

*THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
CENTRAL STATISTICAL AUTHORITY*

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

VOLUME I

**REPORT ON
AREA AND PRODUCTION FOR
MAJOR CROPS**

(PRIVATE PEASANT HOLDINGS, MEHER SEASON)

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ABBREVIATIONS

CSA	-	CENTRAL STATISTICAL AUTHORITY
CV	-	COEFFICIENT OF VARIATION
EC	-	ETHIOPIAN CALENDAR
EA	-	ENUMERATION AREA
GDP	-	GROSS DOMESTIC PRODUCT
HA	-	HECTARE
NS	-	NOT STATED
PCs	-	PERSONAL COMPUTERS
PSUs	-	PRIMARY SAMPLING UNITS
QT	-	QUINTAL
SE	-	STANDARD ERROR
SNNPR-		SOUTHERN NATION, NATIONALITIES
		PEOPLES' REGION

REPORT ON

AREA AND PRODUCTION OF MAJOR CROPS

1. INTRODUCTION

Ethiopia's economy is predominantly agrarian and the majority of the population in the country is engaged in agriculture. Accordingly, it contributes a considerable portion to the Gross Domestic Product (GDP). The collection of reliable, comprehensive and timely statistical information on agriculture is therefore very essential for planning purposes and formulation of agricultural policy.

The Central Statistical Authority (CSA) has been conducting Agricultural Sample Surveys on annual basis since 1980/81 (1973 E.C.) to meet some of the statistical data needs of planners and policy makers. 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 undertaking 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 the objectives of the 1995/96(1988 E.C.) annual survey; coverage and content of the survey; sample design; field organization; training of field staff ; method of data collection; and survey results on area, production and yield of major crops. Moreover, it presents the appendices that comprise survey questionnaires; number of sampled EAs, number of EAs that are actually covered and not covered in the survey; number of households that has been planned to be covered and those actually covered in the survey for the purpose of area and production of major crops, agricultural

practices,...etc.; number of fields measured and crop cuttings conducted; estimation procedure; standard errors and coefficient of variations for area and production estimates of major crops for the year 1995/96(1988 E.C.) for the country, regions and reporting levels (i.e. group of zones or regions).

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 1995/96 (1988 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 54 zones and 367 weredas were covered by the survey. The areal coverage of the survey is given in *Table a*.

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 residents.

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

Moreover, for the survey a total of 620 Enumeration Areas (1.1% of the total agricultural EAs) were selected to be covered in all regions. Nevertheless, 8 of them were closed due to various reasons and the survey succeeded to cover only 612 Enumeration Areas (EAs). For details see *Appendix II*. 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 major crops (temporary or annual), cropland 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. 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 regarding area, production, practices, industrial inputs, cropland use and number of permanent trees refer to survey questionnaires in *Appendix I*.

It should be noted here that of the total 25 agricultural households covered in the selected EAs, the data collection on crop cutting was administered only on the last 15 households starting from the 11th selected household. Thus, a total of 14,800 agricultural households were covered for these exercises. In addition, area measurements of 73,309 fields in 41,585 parcels with different crops belonging to the 25 households were done for the meher season and 22,075 crop-cutting exercises on major temporary crops in sub-sample of the fields were conducted. For details refer to *Appendix III and IV*.

This report, which is *volume I* of the 1995/96 annual agricultural sample survey

consists of results on area, production and yield of major crops per hectare. The remaining information collected in the survey will be published in subsequent volume.

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.

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.

5. SAMPLE DESIGN.

A two stage stratified sample design was used for the 1995/96 (1988 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.

Estimation procedures of totals and ratios of agricultural variables and the measure of precision of area and production are given in *Appendix V and VI*.

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, ruler, 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. Some of 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.

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. On the other hand, all fields under temporary crops of each holder in the last 15 sampled households were classified by type of crop and from each type a field was randomly selected for crop cutting. Then, a sixteen meter square plot was demarcated in the selected field in which the crop in the plot was harvested. The harvested crop was threshed and carried in bag with identification information like name of the crop, holding number, parcel and field number. The crop in the bag was weighed immediately after threshing and weighed again after two weeks of drying. The weights were recorded in the respective questionnaire.

9. EDITING, CODING AND VERIFICATION.

The editing and coding instruction manuals were prepared and printed. Then

intensive training was given to the editors for three days. About 20 editors-coders 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 staffs. Finally, the data processing activity was also done by personal computers(PCs) to produce results which were indicated in the tabulation plan and this operation was performed by four programmers.

11. SUMMARY OF THE SURVEY RESULTS ON AREA AND PRODUCTION.

The result of area, production and yield for major crops (temporary or annual) are presented in this publication. Consequently, the *total area* under major temporary crops (See *Table b*) is estimated to be about 7.95 million hectares at national level for the meher season of 1995/96 (1988 E.C.). When comparing this result with last year survey result, a 14 % increase is noticed. The possible reasons for this increase are farmers might have ploughed more fields which were in fallow and/or other land uses during the previous year due to favorable weather condition and inclusion of areas and crops which were not covered by the previous survey.

Out of the total area *cereals* account for about 6.65 million hectares (83.70%) while *pulses* and *other crops* like *neug*, *linseed*, *rapeseed*, *ground nuts*, *sunflower*, *sesame* and *fenugreek* shared 0.90 million hectares (11.38%) and 0.39 million hectares (4.93%) respectively.

When one looks at the specific crop the largest area, i.e. about 2.10 million hectares, is reported for *teff* followed by *maize* and *sorghum* in that order. For details refer to Table 3.

Table b. Summary of Area, Production and Yield of Major Crops for the year 1995/96 (1988 E.C.)

TYPE OF CROP	TOTAL AREA		TOTAL PRODUCTION		YIELD(QT/HA)
	MILLION HA	%	MILLION QT.	%	
<i>CEREALS</i>	6.65	83.70	82.70	89.12	12.43
<i>PULSES</i>	0.90	11.38	8.14	8.77	9.00
<i>OTHER CROPS</i>	0.39	4.93	1.95	2.10	4.99
TOTAL	7.95	100.00	92.79	100.00	11.67

Furthermore, the *total production* estimate at national level is about 92.79 million quintals, of which *cereals* account for 82.70 million quintals, *pulses* account for about 8.14 million quintals and *other crops* mentioned above totalled to 1.95 million quintals (See Table b).