THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

CENTRAL STATISTICAL AUTHORITY

AGRICULTURAL SAMPLE SURVEY
1995/96 (1988 E.C.)

VOLUME III

REPORT ON

AGRICULTURAL PRACTICES

(PRIVATE PEASANT HOLDINGS, MEHER SEASON)

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REPORT ON
AGRICULTURAL 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. The survey was interrupted in 1992/93(1985 E.C.) and 1993/94(1986 E.C.) because during these two years the CSA was fully engaged in undertaking the preparatory activities for the 1994 Population and Housing Census. However, after completing the 1994 Population and Housing Census, the undertaking of annual agricultural survey was resumed in 1994/95 (1987 E.C.) and also conducted for the year 1995/96 (1988 E.C.).

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, June, 1996.**" That volume presents in its appendices survey questionnaires; 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*** 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 to be 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; cropland 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 at national and different reporting levels which are regions or group of zones.

3. COVERAGE AND CONTENT.

The 1995/96 (1988 E.C) annual agricultural sample survey was designed to cover the sedentary rural agricultural population in all regions of the country. Accordingly, a total of 54 zones and 367 weredas were covered in the survey. The areal coverage of the survey is given in the following table.

Table a. AREAL COVERAGE OF THE 1995/96 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	34
AFAR[2]	5	2	3	6	4
AMHARA	10	10	-	96	95
OROMIYA	12	12	-	148	144
SOMALIE[3]	9	3	6	6	5
BENSHANGUL-GUMEZ	3	2	1	6	5
S.N.N.P.R.	16	16	-	72	69
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	54	15	381	367

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 resident.

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

Moreover, for the survey 620 enumeration areas were selected to be covered in all regions. Nevertheless, during the data collection stage the survey succeeded to cover only 612 enumeration areas (EAs). For details see *Appendix II of Volume I* of the same survey. Furthermore, from each of the selected EAs a sample of 25 agricultural households were taken to represent the agricultural population in the sampled EA.

From these households, information on area under crops, production of major crops (temporary or annual), cropland utilisation, agricultural practices, crop damage, quantity and cost of agricultural inputs used, number of livestock and poultry by type, purpose, age and sex and number of beehives by type were collected. In addition, it was attempted for the second time to collect information on the total number of trees and number of yielding trees during the survey year (For details refer to survey questionnaires in ***Appendix I of Volume I***).

This report, which is *Volume III* is one of the series of other reports and volumes of the 1995/96 annual agricultural sample survey. It presents results on agricultural practices such as uses of improved seed, irrigation, pesticide, fertilizers and rate of application of commercial fertilizers by type.

4. BASIC 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 utilisation of the products.

Holding: a holding is all the land and 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.

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 anew or planted for further production after the harvest. Similarly, crops grown in rotation are also considered temporary crops[1] 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[2] crops. Permanent meadows and pastures, however, are excluded.

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).

Note: [1]. In this report, Other temporary includes tomato, carrot, cabbage, ...etc.

[2]. In this report also Other permanent includes sugarcane, gesho,...etc.

Pesticide: are chemicals useful for the mitigation, control or elimination of pests which are troublesome or harmful to crops. Here insecticides and herbicides are considered as pesticides.

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, and usually provided by Agricultural Inputs supply corporation (AISCO) in Ethiopia.

5. SAMPLE DESIGN.

A two stage stratified sample design was used for the 1995/96 (1988 E.C.) agricultural sample survey. In three regions, namely in Amhara, Oromiya and Southern Nations, Nationalities and 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 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, population 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 population 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 picked systematically without replacement from a fresh list of agricultural households. For agricultural practices of meher(main) season, information was collected from these selected 25 agricultural households. As noted above, all holders within these households were enumerated and the required data were collected from these holders.

A total of 620 EAs (1.1 % of the total agricultural EAs) in the country were planned to be covered by the survey. But 8 of the sampled EAs were closed due to various reasons and the survey covered 612 EAs effectively.

Estimation procedures of total agricultural variables and measure of precision are given in *Appendix I and II.*

6. FIELD ORGANIZATION.

CSA branch statistical office heads, field supervisors and enumerators were fully involved in the survey. Hence, 15 statistical branch office heads, about 140 field supervisors, each supervising 5 enumerators in most cases and about 651 enumerators (including reserve enumerators) stationed in each of the selected EAs, experts from head office, other support staff and about 62 drivers were involved in the operation.

For all enumerators the necessary survey equipment, such as compasses, protractors, rulers, measuring tapes, balance scales, poles, ropes, sample bags,...etc. were made available and to facilitate the field work about 62 vehicles were put on operation.

7. TRAINING OF FIELD STAFF.

At the outset all relevant materials, like equipment have been procured, questionnaires and instruction manuals were prepared and printed. Then the training program for the field staff was carried out in two stages. In the first stage, about 90 trainees, i.e. experts from the head office, branch statistical office heads and some of the field supervisors were given training for one week at the head office. Those trained in the first stage conducted similar training for about 140 field supervisors and about 651 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.

The survey data were collected on questionnaires both by subjective and objective methods of data collection. Information on agricultural practices (application of fertilizer, pesticide, use of improved seed and irrigation), livestock, poultry and belg season information were collected subjectively by interviewing the holders in the sampled households. For these cases all selected households have been covered.

Moreover, the objective measurements were conducted for the selected households from each sampled EA in which all crop areas were physically measured using compasses and measuring tapes.

9. EDITING, CODING AND VERIFICATION.

The editing and coding instruction manuals were prepared and printed. Then an intensive training was given to the editor-coders for three days. About 20 editors were involved to accomplish the editing and coding tasks. In due course, two professional 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 about 10 supervisors/verifiers. The verification was done on 100% basis.

10. DATA ENTRY, CLEANING AND PROCESSING.

About 40 data encoders have participated in the data entry activity on shift basis (20 in the morning and 20 in the afternoon). Unlike the previous years, the data was entered in personal computers using IMPS (Integrated Microcomputer Processing System) software. Then, the data entered was checked and cleaned by four regular staff. Finally, the data processing activity was also done by personal computers(PCs) to produce results which were noted out in the tabulation plan and this operation was performed by four programmers.

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.

Table b : Summary of Area under Farm Management Practices

Type of Management Practice	Area Applied ('000 Hectare)
Use of Improved Seed	61.84
Use of Irrigation	84.64
Use of Pesticide	821.25
Use of Fertilizer	2839.91

1.1 Total Improved Seed Applied Area.

As indicated in Table 1.1, the total cultivated area of all crops is about 8687.13 thousand hectares. From this crop area, *improved seed* was applied only on 61.84 thousand hectares (0.71%). 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.