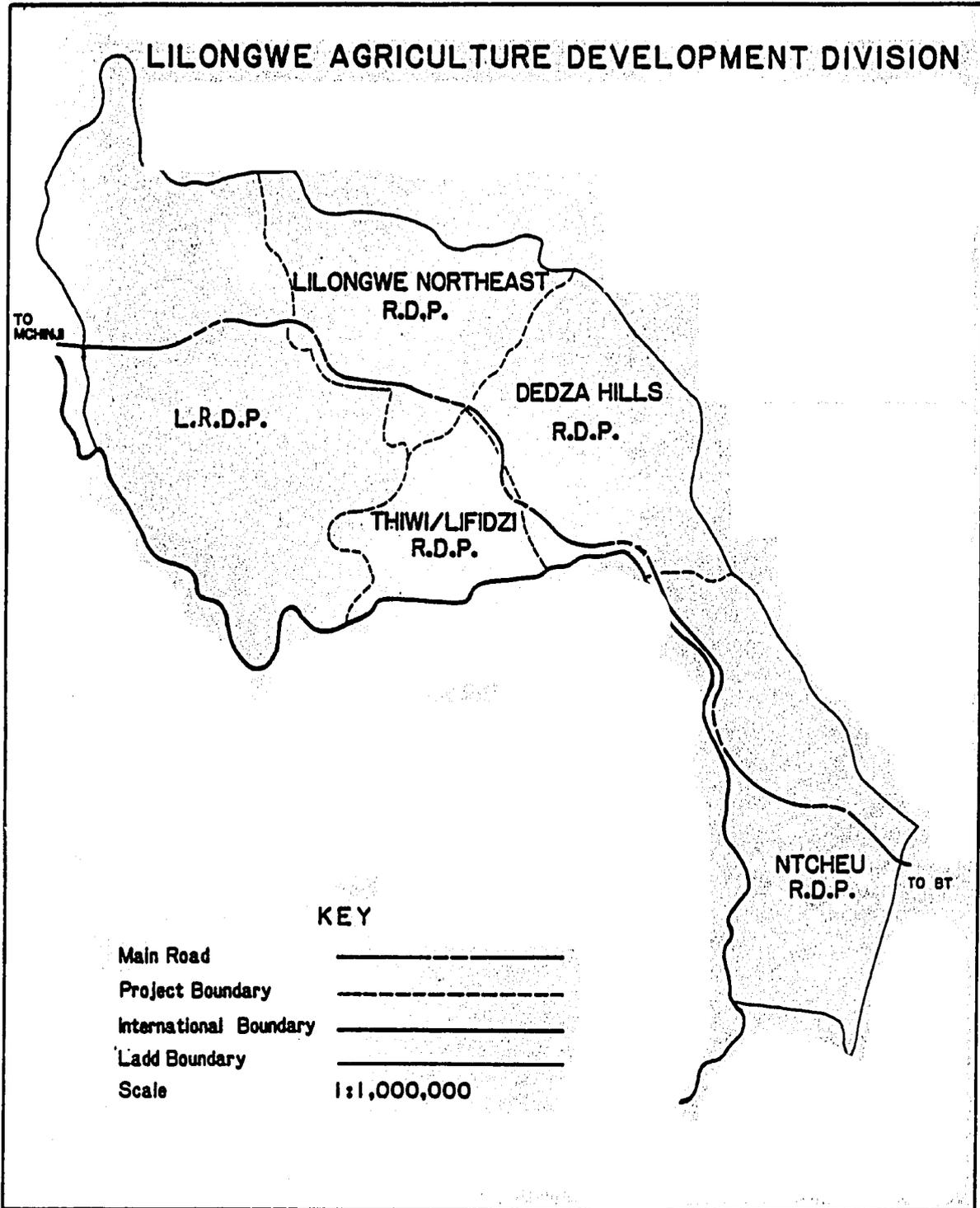
WIADP endeavors in Malawi included research, training, and action-oriented projects. In its major intensive research activities, WIADP concentrated in one area in each of the three regions of the country at the request of the MOA. WIADP focused

its data collection in terms of farming systems research (FSR) in Karonga ADD (KRADD), Lilongwe ADD (LADD), and Blantyre ADD (BLADD), but all ADDs were visited and staff interviewed in terms of development planning and women farmers (Spring 1983a).

WIADP's agro-socioeconomic research activities focused on FSR including reconnaissance surveys carried out in Liwonde ADD (LWADD) (Spring 1982a) and KRADD (Spring 1982e; Spring, Smith, Kayuni 1982), trials in BLADD and LADD (Spring 1981c; Smith 1982a, 1982b, 1983), investigations of groundnut, soybean and stall-feeder enterprises in LADD (Spring 1982a, 1983), and an in-depth investigation of farming systems in LADD. The latter is described in this report (Map 2).

Another research endeavor involved the investigation of the background and agricultural training of female and male extension personnel at various levels with the help of the Women's Program Section of the MOA (Spring 1981a, 1982b, 1983a; Kayuni 1982a, 1982b).

The third major research activity was concerned with disaggregating by sex two large bodies of data. Sex disaggregated labor data from the AgroEconomic Survey Reports (AES 1968-83) that had been collected since 1968 were compiled and analysed to provide a general picture of the farming systems and women's contribution by area and commodity (Spring, Smith and Kayuni 1983b). Another sex-disaggregation project, reported on here, is concerned with a large data set from the National Sample Survey of Agriculture (NSSA) that was carried out in Malawi in 1980-81. Survey data were analysed, and the various research units responsible for analysing these data were introduced to the



MAP 2 THE LILONGWE AGRICULTURAL DEVELOPMENT DIVISION (LADD) AND LILONGWE RURAL DEVELOPMENT PROJECT (LRDP)

method of sex-disaggregation.

In terms of training, WIADP held a National Workshop on Women in Agricultural Development for Women's Program Officers and others (Spring 1982d), prepared a commodity training manual, provided agronomic training and materials to farmers, and worked with extension personnel at a variety of levels to train them in agricultural topics.

The action and policy endeavors of WIADP included changing reporting formats for RDPs (Spring, Smith and Kayuni 1983b; Appendix B), working at the national level on credit policy for women (MOA, 1982), preparing recommendations<sup>2</sup> and methodologies as to how male extension workers could work with women farmers (MOA 1983), and having the National Statistical Office (NSO) utilize the sex-disaggregated data (NSO 1982). A complete list of WIADP's publications is given in Appendix A.

#### INVOLVEMENT OF WIADP IN DISAGGREGATING NSSA DATA

There has been much discussion about the need to have data disaggregated by sex at the national level in order to have adequate data bases with which to evaluate and plan projects to benefit women (Dixon 1982; Burfischer and Horenstein 1982; Safilios-Rothschild 1983). A major concern of WIADP and of this report is to document the farming practices and delivery of RDP services to women in married households and on their own, and to compare male and female headed households. "It is very important to have detailed data on the nature of women's employment status in agriculture in order to dispel the prevailing stereotypic

image of women as unpaid family workers" (Safilios-Rothschild 1983:1).

Various indicators at the macro-level on women's contributions, needs, and potential must be known for planning purposes. Because the many aspects of women's agricultural work are unknown, national policies and field projects do not take rural women into account thereby failing to prepare and provision them adequately. WIADP saw as a very important goal the task of providing sex disaggregated data both in its own work and in terms of the secondary data that it utilized. Some of the results of this work in other RDPs were presented to the Planning Division of the MOA at their request in April 1983 (Spring, Smith and Kayuni 1983b).

WIADP targeted the NSSA as a major body of data that would be used for policy making and investigated the possibility of disaggregating by sex the data generated by the various surveys. The NSSA was carried out in 1980-81 as a national survey of smallholder agriculture. Approximately 7,000 households were surveyed. The purpose of the NSSA was to study the use of Malawi's agricultural resources in order to help policy makers decide priorities and strategies for future agricultural development.

The NSSA was a very intensive endeavor in terms of the amount of data collected, the length of time involved (an entire year), and the local specificity, i.e., its ability to assess production at the ADD as well as the RDP level. Funds for the NSSA came from the British (90%) and Malawi (10%) Governments, and the work was conducted on a collaborative basis between the

MOA and the National Statistical Office (NSO) which is under the Ministry of Finance.

Starting in one ADD, WIADP was able to obtain coding sheets of three NSSA surveys prior to their being processed by the NSO and realized that data were collected in such a way as to contain adequate information by sex of household head. The analysis as planned by the NSO and other units of the MOA would ignore this fact and lump female household heads (FHHs) and male household heads (MHHs) together. WIADP was particularly interested in the sex of household head because a distinction is often made in terms of female household heads and women in married households as being eligible or targeted for various RDP services.

On the basis of establishing the method of analysis and seeing that the results might present some useful data, WIADP presented these notions to MOA and NSO personnel in November 1981. WIADP stressed that it would be useful to know the percentage of FHHs (as these households might need some attention) in all the project areas for planning purposes and noted that this easily could be gleaned from the data. WIADP argued that it would be then possible to rewrite the software programs so that FHHs and MHHs could be compared in all the surveys. Subsequent meetings with various ADD and NSO personnel involved discussions about the need to disaggregate the data by sex and the method for doing so.

By the time WIADP terminated its stay in the country the following had been completed in terms of disaggregation by sex of NSSA data on smallholder farmers (these items are not given in chronological order). First the initial NSO publication on the

NSSA contains the percentage of FHHs for each ADD and RDP in the country (Table 1-1), allowing area-specific and nationwide totals to be seen for the first time (NSO 1982:2).

Various ADDs were "inspired" to disaggregate their NSSA data. Liwonde ADD (LWADD) re-entered all its data from the three Core Surveys (discussed in Chapter 2) into the University of Malawi's computer and analyzed the data using its own method. Since this particular ADD has a high proportion of FHHs (37% compared with the national total of 29%), some attention was focused on these households in subsequent rural development project proposals (LWADD 1982).

The Evaluation Unit of Ngabu ADD (NADD) followed the model laid out exactly, analyzing by sex of household head for the same three surveys as in the original paper (Spring 1981b), in spite of the fact that they had access to data on other surveys as well (NADD 1982). They then used the data gleaned in this way to understand the lack of contacts by their extension staff to women farmers in the area.

BLADD analyzed all the surveys by sex of household for one RDP area with 35% FHHs and added a refinement to the concept of household head by distinguishing between FHHs who were married and those who were not. The analysis showed that married FHHs were more similar to MHHs, while unmarried FHHs were quite different in their cropping, income and expenditure patterns (BLADD 1982a, 1982b).

Of the remaining ADDs, LADD and KRADD were preparing to disaggregate the data; Kasungu ADD (KADD) was considering the process; and the Salima ADD (SLADD) and Mzuzu ADD (MZADD)

TABLE 1 PRELIMINARY REPORT NSSA 1980/81 - NATIONAL SAMPLE SURVEY OF AGRICULTURE FOR CUSTOMARY LAND  
HOUSEHOLD CHARACTERISTICS

	% FEMALE HH HEADS	MEAN DE FACTO HH SIZE	MEAN AREA CULTIVATED (HECTARES)	SAMPLE NO HOUSEHOLDS
CHITIPA	13.2	5.1	1.07	100
KARONGA	17.7	4.5	0.88	120
KARONGA ADD	15.8	4.8	0.96	220
RUMPHI-COFFEE	22.7	6.1	0.77	60
HENGA-KASITU	27.7	4.6	1.14	60
HENGA-KASITU EXT	17.1	5.1	1.79	80
RUKURU-KASITU	17.4	4.7	1.57	80
WEST MZIMBA	16.1	4.8	1.72	120
SOUTHWEST MZIMBA	33.1	3.9	1.42	60
NKHATA BAY	24.0	5.4	0.88	120
MZUZU ADD	21.9	4.8	1.39	580
KASUNGU NORTH	12.0	4.8	2.26	220
RUSA	9.3	5.7	2.36	100
NTCHISI	12.0	4.5	2.10	100
DOWA WEST	14.9	5.3	2.06	220
BOYA HILLS	16.1	4.4	1.64	120
MCHINJI SOUTH	16.4	4.7	2.04	180
KASUNGU ADD	14.1	4.9	2.06	940
MKHOTA-KOTA	25.6	5.1	0.71	80
SALIMA NORTH	27.0	4.3	1.01	220
SALIMA SOUTH	30.4	4.1	1.11	200
SALIMA ADD	28.4	4.3	1.02	500
LILONGWE	20.4	4.4	1.72	540
LILONGWE EAST	20.0	4.4	1.16	219
THIWI-LIFIDZI	32.8	4.2	1.36	180
DEDZA HILLS	38.5	4.6	0.99	160
NTCHEU	38.2	4.6	1.08	219
LILONGWE ADD	27.4	4.4	1.38	1318
MANGOCHI	33.2	4.0	0.79	240
MAMVERA	42.3	3.9	0.97	160
BALAKA	42.3	4.3	1.01	220
KAWINGA	31.2	3.9	0.94	260
ZOMBA	36.9	4.0	0.77	480
LIWONDE ADD	36.5	4.0	0.87	1360
SHIRE HIGHLANDS	33.6	4.7	0.75	660
BLANTYRE	37.9	4.8	0.77	220
MWANZA	30.9	4.8	1.27	120
PHALOMPE	34.7	4.3	0.89	259
MULANJE	33.0	4.6	0.67	320
BLANTYRE ADD	34.3	4.6	0.80	1579
CHIKWAWA	23.7	4.4	1.46	240
NSANJE	24.5	4.5	1.18	140
NGABU ADD	24.0	4.4	1.36	380
MALAWI	28.8	4.5	1.16	4877

TABLE 1-1 PRELIMINARY REPORT & NSSA 1980/81  
HOUSEHOLD CHARACTERISTICS

appeared disinterested.

Shortly before WIADP terminated in Malwai, the programmer at NSO rewrote a program for the Extension, Household Composition and Resources Surveys for two of the project areas, one of which was LRDP. Therefore, in total WIADP was able to obtain the data and analyze five of the ten NSSA surveys for LRDP.

#### INVOLVEMENT OF WIADP IN LADD

WIADP was located at Chitedze Agricultural Reserach Station which is in the LRDP area and which was designated as one of our research areas by the MOA. The Program Manager (PM) of LADD and the Project Officer (PO) of LRDP were receptive to WIADP's work. A variety of studies and training activities took place in LRDP and focused on stall-feeding (Spring 1982b, 1983d), soybean demonstrations and trials (Spring 1981c; Smith 1982a, 1982b, 1983) and training of extension personnel (Spring 1981a, 1982c; Kayuni 1982a, 1982b, MOA 1983).

A request from the MOA to evaluate Women's Programs in the ADDs required extensive contact with the management and staff of all ADDs. The PM of LADD, however, requested that WIADP present its findings about LADD at an all day seminar to its staff. He and his staff worked with WIADP to prepare a document specifying strategies that the various sections and programs could use to: 1) increase their benefits to women farmers and 2) account for the presence of rural women in agriculture (Spring, Smith and Kayuni 1983a). To this end sex-disaggregated reporting formats were designed to monitor the progress of extension contacts, training

courses, and credit programs for staff and management at all levels. These formats are now in use for all of the RDPs within LADD (Appendix B).

### LILONGWE RURAL DEVELOPMENT PROJECT

The Lilongwe Rural Development Project (LRDP) is located to the west and south of Lilongwe City, the capital, in an area of gently undulating plains. The area has an altitude of 1,090-1,230 meters, a temperature range of 15 to 23 degrees celstus, and a rainfall ranging from 640-1,090 mm (November to April). The soils are moderately fertile and well suited for growing maize, groundnut and tobacco. The area was originally selected for funding in the late 1960's because it was in the "major granary area of Malawi and people were accustomed to cash cropping and had shown interest in land reorganization and improved farming" (Kinsey 1973; Lele 1975).

The people in the Project area primarily monocrop maize (corn), groundnuts (peanuts), tobacco, beans and sweet potatoes under rainfed conditions. The project aim was the "production of major crops (maize, groundnut, and tobacco) in a concentrated area of 465,587 ha. through improvements in rural infrastructure, land reorganization, training, credit, extension, marketing and livestock development" (Lele 1975:10-11). Benefits to the nation included increased government revenue, taxes and exportable surpluses, plus the formation of an experienced group of development officers ( LLDP 1973, 1979; Kinsey 1973; Lele 1975).

Benefits to the farmer included an increase in net income

and the establishment of a stable pattern of agriculture based on land registration. It was believed that matrilineal inheritance and post-marital matrilocal residence precluded stable, commercial agriculture, and so land registration was supposed to stabilize men on the land. The project's original name was the Lilongwe Land Development Programme (LLDP) because a major aspect of the original proposal focused on land reorganization, consolidation and registration.

Currently in its fifth and final phase, LRDP was largely funded by the International Development Association and the GOM. The structure of LRDP is that six administrative groups oversee 40 units (recently changed to EPAs or Extension Planning Areas) that have been developed since 1968. Each unit has a Development Officer and a number of grass roots technical assistants (four or more general extension agents and occasionally other personnel such as tobacco, forestry, livestock/veterinary assistants who are male, and half the units have one farm home assistant who is female).

During the first two years of LRDP, there was one extension worker for every 200 families; the next 2 1/2 years the ratio was one for every 400 families compared with one for every 1,200-1,300 families in the non-program area. In addition there are development/planning committees for farmers organized at village, unit, group, and project levels. Day training courses take place at the unit center while one to two week courses are given at the two residential training centers. Most agricultural courses are for men while women receive home economics courses.<sup>3</sup>

Originally LRDP dispersed credit on an individual basis, but

abandoned that system in favor of farmers groups/clubs where seasonal loans are guaranteed by the members. Medium term loans and credit for livestock are still made on an individual basis (see Table 1-2). Most units have primary schools; some have a dispensary; and many have a government market owned by the Agricultural Marketing and Development Corporation (ADMARC).

WIADP examined many of the LRDP proposals and project completion reports and determined that there was little about women either as farm managers (FHHs) or family laborers in the proposals or reports (LLDP 1973; 1979). Women are mentioned only as "farmer's wives" to be trained in home economics classes, and their participation in LRDP services is only measured by attendance at home economics courses. WIADP determined that although the aims of Phases IV and V relate directly to women's concerns and needs, no mechanisms exist to connect women to project services.

The current situation in terms of women in groups/clubs and in obtaining various types of credit is given in Table 1-2. In almost none of the six groups does the percentage of women participating in project services come close to the percentage of female heads of household or farm laborers. Although at least 20% of farms are headed by women in LRDP, only 12% of the membership of clubs/groups is female, and many of these women members are married to men who are members. The same can be said for the percentage of women getting seasonal credit (13%), stall-feeding (17%) and medium term credit (0.4%). It is hoped that documenting women's contribution and needs as well as meeting with the staff to discuss strategies will result in women

Table 1-2

## CLUBS AND CREDIT BY SEX IN LRDP 1982/83\*

GROUP (Division)	1	2	3	4	5	6	Total Project
<u>CLUBS</u>							
Total Clubs	244	266	35	428	274	218	1465
Total Members	5265	6859	9124	10241	6404	5752	43645
Men	4690	5887	3274	8436	5906	4767	37870
Women	665	972	840	1805	198	962	5442
% Women	13%	14%	9%	18%	8%	17%	12%
<u>CREDIT</u>							
<u>Seasonal</u>							
Men	3824	5840	7995	8061	4701	4268	34689
Women	434	972	798	1699	403	928	5234
% Women	10%	11%	9%	17%	8%	18%	13%
<u>Medium Term</u>							
Men	69	38	36	62	37	11	253
Women	-	-	-	-	-	1	1
% Women	0%	0%	0%	0%	0%	8%	0.4%
<u>Stall-feeders</u>							
Men	121	70	118	154	100	79	642
Women	66	3	5	31	22	3	130
% Women	35%	4%	4%	17%	18%	4%	17%
<u>Dairy</u>							
Men	18	5	21	3	2	36	85
Women	-	-	1	-	-	-	1
% Women	0%	0%	5%	0%	0%	0%	1%

\* Source, Project Officer, LRDP

receiving more attention in present programs and future proposals.

### THE LRDP SURVEY

In addition to the data from the NSSA on the LRDP, this report focuses on a large (15 instrument) survey carried out by WIADP with the Farming Systems Analysis Section (FSAS). The FSAS was part of another USAID project on Agricultural Research conducted through the MOA and was responsible for farming systems research in the country. It was able to provide personnel, transport, some supplies, and computer facilities for the Survey (Hansen and Ndengu 1983). The households in the LRDP Survey are a sub-sample from the NSSA. It was therefore possible to obtain a great deal of information about the same households over a two year period and combine both primary and secondary data. The purpose of the Survey was to study:

1. sex differences in farming practices between a) male and female household heads, b) men and women in the same household, and c) women in the two types of households;
2. the effects of a development project on the farming system of men and women smallholder farmers; and
3. the major indicators of smallholder agricultural development.

### Previous LRDP Studies and Findings

The first survey in LRDP was a Farm Management Survey carried out on 1,000 growers from November 1969 to June 1971 by LLDP's Evaluation unit. It studied cropping patterns, the household, livestock ownership, knowledge of "correct" (i.e., extension) recommendations, farming practices, and farm planning (LLDP 1971; 1973). Unlike Kydd (1982b below) who used a figure of 11% for female heads of households, it concluded that 30% of the farms were managed by women, the average holding was 5 acres, 36% of growers cultivated vegetable seepage gardens, the average household had 4.9 persons; and polygyny occurred in 26% of male headed households. Fifty nine percent of the rainfed land was in unimproved maize; only 3% of arable land under cultivation was intercropped, and 9% ever received a fallow period. The following proportion of households owned livestock: cattle-(19%), work oxen-(8%), poultry-(60%), other fowl-(14%), sheep-(2%) and pigs-(8%). Bicycles were owned by 25%, stores by 2% and 1% had vehicles.

Of particular importance to the design of the 1982 LRDP Survey is Kydd's work in LRDP (1978, 1982a, 1982b). His key indicators are activity patterns, income, consumption, productivity, management and resources. The data Kydd uses were collected in two Farm Management Surveys that were administered by the Evaluation Section of LRDP in 1969/70 and then in 1978/79. The first survey was the predecessor to the Core Surveys of the NSSA (see Chapter 2). It

"measured household composition (monthly), garden (one measurement-double checked), the incomes, expenditures and labour allocation of all household members and the work performed by the hired labour (by daily visits). The surveys spanned the twelve months October to

September, and during this period enumerators were stationed in the selected villages. Each enumerator was required to make daily visits to between eight and ten households" (Kydd 1982a:i).

Kydd's compares the two surveys. He shows that between 1969/70, the start of the Project, and 1978/79, nine years later, there were significant changes in income, labor allocations, resources and expenditures. He found that the number of female heads increased from 11% to 28% between the two samples, but there was no change in the average age of the household head. Holding size decreased commensurate with the estimated population growth rate in LDRP (2.5%), but the land-person ratio was less affected, probably because of increased male labor migration. "Farm units of all sizes ... experienced declining land availability per worker" (1982b:99) with households having the most and least land suffering the greatest decline. Men who do not have sufficient land tended to migrate, accounting for the increase in female headed households.

Over the nine year period farmers planted their maize earlier following extension recommendations, but there was an overall increase in the labor expended. Cultivation of improved maizes declined, and more labor was expended on tobacco than maize at the expense of livestock, vegetables and other crops. Agricultural labor allocated to local maize increased from 35% to 44% of total agricultural work, while labor applied to improved maizes fell from 3.5% to zero. Work on tobacco increased from 13% to 21% of total agricultural work. Work on groundnuts was stable with improved varieties becoming important (5 to 11 times more labor time). Labor devoted to vegetables and other crop and

livestock declined. The proportion of work done by hired labor was unchanged.

Kydd also shows that overall income increased but purchasing power remained stable. Cash income increased from agriculture, but the importance of agricultural income declined while that of non-agricultural income increased. However, there was no change in the share of tobacco in agricultural receipts (1982b:93). Also unchanged was the share for livestock although the labor allocation decreased, and increased expenditure could be due to the introduction of stall-feeding. Similarly, labor on vegetables and other crops declined, but income from these activities increased probably due to increased demand from Lilongwe City. The income from non-agricultural wage labor and non-farm business increased markedly.

#### Indicators for the LRDP Survey

A guiding idea in the design of the LRDP Survey was the use of key indicators of development (Castro, Hakansson and Brokensha 1981; Kydd 1982a, 1982b). Castro, et. al. suggest that it is useful to consider control of land, productive resources such as capital equipment, consumer durables, income (farm and nonfarm), and livestock, as well as non-productive indicators such as housing, consumer goods, fuel, ceremonial expenditure and diet (1981:401). The authors also attempt to delineate local people's perception of development. Following Castro, et. al. and Kydd the indicators used in the LRDP Survey are;

1. Land: types, major and minor crops grown, land tenure and

acquisition, use of fertilizers and inputs, yields and stored grain, experience cultivating improved maizes.

2. Capital equipment other than land and livestock: farm implements, consumer durables.
3. Income: self provisioning ability, sources of income from farm and non-farm. (Amounts and expenditures were not possible to collect properly, and retrospective data on these topics are inaccurate.)
4. Non-productive property: condition of main house, number of granaries.
5. Fuel firewood - sources
6. Education: of household head, spouse, children.
7. Household size and composition: number and age of adults and children, residency status, sex of household head.

From the smallholder study (LLDP 1973) the following types of information were added to the survey instruments:

8. Knowledge of correct maize cultivation practices and recommerdations.
  9. Farm Flanning: sources of seed and inputs, plans and operations for the next growing season.
- In addition, the following other indicators were then added:
10. Labor: persons participating by crop and farm operation, labor hired.
  11. Perceived changes as a result of the Project: perceptions of "development", utilization of project services, and committee/club membership.
  12. Distances to resources/project services.
  13. Religiousity, traditional and non-traditional status

14. Migration, urban and international experiences of men and women.

The previous surveys and analysis described above provide a foundation for the 1982 WIADP/FSAS LRDP Survey. Chapter 2 expands upon the 1980/1981 NSSA survey instruments and results since this was the sample from which the 1982 subsample was drawn. Then Chapter 3 discusses the instruments and results of the 1982 LRDP Survey. Chapter 4 compares the NSSA and LRDP Survey and argues that they are producing comparable data so that profiles about smallholder agriculture or farming systems of male and female household heads can be reliably made from either or both.

FOOTNOTES

1. The funding from the office of Women in Development, USAID commenced in March 1982.
2. In Malawi, only the MOA issues technical agricultural recommendations. Ideas and advice from other sources are considered suggestions.
3. Beginning in 1982, LADD began targeting women for agricultural courses as well as home economics courses. Thirty percent of places in agricultural courses were being reserved for women.

## CHAPTER 2

### THE NATIONAL SAMPLE SURVEY OF AGRICULTURE

#### DESCRIPTION OF THE NSSA

##### Survey Instruments

The National Sample Survey of Agriculture utilized ten survey schedules to assess agricultural, social and economic variables which affect rural farm families. The first three survey instruments (Household Composition, Garden, and Yield) have been used previously and are known as the Core Surveys.

The Preliminary Report (NSO 1982) describes the survey instruments as follows:

- "1. HOUSEHOLD COMPOSITION SURVEY: A listing of all members by age and sex together with questions covering personal characteristics of the household head.
2. GARDEN SURVEY: Area measurements together with questions covering land tenure and land husbandry.
3. YIELD STUDY SURVEY: Harvest record with other questions covering cultivation practices.
4. RESOURCES SURVEY: Distance of the household from various important amenities together with questions concerning ownership of various household and farm implements and the condition of the main dwelling unit.
5. EXTENSION SURVEY: A set of questions answered separately by the household head, and where possible by his wife (sic), concerning types of advice, methods of receiving advice and frequency.
6. CROP STORAGE SURVEY: Measurement of all storage structures with records of the amount of crops in the structure, pests

and protection methods used.

7. LIVESTOCK SURVEY: A count of all cattle, sheep, pigs, goats and all types of poultry together with a recording of deaths, births and slaughterings during a set recall period.
8. INCOME AND EXPENDITURE SURVEY: A record of all income by source, expenditure by type and barter transactions.
9. NUTRITION SURVEY: Weight and length measurements for children under five years.
10. ENERGY SURVEY: A survey of types of energy used for various tasks with questions concerning the availability of wood" (NSO 1982:v).

All households in the sample received the Household Composition, Garden, Yield, Resources, Livestock, and Nutrition Surveys. Thirty five percent of the sample were queried on the Extension, Crop Storage, and Energy Surveys; only 20% were given the Income and Expenditure Survey. Household Composition, Yield, Resources and Extension Surveys were administered once. Garden, Crop Storage, Nutrition and Energy were given twice. The Livestock Survey was given thrice; and the Income and Expenditure Survey involved weekly visits to record data.

This chapter analyzes the data pertaining to the Core Surveys plus the Resources and Extension surveys. Data from the remaining surveys were still being processed by the NSO when WIADP stopped its work in Malawi.

### Sample

The sample of households was chosen through a sequential process that utilized both stratification and randomness. The first strata were the 180 Eastern Planning Areas (EPAs) into

which the rural countryside is divided. All EPAs contain approximately the same number of farm families. Each EPA was subdivided in the mid 1970s into subunits that were used as enumeration areas (EAs) for the 1977 National Population Census. Each of these EAs had a population of between 500 and 1500 people in 1977. A random sample of twenty households was selected from the complete list of all households within each of the randomly selected EAs. Each of the 344 enumerators for the NSSA was assigned 20 households within an EA, giving a possible national sample of 6,880 smallholder households from 344 EAs. The enumerators resided for 12 months in the villages close to their clusters of 20 families.

For the NSSA a household was defined as:

"being made up of all members who make common provision for food, or more simply, people who eat together from a common pot. A household head is the person making day to day decisions (especially concerning agriculture) in the household. In some cases female headed households may be supported by husbands working elsewhere." (NSO 1982:1)

### Administration

The NSO was ultimately responsible for the NSSA. At the field level one supervisor managed 6 enumerators, and a field officer monitored the progress of a number of supervisors. Each ADD has its own Evaluation Unit that is responsible annually for collecting and analyzing data in project areas that have already received international funding. These Evaluation Units administered the NSSA in the EAs within those project areas. In project areas that are not yet funded and, thus, do not have an

Evaluation Unit assigned to them, the NSO directly hired enumerators, field officers and supervisors and also utilized the staff of the Agro-Economic Survey office. There were 344 enumerators who collected data, each man being responsible for 20 households and residing in the villages where households were located.

In terms of data analysis, the responsibility rests with NSO. However, some ADD Evaluation Units produced preliminary results for their areas, by computer or hand tabulation, usually only of the Core Surveys.

It should be pointed out that the NSO shares a computer with only 24K of memory (Apple home micro-computers have 64K or 128K) with other government agencies, hence processing and analyzing the data has been slow. Thus far NSO has produced a nationwide preliminary analysis of the NSSA that gives household characteristics (percentage of female household heads and de facto household size), mean cultivated area by RDP, cropping patterns by ADD, and yields of seven major crops by RDP (NSO 1982).

#### WIADP'S ANALYSIS OF LRDP NSSA MATERIALS

The Evaluation Unit of LADD was responsible for the NSSA enumerators working within existing projects such as LRDP. Because the Evaluation Unit of LADD had been administering the Core Surveys for years prior to NSSA, the Unit received the print-outs from NSO. WIADP worked to analyze the LRDP NSSA materials because of its interest in disaggregating the data and

because the Unit was not currently working on it. Print-outs from the three Core Surveys were obtained from the Evaluation Unit. Tables were prepared that disaggregated the data by sex of household head. Extension and Resources Surveys were subsequently analyzed more easily because the programs were rewritten by NSO and the data computerized. VIADP was able to analyze five of the NSSA surveys: the three Core Surveys (Household Composition, Garden and Yield), Resources; and Extension, because the data were available for analysis. Print-outs from the remaining five surveys are still in progress by the NSO.

## RESULTS OF THE NSSA

### Household Composition Survey

The Household Composition Survey collected demographic data on the number and age of residents, education, employment and social status, as well as facts concerning the household head. For the Survey, a household consisted of those people who regularly eat from the same pot, and the head of the household is the person who makes major decisions for the household. The Household Composition Survey required that "The wife should be listed as Head if the male of the household returns home less frequently than once a month" (NSSA: enumerators' manual 1980).

Figure 1-1 in Chapter 1 shows each ADD and RDP in terms of percentage of female heads, mean de facto household size, mean area cultivated and number of households sampled. LADD averaged

27% female household heads (FHHs) compared with 29% for all of Malawi. LRDP showed 20.4% in the NSO corrected sample. However, in the uncorrected print-outs used by WIADP for this Survey, 21.9% or 114 out of 520 households were female headed. Other RDPs in LADD such as Dedza Hills and Ntcheu have 38% of their households headed by women.

The marital status of FHHs and male headed households (MHHs) is shown in Table 2-1. Unlike KRADD in the Northern Region where 62% of FHHs are widows and 18% are married (Spring 1981), in LRDP 39% of FHHs are married; 30% are separated or divorced; and 31% are widows. There are no questions that provide information about the location of the husbands, though one assumes they are in Malawi (estates, urban areas or living with other wives on a regular basis) or elsewhere. No information was collected concerning remittances from or frequency of contact with husbands. LRDP is located in the matrilineal/matrilocal areas of Malawi. Table 2-2 shows that FHHs have lived in their village as long or longer than MHHs.

Concerning education, most FHHs (72%) have no education compared with 36% of MHHs. The 28% of the FHHs with some education are divided equally between vernacular (Chichewa) and some primary school education. Only 1% of FHHs have completed primary school compared to 8% of MHHs. Secondary school was attended by 1% of MHHs and no FHHs (Table 2-3).

Thirty six percent of MHHs have attended farming courses compared to only 10% of FHHs; few household heads have attended residential courses (Table 2-4). Other information not given in the tables show that no FHHs had vocational training whereas 5%

TABLE 2-1 MARITAL STATUS OF HOUSEHOLD HEADS, LRDP NSSA (PERCENTAGES)

	MHH=406	FHH=114
non polygynist*	72	39
polygynist	24	--
separated	2	18
divorced	1	12
widowed	1	31
never married	1	1
Total %	101	101

\* A man with more than one wife is recorded as a polygynist.  
 A woman married to a polygynous husband is recorded as a non-polygynist.

TABLE 2-2 NUMBER OF YEARS IN THE VILLAGE, LRDP NSSA (PERCENTAGES)

	MHH=406	FHH=114
0- 5 years	10	3
6-10 years	7	7
11-20 years	10	10
21-40 years	45	43
40+ years	27	38
Total %	99	101

TABLE 2-3 SCHOOL EDUCATION OF HOUSEHOLD HEADS, LRDP NSSA (PERCENTAGES)

	MHH=406	FHH=114
No education	36	72
Vernacular	23	14
Some Primary	31	14
Primary Completed	8	1
Some Secondary	1	-
Total %	99	101

of MHHs did. Two percent of FHHs had experience on farming estates compared with 6% of MHHs.

The wage employment histories differed significantly for MHHs and FHHs with 72% of the MHHs compared with 6% of the FHHs having wage labor experience. Of the males, 42% had two to five years; 12% had two years; and 17% had six or more years experience (Table 2-5).

The question on traditional status showed that 14% of MHHs and 5% of FHHs had some traditional status. Traditional status categories are vaguely defined, and it is difficult to tell if one or both sexes were queried properly. Enumerators were simply told to "make a list of the positions of traditional status" in their field notebooks. Non-traditional status was acquired by 33% of MHHs and 13% of FHHs. One assumes since non-traditional statuses were specified as minister, local political party member, and project committee officers, that women's statuses such as midwife were not counted (Table 2-5).

### Resources Survey

The Resources Survey measured distances to government and infrastructural facilities within LRDP in three broad categories: less than 2 kilometers, 2-8 kilometers and more than 8 kilometers. Table 2-6 shows there are few differences between the male and female heads, but female heads tend to be closer to improved water supplies. Most households tend to be within 2 kilometers of improved water, firewood supply and a grocery store. The majority of households are between 2 and 8 kilometers

TABLE 2-4 ATTENDANCE OF FARMING COURSES, LRDP NSSA (PERCENTAGES)

	MHH=406	FHH=114
None	65	90
Day	29	9
Residential	4	1
Both	3	-

TABLE 2-5 WAGE EMPLOYMENT AND STATUS, LRDP NSSA (PERCENTAGES)

Wage Employment	MHH=406	FHH=114
no experience	29	94
2 years	12	2
2-5 years	42	2
6-10 years	11	1
10+ years	6	1
Status		
No status	53	82
Traditional status	14	5
Non-traditional status	33	13

TABLE 2-6 APPROXIMATE DISTANCE TO CLOSEST FACILITIES FROM HOUSEHOLDS, LRDP NSSA (PERCENTAGES)

	2km		2-8km		8km	
	MHH=80	FHH=53	MHH=80	FHH=53	MHH=80	FHH=53
Improved Water	78	91	14	9	8	0
Firewood Supply	76	72	17	26	7	2
Medical Dispensary	9	17	58	53	33	30
Under 5 Clinic	22	23	67	64	10	11
Primary School	58	47	38	49	5	4
Secondary School	0	0	21	9	79	91
Training Centre	8	4	59	51	12	45
ADMARC Market	21	23	68	64	0	13
Grocery Store	53	60	45	34	3	6
Dip Tank	5	28	91	64	4	8

from a medical dispensary, Under 5 Clinic, Training Center, Government (ADMARC) Market, and cattle dip tank. Primary schools are less than 2 km for most MHHs and divided between the first two categories for the FHHs.

The Resources Survey also measured ownership of household items and farm equipment as well as the condition of the house. MHHs own more household goods than FHHs (Table 2-7a). MHHs are four times more likely to own a bicycle (32% compared with 8%) and own twice as many chairs, tables, beds and lamps as FHHs (Table 2-7a). Sixteen percent of MHHs own a radio compared with 6% of FHHs. Only 4% of both types of households own sewing machines. Overall MHHs have more improved housing than FHHs (Table 2-7b), but 8% of FHHs have sun dried bricks compared with 3% of MHHs. MHHs have more tin roofs and glass windows. Sixty percent of MHHs have latrines compared to only 38% of FHHs. The low frequencies of latrines in households headed by women has been noted elsewhere (Spring 1981a). Latrines have to be redug and replaced more frequently than other parts of the house and FHHs lack labor to do so.

Table 2-7c shows that all households have the basic farm implement, the hoe, and most (63%) of the MHHs have a watering can compared with only 26% of the FHHs. Other farm equipment is rarely owned but 13% of MHHs have an ox-cart compared to 8% of FHHs.

TABLE 2-7a TYPES OF HOUSEHOLD ITEMS OWNED BY HOUSEHOLDS,  
LRDP NSSA (PERCENTAGES)

	MHH=76	FHH=53
Bicycle	32	8
Chair	42	19
Table	32	11
Bed	29	15
Lamp	43	24
Watch/Clock	10	8
Radio	16	6
Sewing Machine	4	4
Stove	4	2
None	0	0

TABLE 2-7b. CONDITION OF THE MAIN HOUSE, LRDP NSSA (PERCENTAGES)

	MHH=76	FHH=53
Sun dried Bricks	3	8
Fired Bricks	1	2
Latrine	60	38
Glass Windows	26	9
Cement Floor	3	2
Tin Roof	13	6

TABLE 2-7c TYPES OF FARM EQUIPMENT OWNED, LRDP NSSA (PERCENTAGES)

	MHH=80	FHH=53
Hoe	100	100
Watering Can	63	26
Sprayer	0	0
Ox-Cart	13	8
Plough	3	2
Ridger	3	2
Wheel Barrow	1	0

The Extension Survey was given to seven of the twenty households in each of the 27 strata in LRDP and 7 of the possible 189 were not usable, so the sample consists of 182 households, 35 of which are FHHs and 147 were MHHs. Additionally 135 wives of MHHs were queried. The Extension Survey asked about the sources of advice, types of farmer contacts with extension workers (personal and field visits, group meetings, demonstrations) and exposure to Extension Aids programs (radio programs, cinema and puppet shows). In addition farmers were questioned about the topics on which they received advice.

Table 2-8 shows the sources of advice for Household Heads and Wives and includes the percentage of those who received no advice. Forty five percent of MHHs received some agricultural advice compared to 27% for FHHs and 26% for Wives. Table 2-9 shows sources of advice for recipients only. The data on the sources of advice for the major extension topics shows that extension workers provide the major source of advice for both men and women farmers. Slightly more FHHs (14%) than MHHs and Wives received more advice from other farmers/friends and traditional leaders. For both men and women little agricultural advice was obtained from yellow-van puppets, cinema shows, traditional or party leaders, and agricultural shows.

Table 2-10 shows the type of contact by extension agents for those being contacted. More men than women receive personal visits by extension workers. Forty one percent of MHHs were personally contacted compared with 28% of their wives and 23% of FHHs. Group meetings tended to reach more farmers than personal contacts, although women did not benefit as much as men. The

TABLE 2-8 SOURCE OF EXTENSION ADVICE, LRDP NSSA (PERCENTAGES)

	MHH=147	FHH=35	WIVES=135
No Advice	55	73	74
Other Farm/Friend	2	4	2
Party Leader	1	1	1
Traditional Leader	1	2	1
Extension Worker	34	15	17
Farmers' Training Course	2	2	2
Radio Program	3	1	2
Yellow-Van Cinema Show	1	1	1
Agricultural Show	0	0	0
Yellow-Van Puppet Show	0	0	0
Other Sources	0	0	1
Total %*	99	99	101

\* May not total 100% due to rounding

TABLE 2-9 SOURCES OF ADVICE ON EXTENSION TOPICS OF THOSE RECEIVING ADVICE, LRDP NSSA (PERCENTAGES)

	MHH=147	FHH=77	WIVES=135
Other Farmer/Friend	5	14	9
Party Leader	1	3	3
Traditional Leader	2	6	3
Extension Worker	75	58	66
Training Course	4	6	6
Radio Program	7	5	6
Yellow-Van Cinema	2	3	4
Agricultural Show	1	1	0
Yellow-Van Puppets	1	1	0
Other Sources	1	1	3
Total %	99	99	100

data show that 25% more men were contacted by meetings compared with personal visits (Table 2-10). Women benefit considerably more by meetings than personal visits. However, more men attend such gatherings with greater frequency. Sixty six percent of male heads were contacted by extension agents at group meetings, compared to 44% of their wives and 49% of FHHs.

Relatively few male or female farmers saw extension demonstrations. However, twice as many men as women learned through this method. Field visits also reached a smaller proportion of farmers than personal visits or group meetings; again women appear to be contacted less than men. One reason may be that women are not summoned to listen as the extension agent instructs the men he finds working in the field. Thirteen percent of the MHHs were visited in the field compared with 9% of wives and 6% of FHHs.

The respondents were asked on which of eleven major extension topics they had received advice (Table 2-11). For most topics, except home economics, MHHs received more advice than Wives or FHHs. The most frequent advice to men was on land and crop husbandry and credit; women most frequently received advice on crop husbandry. Crop husbandry was the most commonly taught subject for both men (76%) and women (63%), although wives (47%) received less advice than household heads. Only small differences were found between men (25%) and women (22% for FHHs and Wives) for advice on vegetable growing. This could be because this subject is covered by female extension agents. Land Husbandry and Agricultural Credit are two commonly taught subjects for which women tended to receive less instruction than

TABLE 2-10 TYPE OF CONTACT FROM EXTENSION AGENTS TO THOSE HOUSEHOLD HEADS AND WIVES RECEIVING ADVICE, LRDP N SSA (PERCENTAGES)

	MHH=147	FHH=35	WIVES=135
Personal Visit	41	23	28
Group Meeting	66	49	44
Demonstration	13	6	6
Field Visit	13	6	9

TABLE 2-11 TYPE OF ADVICE RECEIVED BY THOSE RECEIVING ADVICE, LRDP N SSA (PERCENTAGES)

EXTENSION TOPIC	MHH=147	FHH=35	WIVES=135
Land Husbandry	61	34	28
Animal Husbandry	42	31	18
Crop Husbandry	76	63	47
Vegetables	25	22	22
Woodlots	47	9	14
Credit	64	43	33
Food Storage	31	9	19
Agricultural Show	29	6	12
Farmer Clubs	32	11	13
Training	34	11	16
Home Economics	25	26	39
Total number of topics	665	93	355
Average # of topics/farmer	4.5	2.7	2.6

men. About half as many female heads and wives (34% and 28%) learned Land Husbandry compared with male household heads (61%). Wives (33%) tended to receive about half the instruction on credit as their husbands (69%). This may be due to beliefs that the household head should be responsible for credit within the family. Home Economics was the one topic in which more women than men received advice. Twenty five percent of MHHs and 26% of FHHs were taught home economics versus 39% of wives. The average number of extension topics was greater for men (4.5%) than for women (2.7 for FHH and 2.6 for Wives).

#### Garden Survey

The Garden Survey of the NSSA was conducted from January to May of 1981. The Survey measured the area of fields cultivated by selected households and collected information on their land tenure and land husbandry practices. The Evaluation Officer of LRDP was responsible for collecting the data from the LRDP and the other four projects in LADD. Data given below is from the NSSA sample of 519 households of which 113 were identified as FHHs (Data for one household were not available for this survey).

The data show that the average number of gardens the FHHs cultivate is less than the average number for MHHs. More than 60% of FHHs cultivate only one or two gardens, whereas less than 50% of MHHs do so. Only 12% of FHHs cultivate four or more gardens, compared with 30% of MHHs. These statistics also reveal the heterogeneity of both FHHs' and MHHs' land holdings. Table 2-12 shows that proportionally twice as many FHHs as MHHs

cultivate less than 1.00 hectare. Furthermore, only half the percentage of FHHs as MHHs cultivate more than 2.50 hectares. Half the FHHs (50%) and MHHs (61%) cultivate between 1 and 2.49 hectares, but a larger proportion of FHHs cultivate less land than MHHs.

A garden is considered by the NSSA to be a continuous piece of land comprised of plots of varying crop enterprises. No differences are detected between MHHs and FHHs in the size of their individual gardens or plots. Gardens average 0.6 hectares and plots average 0.4 hectares. The average number of plots per garden are also very close for FHHs and MHHs.

A sizable difference was found in the average number of gardens per household: 2.3 for FHHs and 2.9 for MHHs. This 26% increase in the number of MHHs' gardens is correlated with 24% larger average holding: 1.8 hectares for MHHs compared with 1.4 hectares for the FHHs.

Table 2-13 shows a large difference in the source of permission to use gardens. Over twice as many gardens of MHHs as gardens of FHHs were acquired from a male relative by birth. Conversely, over twice as many of the FHHs gardens were obtained from a female relative by birth. These relationships imply that women tend to give their gardens to women in their lineage, and men tend to give gardens to men in their lineage. No major differences existed in acquiring gardens from people other than relatives by birth.

The previous users of the gardens show the same patterns as the source of permission. Male relatives by birth previously used 35% of the MHHs' gardens and 18% of the FHHs' gardens.

Females related by birth were the previous users of 49% of the FHHs' gardens and 21% of the MHHs' gardens. It can be inferred from this correlation that the previous user was usually the one who gave permission. For both MHHs and FHHs, 17% of the gardens were cleared from bush so no previous operator existed.

It seems that both MHHs and FHHs have controlled their gardens for similar number of years. Gardens controlled for less than five years comprised 38% of the FHHs' gardens and 45% of the MHHs' gardens. Likewise, the distance from the household to the garden seemed to be evenly distributed between MHHs and FHHs. Gardens between 500 to 2000 meters from the household made up 50% of the FHHs' gardens and 48% of the MHHs' gardens.

Considering cropping patterns, Table 2-14 shows that both MHHs and FHHs plant tobacco and improved maize, cash crops not generally grown for home consumption. The Survey found that 6% of the land for the average FHH was planted in tobacco and improved maize while the average MHH grew about twice that percentage. The areas planted to local maize groundnuts, pulses and sweet potatoes were similar for both MHHs and FHHs.

Although the differences were not great, more FHHs had fewer trees than MHHs. Households with 1 to 19 trees comprised 76% of the FHHs and only 66% of the MHHs. Only 4% of the FHHs owned more than 30 trees compared with 14% of the MHHs.

No major differences could be found in the methods in which FHHs or MHHs ridge or prepare the soil for their gardens. Plots ridged by hand comprised 87% and 85% of the plots of the FHHs and MHHs. Ridges were prepared on-contour for 77% of the FHHs plots and 80% of the MHHs' plots.

TABLE 2-12 CLASSES OF HOLDING SIZE FOR LRDP NSSA

HOLDING SIZE	MHH	FHH	TOTAL	MHH=406	FHH=113	TOTAL=519
	Households			Percentages		
0.00	0	0	0	0	0	0
0.01 - 0.99	82	45	127	20	40	24
1.00 - 2.49	246	57	304	61	50	58
2.50 & above	78	11	89	19	10	17
Total Households	406	113	519	100	100	99
Total Hectares	730	159	839	-	-	-
Hectares Per Household	1.8	1.4	1.7	-	-	-

TABLE 2-13 SOURCE OF GARDENS, LRDP NSSA

	MHH	FHH	TOTAL	MHH	FHH	TOTAL
	Plots			Percentages		
Male relative by birth	498	48	546	42	18	38
Female relative by birth	240	119	359	20	46	25
Male relative by marriage	78	23	101	6	9	7
Female relative by marriage	143	15	158	12	6	11
Village Headman	136	36	172	12	14	12
Scheme/Project	0	0	0	0	0	0
Borrowed	69	17	86	6	7	6
Other	13	1	14	1	0	1
TOTALS	1177	259	1436	99	100	100

TABLE 2-14 AREAS PLANTED TO MAJOR CROPS IN LRDP NSSA

	MHH	FHH	TOTAL	MHH	FHH	TOTAL
	Ha.			%		
Tobacco	0.18	0.09	0.16	10	6	10
Improved Maize	0.24	0.09	0.21	14	6	12
Local Maize	0.90	0.79	0.87	51	56	52
Groundnuts	0.40	0.48	0.40	23	30	24
Pulses	0.02	0.01	0.02	1	1	1
Sweet Potatoes	0.02	0.01	0.02	1	1	1
Totals	1.76	1.42	1.68	100	100	100

The results show that the FHHs have less land than MHHs because they cultivate fewer gardens. The sizes of those gardens are the same for both MHHs and FHHs. Practically all MHHs are married and, therefore, usually have an extra adult to work in agriculture. In contrast, nearly two thirds of FHHs are not married and so are missing the labor of a spouse. Despite this labor shortage, many FHHs cultivate as much or more land than many MHHs who have the added labor of a wife or wives.

Perhaps the reason that FHHs have fewer gardens is the source of permission to use the land. Women tend to acquire land from female relatives by birth, and men gain more land through their male relatives by birth. Presently, although the system is matrilineal near Lilongwe, the married couple will often choose to live in the village of the spouse who can offer the most land. Since almost all MHHs are married, they can make this choice. In contrast, only one third of the FHHs are married and so most do not have the option to acquire gardens through the husband's relatives.

It is commonly thought that women do not grow cash crops and are restricted to growing food crops consumed at home. This survey discovered that 14% of the FHHs grow tobacco and 8% grow improved maize. Tobacco in particular is thought to be a "man's crop" and, therefore, technical aid and credit assistance are targeted towards men. The fact that so many FHHs have overcome these biases is proof that women can be innovators and adopt more lucrative technologies.

No differences were found in the ways which FHHs and MHHs prepare or ridge their fields. This supports the idea that they

are equal in their skill at farming because their practices are the same. Major differences were not found between FHHs and MHHs in the distance from garden to household, garden size, or years the garden was controlled. It can be inferred that the natural and social factors which influence farming are the same for both FHHs and MHHs. This again implies that skill in farming is similar for FHHs and MHHs.

It can be concluded that the differences between MHHs and FHHs are economic and not ability to farm. Women acting as heads of households are responsible for growing about half the amount of tobacco and improved maize as their male counterparts. This is despite the fact that only 12% of credit holders in LRDP are women. Many FHHs farm land areas similar to MHHs despite a shortage of labor.

### Yield Survey

The Yield Survey is an extension of the Garden Survey; enumerators physically harvested a small area within each plot measured in the Garden Survey. In LRDP, major crops harvested were maize, groundnuts, and tobacco. The first two crops are analyzed here as the number of FHHs in the sample is too small to be significant. Additional questions in the Yield Study focused on the timing of soil preparation, planting, weeding, and the use of plant nutrients or pesticides.

Certain maize and groundnut tables are chosen here that might show interesting comparisons between yield plots of female and male household heads. All quantities are converted to percentages, and subjected to chi-square analysis. For some

tables, the chi-square variation is partitioned between categories according to the method of L.A. Goodman (Blalock 1979). Using Table 2-16 as an example, chi-squared is equal to 13.76 ( $\chi^2=13.76$ ). Since the probability of a chi-squared relationship equals 99% ( $P(\chi^2)=0.99$ ), it can be 99% certain that a relationship exists between head of household and source of maize seed.

The data shows that almost all farmers (97%) grew local maize, followed by groundnuts (84%); a third of the households cultivated improved maize and tobacco, with slightly more than a fifth growing sweet potatoes and pulses (Table 2-15). Female headed households in LRDP tended to have less diverse cropping patterns than MHHs. About 30% more MHHs than FHHs grew improved maize, and the same trend is seen with tobacco. Both improved maize and tobacco are primarily cash crops. Most households who grow improved maize also cultivate local maize for home consumption, and the few households who did not raise local maize probably grew exclusively improved maize. Table 2-15 also shows that slightly more MHHs than FHHs grew sweet potatoes and pulses. The opposite is true with groundnuts since slightly more FHHs cultivated this crop.

Table 2-16 considers the sources of maize and groundnut seed. Three fourths of the farmers used their own maize seed; the remaining fourth obtained their seed from a Project credit package, government market (ADMARC) or elsewhere. Groundnut seeds are obtained by 52% of farmers from their own supply, but 48% obtained theirs elsewhere: 35% from Project sources, 3% from

TABLE 2-15 MAJOR CROPS GROWN, LRDP NSSA (PERCENTAGES)

	MHH=406	FHH=113	TOTAL=519
Local Maize	97	99	97
Improved Maize	41	11	35
Groundnuts	83	88	84
Tobacco	42	14	36
Sweet Potato	23	13	21
Pulses	25	18	23

TABLE 2-16: SOURCES OF MAIZE AND GROUNDNUT SEED, LRDP NSSA (PERCENTAGE OF PLOTS)

	Maize			Groundnuts		
	MHH=933	FHH=198	Total=1131	MHH=476	FHH=122	Total=598
Self Grown	85	74	76	63	49	52
Credit Package	4	14	12	25	37	35
ADMARC	2	3	3	4	3	3
Other	8	9	9	7	11	10
TOTAL	99	100	100	99	100	100

$X^2 = 13.76$   
 $P(X^2) = 0.99$

$X^2 = 9.31$   
 $P(X^2) = 0.97$

TABLE 2-17: CROP MIXTURES IN GROUNDNUT PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

	MHH=471	FHH=127	Total=598
Pure Stand	98	96	96
With Maize	2	1	1
With Pulses	0	1	1
With Other	1	2	2
TOTAL	101	100	100

$X^2 = 3.34$   
 $P(X^2) = 0.06$

ADMARC and 10% from other sources.

It can be deduced from Table 2-16 that FHHs have less access to credit seed than do MHHs. About 10% more maize plots of MHHs were planted with seed obtained via credit packages. This corresponds to self-grown seed planted on nearly 10% more maize plots of FHHs which may be related to greater use of local maize. The same pattern is seen with groundnuts in which over 10% more plots of FHHs were planted with self-grown seed, and over 10% more plots of MHHs were planted with seed from credit packages. Data for both maize and groundnuts produced a significant chi-squared value which implies differences between source of seed for FHHs and MHHs.

In LRDP most crops are planted in pure stands rather than interplanted. This is not true in many other areas of Malawi, especially where holding size is small. Table 2-17 shows that 96% of the groundnut crop is pure stand and that there are virtually no differences for the MHHs and FHHs. Table 2-18 shows that most farmers prepared the soil for their maize gardens in October in the 1980 cropping year, and 85% prepared the soil by November. Few differences are found between the types of households. Usually groundnut fields are prepared after maize; it can be seen in Table 2-18 that 49% of the groundnut plots of FHHs were first prepared before November compared with 38% of MHHs. This difference largely results from more groundnut plots of FHHs being first prepared in October (37% compared with 25% for MHHs)

The time of planting for maize and groundnuts appears very similar for both FHHs and MHHs (Tables 2-19 and 2-20). The

TABLE 2-18 MONTH OF FIRST SOIL PREPARATION FOR MAIZE AND  
GROUNDNUT PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

	Maize			Groundnuts		
	MHH=907	FHH=202	TOTAL=1109	MHH=467	FHH=126	TOTAL=593
August	8	4	7	2	4	2
September	14	9	13	11	8	10
October	37	46	39	25	37	27
November	26	22	25	19	19	19
December	10	12	10	37	28	35
January	2	2	2	4	4	4
Other	3	4	3	3	0	2
TOTAL	100	99	99	101	100	99

$$X^2 = 12.00$$

$$P(X^2) = 0.94$$

$$X^2 = 15.35$$

$$P(X^2) = 0.98$$

TABLE 2-19. TIME OF PLANTING FOR MAIZE PLOTS  
LRDP NSSA (PERCENTAGE OF PLOTS)

	MHH=918	Maize FHH=201	TOTAL=1119
	Nov. 1-15	20	20
Nov. 16-30	30	34	33
Dec. 1-15	31	25	26
Dec. 16-31	9	13	12
Other	10	8	8
TOTAL	100	100	99

$$X^2 = 5.79$$

$$P(X^2) = 0.78$$

TABLE 2-20 TIME OF PLANTING FOR GROUNDNUT PLOTS  
LRDP NSSA (PERCENTAGE OF PLOTS)

	MHH=918	FHH=201	TOTAL=1119
	October	1	1
November	15	14	14
December 1-15	49	44	45
December 16-30	27	33	32
January	8	8	8
TOTAL	100	100	100

$$X^2 = 1.84$$

$$P(X^2) = 0.23$$

value of chi-squared implied no relationship exists between the head of household and when maize or groundnuts were planted. This table shows that about half of the maize plots of both FHHs and MHHs were planted before December, compared with less than one fifth of groundnut plots. Most farmers plant maize before groundnuts.

No large differences were found between FHHs and MHHs for the timing and number of weedings for maize and groundnuts. The significant chi-squared interaction in Table 2-21 should be related to MHHs weeding slightly more maize plots twice, and to more plots of FHHs being weeded between 4 to 6 weeks or not at all. Table 2-22 also displays only slight differences between household types for weeding practices of groundnut plots based on the head of household.

Thirty seven percent of MHHs and 28% of FHHs apply various types of fertilizer to maize ( $\chi^2 = .99$ ). Table 2-23 shows that as a first fertilizer 20:20:0 was applied to 18% of the maize plots of MHHs versus 9% for FHHs. Seventy two percent of the maize plots of FHHs did not receive any fertilizer compared with 63% for MHHs. The difference between household types using 20:20:0 fertilizer and no fertilizer accounts for 96% of the chi-squared variation in first fertilizer used. The two nitrogen fertilizers, Sulphate of Ammonia and Calcium Ammonium Nitrate, were used the same regardless of household head. Manure was used as a fertilizer on only 4% of the maize plots and 0% of the groundnut plots surveyed. Extension agents visited 0% of the sampled plots of maize and groundnut plots in this survey.

For most plots of both FHHs and MHHs, plant populations were

TABLE 2-21 TIME OF WEEDING FOR MAIZE AND GROUNDNUT PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

Weeks after planting	Maize			Groundnuts		
	MHH=929	FHH=201	Total=1130	MHH=447	FHH=128	Total=575
None	2	6	3	4	5	4
0 to 3	23	17	22	20	16	19
4 to 6	39	46	40	43	50	44
0 to 3 & 4 to 6	10	5	9	12	8	11
beyond 6	10	11	10	13	13	13
0 to 3 & beyond 6	6	2	5	2	2	2
4 to 6 & beyond 6	10	13	11	6	7	6
0 to 3 & 4 to 6 & beyond 6				1	0	1
TOTAL %	100	100	100	101	101	100

$$X^2 = 21.42$$

$$P(X^2) = 0.99$$

$$X^2 = 5.74$$

$$P(X^2) = 0.43$$

TABLE 2-22 NUMBER OF WEEDINGS FOR MAIZE AND GROUNDNUT PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

	Maize			Groundnuts		
	MHH=929	FHH=201	Total=1130	MHH=477	FHH=128	Total=605
0	2	6	3	4	5	4
1	72	74	72	76	79	76
2	26	20	23	1	0	1
3				1	0	1
TOTAL	100	100	101	101	101	100

$$X^2 = 9.25$$

$$P(X^2) = 0.99$$

$$X^2 = 2.49$$

$$P(X^2) = 0.52$$

TABLE 2-23 TYPE OF FIRST FERTILIZER APPLIED TO MAIZE PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

	MHH=742	FHH=162	Total=904
None	63	72	65
20:20:0	18	9	16
Sulphate of Ammonia	11	11	11
Calcium Ammonium Nitrate	3	2	3
Mixture	5	6	5
TOTAL	100	100	100

$$X^2 = 10.14$$

$$P(X^2) = 8.96$$

below levels recommended for optimum yield of maize and groundnut. Farmers may plant less due to the lower soil fertility in the fields of most LRDP farmers compared to the research trials which formulated the recommended plant population levels--but this is conjecture--as probably farmers are not aware of these technical differences. Only about 40% of the maize plots sampled (Table 2-26) approach the optimum of 3.6 plants per square meter (plants/m<sup>2</sup>) recommended for fertilized maize (MOA 1979-80). Similarly, only about 25% of the sampled groundnut plots approximate the suggested level for certified (Chalimbana) groundnut seed of 7.4 plants/m<sup>2</sup> (personal communication with Chitedze groundnut agronomist).

Recognizing the overall lower yields, maize and groundnut plots grouped according to plant population varied less than 5% between type of household head (Table 2-24). This implies that most farmers in both types of households cultivate maize and groundnuts at the same spacing between and within the rows. The proportion of plots in the medium ranges of maize yields was similar regardless of household head (Table 2-25). The variation in number of plots was less than 5% between FHHs (61%) and MHHs (64%) for yield classes ranging from 500 to 2,499 kilograms per hectare. This implies that most of the maize plots of both household types have comparable growing conditions and therefore produce comparable yields. Although about 80% of the total plots had similar maize yields regardless of household heads, proportionately more plots of MHHs achieved the highest yields, and a greater fraction of maize plots of FHHs ranked in the lowest yields. Of the maize plots managed by male household

TABLE 2-24 PLANT POPULATIONS FROM MAIZE AND GROUNDNUT PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

PLANTS/m	Maize			Groundnuts		
	MHH=918	FHH=200	Total=1118	MHH=479	FHH=125	Total=604
0-0.9	10	10	10	12	16	13
1-1.9	7	11	8	2	2	2
2-2.9	38	40	38	16	18	16
3.3.9	33	28	32	27	22	26
4-4.9	11	8	10	22	24	22
5-over	1	2	1	22	18	21
TOTAL	100	99	99	101	100	100

$$X^2 = 11.7$$

$$P(X^2) = 0.96$$

$$X^2 = 3.30$$

$$P(X^2) = 0.34$$

TABLE 2-25 MAIZE YIELDS FROM PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

MAIZE YIELDS kg/ha	MHH=844	FHH=200	TOTAL=1044
0- 499	10	30	14
500- 999	18	22	19
1000-1499	21	17	20
1500-1999	15	10	14
2000-2499	10	12	10
2500 & above	26	8	22
TOTAL	100	99	99

$$X^2 = 70.25$$

$$P(X^2) = 0.99$$

TABLE 2-26 GROUNDNUT YIELDS FROM PLOTS, LRDP NSSA (PERCENTAGE OF PLOTS)

GROUNDNUT YIELDS kg/ha	MHH=400	FHH=98	TOTAL=498
1- 99	12	11	11
100-199	32	30	31
200-299	26	25	25
300-399	14	14	14
400-499	6	11	10
500 & above	10	8	9
TOTAL	100	99	100

$$X^2 = 2.17$$

$$P(X^2) = 0.17$$

heads, 26% yielded above 2500 kg/ha. compared with only 8% for FHHs. At the lower end of the yield spectrum, 30% of the maize plots of FHHs produced below 500 kg/ha. versus only 10% for MHHs.

No large differences could be found between household types for groundnut yields (Table 2-26). Only about 10% of the harvested plots yielded above 500 kg/ha. which could be related to the low plant populations recorded in Table 2-24. The fact that fertilizer was not applied to groundnuts would remove yield advantages available to progressive maize growers.

For those crop operations which do not need access to agricultural development inputs, few differences were apparent between households headed by females or males. This uniformity in farming practices implies that knowledge and skill with maize and groundnuts is the same for both household types. However, some FHHs may have less access to the extension services which promote improved agriculture and therefore may be slower to adopt innovations.

Pure stands of maize and groundnut were overwhelmingly popular with both household types. The conditions which suppress mixed cropping in the Lilongwe Plain affect both types of households equally. Manure and pesticides are uncommon for both MHHs or FHHs in LRDP and for maize or groundnut crops.

The timing of seasonal activities is dependent on the agricultural environment and the farmer's preferences and abilities. The great similarity in the timing of crop operations implies that both types of households operate under comparable conditions. One exception was that more groundnut plots of FHHs were prepared earlier than those of MHHs. The reason may be that

more FHHs are unable to begin growing other cash crops and therefore spend greater time on groundnuts as a cash crop.

Households headed by women tend to have one less working adult because of the absence of a father or husband. They may need to do agricultural day work for others to buy food. This can increase the chances of labor shortages which could hinder necessary crop operations. This might be the reason why a few more maize plots of FHHs were weeded late or only once compared with MHHs, who often have more available labor.

Fertilizer is neither recommended nor commonly used on groundnuts, and this is evident by plant population levels of farmers falling much below the optimum level. Fertilizer was applied to about 40% of maize plots, which correlates with about 40% of maize plots approaching the recommended population. The numerous factors which influence plant spacing seem to equally affect female and male farm managers.

The similarity in groundnut yields between the two household types could be due to the same disease/pest problems as well as cultural practices, and so access to inputs would not be a factor. Also, groundnuts are considered a "woman's crop", so primarily women are growing the crop in both types of households. In contrast, a larger proportion of maize plots managed by FHHs produced the poorest yields. The same pattern is seen with the best maize yields, which were achieved by a greater fraction of plots of male household heads.

The women managers in the lowest maize yield ranges could have faced labor constraints which prevented them from timely weeding of certain plots. The households headed by men may have

more access to fertilizer because extension staff tend to deal with men. MHHs with one or more wives have more available labor than most FHHs. These factors may favor some MHHs to achieve a greater proportion of maize plots with high yields.

## CHAPTER 3

### THE LILONGWE RURAL DEVELOPMENT PROJECT SURVEY

#### DESCRIPTION OF THE SURVEY

##### The Survey Instruments

Following the indicators used by Castro *et. al.* (1981), Kydd (1982a, 1982b), the 1969-71 LRDP Farm Management Survey (1971, 1973), as well as the NSSA instruments, a series of 15 survey instruments were designed by WIADP and FSAS for their 1982 LRDP Survey. The relatively short length of time that the interviewers were able to devote to data collection (one week per household) was taken into account as was the fact that all crops were already harvested. The following instruments were prepared and administered:

1. HOUSEHOLD COMPOSITION: A listing of all members by sex, age, relationship to household head, educational level attained and current location.
2. NATALITY HISTORY: A history of women's reproductive experiences and a listing for women and men of all children born, their ages, sex, education and present location.
3. EDUCATION: A test of literacy in Chichewa and English.
4. MIGRATION AND WORK: Questions on migratory experience, current sources of employment and income, and changes in farming practices in the past decade.
5. STATUS AND RESOURCES: Questions on status, religiosity, labor hired, use of maize mills, purchase of firewood, extension visits, condition of main house, and ownership of

farm and household items.

6. DISTANCES AND MAIZE PRODUCTION: Distance of household from various important amenities and infrastructural facilities, as well as measurements of granaries as an estimate of stored maize, and an estimation of the length of time stored maize would feed the family.
7. GARDEN LAND INVENTORY: A listing of all gardens controlled by the household.
8. GARDEN LAND TENURE: Information on how the garden was acquired and from whom.
9. GARDEN LABOR: A recall of those who worked on each crop by operation.
10. GARDEN HISTORY: Major and minor crops grown in each garden over a three year period, plus information on fertilizer usage and source of fertilizer and seed.
11. MAIZE: Experience with different varieties.
12. CHANGE AND DEVELOPMENT: Use of LRDP services such as training, credit, extension visits, amount and change in livestock ownership, perceptions of development as a result of LRDP.
13. FARM PLANNING AND MAIZE AGRICULTURAL KNOWLEDGE: Farmer's plans for the coming agricultural season, sources of seed and fertilizer, and knowledge of extension recommendations.
14. DIETARY SURVEY: A five day volumetric intake of the household as a whole.
15. ANTHROPOMETRY: Measurement of all household members in terms of height, weight and skinfold adiposity.

Data from all surveys except for the Dietary, Anthropometry, Labor and parts of Maize Production and Change and Development are analyzed here.

### The Sample

Of the approximately 7000 households in the 1980-81 NSSA, 520 were located in LRDP. Half of these 520 households (260

households) were reinterviewed the next year (1981/82) in the annual evaluation that is normally carried out by the Evaluation Unit of LADD. From these 260 households, WIADP and FSAS selected a stratified random sample of 102 households (6 households per NSSA cluster in seventeen clusters) for the intensive survey. Unlike the NSSA that only queried household heads, the LRDP Survey designed by WIADP and FSAS was administered to male household heads, their wives and female household heads in order to obtain intrahousehold data as well as data on women farmers.

### Personnel and Design

In order for WIADP and FSAS to conduct the LRDP Survey, interviewers who could live in the villages, speak the language and carry out the detailed surveys were required. Twenty students from Bunda College of Agriculture were hired during their vacation period to collect the data. It was reasoned that they could understand the nature of the Survey, learn how to administer the instruments in a short time, provide the necessary skills in terms of language, anthropometry, dietary and surveying techniques, and conduct themselves in an appropriate manner.

The LRDP Survey administered in August through September 1982 took into account the limited amount of time of the interviewers and the available personnel in terms of supervising the data collection from the two projects. The students were brought to Chitedze Agricultural Research Station for a week of training. The Survey was scheduled for the dry season following the harvest in May-June. This timing is important to note

because it influenced various aspects of the data and its collection.

1. Food supplies are plentiful during this post-harvest season.
2. People have more leisure as it is the non-agricultural season, and this facilitates answering long questionnaires. However, people are involved in beer drinking and ceremonies.
3. School children are home on holidays, and husbands who work in agriculture on estates are likely to be home.
4. It is not possible to take plot yields, and exact garden boundaries are not measurable.
5. Roads are easily accessible and the students could use their bicycles to get around the villages; the two project directors and five staff supervisors could travel easily to check on the interviewers.

#### Analysis of the Data

The data were transferred to coding sheets and entered into a storage program on a microcomputer in Malawi. Analysis proceeded after the data were transferred to a statistical program on a mainframe computer at the University of Florida. Sex-disaggregated data in terms of household heads, husbands and wives, and women in male and female headed households are presented whenever possible or appropriate. Of the 102 households, one household dropped out when the family went to Mozambique in the middle of the Survey. The 101 households

studied contain 84 (83%) male headed households and only 17 (17%) female ones which is lower than the NSSA. It is suspected that a reason for this is the presence of husbands who ordinarily are away working on estates. Since the Survey took place over a short time period, it was not possible to apply the NSSA definition of a female household head as one whose husband does not return more often than once per month. Men who were present during the LRDP Survey were counted as the household head if they said they were. Additionally, the Survey queried the wives of male heads, but only the wife who resided in the designated household, was queried; co-wives were not. Three female relatives who lived in MHHs where the man was not married were counted as "Wives".

## DEMOGRAPHIC AND SOCIAL INDICATORS

### Household Composition

Table 3-1 shows that two thirds of the MHHs are married monogamously; 30% are polygynists;<sup>1</sup> and 3% are not married. Thirty five percent of FHHs are married; 35% are widows; and 30% are divorcees. Table 3-2 shows that husbands of these married female household heads are working in Malawi (18%), outside Malawi (12%) or elsewhere (6%).

Although 30% of the male heads of households are polygynous, only the wife or female relative residing in the household in the survey was queried on survey instruments, giving a maximum total of 84 "Wives". They are called "Wives" here even though 3 are

not Wives but other female relatives of the unmarried MHHs.

The tables presented give the number of male headed households (MHH), female headed households (FHH) and total households (MHH and FHH), as well as data from the Wives who are is not added to the total households. Data on Wives is presented in order to compare intrahousehold answers between husbands and wives as well as to compare women in male and female headed households. Where appropriate, data on the total number of women are tallied.

### Migration and Residence

Over half of the household heads reside in their natal village (Table 3-3), but about one fifth respectively moved to be with relatives or spouses. Almost as many wives moved to join their husbands (43%) as were born in the villages (44%). Being born in the village is reflected in the high number of years household heads have lived there (Table 3-4). The international and urban experiences of respondents show that many MHHs (57%) have international work experience compared with only 12% of FHHs and 5% of Wives. Similarly most MHHs (65%) but only 13% of Wives and 30% of FHH have lived in urban areas previously.

The average number of people per household is 5.3, but this figure obscures the fact that FHHs have 4.2 people per household (Table 3-5a). Table 3-5a shows that the difference between MHHs and FHHs is the absence of an adult man; the average number of women and children does not differ in the two types of households. These differences and similarities are reflected in

TABLE 3-1 MARITAL STATUS OF HOUSEHOLD HEAD (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Non-polygynist	67	35	62
Polygynist	30	-	25
Divorced	1	30	6
Separated	1	-	1
Widowed	1	35	7
Total %	100	100	101

TABLE 3-2 HUSBAND'S LOCATION AT TIME OF SURVEY (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Present in household	87	-	73
With other wife	8	-	7
Working outside Malawi	-	12	2
Working in Malawi	1	18	4
Elsewhere	3	6	4
FHH	-	65	11
Total %	99	101	101

TABLE 3-3 REASON FOR RESIDING IN PRESENT VILLAGE (PERCENTAGES)

	MHH=76	FHH=16	WIVES=79	TOTAL MHH and FHH=93
Born here	54	41	44	52
Moved here to be with relatives	21	24	10	22
Moved here because of marriage	20	18	43	19
Other reasons	4	18	2	6
Total %	99	101	99	99

TABLE 3-4 LENGTH OF RESIDENCE IN PRESENT VILLAGE (PERCENTAGES)

	MHH=76	FHH=16	WIVES =79	TOTAL MHH and FHH=92
0-5 years	8	6	13	7
6-10 years	8	19	10	9
11-20 years	16	6	25	14
21-40 years	33	25	33	32
More than 40	36	43	19	37
Total %	101	99	100	99

TABLE 3-5a HOUSEHOLD COMPOSITION BY AGE CATEGORIES  
(AVERAGE NUMBER PER HOUSEHOLD)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Adult men (16 yrs. +)	1.5	.5	1.3
Adult women (16 yrs. +)	1.3*	1.5	1.3
Boys 6-15 yrs.	.8	.8	.8
Girls 6-15 yrs.	.8*	.8	.8
Boys 0-5 yrs.	.5	.2	.4
Girls 0-5 yrs.	.7*	.5	.6
Total Household Size	5.5	4.2	5.3

\*n=83

TABLE 3-5b HOUSEHOLD COMPOSITION BY KINSHIP CATEGORIES  
(AVERAGE NUMBER PER HOUSEHOLD)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Family of procreation	4.6	3.0	4.3
Family of orientation	.1	.1	.1
Other relatives	.5	1.0	.6
Visitors	.2	.1	.2
Hired servants/ laborers	.2	-	.2
Total Household Size	5.6**	4.2	5.4**

\*\*Totals may differ from Table 5a due to rounding

Table 3-5b. The family of procreation (mother, father and children) is larger for MHHs where fathers are present. The family of orientation (grandparental generation) is the same for both types of households, but FHHs have slightly more other relatives, and MHHs have hired servants and/or laborers living with them.

### Natality History

The reproductive experiences of women in male and female headed households are tallied in terms of completed pregnancies, reproductive wastage (miscarriages/stillbirths), and child mortality (neonatal deaths, deaths to 1 year and beyond). Table 3-6 shows virtually no differences between households. The average number of completed pregnancies is 6.9, while the average reproductive wastage is 0.4, and average number of living children is 4.0.

### Education

Although the educational experience of women is inferior to that of men, and FHHs' education is inferior to Wives (Table 3-7a). However the educational experiences of children of these households are not as dissimilar (Table 3-7b). Sixty four percent of MHHs have attended some primary school compared with 42% of Wives and only 29% of FHHs. Although the number of female compared to male children who attend school currently as well as the total years for each sex is lower for girls than boys, the

TABLE 3-6 AVERAGE NUMBER OF PREGNANCIES, BIRTHS AND DEATHS

	WIVES =83	FHH=17	TOTAL WOMEN =100
Number of completed pregnancies	6.9	6.8	6.9
Number of live births	6.5	6.0	6.4
Number of miscarriages/ stillbirths	.4	.4	.4
No. of neonatal deaths	.5	.6	-
No. of deaths to 1 yr.	1.3	-	-
No. of living children	4.0	3.8	4.0

TABLE 3-7b EDUCATION EXPERIENCE OF ADULTS (PERCENTAGES)

	MHH=76	FHH=17	WIVES=83	TOTAL MHH and FHH=93
None	36	71	58	42
<u>Primary</u>				
Standard 1-2	16	6	12	14
Standard 3-4	11	18	14	12
Standard 5-6	21	6	14	18
Standard 7-8	16	-	1	13
<u>Secondary</u>				
Form 1-2	1	-	-	-
<b>Total %</b>	<b>101</b>	<b>101</b>	<b>99</b>	<b>99</b>

TABLE 3-7b CURRENT AND PREVIOUS CHILDREN EDUCATED (PERCENTAGES)  
AND AVERAGE NUMBER OF YEARS OF SCHOOL ATTENDANCE

	MHH*	FHH*	WIVES*	TOTAL MHH and FHH*
% children currently in primary school	.7	.5	-	.7
% children currently in secondary school	-	-	-	-
% of male children who ever attended school	.9	.6	.7	.8
% of female children who ever attended school	.7	.7	.6	.7
Average no. years male children attended school	7.9	6.9	8.3	
Average no. years female children attended school	7.3	5.6	5.6	

\*Household frequencies vary depending on available data

differences are not great.

It appears that the present generation is being educated more than their parents. In the Malawian educational system, there are 8 years of primary school (Standards 1-8 which are roughly equivalent to U.S. grades 1-6) and 6 years of secondary school (Forms 1-6 which are roughly equivalent to U.S. grades 7-12). The number of primary schools close to the villages is increasing and is a direct result of the LRDP infrastructure. Forty percent of households have primary schools within one mile walking distance and 74% are within 3 miles as noted below (Table 3-12).

Household heads and Wives were asked if they could read and if they answered affirmatively, they were given passages from the national newspaper in Chichewa (the national language) and English. Respondents were asked to read the selections as a test of literacy. In terms of literacy, men and women differ. Thirty-eight percent of MHHs, 82% of FHHs and 76% of Wives are unable to read the selections (Table 3-8a). Of the MHHs, 23% find the vernacular difficult; 38% find it easy; and 15% find English difficult, whereas 6% find it easy. None of the FHHs are able to read English at any level while 10% of Wives find it difficult. Twelve percent of FHHs and 10% of Wives find Chichewa difficult to read while 6% of each of these groups are able to do so easily. English speaking ability was queried verbally, and 15% of husbands, and 5% of Wives spoke English compared with no FHHs (Table 3-8b).

#### Status Positions

TABLE 3-8a

READING ABILITY IN CHICHEWA (VERNACULAR)  
AND ENGLISH (PERCENTAGES)

	MHH=77	FHH=17	WIVES=83	TOTAL MHH and FHH=94
None	38	82	76	46
Vernacular-difficult	23	12	10	21
Vernacular-easy	17	6	4	15
Vernacular and English- difficult	1	-	2	1
Vernacular easy-English difficult	14	-	8	12
Vernacular and English- easy	6	-	-	5
Total %	99	100	100	100

TABLE 3-8b

ENGLISH SPEAKING ABILITY (PERCENTAGES)

		FHH=17	TOTAL MHH and FHH=101
None	79	100	82
Husband	15	-	13
Wife	5	-	4
Husband and wife	1	-	1
Total %	100	100	100

Self reported answers on church membership and attendance (as opposed to observed behavior) indicate that most people consider themselves Christians, but attendance may or may not be regular. Women (FHHs and Wives) consider themselves members and attenders much more than men (Table 3-9). Thirty five percent of FHHs hold church positions compared with 16% of Wives and 13% of MHHs. The denominations are not recorded. Most Protestant churches do not allow their members to drink or brew beer, yet about 60% of all samples participate in these activities; beer brewing is a major source of income for women (see below).

The main categories of traditional status are village headman, member of the Nyau (secret society), midwife, initiator, diviner and healer. Non-traditional statuses include membership in the Malawi Congress Party (MCP) as well as the LRDP Village Planning Committees (VPCs). There are no participants in VPCs or diviners/healers in the sample. Twelve percent of FHHs and 15% of Wives are midwives, and 6% of each are MCP Women's League Officers. Twenty-two percent of MHHs, no FHHs and 6% of Wives are MCP members, and an additional 12% of MHHs are MCP Youth League members (Table 3-10).

### Resources and Access to Infrastructure

Interviewers primarily observed rather than asked about the resources of the households, using the NSSA categories (condition of the main house and ownership of farm equipment and household items) plus adding an additional item for women, ownership of the

TABLE 3-9

## CHRISTIANITY AND CHURCH ATTENDANCE (PERCENTAGES)

	MHH=76	FHH=17	WIVES=80	TOTAL MHH and FHH=93
Non-Christian	51	18	30	45
Christian-infrequent attendance	8	18	9	10
Christian-frequent attendance	28	29	45	28
Christian-church position	13	35	16	17
Total %	100	100	100	100

TABLE 3-10

## TRADITIONAL AND NON-TRADITIONAL STATUSES

	MHH=78	FHH=17	WIVES=78	TOTAL MHH and FHH=95
Chief headman	16	12	-	15
Nyau society	27	-	3	22
Midwife	-	12	15	2
Diviner/initiator	1	6	1	2
Malawi Congress Party	22	-	6*	18
MCP Women's League Officer	-	6	6*	1
MCP Youth League Officer	12	-	-	9
Other	-	-	1	-

\*n=79

"Mbumba uniform". Tables 3-11a-c record the percentage of households owning these items.

The house structures of the MHHs are more improved than those of the FHHs. Only a sixth of all households have metal roofs ("iron sheets"), and a fifth have glass windows. FHHs have fewer latrines (41%) than MHHs (69%) as shown in Table 3-11a, probably because of the lack of labor to construct them. This has been noted elsewhere in Malawi (Spring 1981b).

All farmers in the survey own hoes (the major agricultural tool), a third of MHHs have watercans compared with 12% of FHHs. More MHHs have ox carts (17%) than FHHs (6%), but plows and ridgers are hardly differential (Table 3-11b). With the exception of a bicycle (MHHs = 31%), both types of households have similar amounts of chairs, tables and radios, although MHHs own more lamps (69%) than FHHs (53%).

A garment known as the "Mbumba uniform" is worn by women when they attend Malawi Congress Party functions and dance for the President of Malawi. It must be purchased, and all women are eligible to wear it. Only 8% of women in MHHs owned the item while no FHHs own them (Table 3-11c).

Other information not tabularized shows that two MHHs own grinding mills and one is a storeowner. All households utilize grinding mills for the processing of maize (although the frequency of usage was not determined), and 10% of MHHs use mills for other grains as well. Only 15% of households purchase firewood. Virtually all households pay cash for milling and firewood, obtaining the money from agricultural sales and other sources.

TABLE 3-11 RESOURCES (PERCENTAGES)

3-11a CONDITION OF MAIN HOUSE (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Iron sheets	17	12	16
Baked bricks	4	12	5
Cement floor	7	-	6
Sunfired bricks	4	6	4
Glass windows	21	12	20
Latrine	69	41	64

3-11b FARM EQUIPMENT (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Hoes	100	100	100
Ox cart	17	6	15
Plough	8	6	8
Ridger	4	6	4
Watercan	33	12	30

3-11c HOUSEHOLD ITEMS (PERCENTAGES)

	MHH=84	FHH=17	Total MHH and FHH=101
Chair	40	35	39
Table	33	35	33
Bicycle	31	-	26
Radio	20	23	21
Vehicle	1	-	1
Paraffin lamp	69	53	66
Mbumba uniform	8	-	7

### Distances

The interviewers were required to walk using pedometers calibrated to their own stride to the closest infrastructural facilities such as the grinding mill, medical dispensary, primary school, Unit Center and ADMARC market as well as to the water supply. Table 3-12 shows that most people live less than a mile from their water supply and other data show that more households have improved taps as compared with an unimproved water supply. Fifty seven percent of households are within 2 miles of a primary school, and 50% are as close to a maize mill, but only 17% are as near to a dispensary, 27% to ADMARC, and 21% to a Unit Center. About half of the dispensaries are permanent and the others are mobile.

### Extension Services

Some of the services and activities that are available to farmers are training courses, membership in farming clubs and groups, Achikumbi (good farmer) status, and extension visits. Credit is given to farmers in clubs and groups. Table 3-13 shows that most of the household members have never attended either a day or residential training course, but 27% of MHHs have attended courses (about equally divided between day and residential), compared with 12% of FHHs for day courses only and 14% of Wives mostly for day courses at the Unit Center. Similarly few FHHs are members of farmers clubs/groups (12%), compared with 39% of

TABLE 3-12 MEASURED DISTANCES TO FACILITIES AND INFRASTRUCTURE (PERCENTAGES)

FACILITY		Number of Miles										Total	
		<1	1	2	3	4	5	6	7	8	9	10	%
Medical Dispensary	M	1	6	11	11	10	26	10	2	5	4	15	101
	F	6	6	-	12	6	41	-	-	-	-	30	101
	Total	2	6	9	11	9	29	8	2	4	3	18	101
Primary School	M	13	27	15	17	14	8	4	-	-	-	1	99
	F	18	18	23	18	18	6	-	-	-	-	-	101
	Total	14	26	17	17	15	8	3	-	-	-	1	100
ADMARC Market	M	5	9	12	10	19	27	10	4	4	1	-	101
	F	11	18	-	11	18	24	11	6	-	-	-	101
	Total	6	11	10	10	19	27	10	4	3	1	-	101
Unit center	M	1	11	10	10	17	33	11	4	4	1	-	101
	F	6	12	-	12	18	35	12	6	-	-	-	101
	Total	2	11	8	10	17	34	11	4	3	1	-	101
Water Supply	M	77	20	1	-	-	-	-	-	-	-	1	99
	F	76	18	-	-	-	-	-	-	-	-	6	100
	Total	77	20	1	-	-	-	-	-	-	-	2	100
Maize mill	M*	7	20	25	22	18	3	3	1	-	-	-	99
	F*	-	23	15	23	31	8	-	-	-	-	-	100
	Total*	6	21	23	22	21	4	3	1	-	-	-	100

MHH=84 FHH=17 Total=101 M\*=65 F\*=65 Total\*=78

MHHs and 20% of Wives (Table 3-14).

On the other hand, 29% of FHHs are recognized as Achikumbi (good farmers) compared with 14% of men and 9% of Wives (Table 3-15). Achikumbi status means that the person has been cited by the extension agent to LRDP, and the farmer receives a certificate of award. These farmers are usually members of farmer's clubs. It is surprising, given the fact that 29% of FHHs are Achikumbi, that their membership in clubs is much lower and may reflect past rather than current membership.

Household heads were asked to report on who does the farming in the household. In 4% of MHHs the wife does the farming, and in the same amount the women does not farm. Interestingly, 18% of FHHs claim that their husbands help them and an additional 6% note occasional help. Hence married FHHs may receive some labor assistance from spouses (Table 3-16). Only 16% of the entire sample receive no extension visits at all (Table 3-17), masking the fact that this situation obtains for over one third of the FHHs compared to only 12% of MHHs. Most farmers do report that the extension agents visit frequently.

## GARDEN AND CROPPING PATTERNS

### Garden Inventory and Land Tenure

The average number of gardens per household is 4.3 with MHHs having 4.6 and FHHs having 3.7 (Table 3-18). The majority of these gardens are rainfed, and almost every household has one or more of these gardens where the major staple crop, maize, is

TABLE 3-16 HOUSEHOLD HEAD'S REPORT AS TO WHO FARMS IN HOUSEHOLD (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Man and woman farm together	93	18	81
Woman farms alone	-	77	13
Woman farms alone, man with other wife	4	-	3
Man helps on some op-	-	6	1
Man farms alone	4	-	3
Total %	101	101	101

TABLE 3-17 EXTENSION AGENT VISITS (PERCENTAGES)

	MHH=77	FHH=17	WIVES=81	TOTAL MHH and FHH=94
None	12	35	31	16
Visits-no frequency given	5	-	4	4
Visits-infrequent	5	18	4	7
Visits-frequently	78	47	62	72
Total %	100	100	101	99

TABLE 3-13

## TRAINING COURSES (PERCENTAGES)

	MHH=77	FHH=17	WIVES=83	TOTAL MHH and FHH=94
None	73	88	86	76
Day Training	14	12	13	14
Residential TC	12	-	1	10
Both D + R	1	-	-	1
Total %	100	100	100	101

\*Training Center

TABLE 3-14

## FARMING CLUB/GROUP MEMBERSHIP (PERCENTAGES)

	MHH=73	FHH=17	WIVES=83	TOTAL MHH and FHH=156
None	62	88	80	67
Member	29	12	19	26
Member and officer	10	-	1	8
Total %	101	100	100	101

TABLE 3-15

ACHIKUMBI (RECOGNIZED "GOOD FARMER") STATUS  
(PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
None	85	71	83
Man and woman	8	-	7
Man	6	-	5
Woman	1	29	6
Total %	100	100	100

grown. Half of all households, but only 35% of FHHs, cultivate a seepage zone (dambo) garden where crops may be grown during the dry season (Table 3-19). This type of garden is often a source of cash income since its crops mature out of the regular rainfed season. Seepage gardens are less common because there is less appropriate land available. Three quarters of the households cultivate all the land they control (Table 3-19), and only 6% (MHHs) to 8% (FHHs) of plots are not cultivated (Table 3-18), so scarcity of land could be an obvious constraint to expanding production.

Much of the land is registered in the name of the head of the matrilineage as a result of the land registration section of LRDP. However, people still acquire their gardens from a variety of sources through inheritance, gift, purchase, rental or by clearing it themselves. Table 3-20 shows that male relatives are the largest single source (40%) of gardens for household heads, but this obscures the fact that FHHs obtain 40% of their land from female relatives. It appears that each sex obtains land from relatives of the same sex more than from the opposite sex, and more land is acquired through relatives than from the village headman or through other sources (Table 3-21). More land is acquired by gifts from relatives than any other source. There is little difference between FHHs and MHHs households in terms of the percentage of plots cleared, but FHHs purchase, rent or borrow plots while MHHs rarely are in this situation (Table 3-21).

### Crops Grown

TABLE 3-18

NUMBER OF GARDENS (PLOTS PER  
ACRE PER HOUSEHOLD AND PERCENTAGES)

	Plots	MHH=84			FHH=17		TOTAL %
		Ave/HH	%		Plots	Ave/HH	
Rainfed	307	3.7	81		51	3.0	82
Seepage (dambo)	47	.6	12		6	.4	9
Uncultivated	23	.3	6		5	.3	8
<b>Total</b>	<b>377</b>	<b>4.6</b>	<b>99</b>		<b>62</b>	<b>3.7</b>	<b>99</b>

Table 3-19

NUMBER AND TYPE OF GARDENS PER HOUSEHOLD  
FOR 84 MHH AND 17 FHH (PERCENTAGES)

	Rainfed			Dambo			Uncultivated		
	NO GARDENS	MHH	Total HH	MHH	FHH	Total HH	MHH	FHH	Total HH
0	1	-	1	46	65	50	75	77	75
1	4	12	5	51	35	49	23	18	22
2	18	18	18	2	-	1	2	6	3
3	26	35	28	-	-	-	-	-	-
4	25	29	26	-	-	-	-	-	-
5	16	6	14	-	-	-	-	-	-
6	6	-	5	-	-	-	-	-	-
7	4	-	3	-	-	-	-	-	-
8	1	-	1	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-
<b>Total%</b>	<b>101</b>	<b>100</b>	<b>101</b>	<b>99</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>101</b>	<b>100</b>

TABLE 3-20

SOURCE OF ACQUIRED GARDENS  
(NUMBERS AND PERCENTAGES)

	MHH=83		FHH=17		WIVES		TOTAL MHH and FHH=100	
	plots	%	plots	%	plots	%	plots	%
Male Relatives	106	41	12	34	38	44	118	40
Female Relatives	72	28	14	40	48	56	86	29
Village Chief	55	21	6	17	-	-	61	21
Other	28	11	3	8	-	-	31	10
<b>Total</b>	<b>261</b>	<b>101</b>	<b>35</b>	<b>99</b>	<b>86</b>	<b>100</b>	<b>296</b>	<b>100</b>

TABLE 3-21

MEANS BY WHICH GARDENS WERE ACQUIRED  
(NUMBER OF PLOTS AND PERCENTAGES)\*

	MHH=83		FHH=17		Total MHH and FHH=100	
	plots	%	plots	%	plots	%
Inherited	82	24	11	18	93	23
Gifts	152	45	22	36	174	44
Purchased, rented, borrowed	5	1	14	23	19	5
Cleared	96	29	14	23	110	28
<b>Total</b>	<b>335</b>	<b>99</b>	<b>61</b>	<b>100</b>	<b>396</b>	<b>100</b>

\* No information for wives

The staple crop is "maize of the ancestors" or what has come to be called "local" maize (Zea mays). Because of the open pollination of maize, it is likely that "local" maize in most of LRDP has been influenced by introduced varieties and is no longer strictly of "local" origins. This flint maize is preferred by the people for home consumption because it pounds and stores better, and it provides more flour per volume of shelled maize when pounded at home. It is a hard (flinty), white maize with large and often variable kernels.

The hybrid maize presently being promoted (Malawi Hybrid 12 or MH12) is a dent maize that is softer and has a higher yield per hectare. It is more susceptible to weevil attacks in storage, produces less flour per volume of kernels when processed at home, and its taste is not preferred. Nevertheless, its yield and good maize prices makes MH12 an important cash crop which is purchased by ADMARC and milled and packaged for urban consumers. Composite or synthetic maizes (Ukiriguru Composite A or UCA is the variety currently being promoted in LRDP) are semi-dent or semi-flint with intermediate yield potential.

All households grow local maize; 35% grew the hybrid in 1981/1982; 39% of MHHs grew MH12 compared with only 12% of FHHs. In the previous year, 44% of MHHs had grown the hybrid compared with 24% of FHHs (Table 3-22). Other maizes are grown by few farmers presently or in the past. About 46% of households use introduced maize in food preparation in spite of the preference for local maize, either obtaining it from their own gardens or because they purchase maize from ADMARC (Table 3-22).

TABLE 3-22 VARIETIES OF MAIZE (PERCENTAGES)

	MHH=84	FHH=17	TOTAL MHH and FHH=101
Local maize	100	00	100
UCA 1981/82	4	6	4
MH12 1981/82	39	12	35
Other varieties 1981/82	5	6	5
UCA before	7	12	8
MH12 before	44	24	41
Other before	11	6	10

TABLE 3-23 MISCELLANEOUS HOUSEHOLD BEHAVIOR

	MHH	FHH	TOTAL
Use of introduced maize in food preparation	45%	47%	46%
Use of fertilizer for local maize	57%	59%	58
Average no. of years to fertilize local maize	20	7	14

Considering the types of crops by number of plots and sex of household head, Table 3-24 show that within the same garden or field most farmers grow one main crop but may have scattered plantings of other crops, mostly indigenous vegetables such as cruciferae and curcubits. Unlike other areas of Malawi where farmers intercrop to a significant degree, farmers in LRDP monocrop maize, groundnuts, tobacco, and sweet potatoes. Differences between MHHs and FHHs are that MHHs grow more hybrid maize and tobacco and FHHs grow more groundnuts and sweet potatoes. This trend is demonstrated in 1981/82, but is less obvious in 1980/81 (Table 3-25).

#### Maize Production and Inputs

Credit offered by LRDP to farmers comes in the form of inputs rather than cash. Credit packages for introduced maize varieties, groundnuts, tobacco, and fertilizer by itself are available through the extension staff. Farmers may also purchase fertilizers and seed from ADMARC, and seed is available in local markets.

Fifty eight percent of all households (with virtually no differences between types of households) have used fertilizer for their "local" maize. LRDP and MOA recommendations stress the fertilizer use for introduced varieties. Hansen et. al. (1982) has shown through a series of trials that there are advantages to the farming system if farmers fertilize "local" maize. Interestingly, FHHs have fertilized their "local" maize for more years than MHHs. It appears that men have more experience with

TABLE 3-24

## CROPPING PATTERNS 1981-82 (PERCENTAGE OF PLOTS)

	MHH=84				FHH=17			
	1st *p= 345	2nd p=334	Min1 p=304	Min2 p=298	1st p=55	2nd p=52	Min1 p=43	Min2 p=44
No crop	0	89	45	71	-	88	30	61
"Local" maize	33	1	2	0	38	2	2	-
Hybrid maize	12	0	-	-	7	-	-	-
Composite/ synthetic maize	0	-	-	-	-	-	-	-
Groundnuts	15	1	-	0	20	6	-	-
Tobacco	10	-	-	-	4	-	-	-
Sweet potatoes	7	-	1	1	16	-	2	-
Beans	6	1	6	2	7	-	14	-
Other	16	8	6	26	7	4	51	39
Total %	99	100	100	100	99	100	99	100

\*p = number of plots

1st = first and main crop

2nd = second main crop-intercropped

Min1 = first minor crop-scattered planting

Min2 = second minor crop-scattered planting

TABLE 3-25

FIRST AND SECOND MAIN CROPS IN 1980-81  
(PERCENTAGE OF PLOTS)

	1st	2nd	1st	2nd
	MHH=84 p=347	MHH=84 p=313	FHH=17 p=55	FHH=17 p=51
No crop	7	82	11	78
"Local" maize	41	1	49	6
Hybrid maize	10	-	7	1
Synthetic maize	-	-	-	-
Groundnuts	17	2	20	10
Tobacco	9	0	2	-
Sweet potatoes	4	-	5	-
Beans	1	4	1	-
Other	11	10	4	4
Total %	101	99	99	99

introduced varieties. Women focus more on "local" maize but have picked up the technique of fertilizing it and continue to do so instead of moving on to new varieties, probably because they lack encouragement to do so. Figure 3-1 gives the government recommendations from the Ministry of Agriculture.

Information on fertilizer use per plot in 1980/81 and 1981/82 is provided in Table 3-26. In 1980/1981 fertilizer was readily available for purchase or on credit, while in 1981/1982 the country experienced a shortage, and fertilizer was primarily available to club farmers. While most FHHs (90%) used fertilizer in 1980-81, most MHHs (66%) did not fertilize. Most FHHs in 1980-81 used Sulfate of Ammonia (S/A) by itself, and some only used 20:20:0, whereas the majority of MHHs who fertilized used both S/A and 20:20:0 fertilizers as recommended. Usage in 1981/82 is less differential because fewer farmers (12% of FHHs and 24% of MHHs) used fertilizers at all because of the reduced supply.

Table 3-27 shows that the average number of bags used by the two types of households is not differential when fertilizer is readily available, but in times of scarcity MHHs obtain more fertilizer. Also, few FHHs use fertilizers other than S/A for maize while MHHs do, and this probably reflects MHHs use of other mixtures for tobacco production.

Of those farmers obtaining fertilizer, most get theirs on credit rather than by cash purchase (Table 3-28). LRDP is on the one hand geared toward focusing its extension activities on the dispersion of credit, but on the other has the notion that farmers should be "weaned" from credit. Most farmers see credit

FIGURE 3-1 ESTABLISHED FERTILIZER PRICES  
AND GOVERNMENT MAIZE RECOMMENDATIONS

<u>Fertilizer</u>		
<u>Type</u>	<u>Weight</u>	<u>Price</u>
Sulfate of Ammonia (S/A) (21%N, 24%S)	50kg	K8.00
20:20:0 (20%N, 20% Phosphate)	50kg	K8.50

Number of Bags of Fertilizer

Hybrid maize-"2 bags per 0.5 ha. 20:20:0 at planting time followed by 2 bags per 0.5 ha. Sulphate of Ammonia applied when the crop is knee high (45cm to 60cm)."

Composite maize-"1 bag per 0.5 ha. 20:20:0 followed by 2 bags per 0.5 ha. of Sulfate of Ammonia."

Unimproved maizes-"At least 1 1/2 bags Sulfate of Ammonia...to be applied when the crop is knee high."

Planting Dates

Early Planting-"Maize should either be dry planted before the rains...or be planted immediately after the first heavy storm..."

Plant Population

Correct Plant Population-"...for all maize varieties...90 cm between ridges, 90 cm between planting holes and 3 seeds per hole..."

"90cm x 75cm x 3 seeds (hybrids only and \*not\* for large, tall varieties)."

"90cm x 30cm x 1 seed using seed drills as practiced by estates. (This should also apply to hybrids only)."

Source: Guide to Agricultural Production in Malawi 1981-82, MOA.

TABLE 3-26

FERTILIZERS USED IN 1980-81 AND 1981-82  
(PERCENTAGE OF PLOTS)

	1980-81			1981-82		TOTAL MHH and FHH=101 p=405
	MHH=79 p=349	FHH=17 p=55	TOTAL MHH and FHH=96 p=404	MHH=84 p=350	FHH=17 p=55	
None	66	71	67	75	89	77
S/A	8	15	9	8	6	7
20:20:0	4	11	3	4	-	4
S/A and 20:20:0	12	-	12	3	6	4
Other	3	4	3	7	-	6
Any other combination	7	-	6	2	-	2
Total %	100	101	100	99	101	100

TABLE 3-27 AVERAGE NUMBER OF BAGS PER PLOT (P) OF VARIOUS TYPES OF  
FERTILIZER USED IN 1980-81 and 1981-82

	1980-81		1981-82	
	MHH=80 p=77	FHH=17 p=13	MHH=84 p=40	FHH=17 p=4
S/A	2.2	2.3	2.2	2.0
20:20:0	p=74 2.2	p=8 2.5	p=33 2.1	p=2 1
Other	p=33 3.2	p=3 1.7	p=29 2.1	p=55 0

TABLE 3-28

SOURCE OF FERTILIZER FOR 1980-81 AND 1981-82  
(PERCENTAGE OF PLOTS)

	1980-81		1981-82	
	MHH=84 p=348	FHH=17 p=55	MHH=84 p=349	FHH=17 p=55
None	66	69	75	89
Cash	11	7	11	2
Credit	22	24	11	7
Friend/relative	1	-	1	1
Other	0	-	1	-
Total %	100	100	99	99

as a major LRDP program.

The government recommendation for fertilizing half a hectare of hybrid maize is 2 bags of 20:20:0 at planting time and 2 bags of S/A when the crop is knee high, while unimproved maizes should receive at least 1 1/2 bags of S/A for the same area when the crop is knee high (Figure 3-1). Table 3-29 does not distinguish between the types of maizes. If everything knee high and below are counted as "correct" applications, and waist high or taller are considered incorrect, then Table 3-30 shows dramatically that farmers who use fertilizers are applying it too late, and that FHHs are less knowledgeable of when to apply fertilizer than MHHs.

Another problem experienced in the 1981/82 season was that the fertilizer was late arriving in the country, and consequently distribution was delayed. More detailed data collection would be necessary to determine accurately if farmers delayed applying fertilizer after receiving it due to erroneous ideas of when to apply it, or whether the delay in distribution caused the late application. However, informal discussions with farmers reveal that many erroneously believe that fertilizer is absorbed by plants quickly, and that late application provides the growth spurt and helps the kernels form just prior to tasseling.

#### FARM AND OFF-FARM INCOME

Although actual figures for income and expenditure were desired, this information is difficult to collect and usually inaccurate. Instead, the survey instruments used farmer's

TABLE 3-29

TIME OF FERTILIZER APPLICATION FOR 1980-81  
AND 1982-82 MAIZE PLOTS (PERCENTAGE OF PLOTS)

	1980-81		1981-82	
	MHH=84 p=349	FHH=17 p=55	MHH=84 p=349	FHH=17 p=54
None	66	69	75	91
While planting	3	-	2	-
Plant is small	9	4	4	2
Knee high	10	11	6	-
Waist high	4	7	2	2
Chest high	0	-	3	-
Banking	2	4	2	-
Weeding	0	-	5	6
Maize about to tassel	5	5	5	6
Total %	99	100	99	101

TABLE 3-30

FARMERS KNOWLEDGE OF TIME OF FERTILIZER  
APPLICATION FOR MAIZE PLOTS IN 1980-81  
AND 1981-82 (PERCENTAGE OF PLOTS)

	1980-81		1981-82	
	MHH=119 p=29	FHH=5 p=17	MHH=21 p=87	FHH=2 p=5
"Correct" Answer (knee high or earlier)	66	47	42	11
"Incorrect" Answer (waist high or later)	34	53	59	89
Total	100	100	101	100

self-reported information about sources of cash income in efforts to determine relative importance of agricultural and non-agricultural cash income. By comparison, the NSSA Survey on Income and Expenditure was done weekly for 52 weeks and collected actual amounts.

Table 3-31 shows that most households sell groundnuts, and that it is the predominant crop by far for FHHs. The next most commonly sold crop for MHHs is tobacco. No FHHs sell other dambo garden crops. Other differences are that MHHs sell more hybrid maize, sweet potatoes, sugar cane, chickens, eggs and cattle, while the households do not differ in bananas and other crops.

Hybrid maize provides the most income to 40% of MHHs, followed by tobacco and groundnuts, whereas groundnuts provides the most income for 47% of FHHs; maize accounts for 23% of FHHs' income (Table 3-32). Income was earned from dambo crops and livestock to a much lesser degree, with wives being fairly consistent with their husbands in reporting relative importance.

Other sources of income for both sexes are agricultural work for others, construction work, and government or other jobs. MHHs also do urban wage labor. Over a tenth of both men and women work for others doing day farm labor, and 20% of MHHs and 3% of Wives have other sources of employment compared with none of the FHHs (Table 3-33). On the other hand, Table 3-34 shows that FHHs and Wives rely on beer brewing for cash income, as do some MHHs who also are doing crafts or artisan activities.

Table 3-35 clearly shows that all households see agricultural sources as providing more total income than

TABLE 3-31

HOUSEHOLD SELLING CROPS AND LIVESTOCK  
(PERCENTAGES)

	MHH*	FHH*	WIVES*
Local maize	18	25	23
Hybrid maize	36	19	31
Both maizes	10	-	11
Groundnuts	76	93	76
Tobacco	55	12	48
Sweet potatoes	30	13	37
Sugar cane	34	12	32
Bananas	27	29	28
Other dambo crops	38	-	32
Other crops	19	18	12
Chickens	47	19	48
Eggs	32	25	30
Cattle	19	6	11
Other livestock	11	12	14

\*Number of households varies depending on available data

TABLE 3-32

RELATIVE IMPORTANCE OF CASH FROM CROPS AND LIVESTOCK  
(PERCENTAGES)

	MHH*			FHH*			WIVES*		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Maize	40	12	4	23	12	-	32	20	6
Groundnuts	17	31	19	47	31	6	21	35	4
Tobacco	28	17	3	-	6	-	28	1	6
Sweet potatoes	4	5	7	-	-	12	5	5	1
Dambo crops	6	11	22	12	6	6	6	6	25
Chickens/eggs	2	1	4	6	-	12	1	2	3
Other livestock	-	11	14	6	6	12	2	5	12

\*Number of households varies depending on available data

TABLE 3-33

HOUSEHOLDS GAINING INCOME THROUGH OUTSIDE  
EMPLOYMENT (PERCENTAGES)

	MHH=72	FHH=16	WIVES=77	TOTAL MHH and FHH=88
None	67	88	86	70
Agricultural day labor	10	12	10	10
Agricultural day labor plus other rural labor	4	-	4	3
Rural labor	1	-	-	1
Rural construction	4	-	1	3
Urban wage	3	-	-	2
Government job	6	-	1	5
Other/other combination	6	-	1	5
Total %	101	100	100	99

TABLE 3-34

HOUSEHOLDS OBTAINING INCOME FROM VILLAGE  
INDUSTRIES (PERCENTAGES)

	MHH=76	FHH=16	WIVES=79	TOTAL MHH and FHH=92
None	50	31	38	47
Beer brewing	18	50	44	24
Beer brewing plus other rural business	-	-	8	-
Home crafts	11	6	4	10
Skilled artisan	8	-	-	6
Other	13	12	6	13
Total %	100	99	100	100

TABLE 3-35

## SOURCES WHICH PROVIDE THE BEST INCOME (PERCENTAGES)

	MHH=76	FHH=17	WIVES=79	TOTAL MHH and FHH=93
Both provide equal cash incomes	-	6	2	1
Non-agricultural sources	17	29	23	19
Agricultural sources	83	65	72	80
Total %	100	100	99	100

non-agricultural sources. Combining all types of cash income for farmers, Table 3-36 shows that the most important single source of income for men is hybrid maize followed by tobacco, whereas for FHHs the most important single source is beer brewing (non-agricultural business), followed by groundnuts.

#### PERCEIVED CHANGES DURING THE PAST DECADE

The LRDP has been in existence since 1968 and has spread out through the years to encompass a wider area of the Lilongwe Plain, increasing the number of people who have come under its influence. Not all farmers in the Survey have been in the LRDP (Project) area for the entire duration and had its infrastructural resources available to them. However, farmers were queried as to how they felt that LRDP affected aspects of their agricultural production over the years. Questions of food self-sufficiency and utilization of infrastructure and services (markets and inputs) were put to the farmers.

Many people failed to answer some of these questions, so that no quantitative data are available for some questions. However, many MHHs note that they started to grow hybrid maize, and some have stopped growing tobacco because of recent lowered prices. Both sexes note changes in credit availability and prices.

Forty four percent of all households believe that there is more food as a result of LRDP, and another 15% attribute this to infrastructural factors. Surprisingly, 38% think there is less food, the majority of which is attributed to natural factors but

TABLE 3-36

RELATIVE IMPORTANCE OF SOURCES OF CASH INCOME  
(PERCENTAGES)

	MHH*			FHH*			WIVES*		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Non-agricultural employment	5	5	5	-	5	17	2	2	3
Non-agricultural business	14	14	14	35	18	-	27	16	12
Maize	34	13	11	23	12	-	25	16	18
Groundnuts	12	22	18	29	35	12	14	32	17
Tobacco	27	17	3	-	5	-	23	7	7
Other crops	7	13	27	5	-	23	6	12	18
Livestock	-	13	14	5	5	12	1	8	13

\*Number of households varies depending on available data

TABLE 3-37

## CHANGES IN FOOD SELF-SUFFICIENCY AS RESULT OF PROJECT (PERCENTAGES)

	MHH=76	FHH=17	WIVES=81	TOTAL MHH and FHH=93
No change	3	-	2	2
More food	44	41	41	44
More food due to infrastructural factors	16	12	11	15
More food due to family or labor factors	-	6	-	1
Less food due to infrastructural factors	14	-	9	12
Less food due to family or labor factors	5	18	10	8
Less food due to natural factors	17	24	26	18
Total %	99	101	99	100

infrastructural and family or labor factors are mentioned also (Table 3-37). Probably natural factors refers to a combination of less rainfall and more continuous cultivation of the land as a result of increased population and land registration. These have reduced soil fertility and the ability to practice shifting cultivation. These factors contribute to those farmers who have been experiencing reduced food self-sufficiency.

A concomitant is that 52% of farmers say that they now have more cash income in general and due to infrastructure, but 44% say they have less cash income. Some of the latter is attributed to natural factors (an overall 30%, but 27 % for MHHs and 41% for FHHs), and 13% of MHHs attribute less cash to infrastructural factors; 12% of FHHs attribute less cash to family labor shortages (Table 3-38).

Most farmers, but especially married ones, note greater use of seeds, fertilizers, and machinery (Table 3-39), and most farmers see the use of credit increasing as a result of LRDP (Table 3-40). MHHs and Wives note that it is easier to transport items to market, whereas FHHs note no changes in marketing as a result of LRDP (Table 3-41).

#### FARM PLANNING AND MAIZE KNOWLEDGE

Because maize is the staple, questions about farm planning focused on farmers' knowledge and practices concerning this crop. The formulation of many of the questions is based on an earlier survey of smallholder agricultural knowledge (LLDP 1973).

Almost all farmers (MHHs and FHHs) know what crops they will

TABLE 3-38

CHANGES IN CASH INCOME AS RESULT OF PROJECT  
(PERCENTAGES)

	MHH=77	FHH=17	WIVES=76	TOTAL MHH and FHH=94
No change noted	1	6	3	2
More cash income	38	29	33	36
More cash due to infrastructural factors	18	6	13	16
More cash due to family or labor factors	-	6	-	1
More cash due to natural factors	1	-	1	1
Less cash due to infrastructural factors	13	-	11	11
Less cash due to family or labor factors	1	12	4	3
Less cash due to natural factors	27	41	36	30
Total %	99	100	101	100

TABLE 3-39

CHANGES IN USE OF INTRODUCED INPUTS AS RESULT OF  
PROJECT (PERCENTAGES)

	MHH=75	FHH=17	WIVES=80	TOTAL MHH and FHH=92
No change noted	12	41	18	17
Greater use of seeds and fertilizers	75	53	70	71
Greater use of seeds, fertilizer and machinery	11	6	8	10
Less use of seeds and fertilizer	3	-	3	2
Total %	101	100	99	100

TABLE 3-40

CHANGES IN USE OF CREDIT AS A RESULT OF  
PROJECT (PERCENTAGES)

	MHH=77	FHH=17	WIVES=80	TOTAL MHH and FHH=94
No change noted	19	35	33	22
More credit used	74	65	61	72
Less credit used	6	-	5	5
TOTAL	99	100	99	99

TABLE 3-41

CHANGES IN MARKETING AS A RESULT OF  
PROJECT (PERCENTAGES)

	MHH=76	FHH=16	WIVES=79	TOTAL MHH and FHH=92
No change noted	17	56	29	24
Greater use of ADMARC or market is nearer now	1	-	5	1
Same or fewer use of ADMARC	-	6	1	1
Easier to transport items	68	31	54	62
Combination of greater use of ADMARC or nearer market and easier transport	6	-	4	5
Combination of less/same use of ADMARC and easier transport	1	-	1	1
More use of other outlets	5	6	5	5
Total %	99	99	99	99

plant next season. All farmers will plant "local" maize and most will obtain seed from their own granaries. The majority of the farmers have not yet selected their seed for the coming season, although 18% of the MHHs/Wives had done so compared to none of the FHHs. Fifty seven percent of farmers plant hybrid maize as well, 61% of the MHHs compared with 35% of the FHHs (Table 3-42), and the majority of these farmers will obtain their seed from the government marketing board (ADMARC). Most farmers growing hybrid have not yet obtained their seed, but plan to purchase seed from ADMARC (Table 3-43).

Households that use their own seed or obtain seed from other farmers or elsewhere besides ADMARC are in reality only calling the seed "hybrid"; they are probably using seed that is one or more generations removed from the genetically controlled material with hybrid yield potential. More FHHs than MHHs are in this category. This does demonstrate a route by which new genetic material gets into the local pool and eventually becomes "local" maize.

Comparing groundnuts with maize, over half of the farmers have already acquired most of their groundnut seed (Table 3-44) from their own supply. Here again, when farmers obtain non-certified seed from sources other than ADMARC, they are probably mixing the quality of their seed.

The Survey asks whether or not farmers plan to fertilize their crops, and types and amounts of fertilizers they plan to use. About 25% of all households do not intend to use any commercial fertilizer, but more FHHs (44%) than MHHs (21%) are not planning to use any and this may be related to their low

TABLE 3-42 SOURCE OF HYBRID SEED (PERCENTAGES)

	MHH=74	FHH=17	WIVES=80	TOTAL MHH and FHH=91
Does not plant	38	65	41	43
ADMARC	55	29	50	51
Own supply	1	-	1	2
Other farmer	4	6	6	3
Other	1	-	1	1
Total %	99	100	99	100

TABLE 3-43 SOURCE OF HYBRID MAIZE SEED FOR NEXT SEASON (PERCENTAGES)

	MHH=62	FHH=13	WIVES=61	TOTAL MHH and FHH=75
Might not plant next season	37	62	46	41
Already acquired seed from own store	5	8	7	5
Already acquired seed from ADMARC	2	-	-	1
Will get all seed later from ADMARC	56	23	46	51
Will get all seed later from other sources	-	8	2	1
Total %	100	101	101	99

usage in 1981/1982. Of those households using fertilizer, most plan to use both S/A and 20:20:0, following MOA recommendations. Nine percent of the wives note that their husbands decide on fertilizer usage, and the wives do not know the husbands' plans (Table 3-45). Most farmers are familiar with S/A, 20:20:0 and CAN (Calcium Ammonium Nitrate). However women have less knowledge than men concerning other types of fertilizer (Table 3-46). Only 4% MHHs are planning to use manure.

When asked to speculate on the amount of fertilizer they would use, the number of bags of S/A ranged from 1-16, of 20:20:0 from 1-50, and of other types from 1-40. In their expectations, husbands and wives fairly well agree, and their projected usage is double that of the FHHs for S/A and triple that of FHHs for 20:20:0 and other types (Table 3-47), whereas the estimated acreage does not differ. Of farmers using fertilizer, 62% plan to obtain all bags on credit; 20% will purchase bags; and 17% will obtain fertilizer by both methods (Table 3-48). A small number (8%) of MHHs already have some fertilizer stored in their houses.

Farmers' knowledge of when to prepare the land, when to plant maize and the proper plant populations is also considered by the Survey. Most farmers (women more than men) say that the land should be cleared soon after harvest in July--August, followed by believing that late August--September is best (Table 3-49). Actual practices show that most farmers do not clear the land until late September--October. Answers for when to ridge also place the dates earlier than actual observed practice (Table 3-50).

TABLE 3-44 SOURCE OF GROUNDNUT SEED FOR NEXT SEASON  
(PERCENTAGES)

	MHH=52	FHH=15	WIVES=54	TOTAL MHH and FHH=67
Might not plant next season	6	-	6	4
Already acquired seed from own store	50	67	52	54
Already acquired seed from own store and ADMARC	4	-	-	
Already acquired seed from other source	-	-	1	-
Will get seed later from ADMARC	30	13	35	27
Will get seed later from other source	8	13	1	9
Has some, will get more later	2	7	4	3
Total %	100	100	99	100

TABLE 3-45 NUMBER OF FARMERS WHO PLAN TO USE COMMERCIAL FERTILIZER NEXT SEASON (PERCENTAGES)

	MHH=76	FHH=16	WIVES=81	TOTAL MHH and FHH=92
Does not plan to use any	21	44	27	25
Only S/A	5	19	7	8
Only 20:20:0	3	6	4	3
S/A and 20:20:0	41	31	37	39
S/A, 20:20:0 and CAN	21	-	9	17
Any other type	3	-	2	2
Any other combination	7	-	4	5
Does not know (only husband decides)	-	-	9	-
Total %	101	100	99	99

TABLE 3-46 FERTILIZERS KNOWN BY FARMERS (PERCENTAGES)

	MHH=75	FHH=17	WIVES=82	TOTAL MHH and FHH=93
Only S/A	-	-	2	-
20:20:0	1	-	-	1
20:20:0, S/A, CAN	59	70	77	61
20:20:0, S/A, CAN plus other types	40	30	21	38
Total %	100	100	100	100

TABLE 3-47 AVERAGE NUMBER OF BAGS OF VARIOUS TYPES OF FERTILIZERS FARMERS PLAN TO USE

	MHH=49	FHH=9	WIVES=32
S/A Range 1-16;	4.4	2	3.8
20:20:0 Range 1-50;	MHH=51 4.8	FHH=4 1.5	WIVES=28 4.9
Other Range 1-40;	MHH=33 3.3	FHH=13 0	WIVES=3 17.3

TABLE 3-48 SOURCE OF FERTILIZER FOR FARMERS WHO WILL USE IT (PERCENTAGES)

	MHH=59	FHH=10	WIVES=58	TOTAL MHH and FHH=69
Purchase all	19	30	17	20
Get all on credit	64	50	71	62
Some purchased on credit	17	20	12	17
Total %	100	100	100	99

Table 3-51 shows that 13% are unsure of when to plant; 41% say before the first rains, followed by 25% in November and 18% in December. MHHs and FHHs differ in their opinions of correct planting time, since MHHs prefer to plant before the first rains (44% compared with 25% for FHHs), while FHHs prefer to plant late (50% compared to 12% for MHHs). Wives are between MHHs and FHHs on this variable.

The government recommends early planting and dry planting (Figure 3-1). Since dry planting is uncommon in LRDP, the large number of persons who give this response is interesting. Also, the later dates for FHHs may be due to a variety of factors. The extension staff with their visits and instructions on radio broadcasts and in credit programs continually stress early planting. Women receive far less exposure to this recommendation than men. Planting dates may be later for FHHs because of labor constraints or the desire to be certain of the rains before expending labor and seed, i.e., they are less willing or able to take the risk of earlier planting in order to obtain greater yields.

Most farmers know the recommended number of seeds per station (3-4 seeds), and distances between stations (3 feet) and ridges (3 feet) (Table 3-52). But more of the women give incorrect answers--erring toward denser planting which is recommended for hybrid and estate use (Figure 3-1). In practice, farmers without extension contacts deviate more from the recommended plant spacing, but usually have lower than optimal plant population

Although the type of maize is not specified in the questions

TABLE 3-49 FARMERS KNOWLEDGE OF WHEN TO CLEAR LAND FOR MAIZE (PERCENTAGES)

	MHH=76	FHH=17	WIVES=81	TOTAL MHH and FHH=
Soon after harvest, (July-August)	57	65	59	58
Starting late, (August-September)	34	29	33	33
Starting late, (September-October)	9	6	6	9
Other answers	-	..	1	-
Total %	100	100	99	100

TABLE 3-50 FARMERS KNOWLEDGE OF WHEN TO RIDGE LAND FOR MAIZE (PERCENTAGES)

	MHH=76	FHH=17	WIVES=81	TOTAL MHH and FHH=93
Soon after harvest, (July-August)	18	24	14	19
Starting late (August-September)	43	29	41	41
Starting late (September-October)	30	35	35	31
Starting late (October-November or later)	7	12	4	8
After clearing	1	-	1	1
When first rains come	-	-	4	-
Other answers	-	-	2	-
Total %	99	100	101	100

TABLE 3-51 FARMERS KNOWLEDGE OF WHEN TO PLANT MAIZE (PERCENTAGES)

	MHH=77	FHH=16	WIVES=82	TOTAL MHH and FHH=93
Does not know	13	13	18	13
Anytime in October	-	6	1	1
Before first rains	44	25	32	41
Anytime in November	29	6	23	25
Anytime in December	12	50	23	18
Soon after 1st rains	-	-	2	1
During second rains	1	-	-	1
Other answers	1	-	-	1
Total %	100	100	99	100

about fertilizer application, the responses show both correct and incorrect knowledge. In Table 3-53, one third of the farmers know they should apply 20:20:0 at planting time; another third know the maize should be small. About 25% of the FHHs do not know when to apply, and 21% of MHHs apply too late. Table 3-54 shows that more farmers think they should apply S/A when the maize is about to tassel, and most farmers think application when "waist high" or higher is recommended, when in fact the recommendation calls for "knee high" application. The results of this knowledge test corroborates the information as to when farmers apply fertilizer as noted above. Tables 3-55 and 3-56 show that most households know the correct recommendation of the number of bags of fertilizer, but most FHHs do not know and Wives know less than their husbands. Concerning the price of fertilizer, only 12% of FHHs know correct prices for S/A, whereas 29% of MHHs know the price of both S/A and 20:20:0. There was a large gap between husbands' and wives' knowledge of prices (Table 3-57), which undoubtedly reflects the husband's greater involvement with credit and buying.

TABLE 3-52 FARMERS KNOWLEDGE OF RECOMMENDED SPACING FOR MAIZE (PERCENTAGES)

	MHH=84	FHH=17	WIVES=84	TOTAL MHH and FHH=168
Knows correct-3' between ridges and 3' between stations	63	53	50	61
Knows correct-approx. 3' between ridges and 1' between stations	9	6	11	9
Shows spacing denser than recommended between ridges and/or stations	17	29	33	19
No information	11	12	5	11
Total %	100	100	99	100

TABLE 3-53 FARMERS KNOWLEDGE OF WHEN TO APPLY 20:20:0 TO MAIZE (PERCENTAGES)

	MHH=76	FHH=17	WIVES=80	TOTAL MHH and FHH=93
Does not know	4	24	14	8
Before or while planting	38	35	31	38
When maize is small	36	35	29	35
When maize is knee high	18	6	14	16
When maize is waist high	1	-	6	1
When maize is taller than waist high	1	-	3	1
When maize is tasselling or about to	-	-	4	0
Can apply several different times	1	-	-	1
Total %	99	100	101	100

TABLE 3-54 FARMERS KNOWLEDGE OF WHEN TO APPLY S/A to MAIZE  
(PERCENTAGES)

	MHH=76	FHH=17	WIVES=81	TOTAL MHH and FHH=93
Does not know	9	24	12	12
When maize is small	4	-	2	3
When maize is knee high	16	-	19	13
When maize is waist high	21	18	16	20
When maize is taller than waist high	3	-	10	2
When maize is tasselling or about to	47	59	38	49
Can apply several differ- ent times	-	-	2	-
Total %	100	101	99	99

TABLE 3-55 FARMERS KNOWLEDGE OF RECOMMENDED BAGS OF 20:20:0  
PER ACRE (PERCENTAGES)

	MHH=84	FHH=17	WIVES=84	TOTAL MHH and FHH=168
Does not know	12	53	26	19
Bag for "local"/composites and 2 bags for hybrid	7	12	12	8
Either 1 or 2 bags	63	29	45	57
More than 2 per acre	8	6	12	8
No information	10	-	5	8
Total %	100	100	100	100

TABLE 3-56

FARMERS KNOWLEDGE OF RECOMMENDED BAGS OF S/A  
PER ACRE (PERCENTAGES)

Total MHH

	MHH=84	FHH=17	WIVES=84	and FHH=164
Does not know	14	53	26	21
Knows 1 bag for "local" and 2 bags for composite/ hybrid	5	6	11	6
Either 1 or 2 bags Less than 2 per acre	58	35	48	54
No information	10	-	5	9
	10	-	5	9
Total %	100	100	100	100

TABLE 3-57

FARMERS KNOWLEDGE OF PRICE OF FERTILIZER  
(PERCENTAGES)

	MHH=84	FHH=17	WIVES=84	TOTAL MHH and FHH=168
Does not know or Wrong answer	54	88	91	60
Knows only price S/A and 20:20:0	29	-	6	24
Knows only price S/A knows only price 20:20:0	6	12	1	7
No information	1	-	-	0
	10	-	2	8
Total %	100	100	100	99

## FOOTNOTES

1. A polygynist is a man with more than one wife. The correct technical term for a recognized marriage to more than one wife is polygyny. Polygamy is the more general term for recognized marriage to more than one spouse (husband or wife).

## CHAPTER 4

### COMPARISONS AND IMPLICATIONS

#### INTRODUCTION

This chapter begins by comparing the data collected by the NSSA and the LRDP Survey. They are found to be similar and the argument is made that profiles of men and women smallholders in LRDP can be drawn using both data sets. Since each data set has some information that is lacking in the other because of design, emphasis or season of collection, it is advantageous to be able to use the information from both sets interchangeably.

The time span in the two small surveys aids in understanding certain issues such as female-headedness. The data show that female headedness is not a permanent condition for all those types of households and that male mobility (wage labor), polygyny and easy divorces contribute to female headedness. Brief summary profiles of men and women (as wives and as female heads) are presented, followed by some implications of this report for the Lilongwe Rural Development Project itself as well as for other WID projects.

#### COMPARISONS OF THE NSSA AND THE LRDP SURVEY

Data from the NSSA in 1980/81 and the LRDP Survey in 1982

have been presented in the previous chapters. The households used in the LRDP Survey are a random subset of the NSSA households. A question is whether or not the LRDP Survey subsample (N=101 households) is representative of the NSSA sample (N=520 households) which is already considered to be representative of the LRDP population. A number of tables and comparisons of the data show that in fact there are very close similarities.

This report assumes, therefore, that the LRDP sample, although only one fifth as large as the NSSA, is a representative and comparable subsample of the NSSA sample and the LRDP population. The importance of this assertion is threefold. First, any questions about sample size of the LRDP Survey are alleviated by demonstrating that it is truly representative. Second, certain data that were collected in the NSSA and were impossible to collect in the LRDP Survey because of season and length of time may be added into the data for the LRDP Survey households. Third, data on the small number of female headed households in the LRDP Survey may be augmented by data on the FHHs from the NSSA.

For purposes of brevity, comparative material from the Household Composition and Garden Surveys are presented in which the results from the NSSA for the 101 households used in the LRDP survey are compared to the total NSSA results of 520 households. The LRDP Survey sample of female headed households (N=17) is small, which diminishes the significance of the statistics. As we noted in Chapter Three, the 101 were selected from the half of the 1980-81 NSSA households that were resurveyed in 1981/82 by

the LADD Evaluation Unit. Data from all the FHHs in the sample of 260 households from which the sample of 101 was drawn enlarge the sample of FHHs to 58 households. Eighty of the MHHs in the LRDP Survey of 101 households were found in the NSSA. Tables compare the 58 FHHs and the 80 MHHs.

### Household Composition Survey

A few tables demonstrate that the populations of the NSSA and LRDP Survey are comparable. For example, the de jure populations for the NSSA and LRDP Survey households as measured in the Household Composition Survey have almost identical distributions (Table 4-1). The length of village residence is also similar (Table 4-2). School attendance of household head, traditional and non-traditional status, and vocational training are also virtually identical between the two samples (tables not shown). There is a slight difference in agricultural work experience between the two samples in that 10% of the LRDP versus only 5% of the NSSA worked on farming estates.

The question to be asked is how stable are these households in regards to the sex of household head. They appear stable when aggregate numbers are examined since there were 58 FHHs in 1980/81 and 61 in 1981/82. Most studies only aggregates, and this gives a false impression that longitudinal data modify. Table 4-3 shows that most households remain the same, but 12% of the 58 FHHs in 1980/81 had changed to MHHs in 1981/82. Of the 61 households headed by women in 1981/82, a total of 16% had been headed by men during the previous survey in 1980/81. An

TABLE 4-1 DE JURE POPULATIONS BY AGE AND SEX  
IN LRDP FROM NSSA DATA (PERCENTAGES)

Age (years)	Sex	NSSA	LRDP	FHH	MHH
0 - 14	Male	23	20	24	20
	Female	22	24	24	23
	Both	45	44	48	43
15 - 49	Male	21	21	16	23
	Female	23	23	24	23
	Both	44	44	40	46
50+	Male	5	6	3	6
	Female	5	5	11	5
	Both	10	11	14	11
TOTAL %	Male	49	47	43	49
	Female	50	52	59	51
	Both	99	99	102	100
TOTAL POPULA- TION	Male	1149	220	97	191
	Female	1172	243	140	194
	Both	2345	463	237	385

TABLE 4-2 LENGTH OF VILLAGE RESIDENCE OF HOUSEHOLD HEAD,  
NSSA DATA (PERCENTAGES)

Years	NSSA (n=520)	LRDP (n=101)	FHH (n=58)	MHH (n=80)
0- 5	9	7	0	9
6-10	7	8	9	8
11-20	10	4	9	5
21-40	44	48	45	46
40 and above	29	34	38	32
Other	0	0	0	0

aggregate analysis could only state that the percentage of FHHs was stable (22% in 1980/81 and 23% in 1981/82) but this study of the same households over time shows that one sixth of the FHHs in 1981/82 are new to that status. This demonstrates the flexibility of the situation.

Only 12% of the women in FHHs in 1980/81 were monogamously married (Table 4-4) and some had husbands working outside the village who returned by the next year. Some of the husbands of the 26% polygynously married FHHs spent more time with other wives in 1980/81 but with the surveyed wives in 1981/82 and were counted as household heads there. Some of the 62% of FHHs who were not married in 1980/81 were married by the next year.

The opposite changes also occurred for the 16% of FHHs in 1981/82 who were MHHs in 1980/81. Some of the husbands in the 79% monogamously married MHHs left their villages for outside employment in 1981/82, leaving their wives to be FHHs. Some of the heads of the 1980/81 MHHs went to live with other wives because they became polygynously married in 1981/82 or already had other existing wives. Some of the monogamous marriages in 1980/81 broke up leaving the wife as household head in 1981/82.

The stability of the sex of household head over the years is affected by changes in marital, employment and migration status. The increase in male wage labor and off-farm activities means that more men will leave their families in rural areas with women acting as household heads. Some of these men do not return or return sporadically. Changes in marital status will also cause the sex of the household head to fluctuate from male to female to male again. This flux implies that households should not be

TABLE 4-3 CHANGE OF THE SEX OF THE HOUSEHOLD HEAD  
FROM 1980-81 TO 1981-82 (PERCENTAGES)

	LRDP 1980/81 (n=267)	FHH 1980/81 (n=58)	FHH 1981/82 (n=61)
MHH Change to FHH	4	-	16
FHH Change to MHH	3		-
No Change	94		84
<b>TOTAL</b>	<b>101</b>	<b>100</b>	<b>100</b>

TABLE 4-4 MARITAL STATUS OF HOUSEHOLD HEAD, NSSA (PERCENTAGES)

	NSSA (n=520)	LRDP (n=101)	FHH (n=58)	MHH (n=80)
Monogamous Marriage	66	64	12	79
Polygamous Marriage	18	19	26	18
Separated	4	4	17	1
Divorced	3	5	16	2
Widowed	7	8	29	0
Never Married	1	0	0	0
Other	0	0	0	0
<b>TOTAL</b>	<b>99</b>	<b>100</b>	<b>100</b>	<b>100</b>

discouraged from obtaining LRDP services because they are FHHs for a given period of time. Married women will require LRDP services because their husbands may depart or they may become heads of households subsequently. The overall figure of 29% FHHs for Malawi (Figure 1-1, Chapter 1) shows that more than one in every four households are headed by women. In 14 of the 35 RDPs measured by the NSSA a third or more of the households are FHHs.

Kydd and Christiansen (1977) show that since Independence in 1964 women have become more important in agriculture as men have become increasingly involved in wage labor. This leaves the wives of these men as full time farmers and reinforces the predominance of female labor on a full time basis. Kydd and Christiansen present figures showing that almost 70% of the full time or full year farmers are women and that this has increased between 1966 and 1977. The majority of these women are married but head their households.

### Garden Survey

As noted in previous chapters, it was not possible to measure crop hectareage in the LRDP Survey because the crops were already harvested. However, the NSSA was able to do this task and in addition obtain validated data on crop patterns. Table 4-5 shows the percentage of households in the total NSSA, LRDP Survey, enlarged FHHs, and comparative MHHs samples. First, the NSSA and the LRDP Survey samples are almost identical. Second, the table shows that MHHs grow twice as much tobacco, hybrid maize, sweet potato and green bean as FHHs, while FHHs grow

slightly more groundnut, groundbean and synthetic maize than MHHs. Some of these differences were noted in previous chapters.

The NSSA and other surveys in Malawi only provide percentages of farmers cultivating individual crops. The FSAS analyzed NSSA and LRDP Survey data in terms of household cropping patterns in which all of the major crops grown by each household were recorded and major patterns identified (Hansen and Ndengu 1983). A tabulation of the major cropping patterns of the NSSA and the LRDP Survey samples (Table 4-6) shows a similar distribution with are slight differences in patterns 1 (local maize and groundnuts) and 8 (other patterns) between the NSSA and the LRDP Survey samples. But more major are the differences between the MHHs and FHHs. Most FHHs are still growing the traditional pattern of local maize and groundnuts, while more of the MHHs are involved in more complex patterns. Nevertheless, there are FHHs who are involved in all patterns.

Looking into average cultivated area per crop for only those households that grow that crop, (Table 4-7) shows that only in the hectarage of synthetic maize and green bean are there significant differences between FHHs and MHHs. However, many FHHs simplify their farming system as manifested in their cropping patterns. This simplification is congruent with the fact that FHHs cultivate on average less land than MHHs (1.53 compared to 1.83 hectares), and shortage of land and labor as discussed in Chapters 2 and 3 account for this. On the other hand, Table 4-8 shows that holding sizes for some patterns (local maize, groundnuts and tobacco is an important one) are larger for FHHs than MHHs.

TABLE 4-5 MAJOR CROPS GROWN IN LRDP, NSSA DATA (PERCENTAGES)

CROP	NSSA (n=519)	LRDP (n=101)	FHH (n=58)	MHH (n=80)
Local Maize	97	95	100	95
Groundnut	84	85	90	82
Tobacco	36	35	19	41
Hybrid Maize	29**	22	10	26
Synthetic Maize	-*	1	2	1
Sweet Potatoes	21	26	14	28
Green Bean	-*	18	10	21
Pasture	-*	2	2	2
Groundbean	-*	10	9	8
Mixed Bean	-*	2	0	2

\* Not tabulated

\*\* Includes synthetic maize

TABLE 4-6 MAJOR CROPPING PATTERNS IN LRDP, NSSA DATA (PERCENTAGES)

CROPPING PATTERNS	NSSA (n=519)	LRDP (n=101)	FHH (n=58)	MHH (n=80)
1. Local Maize, Groundnuts	36	41	57	34
2. Local Maize, Groundnuts, Tobacco	18	14	10	18
3. Local Maize, Groundnuts, Hybrid Maize	6	6	3	6
4. Local Maize, Groundnuts, Tobacco, Hybrid Maize	7	4	3	4
5. Local Maize, Groundnuts, Sweet Potatoes	3	3	3	2
6. Local Maize	10	9	12	8
7. Local Maize, Hybrid Maize	4	3	4	0
8. Other Patterns	15	21	10	25
TOTAL %	99	101	98	101

TABLE 4-7 AVERAGE CROP AREA FOR PRODUCING HOUSEHOLDS,  
LRDP FROM NSSA DATA (HECTARES PER HOUSEHOLD)

CROP	LRDP (n=101)	FHH (n=58)	MHH (n=80)
Local Maize	0.94	0.90	0.97
Groundnut	0.44	0.42	0.49
Tobacco	0.43	0.58	0.44
Hybrid Maize	1.12	1.03	0.96
Sweet Potatoes	0.10	0.07	0.11
Green Bean	0.09	0.16	1.00
Pasture	0.11	0.34	0.11
Ground Bean	0.03	0.03	0.03
Mixed Bean	0.08	0.00	0.08
Synthetic Maize	1.01	0.00	1.01
<b>TOTAL AREA</b>	<b>173.37</b>	<b>88.96</b>	<b>146.77</b>
<b>AREA/HOUSEHOLD</b>	<b>1.72</b>	<b>1.53</b>	<b>1.83</b>

TABLE 4-8 HOLDING SIZE FOR HOUSEHOLDS PRODUCING MAJOR  
CROPPING PATTERNS (HECTARES PER HOUSEHOLD)

CROPPING PATTERNS	LRDP (n=101)	FHH (n=58)	MHH (n=80)
1. Local Maize, Groundnuts	1.37	1.13	1.52
2. Local Maize, Groundnuts, Tobacco	2.27	3.28	2.27
3. Local Maize, Groundnuts, Hybrid Maize	2.06	1.90	2.12
4. Local Maize, Groundnuts, Tobacco, Hybrid Maize	2.90	1.75	2.35
5. Local Maize, Groundnuts, Sweet Potatoes	0.95	1.16	0.93
6. Local Maize	0.95	0.75	1.13
7. Local Maize, Hybrid Maize	2.42	-	2.42
8. Other Patterns*	2.03	2.28	2.03
<b>AVERAGE HOLDING SIZE</b>	<b>1.72</b>	<b>1.52</b>	<b>1.84</b>

\* Other Patterns less than 3% of households

## PROFILES OF MALE AND FEMALE SMALLHOLDERS IN LRDP

Since it has been established that data from the NSSA and the LRDP Survey may be compared and considered somewhat interchangeable, conclusions may be drawn about smallholders using data from both sources. The following sums up some of the major findings from the NSSA and LRDP Surveys. The diverse farming systems within the different households have not yet been analyzed.

Demographically the smallholder household is 80% headed by men with a fourth having more than one wife. These households have 5.3 persons in them. Men, women, and children work in agricultural production. Twenty percent of the households are headed by women, and of these about 39% are married but their husbands are away from the family farm. These households have 4.2 persons--a woman and children who are available for agricultural work. Both types of households have similar numbers of children and these children are getting more education than their parents; children in FHHs and girls in both types of houses have less education. Women have less education and most are illiterate compared with men whose education, literacy and migration experiences are greater.

Most households rely on the basic agricultural tool, the hoe, and have few improvements to their houses. Consumer goods are not owned by most, but MHHs have more items than FHHs. The main housing improvement is the latrine but FHHs have fewer of these, probably because they lack male labor to build them. Most

households are within 2 miles of water and firewood supply as well as primary school. Health, training, and marketing facilities are further away.

The majority of gardens are rainfed, dambo land being at a premium; little land is under fallow. The average holding size is 1.7 hectares, with FHHs having less land (average 1.4). Each sex tends to obtain land from a relative of the same sex mostly through gifts or inheritance; there is little land left to clear. More of the FHHs cultivate fewer gardens than the MHHs, undoubtedly reflecting a labor shortage. However there are some FHHs that cultivate just as much or more than MHHs who have additional labor and access to land.

FHHs also have fewer gardens because of the way land is acquired. Women tend to acquire land through female relatives while men acquire land from male relatives. Since only one third of the FHHs are married, the remainder do not have the option to acquire land through the husbands's relatives.

The cropping patterns show that all households grow local maize and then add other food or cash crops. The most common second crop is groundnuts; then hybrid maize and tobacco are added. FHHs grow cash as well as food crops, although fewer are involved in tobacco and hybrid maize than MHHs. Tobacco in particular is thought to be a "man's crop," and the technical aid is directed toward them. It is therefore intriguing that women manage to grow it at all, but almost one fifth of FHHs grow tobacco.

There are no differences in the way that women and men farm in terms of cultural practices, except where extension

recommendations have been introduced. Women have less contact and training in agriculture. Women, whether they are in male headed households or farm managers themselves, know less than men about types of fertilizers and application, credit and its procedures, time of planting, spacing, plant populations, time of weeding, and disease and pest management. Women tend to have less diverse cropping patterns than men, and they have less access to improved seed and improved technologies.

Differences in yields then probably have less to do with real differences in farming skills (because both men and women seem equal in this respect) as they do with access to improved seed and technologies. Yields for FHHs are on the average either the same or lower than MHHs, probably because FHHs are not able to operate as efficiently due to technology constraints. In addition, labor shortages may also affect them. An example of this lag of FHHs behind MHHs is shown by the data on the use of fertilizer on local maize and in the time of fertilizer application. FHHs have fertilized local maize longer than MHHs, probably because the MHHs then went on to the new technology of growing hybrid maize and used their fertilizer on that crop. More FHHs continue to apply their fertilizers too late because they have received no information on correct usage. However, both men and women need more information on time of fertilizer application to prevent late application.

Only about a third of the households have attended a course given by the extension service, but this aggregate figure hides the fact that men have two to three time higher participation. People rely more on the extension worker through group meetings

and personal visits, but contact is always higher for men than women. About half the men but three quarters of the women have had no advice from any sources. For those men and women who have had advice, the men received information on twice as many topics and their topics focus on agriculture and project services (e.g. credit), whereas women receive much less information and what they do receive is more on home economics. Similarly, men tend to be the ones who are in farmers' clubs and getting credit (cf. Table 1-2), and married women are more likely to be members and credit takers than FHHs.

Yet farmers see credit as the main project service to them. Credit covers seasonal inputs such as seed and fertilizers, animal enterprises such as stall-feeding and dairy cows, and machinery. Marketing facilities (ADMARC and local market areas set up by LRDP) are mentioned as well as a main change as a result of LRDP, but they have helped MHHs more than FHHs. Only 40% of all households believe there is more food, and 52% say they have more income as a result of LRDP. Almost 40% believe there is less food, and 44% say they have less income since LRDP came into existence. Natural factors such as drought are noted by those who believe things have gotten worse. But FHHs mention 'family factors'; the loss of labor and access to resources, credit, extension visits surely have affected their farming systems.

All households require cash income, and most obtain their money from agricultural sources. Once again differences in crops are apparent between the two types of households. Men gain more money from tobacco and hybrid maize, and women rely on groundnut

sales. Streamside garden crops aid MHHs more than FHHs, and MHHs are the households with access to dambo land. In terms of non-agricultural income generation, women rely on beer brewing and village industries to a much greater extent than men who are more likely to find off-farm employment.

### IMPLICATIONS OF THIS REPORT FOR LRDP

The evaluation of LRDP in terms of its aims and goals is outside the scope of this report. The data presented here on smallholder agriculture in LRDP helps to understand the nature of farming at the household level. This information on men and women farmers can aid LADD and LRDP staff as well as MOA planners in making decisions about programs and strategies.

#### Sex of Household Head

In this report FHHs and MHHs have been considered discrete, but homogeneous entities. In reality there is diversity within each household type. Some FHHs are impoverished and have a reduced farming system (see below), fewer resources, less possibility of educating their children, and less food (cf: Dietary Survey). Others cultivate large hectarages with improved technologies and use their remuneration for improved housing, better clothing, education, and better diet. The continuum of MHHs likewise ranges from impoverished to affluent.

Women work as farmers in these diverse households headed by

men or by themselves. They actively manage the farm if husbands are not there or if they have no husbands. Since some men prefer to leave the farm for employment, farming responsibilities then fall to their wives. If women were not able to farm and feed their families, husbands could not leave women and children in the rural area to fend for themselves. Some of the men do not return or return sporadically; others use their off-farm cash income to develop their farms.

Marriages may be strained by male mobility, and unions in this area are capable of dissolving easily. Women may be married one farming season and separated, divorced or widowed the next. Men have the option of having more than one wife and household, thereby being only a part time participant in each household. Women, therefore, at different points in the life cycle may find themselves managing the farm alone; they are the ones who are consistently the farmers. They must feed their children whose average number is the same regardless of the marital status of their mothers. All households have cash needs, and women attempt to address these through agriculture and village based industries.

### Cropping System

Because of increasing male mobility, the basic farm unit is the woman and children (although children may be schooling and unavailable for farm work). Most households still have the husband present for most of the year and as a result have more land, labor, access to resources, and extension services. When

labor and resources are constrained, compensations in the farming system must be made. The farming system tends to simplify in that fewer crops, are grown especially non-food crops such as tobacco and hybrid maize. Crops are dropped from the system because

1. less land is available since the family only has land from the woman's relatives;
2. less labor is available since a major laborer, the husband is not present;
3. less money is coming into the household due to the absence of an adult man and to a decline in the cultivation of cash crops thereby reducing the capability to purchase inputs or hire labor.

As a result there may be a return to (or a continuation of) a more traditional cropping pattern of local maize and groundnuts, as access to improved seed, fertilizer and advice is reduced.

### Extension Services

Farmers of both sexes need access to information, training, credit, and inputs. It is clear that women as farmers need agricultural topics in their training, and they need to have the same opportunity as men through improved technologies and credit to increase production and generate income through agricultural production. Techniques by which the largely male extension staff may work with women have been described elsewhere (MOA 1983). These include working with women in groups, scheduling meetings in the villages rather at the unit center so more can attend

(only 21% of households are within 2 miles of a center), working with both husband and wife in married households, giving the same technical information to both sexes (i.e., giving women information about "men's crops"), developing strategies for increased participation in farmers clubs and credit taking, etc.

Data on farmers' knowledge and practice of certain techniques need to be carefully considered. The LRDP Survey data show that farmers have incorrect notions about fertilizer recommendations (such as time of application, amounts, and prices), time of planting and weeding, and optimal plant populations. Other research has shown that farmers' knowledge of the the origins and control of plant disease and pests is extremely limited and has direct effects on yields (Spring, Smith and Kayuni 1982a, 1983b). There must be some feedback between farmers' practices as measured by the NSSA or Evaluation Unit surveys and the extension service. The way farmers understand interpret and utilize recommendations must be understood so that changes may be made in extension techniques.

#### Interpretation of Sex-Disaggregated Survey Data

An initial examination of data concerning FHHs and MHHs or men and women might show that MHHs cultivate more land than FHHs, or that more MHHs cultivate hybrid maize or tobacco and are therefore worthier of praise, attention, credit, etc. than FHHs. Or it might be concluded than men are better farmers than women because average holding size or yields are higher for them.

However, access to inputs, technical advice and resources must be considered as well. The data from both the NSSA and the LRDP Survey show that men and women do not differ in basic farming skills and practices, but that differences in exposure to new technologies and access to services and resources have consequences for the output. FHHs still plan their farms just as the MHHs do but some FHHs must operate with reduced knowledge and inputs or must compensate for the loss of male labor and therefore reduce hectarage and simplify the farming system.

#### IMPLICATIONS FOR OTHER WID PROJECTS

WIADP was able to combine research with action endeavors and gain the approval of the MOA and its staff. Use of accurate quantitative and qualitative data reflective of farmers experiences aided acceptance. In order to accomplish its tasks, WIADP:

1. made use of existing survey data as well as carrying out its own research, thereby benefiting from existing sampling procedures and working with similar populations;
2. worked out a methodology and procedure for dealing with the voluminous amounts of data and was able to transfer these procedures to local Evaluation Units and eventually to the NSO; and
3. stressed the need to present women's agricultural production in relation to men's. This aided credibility that "farmers" were being considered. (The idea of contrasting populations by sex and considering intrahousehold differences in farming

practices is new to most researchers.)

Emphasis on a client group, women farmers, provided direction in that all aspects of the development process that could possibly affect women were considered. All aspects of farmers' activities and development project programs, as well as the training of staff at various levels, that could impinge upon the client group as such had to be considered. For example, in LRDP WIADP worked with the management and staff of LADD in general to examine each section that dealt with farmers in order to suggest some strategies that could be used to:

1. recognize the input of women in food and cash crop as well as livestock production;
2. document how RDP services could be better delivered to women; and
3. prepare monitoring and evaluation procedures that staff at all levels could use to measure the impact of their programs on women and men farmers (Spring, Smith and Kayuni 1983a).

WIADP, of course, was interested in setting up procedures for the collection and recording of sex-disaggregated data. The idea was that if women's work, participation in extension services, and output were recorded and tabulated as well as men's, women's contribution would not only be recognized, but could be targeted in programs. If each staff member, whether at grass roots or management level, had to report his/her contacts with farmers and evaluate farmers' participation and performance in terms of sex-disaggregated categories, that development agent would be forced to think of women as farmers, not as "farmer's wives". To this end reporting formats now used at all levels

collect data in terms of men and women (not by sex of household head) in terms of extension contacts (attendance at block demonstrations and meetings, visits to clubs, individuals, and schools, farmer training attendance, and village and section committee participants), seasonal credit (borrowers for various maize varieties, groundnut seed, tobacco, fertilizer and wheat), credit steers, and medium term credit. Complete sets of the formats for Technical Assistants (TAs), Development Officers (DOs), Project Officers (POs), and Program Manager (PM) are given in Appendix B.

If extension agents are able to collect sex-disaggregated data, the same argument for the importance and usefulness of collection and analysis of research data by Evaluation Units can be made. If these units become used to collecting, analyzing and reporting about men and women farmers as heads of households and within households, women will be targeted in the design of rural development project proposals and evaluations.

WIADP used the method of personal interviews with staff in decision making positions as well as in grass roots operational positions. Assistance from MOA staff both at Headquarters and in the LRDP and elsewhere facilitated the work. WIADP's strengths in being able to combine socio-economic and agronomic data collection and analysis meant that the issues were addressed holistically. Concern with the farmer, development staff and management, as well as the design of projects as the blueprint for implementation, marked the Women in Agricultural Development Project's emphasis in Malawi. It is hoped that this and other reports will be useful to the host country and to others.

Appendix A

WOMEN IN AGRICULTURAL DEVELOPMENT PROJECT IN MALAWI  
USAID/WID

Reports

1. Dr. A. Spring -Farm Home Assistants and Agricultural Training. September, 1981 (9 pages)
2. Dr. A. Spring -NSSA Series: KRADD A Preliminary Analysis of 3 Surveys in terms of Male and Female Household Heads, October 1981 (10 pages)
3. Dr. A. Spring -Soyabean Production in Unit 2. December, 1981 (6 pages)
4. Dr. A. Spring -Stall-feeding in LRDP. January, 1982 (8 pages)
5. Dr. A. Spring -Adapting CIMMYT Farming Systems Survey Guidelines to the Malawian Situation. February, 1982 (4 pages)
6. Dr. A. Spring -Background data on Women and Men Farmers in Kawinga and Lake Chilwa, Liwonde Agricultural Development Division March, 1982 (5 pages)
7. Miss F. Kayuni -Agricultural Refresher Course for LADD Female Extension Workers. April, 1982 (5 pages)
8. Dr. A. Spring -Women in Agricultural Production in malawi. Address to Extension Workers. April, 1982 (5 pages)
9. Mr. C. Smith -Report on Unit 2 Soyabean Trials. April, 1982 (3 pages)
10. Miss F. Kayuni -Female Extension Workers and Agriculture: Training for Women, Address to Extension Workers. April, 1982 (3 pages)
11. Mr. C. Smith -Agronomic Report on Unit 2 Soyabean Trials. May, 1982 (7 pages)
12. Dr. A. Spring -Report on Soyabean Farmers in the Thiwi-Lifidzi Project Area. June, 1982 (4 pages)
13. Dr. A. Spring  
Miss F. Kayuni  
Mr. C. Smith -Karonga Farmer Survey. June, 1982 (28 pages)
14. Mr. C. Smith -NSSA Series: Comparisons between Female and Male-headed Households From the NSSA 1980-81 Garden Survey of LRDP, Malawi. October, 1982 (4 pages)
15. Dr. A. Spring -Farmer Survey in Karonga: Considering the Role of Women in Agriculture. October, 1982 (6 pages)

16. Mr. C. Smith -NSSA Series: An Analysis of the Yields from the NSSA Yield Survey of LRDP in terms of Male and Female-Headed Households. December, 1982 (13 pages)
17. Miss K. Utterback -Appropriate Technology: Women's Responses to the Hand Operated Chitedze Maize Sheller. (8 pages)
18. Dr. A. Spring -Women in Agricultural Development: project Description. January, 1982 (9 pages)
19. Dr. A. Spring -Studies of Agricultural Constraints Facing Women Farmers in Phalombe RDP. April, 1983 (19 pages)
20. Mr. C. Smith -WIADP Soyabean Programme in the Lilongwe Rural Development project. May, 1983 (11 pages)

#### Proceedings/Final Reports

1. Dr. A. Spring (editor & compiler) -Proceedings of the National Workshop on Women in Agricultural Development, March 9-10, 1982. Compiled and edited by Dr. A. Spring, September, 1982 (76 pages)
2. Dr. A. Spring  
Mr. C. Smith  
Miss F. Kayuni -Women Farmers in Malawi: Their Contributions to Agriculture and Participation in Development Projects. Report submitted to the Ministry of Agriculture and USAID/WID, April, 1983 (193 pages)
3. Dr. A. Spring -Priorities for Women's Programmes. Report submitted to the Ministry of Agriculture and USAID/WID, April, 1983 (92 pages)
4. Dr. A. Spring -Profiles of Men and Women Smallholder Farmers in the Lilongwe Rural Development Project in Malawi. Final Report Submitted to USAID/WID, March 1984 (144 pages)

#### Extension Aids Circular

"Reaching Female Farmers Through the Male Extension Staff." (prepared by Dr. A. Spring in conjunction with Extension Aids Staff) Printed by Extension Aids, Ministry of Agriculture, and circulated to all extension personnel. August, 1983.

#### Evaluation of Women's Progra

Reports on the Evaluation of Women's Programmes for Ministry of Agriculture: Agricultural Development Divisions (ADD) and Training Institutes - Dr. A. Spring Mr. C. SMith and Miss F. Kayuni.

1. An Evaluation of Women's Programmes in Salima ADD: How SLADD Sections and Projects can incorporate More Women Farmers in their Programmes. January. 1983 (15 pages)
2. Kasungu ADD. February, 1983 (15 pages)

3. Blantyre ADD. February, 1983 (15 pages)
4. Ngabu ADD. June, 1983 (12 pages)
5. Liwonde ADD. May, 1983 (11 pages)
6. Lilongwe ADD. April, 1983 (30 pages)
7. Karonga ADD. July, 1983 (19 pages)
8. Mzuzu ADD. July, 1983 (21 pages)
9. Thuchila Farm Institute/National Resources College and the Training of Female Extension Workers. March, 1983 (4 pages)
10. Malawi Young Pioneers: Report on Agricultural Training. March, 1983 (8 pages)

#### Miscellaneous Handouts

1. Recommendations for Growing soyabeans (English and Chichewa Versions) November, 1981
2. Syllabus for Teaching Soyabean Agronomy and Recipes to Farmers; Dr. A. Spring and Training Section, LADD. March, 1982 (7 pages)
3. Tables Analyzing the Breakdown of Classroom Hours of Agriculture and Home Economics Courses in the Syllabus for Farmers Training at Day Training Centres, Residential Training Centres and Farm Institutes (prepared by Mr. C.R. Smith) November, 1982 (7 pages)
4. Tables from "The Work Done by Rural Women in Malawi", by B. Clark (6 pages)
5. Summary of Women and Handicrafts: Myth and Reality by J. Dhamija (adapted by Dr. A. Spring) (5 pages)
6. Tables on Male and Female Labour Allocation in LRDP extracted from J. Kydd "Farm Management Report No. 1, Labour Allocation and Crop Labour Requirements", LRDP, 1978.
7. Annual Work Plans (prepared by Dr. A. Spring, December, 1982)
  - a) Format
  - b) Recommendations and strategies for increasing women's participation in credit programmes
  - c) Recommendations and Strategies for introducing the Chitedze Maize Sheller to women farmers

#### Monthly Reports

December, 1981 - April, 1983

APPENDIX B SEX-DISAGGREGATED REPORTING FORMATS FOR LADD

**LILONGWE ADD**  
**Extension Activities' Report Form A**

TAs

Project \_\_\_\_\_ Period \_\_\_\_\_ 19 \_\_\_\_\_

Name \_\_\_\_\_

EPA/Unit \_\_\_\_\_

Section \_\_\_\_\_

Rank \_\_\_\_\_

	Total this month		Total to - date	
	Men	Women	Men	Women
1. <u>Attendance Block Demonstrations</u> topics _____				
2. <u>Attendance Club Visits</u> topics _____				
3. <u>Individual Visits</u>				
4. <u>Farmer Training DTC/Mobile</u> <u>Attendance - Agriculture</u> topics _____				
5. <u>Attendance - Home Economics</u> topics _____				
6. <u>Meetings</u> topics _____				
7. <u>Village Committees</u> topics _____				
8. <u>Section Committees</u> topics _____				
9. <u>Visit to schools</u> topics _____				

# LILONGWE ADD

TAs

## CREDIT BREAKDOWN

For \_\_\_\_\_ 19\_\_\_\_

Project \_\_\_\_\_

EPA/Unit \_\_\_\_\_

Name \_\_\_\_\_

Section \_\_\_\_\_

Rank \_\_\_\_\_

No. Clubs \_\_\_\_\_

Seasonal credit \_\_\_\_\_

Medium Term \_\_\_\_\_

Number Men \_\_\_\_\_

Number men \_\_\_\_\_

No. Men \_\_\_\_\_

Number Women \_\_\_\_\_

Number women \_\_\_\_\_

No. women \_\_\_\_\_

Total Members \_\_\_\_\_

Total borrowers \_\_\_\_\_

Total borrowers \_\_\_\_\_

	Total this month			Total to date		
	Men	Women	Total	Men	Women	Total
<u>Seasonal Credit:</u>						
Borrowers						
Hybrid maize						
Composite maize						
Other maize						
Groundnut seed						
Tobacco (Fertilizer)						
Fertilizer only						
Wheat						
Other _____						
_____						
_____						
Total Loan						
Amount Paid						
and Repayment						
_____						
<u>Credit Steers:</u>						
Borrowers						
<u>Medium Term Credit</u>						
(specify items)						
_____						
_____						
_____						
Total Loan						
Amount Paid						
Balance Outstanding						



LILONGWE ADD CREDIT BREAKDOWN For \_\_\_\_\_ 19 \_\_\_\_\_ AREA \_\_\_\_\_  
 Name \_\_\_\_\_ Rank \_\_\_\_\_

EPA/Groups/Projects															Total
<u>Seasonal Credit</u>	M	W	M	W	M	W	M	W	M	W	M	W	M	W	
MH-12															
Composite															
Groundnuts															
Tobacco															
Fertilizer Only															
Cotton															
Wheat															
Other															
_____															
_____															
<u>Chemicals</u>															
_____															
<b>Total Loan</b>															
<b>Amount Paid</b>															
<b>and Repayment</b>															
_____															
<b>Credit Steers: Borrowers</b>															
<u>Medium Term Credit (specify)</u>															
_____															
_____															
_____															
<b>Total Loan</b>															
<b>Amount Paid</b>															
<b>Balance Outstanding</b>															

Days Breakdown

EPA/Group/Project																				Total
Days Extension																				
Days Staff Training																				
Days Administration																				
Days Leave																				
Days Sick																				
Number Staff Reported																				
Farmer Training TCs																				

EPA/Group/Project	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	Total
1. No. DTCs/Mobile TCs																			
No. Day Courses																			
Attendance - Agriculture																			
Attendance - Home Economics																			
2. No. RTC Courses																			
Attendance - Agriculture																			
Attendance - Home Economics																			

Comments

EPA/Group/Project	M	W	M	W	M	W	K	W	M	W	M	W	M	W
3. Mobile Van Announcements														
4. Film Shows														
5. Puppet Shows														

Comments

## BIBLIOGRAPHY

- AES (Agro-Economic Surveys)  
1968- Fifty one Reports.  
1983
- Blalock, M.  
1979 Social Statistics. New York: McGraw Hill.
- BLADD (Blantyre ADD)  
1982a "Evaluation Working Paper 7/81 Household Composition Survey 1980/81 Season, Phalombe RDP" Evaluation Unit. 21 pp.  
1982b "Evaluation Working Paper 1/82 Livestock Survey, Resources Survey, Extension Survey, Crop Storage Survey, Phalombe RDP. 1980/81 Season." Evaluation Unit, 16 pp.
- Burfischer, M. and N. Horenstein  
1983 Sex Roles in the Niger: the Differential Impact  
New York: Population
- Castro, A., N. Hakansson and D. Brokensha  
1981 "Indicators of Rural Inequality," World Development 9:5:401-27.
- Clark, B.  
1975 "The Work Done by Rural Women in Malawi" Eastern Africa Journal of Rural Development 8:2:80-90.
- Dixon, R.  
1982 "Women in Agriculture: Counting the Labor Force in Developing Countries". Population and Development Review 8:3:539-66.
- GOM (Government of Malawi)  
1978 National Rural Development Programme: Policies, Strategies and General Features. Zomba: Government Printer.
- Hansen, A., E. Mwangi, and B. Phiri  
1982 "Farming Systems Research in Phalombe Project, Malawi: Another Approach to Smallholder Research and Development." Paper presented at the International Conference on Development in Malawi in the 1980's. Zomba, Malawi. July 12.
- Hansen, A. and J. Ndengu  
1983 "Lilongwe Rural Development Project Cropping Patterns: Information from the National Sample of Agriculture", FSAS. 14 pp.

- Kayuni, F.  
1982a "Agricultural Refresher Course for LADD Female Extension Workers". WIADP: Report 7. April, 5 pp. mimeo.
- 1982b "Female Extension Workers and Agriculture: Training for Women: Adress to Extension Workers". WIADP: Report 10. April, 3pp. mimeo.
- Kinsey B.  
1973 The Lilongwe Land Development Project: A Review of the Background, Accomplishments and Transferability of Experience of One of the Three IDA-Funded Rural Development Projects in Malawi. IBRD.
- Kydd, J.  
1978 "Lilongwe Land Development Programme Farm Management Survey 1969/70 to 1971/72. Report No. 1 Labor Allocation and Crop Labor Requirements 1969/70". mimeo.
- 1982a "The Lilongwe Rural Development Project Farm Management Surveys, 1969/70 and 1978/79: An Initial Comparison of the Baselines". Paper presented at the Conference on Socio-Economic Research in Rural Lilongwe. Chitedze Agricultural Research Station. January 23.
- 1982a Measuring Peasant Differentiation for Policy Purposes: A Report on a Cluster Analysis Classification of the Population of the Lilongwe Land Development Programme Malawi, for 1970 and 1979. Zomba, Government Printer.
- Kydd, J. and R. Christiansen  
1981 "The Distribution of Income in Malawi in 1977". University of Malawi. Zomba: Centre for Social Research, Working Paper No. 1.
- Lele, Uma  
1975 The Design of Rural Development: Lessons from Africa. Baltimore: Johns Hopkins Press.
- LLDP (Lilongwe Land Development Programme)  
1970 Lilongwe Land Development Project, Proposal Phase II.
- 1973 Provisional Proposals for Lilongwe Land Development Programme, Phase III.
- 1977 Lilongwe Land Development Programme Phase IV Proposals 1979 Project Completion Report, Lilongwe Land Development Programme, Phase III.
- 1980 "Notes for LLDP Project Completion Report".

## LLDP (Evaluation Section)

- 1971 A Socioeconomic Survey of Agriculture in the Lilongwe Land Development Program Area. Part 1: The Structure of Smallholder Agriculture. LLDP Report No. 7.
- 1973 A Socioeconomic Survey of Agriculture in the Lilongwe Land Development Program Area 1971/72. Part 4: Agricultural Knowledge of Smallholders. LLDP Report No. 13.

## LWADD (Liwonde ADD)

- 1982 Balaka Rural Development Project: Project Proposals. Main Report and Annexes. Evaluation Unit.

## MOA (Ministry of Agriculture)

- 1982 National Credit Manual Department of Agricultural Development, Lilongwe.
- 1983 "Reaching Female Farmers Through the Male Extension Staff". Extension Aids Circular. 8 pp.

## NADD (Ngabu ADD)

- 1982 "Household Composition, Resources, and Extension Surveys: Summary Reports for 1980/81 Survey Season (NSSA). Evaluation Unit.

## NSO (National Statistical Office)

- 1970 National Sample Survey of Agriculture 1968/69. Zomba: Government Printer.
- 1980 "Enumerator's Manuals for the NSSA" (11 manuals) Zomba: Government Printer.
- 1982 Preliminary Report: National Agriculture for Customary Government Printer.

## Safilios-Rothschild, C.

- 1983 "The State of Statistics on Women in Agriculture in the Third World" Expert Consultation on Women in Food Production. Rome, December. 28pp.

## Smith, C.

- 1982a "Report on Unit 2 Soyabean Trials" WIADP: Report 9, April. 3 pp. mimeo.
- 1982b "Agronomic Report on Unit 2 Soyabean Trials". WIADP: Report 11, May. 3 pp. mimeo.
- 1982c "Comparisons Between Female and Male Headed Households From the NSSA 1980-81 Garden Survey of LRDP. WIADP: Report 14, October. 4 pp. mimeo.

- 1982d "An Analysis of the Yields from the NSSA Yield Survey of LRDP in Terms of Male and Female Headed Households. WIADP: Report 16, December. 13 pp. mimeo.
- 1983 "The WIADP Soyabean Programme in the Lilongwe Rural Development Project". WIADP: Report 20, May. 11 pp. mimeo.
- Spring, A.
- 1981a "Farm Home Assistants and Agricultural Training." WIADP: Report 1, September. 9 pp. mimeo.
- 1981b KRADD: A Preliminary Analysis of 3 Surveys in Terms of Male and Female Household Heads. WIADP: Report 2, October. 10 pp. mimeo.
- 1981c "Soyabean Production in Unit 2". WIADP: Report 3, December. 6 pp. mimeo.
- 1982a "Background Data on Women and Men Farmers in Kawinga and Lake Chilwa, LWADD". WIADP: Report 6, March. 5 pp. mimeo.
- 1982b "Stallfeeding in LRDP". WIADP: Report 4, January. 8 pp. mimeo.
- 1982c "Women in Agricultural Production in Malawi: Address to Extension Workers". WIADP: Report 8, April. 5 pp. mimeo.
- 1982d Proceedings of the National Workshop on Women in Agricultural Development. WIADP, September. 76 pp.
- 1982e "Farmer Survey in Karonga: Considering the Role of Women in Agriculture." WIADP: Report 15, October. 66 pp. mimeo.
- 1983a Priorities for Women's Programmes. Final Report submitted to MOA and USAID, April. 92 pp.
- 1983b "Women in Agricultural Development in Malawi." Paper Presented at the XI International Congress of Anthropological and Ethnological Sciences. Vancouver, Canada. August 21. 20 pp.
- 1983c "Disaggregating National Agricultural Data by Sex in Malawi: Progress to Date and a Proposal". Paper Presented at the Association for Women in Development Conference, Washington D.C., October, 15. 20pp.
- 1983d "Men and Women Smallholder Participants in a Stall-Feeder Livestock Program in Malawi". Paper

Presented at the Farming Systems Research Symposium,  
Manhattan, Kansas, November 2. 24 pp. (and forth-  
coming in Human Organization)

- Spring, A., C. Smith and F. Kayuni  
1982 "Karonga Farmer Survey". WIADP: Report 13, June.  
28 pp. mimeo.
- 1983a "An Evaluation of Women's Programmes in Lilongwe  
ADD: How LADD Sections and Projects can Incorporate  
More Women Farmers in Their Programmes. WIADP:  
April. 30 pp. mimeo.
- 1983b Women Farmers in Malawi: Their Contributions to  
Agriculture and Participation in Development  
Projects. WIADP, Final Report submitted to the  
MOA and USAID, April. 193 pp.