THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
CENTRAL STATISTICAL AUTHORITY

AGRICULTURAL SAMPLE SURVEY
1996/97 (1989 E.C.)

VOLUME III

REPORT ON
FARM MANAGEMENT PRACTICES

(PRIVATE PEASANT HOLDINGS, MEHER SEASON)

ADDIS ABABA
JUNE, 1997

171 STATISTICAL BULLETIN 171

PREPARED AND PRINTED BY
CENTRAL STATISTICAL AUTHORITY
P.O.BOX 1143 ADDIS ABABA
Tel. 55-30-11

TABLE OF CONTENTS

LIST OF TABLES

Page

Estimates of Improved Seed, Irrigation, Pesticide and Fertilizer applied area and their percentage distribution by crop for meher season crops of private peasant holdings, 1996/97 (1989 E.C.).

Page

Estimates of Fertilizer applied area by type of fertilizer for meher season crops of private peasant holdings, 1996/97 (1989 E.C.).

Estimates of Quantity of Commercial Fertilizer by Type of Fertilizer for meher season crops of private peasant holdings, 1996/97 (1989 E.C.).

Page

Estimates of Quantity of Improved Seed Applied by Type of Seed for meher season crops of private peasant holdings, 1996/97 (1989 E.C.).

Page

Number of Holders who Applied Agricultural Inputs in Their Fields by Educational Attainment for private peasant holdings, 1996/97 (1989 E.C.). Page

LIST OF FIGURES

REPORT ON

FARM MANAGEMENT PRACTICES

1. INTRODUCTION

Agriculture contributes a major part for the economy of Ethiopia. It contributes a significant amount to the Gross Domestic Product (GDP) and also the majority of the population in the country is engaged in it. The collection of reliable, comprehensive and timely statistical information in this sector is so imperative for the formulation of agricultural development plan and policy. However, it is becoming difficult to provide all kinds of agricultural information needed by planners and policy makers due to resource limitation.

The Central Statistical Authority (CSA) has been conducting Agricultural Sample Surveys on annual basis since 1980/81 (1973 E.C.) to produce some of the statistical data that can be used in planning and policy making activities.

This volume presents survey results on agricultural practices such as, use of improved seed, irrigation, application of pesticides and fertilizers of the private holdings. Also the reader is referred to **Volume I** of the same survey which is " **Report on Area and Production of Major Crops; Private Holdings, Main Season, Addis Ababa, April, 1997.**" That volume presents in its appendices number of sampled EAs, number of EAs that are actually covered and not covered in the survey; number of households planned to be covered and those actually covered in the survey for the purpose of agricultural practices (uses of improved seed, irrigation, pesticide and fertilizers), area and production of major crops and number of fields measured. Moreover, estimation procedures, standard errors and coefficient of variations for agricultural practices such as uses of improved seed, irrigation, pesticide and fertilizers during Main (Meher) season are presented in Appendix I and II of this report.

2. OBJECTIVES OF THE SURVEY.

The general objective of the agricultural sample survey was to collect basic quantitative information on the nation's agriculture that are considered essential for development planning and socio-economic policy formulation.

In particular, the objectives of the survey were to estimate the total cultivated land; total production and yield of major crops per hectare; crop land uses (temporary and permanent); quantity and cost of agricultural inputs by type; number of livestock and poultry by type, purpose, sex and age; number of beehives and honey production in the private peasant holdings for the nation, regions and group of zones.

3. COVERAGE AND CONTENT.

The 1996/97 (1989 E.C.) annual agricultural sample survey was designed to cover sedentary rural agricultural population in all regions of the country. Urban and nomadic areas were not included in the survey. Accordingly, a total of 55 zones and 375 weredas were covered by the survey. The areal coverage of the survey is given in the following table.

AREAL COVERAGE OF THE 1996/97 AGRICULTURAL SAMPLE SURVEY

REGION	NUMBER OF ZONES			NUMBER OF WEREDAS	
	TOTAL	COVERED BY THE SURVEY	NOT COVERED BY THE SURVEY	PLANNED TO BE COVERED BY THE SURVEY	COVERED BY THE SURVEY
TIGRAY[1]	5	4	1	35	33
AFAR[2]	5	3	2	7	7
AMHARA	10	10	-	95	95
OROMIYA	12	12	-	148	148
SOMALIE[3]	9	3	6	7	6
BENSHANGUL-GUMEZ	3	2	1	7	7
S.N.N.P.R.	16	16	-	68	68
GAMBELA	1	1	-	5	4
HARARI	1	1	-	1	1
A. ABABA[4]	6	2	4	5	5
DIRE DAWA	1	1	-	1	1
TOTAL	69	55	15	379	375

Note

1 - In Tigray Region, four out of five zones have rural settled population. In the remaining one zone the entire population is urban residents.

2 - Afar region has a total of five zones, but only two zones have significant sedentary rural population.

3 - Somalie region has a total of nine zones, however only three zones have significant sedentary rural population.

4 - Addis Ababa has a total of six zones, however, only two zones have rural settled population. In the remaining four zones the entire population is urban residents.

S.N.N.P.R = Southern Nations and Nationalities Peoples' Region

Moreover, for the survey a total of 705 Enumeration Areas were selected to be covered in all regions. Nevertheless, 5 of them were closed due to various reasons and the survey succeeded to cover 700 Enumeration Areas(EAs). Furthermore, from each of the selected EAs a sample of 25 agricultural households were selected to represent the agricultural population of the sampled EA.

From these households, information on area under crops, Meher and Belg season production of crops, crop land utilisation, agricultural practices, crop damage, quantity and price of agricultural inputs used, number of livestock and poultry by type, purpose, age and sex, number of beehives by type, honey yield, milk yield and milk for butter were collected.

4. CONCEPTS AND DEFINITIONS.

In order to standardize the data the same concepts and definitions should be applied during data collection. Hence, some of the concepts and definitions used in the survey are given below.

Enumeration Area (EA): An Enumeration Area in rural parts of the country is a locality that is less than or equal to a farmer's association area and usually consists of 150 - 200 households.

Holder: A holder is a person who exercises management control over the operations of the agricultural holding and takes the major decision regarding the utilization of the available resources. He has technical and economic responsibility for the holding. He may operate the holding directly as an owner or as a manager. Under conditions of traditional agricultural holding the holder may be regarded as the person, who with or without the help of other, operates land or raises livestock in his own right, i.e. the person who decides on what, when, where and how to grow crops or raise livestock and has the right to determine the utilization of the products.

Holding: a holding is all the land and/or livestock kept which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone, or with others without regard to title, legal form, size or location.

Size of Holding: In this report size of holding is determined by total area under different crops, such as area under temporary crops and permanent crops.

Household: A household may be either;

a) a one person household, that is a person who makes provision for his own food or other essentials for living without combining with any other person to form part of a multi person household or

b) a multi person household, that is, a group of two or more persons who live together and make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to greater or lesser extent. They may be related or unrelated persons, or a combination of both. These persons are taken as members of the household.

Agricultural household: A household is considered an agricultural household when at least one member of the household is engaged in growing crops and/or breeding and raising livestock in private or in partnership with others.

Parcel: A parcel of holding is any piece of land entirely surrounded by land, water, road, forest, ...etc. which is not part of the holding. It may consist of one or more cadastral units, plots or fields adjacent to each other.

Field: A field is defined as any plot of land which is a parcel or part of a parcel under the same crop.

Meher(Main) Season Crop: Any crop harvested from Meskerem (September) to Yekatit (February) is considered as meher season crop.

Temporary Crops: Temporary crops are those crops which are grown with a cycle of under one year, sometimes only a few months with a view to be sown or planted anew for further production after the harvest. Similarly, crops grown in rotation are also considered temporary crops as these are destroyed when land is ploughed.

Permanent Crops: Crops which occupy land for a long period of time and are not planted for several years after each harvest are considered as permanent crops. All fruit trees (e.g. oranges, mandarins, apples, ...etc.) and trees used for beverages (like coffee, tea, ... etc.) are considered as permanent crops. Permanent meadows and pastures, however, are excluded.

5. SAMPLE DESIGN.

A two stage stratified sample design was used for the 1996/97 (1989 E.C.) Annual Agricultural Sample Survey. In three regions, namely in Amhara, Oromiya and Southern Nations and Nationalities Peoples' Region, group of contiguous zones were treated as strata/reporting levels of the survey results. In the remaining regions, the reporting levels were the regions themselves. The primary sampling units (PSUs) in all strata were Enumeration Areas (EAs). Agricultural households were the ultimate sampling units. The survey questionnaires were administered to all agricultural holders in the sampled agricultural households.

A fixed number of sample EAs was determined for each stratum/ reporting level based on precision of estimates, household size of the stratum and cost considerations. The overall sample number of EAs in a stratum was proportionately allocated to zones/special weredas within the stratum to their household size. From within each Zone/Special Wereda sample EAs were selected with probability proportional to size, size being the total number of households of EAs as obtained from the 1994 census map work. From each sample EA, 25 agricultural households were sampled systematically without replacement from a fresh list of agricultural households.

All information were collected from these households except for crop-cutting exercise, for which data were collected only from the last 15 agricultural households starting from the 11th selected agricultural households. Moreover, holders within these households were enumerated and the required data were collected from these holders.

6. FIELD ORGANIZATION.

CSA branch statistical office heads, field supervisors and enumerators, experts from head office, other support staff and drivers were involved in the operation of the survey.

For all enumerators the necessary survey equipment, such as compasses, protractors, ruler, measuring tapes, balance scales, poles, ropes, sample bags,...etc. were made available and to assist the field work a certain number of vehicles were put on operation.

7. TRAINING OF FIELD STAFF.

The training program for the field staff was carried out in two stages. In the first stage trainees from the head office, branch statistical office heads and some of the field supervisors were given training for one week at the head office. Some of those trained in the first stage conducted similar training for field supervisors and enumerators for 10 days in all the 15 branch offices all over the country. During the training, the field staff were given detailed class room instruction on the objective and uses of the survey, concept and definitions of terms used, method of area measurement, method of crop cutting, interviewing procedures,... etc. The training sessions included thorough field practices with regard to data collection.

8. METHOD OF DATA COLLECTION.

Survey data were collected on questionnaires both by subjective and objective methods. Information on agricultural practices (application of fertilizer, pesticide, use of improved seed and irrigation), livestock and poultry information were collected subjectively by interviewing the holders in the sampled households.

In addition, the objective measurements, particularly for area measurements, were carried out for the 25 selected households from each sampled EA in which all crop areas were physically measured using compasses and measuring tapes.

9. EDITING, CODING AND VERIFICATION.

Intensive training was given to the editors and in due course, regular staffs were assigned to answer questions, clear doubts,...etc. so as to facilitate the editing and coding activity. In addition, the edited and coded data were checked by supervisors on 100% basis.

10. DATA ENTRY, CLEANING AND PROCESSING.

The data was entered in personal computers using IMPS (Integrated Microcomputer Processing System) Software by data encoders. Then, the data entered was checked and cleaned. Finally, the data processing activity was also done by personal computers(PCs) to produce results which were indicated in the tabulation plan.

NOTE:

1. If in some tables figures do not add up to total it is due to rounding.
2. Those estimates designated by "**" in all tables could not be reported because of high coefficient of variations (i.e. they are less reliable). However they are consolidated in the total estimates.
3. It should also be noted that the smaller the Coefficient of Variation , the higher the reliability of the estimate.

11. SURVEY RESULTS.

1. Area under Farm Management Practices:

This part deals with the total crop area on which the private peasant holders used farm *management practices* and these refer to practices that increase crop production and are mainly *uses of improved seed, irrigation, pesticide* and *fertilizer*. The results are summarized and presented below.

Fertilizer: refers to anything added to the soil intended to increase the amount of plant nutrients available for crop growth. Usually fertilizers are divided in to two parts, Natural and Commercial. Examples of Natural fertilizers are farmyard manure and wood ashes while commercial fertilizers are DAP (Di-Ammonium phosphate) and UREA (Ammonium Nitrate).

Pesticide: are chemicals useful for the mitigation, control or elimination of pests which are troublesome or harmful to crops. Insecticides and herbicides are included here.

Area Irrigated: refers to the practice where an area of land is purposely and actually provided with water, other than by rain, for improving the production of crops. The uncontrolled flooding of land by the overflow of rivers or streams is not considered to be irrigation.

Improved Seed: is defined as crop variety which gives a significant higher yield, better quality and/or better benefit compared to traditional varieties of seeds.

Table a : Summary of Area under Farm Management Practices

Type of Management Practice	Area Applied ('000 Hectare)
Use of Improved Seed	165.38
Use of Irrigation	68.21
Use of Pesticide	624.18
Use of Fertilizer	2,844.86

1.1 Total Improved Seed Applied Area.

As indicated in Table 1.1, the total cultivated area of all crops is about 8,825.40 thousand hectares. From this crop area, *improved seed* was applied only on 165.38 thousand hectares (1.87%). This indicates that the peasant holders applied largely the traditional seed rather than the improved ones, and this may have been actually due to less availability and high costs of the improved seed.

Out of the total area under *improved seed*, 153.52 thousand hectares was under temporary crops and 11.86 thousand hectares was under permanent crops.

1.2 Total Irrigated Area.

The total *irrigated area* at national level is 68.21 thousand hectares or 0.77% of the total area (See Summary *Table a*).

Out of the total *irrigated area* 68.52%, was under temporary crops and 31.48% was under permanent crops. Moreover, sorghum from temporary crops and coffee from permanent crops had the largest proportion of *area irrigated* i.e. 27.81% and 8.6% respectively (Refer to Table 1.1).