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THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
CENTRAL STATISTICAL AUTHORITY



AGRICULTURAL SAMPLE SURVEY
1997/98 (1990 E.C.)

REPORT ON
FORECAST OF AREA AND PRODUCTION OF
MAJOR CROPS

FOR
(Private Peasant Holdings)

Addis Ababa
NOVEMBER, 1997

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CONTENTS

| | <u>PAGE</u> |
|---|-------------|
| LIST OF TABLES..... | II |
| LIST OF FIGURES..... | VI |
| 1. INTRODUCTION..... | 1 |
| 2. OBJECTIVE OF THE SURVEY..... | 2 |
| 3. COVERAGE OF THE SURVEY..... | 2 |
| 4. SAMPLE DESIGN..... | 3 |
| 5. FIELD ORGANIZATION..... | 5 |
| 6. TRAINING OF FIELD STAFFS..... | 6 |
| 7. METHOD OF DATA COLLECTION AND CROP PRODUCTION FORECASTING..... | 7 |
| 8. EDITING, CODING AND VERIFICATION..... | 9 |
| 9. DATA ENTRY, CLEANING AND PROCESSING..... | 10 |
| 10. BASIC CONCEPTS AND DEFINITIONS..... | 10 |
| 11. SUMMARY OF THE RESULTS OF 1997/98 (1990 E.C.) CROP PRODUCTION FORECAST SURVEY..... | 12 |
| APPENDIX I- NUMBER OF EAS SAMPLED AND ACTUALLY COVERED..... | 39 |
| APPENDIX II- ESTIMATION PROCEDURES OF TOTAL RATIO AND SAMPLING ERROR..... | 43 |
| APPENDIX III- STANDARD ERROR AND COEFFICIENT OF VARIATION..... | 49 |
| APPENDIX IV- NUMBER OF FIELDS MEASURED | 57 |

LIST OF TABLES

| | <u>PAGE</u> |
|---|-------------|
| Table 1. Forecast of 1997/98 (1990 E.C.) and Estimates of 1996/97 (1989 E.C.) of area, production and yield of major crops for private holdings in Ethiopia by Region(Meher season),..... | 18 |
| Table 2. Forecast of 1997/98 (1990 E.C.) and estimates of 1996/97 (1989 E.C.) of area, production and yield of major crops for private holdings, in ETHIOPIA(Meher season),..... | 20 |
| Table 3. Forecast of area, production and yield of major crops for private holdings in Ethiopia, (Meher season)1997/98(1990 E.C.)..... | 22 |
| Table 4. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for TIGRAY REGION..... | 24 |
| Table 5. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for AFAR REGION..... | 24 |
| Table 6. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for AMHARA REGION..... | 26 |
| Table 6.1 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for AMHARA REGION by group of zones (Meher season)..... | 26 |
| Table 6.2 Forecast of area production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in AMHARA REGION for NORTH & SOUTH GONDER ZONES... | 27 |

| | |
|---|----|
| Table 6.3 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in AMHARA REGION for EAST, WEST GOJAM and AGEWAWI ZONES..... | 27 |
| Table 6.4 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in AMHARA REGION for NORTH WOLLO and WAG HAMRA ZONES..... | 28 |
| Table 6.5 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in AMHARA REGION for SOUTH WOLLO, OROMIA and NORTH SHEWA ZONES..... | 28 |
| Table 7. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for OROMIA REGION..... | 29 |
| Table 7.1 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) for OROMIA REGION by group and Zone..... | 29 |
| Table 7.2 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in OROMIA REGION for EAST & WEST WELLEGA ZONES..... | 30 |
| Table 7.3 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in OROMIA REGION FOR ILLUBABOR & JIMMA ZONES..... | 30 |

| | |
|---|----|
| Table 7.4 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in OROMIA REGION for NORTH & WEST SHEWA ZONES..... | 31 |
| Table 7.5 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in OROMIA REGION for EAST SHEWA, ARSI, BALE and BORENA ZONES..... | 31 |
| Table 7.6 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in OROMIA REGION for EAST AND WEST HARARGHE ZONES..... | 32 |
| Table 8. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in SOMALIE REGION..... | 32 |
| Table 9. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in BENSANGULE GUMEZ REGION..... | 33 |
| Table 10. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION..... | 34 |
| Table 10.1 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION by Group of zones..... | 34 |
| Table 10.2 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION for YEM, KEFICHO, MAJI, SHEKICHO and BENCH ZONE..... | 35 |

| | |
|---|----|
| Table 10.3 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION for NORTH & SOUTH OMO, GARDULA and KONSSO ZONES..... | 35 |
| Table 10.4 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION for HADIYA, KEMBATA & GURAGHE ZONES..... | 36 |
| Table 10.5 Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in S.N.N.P REGION for SIDAMO GEDIO, BURJI & AMARO ZONES..... | 36 |
| Table 11. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in GAMBELA REGION..... | 37 |
| Table 12. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in HARARI REGION..... | 37 |
| Table 13. Forecast of area, production and yield of major crops for private holdings in 1997/98 (1990 E.C.) in ADDIS ABABA REGION..... | 38 |
| Table 14. Forecast of area, production and yield of of major crops for private holdings in 1997/98 (1990 E.C.) in DIRE DAWA REGION..... | 38 |

LIST OF FIGURES

PAGE

| | | |
|--------|--|----|
| FIG. 1 | FORECAST OF AREA UNDER MAJOR CROPS FOR PRIVATE PEASANT HOLDINGS IN ETHIOPIA (MEHER SEASON) 1997/98 (1990 E.C.)..... | 14 |
| FIG. 2 | FORECAST OF EXPECTED PRODUCTION OF MAJOR CROPS FOR PRIVATE PEASANT HOLDINGS IN ETHIOPIA (MEHER SEASON) 1997/98 (1990 E.C.)..... | 16 |
| FIG. 3 | FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 AREA OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA BY REGION (MEHER SEASON)..... | 19 |
| FIG. 4 | FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 PRODUCTION OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA BY REGION (MEHER SEASON)..... | 21 |
| FIG. 5 | FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 AREA AND PRODUCTION OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA (MEHER SEASON)..... | 22 |
| FIG. 6 | FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 OF YIELD FOR CEREALS, PULSES, OTHERS AND ALL CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA (MEHER SEASON)..... | 23 |
| FIG. 7 | FORECAST OF YIELD FOR CEREALS, PULSES, OTHERS AND ALL CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA, BY REGION (meher season) 1997/98 (1990 E.C.)..... | 25 |

CROP PRODUCTION FORECAST 1997/98 (1990 E.C.)

1. INTRODUCTION

Like many developing countries, Ethiopian agriculture is the backbone of the nation's economy. Agriculture continues to be extremely important, contributing about 55 percent to the national GDP, 60 percent to merchandise exports and 80 percent to the population's employment (World Bank, 1995). Besides its contribution as the main income generating sector for the majority of the rural population, it also serves as the main source for household consumption .

Food availability for a majority of Ethiopians continues to be determined by its domestic crop production. Therefore, timely crop production forecast estimates prior to harvest are of a great importance and interest to government agencies and non-government donor organizations. Accurate and objective estimates for use by these organizations for planning purposes are essential. Timeliness of the estimates is of the utmost importance for these organizations to take all necessary and appropriate measures, i.e. administering exports or imports, management of stocks and distribution of food to deficit regions, regulation of price control both during periods of surplus and/or deficits, etc.

From a scientific point of view, a forecast of crop production can be defined as a statement of the most probable production of the crop which can be obtained from the coming harvest given reasonable expectations for normal growing conditions through the harvest period.

The Central Statistical Authority (CSA) has been conducting crop production forecast surveys annually, since 1980/81 (1973 E.C.). The crop forecast estimates are based on data collected from producers (farmers) using scientifically accepted probability

sampling methodology subject to the conditions and expectations for harvest at the time of data collection from 15 September through 10 October 1997 (i.e. from Meskerem 5 to 30, 1990 E.C.)

This report presents basic information of crop production forecasts for 1997/98 (1990 E.C.), i.e. for Meher season harvest, and indicates the area coverage and expected production of major crops for the coming harvest at the national, regional and as well as groups of contiguous zones for reporting levels.

2. OBJECTIVE OF THE SURVEY.

The objective of the crop production forecast survey is to collect basic quantitative information on area and expected production of major crops. Timely estimates made from this quantitative information that indicates the expected production of the 1997/98 (1990 E.C.) Meher season crops prior to their harvest is considered to be essential for policy makers and administrators to prepare policies and for implementation of timely measures such as administering exports or imports, management of stocks and distributing of food to different regions, regulation of prices at the time of surplus and/or deficits, etc.

3. COVERAGE OF THE SURVEY.

The 1997/98 (1990 E.C.) annual crop production forecast was designed to cover **the sedentary rural** agricultural population in all regions of the country. This coverage encompasses a total of 55 zones and 378 weredas which were designated in the sampling design as the area basis to be sampled for the survey. The geographic coverage of the survey is given in Table A.

The original sample selected totaled 1040 enumeration areas (EAs). These EAs were selected at the zonal level to be enumerated for the survey to provide specific coverage within all regions. For this

report, however, the number of "useable" EAs which were completed and acceptable for tabulation, totaled 934 EAs. The remaining 106 EAs were incomplete and unusable for various reasons. In each EA a sample of 40 agricultural households were selected in which 25 households were interviewed for the forecast survey which resulted in a total of 23,075 sample households. The forecast estimates of area under crops are obtained from a sub-sample of the first 10 households out of the 40 selected from each EA.

4. SAMPLE DESIGN.

A two-stage stratified sample design was used for the 1997/98 (1990 E.C.) Agricultural Sample Survey to obtain the crop production forecast estimates. In three regions, namely, in Amhara, Oromia, and the Southern Nations and Nationalities and Peoples' Region (S.N.N.P.R.), groups of contiguous administrative zones were treated as strata or reporting levels of the survey estimates. In the remaining regions, the reporting levels were the regions themselves. The EAs selected as the first-stage sample of this survey design within all strata are referred to as the primary sampling units (PSUs). Agricultural households, were sampled in the second-stage of the survey design and are referred to as the ultimate sampling units. The survey was administered and a questionnaire was completed for all agricultural "holders" or "producers" in the sampled agricultural households. The questionnaire for each holder or producer would be referred to as the individual sample element.

The sample size (number of EAs) was allocated to each stratum level based on population size of the stratum and cost considerations. The overall number of EAs in a stratum was determined through a proportionate allocation to the zonal level (or within a special combination of weredas within the stratum) based on their population size from the 1994 Census. From within each stratum sample EAs were selected with probability proportional to size (pps), size being the total number of households of the EAs

TABLE A. AREAL COVERAGE OF THE 1996/97 (1989 E.C.) CROP PRODUCTION FORECAST SURVEY ¹

| REGION | NUMBER OF ZONES | | NUMBER OF WEREDAS | |
|--------------------------|-----------------|-----------------------|-------------------------------------|-----------------------|
| | TOTAL | COVERED IN THE SURVEY | PLANNED TO BE COVERED IN THE SURVEY | COVERED IN THE SURVEY |
| TIGRAY ¹ | 5 | 4 | 33 | 30 |
| AFAR ² | 5 | 3 | 8 | 8 |
| AMHARA | 10 | 10 | 92 | 89 |
| OROMIA ³ | 12 | 12 | 159 | 152 |
| SOMALIE | 9 | 3 | 9 | 8 |
| BENSHANGUL GUMEZ | 3 | 3 | 14 | 10 |
| S.N.N.P.R. | 16 | 14 | 72 | 70 |
| GAMBELA | 1 | 1 | 5 | 4 |
| HARARI | 1 | 1 | 1 | 1 |
| ADDIS ABABA ⁴ | 6 | 3 | 1 | 5 |
| DIRE DAWA | 1 | 1 | 1 | 1 |
| TOTAL | 69 | 55 | 399 | 378 |

Notes

- 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, however only two zones have significant rural sedentary population.
- 3 - SOMALIE Region has a total of nine zones, however only three zones have significant rural sedentary 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, Nationalities and Peoples' Region

as obtained from the 1994 Census. From each sample EA, 40 agricultural households were selected systematically without replacement. The crop forecast survey questionnaires were administered to a sub-sample of the first 10 of the 40 sampled agricultural households. Then through field area measurement data on area was collected from all cultivated fields of each holders within these 10 households. Also from these first 10 and from an additional sub-sample of 15 households out of the original sample of 40 agricultural households, data were collected on condition factors for the crops in which each holder within these households has under cultivation.

A total of 1040 EAs in the country were originally selected for enumeration during the allotted data collection period covered by the survey. All but 106 of the total sampled EAs were "closed" prematurely (were incomplete) due to various reasons such as resignation of enumerators, late arrival of filld-in questionnaires to head office, ... etc. Thus, for summary purposes the survey included 934 EAs which were successfully completed. The number of EAs sampled and their actual distribution by stratum (reporting) level is given in **Appendix I**. The procedures used for the estimation of cultivated crop population totals and ratios, and for measurement of their level of precision are given in **Appendixes II and III**.

5. FIELD ORGANIZATION.

The Heads of CSA Branch Statistical Offices as well as field supervisors and enumerators were fully involved in the administration of the Agricultural Sample Survey. At any given time during the survey there were approximately 1040 field enumerators stationed across the country collecting data (one field enumerator assigned to each of the selected EA). Moreover, a supervisor for every 4-5 enumerators, experts from the CSA's headquarters, other support staff and about 38 drivers, were involved in the survey operational activities.

For all field enumerators the necessary survey equipment such as compass, protractor, ruler, measuring tapes, balance scale, poles, ropes, sample bags, etc. were issued at the conclusion of their training to facilitate the equipment's availability when needed for field work and crop cutting exercises later in the season at harvest time.

6. TRAINING OF FIELD STAFF.

Preparation for the Agricultural Sample Survey required considerable planning and acquisition of all relevant materials, i.e. hiring and training of personnel, procurement of equipment, designing and printing of questionnaires, as well as enumerator and supervisor instruction manuals.

The training program for the branch office field staff was carried out in two stages. In the first stage, about 85 trainees who are experts in various disciplines other than agriculture in headquarters, Branch Statistical Office Heads, and a few experienced field supervisors were given one week's training at CSA headquarters. Those trained in the first stage conducted similar training for field supervisors and approximately 1040 field enumerators in the 15 CSA Branch Statistical Offices around the country. The content of the training document focused on specific details pertaining to the crop production survey, including detailed class room instruction on the purpose of the survey, terminology, concepts and definitions used for the survey, how to correctly complete each questionnaire, description of field area measurement methodology, detailed discussion on all aspects used for crop cutting measurement, and correct procedures for conducting an interview with holders ...etc. The branch office training was conducted for about 12 days and included thorough field practices to reinforce the classroom lectures and to insure that each enumerator was thoroughly familiar with field measurement and crop cutting data collection procedures.

7. METHOD OF DATA COLLECTION AND CROP PRODUCTION FORECASTING.

i. Method of Data Collection

The data collected from holders for the crop production forecast estimates consisted of both subjective questions obtained through direct interviews pertaining to the nature of production expectations and objective methodologies associated with field measurement. The cultivated crop field area measurement data are collected objectively by measuring all cropped fields under temporary and permanent crops using compasses and measuring tapes (see **Appendix IV** for the total number of fields measured). For forecast purposes only area under major temporary crops are being published. These crop forecast production estimates are calculated from data collected directly from the sampled holder or producer based on the "condition" of his crops surveyed, i.e., percentage change on the expected increase or decrease of yield for the coming harvest, as compared to last year's yield. The enumerator is trained to ask this question on percentage change using the local translation and meaning. The enumerator is trained in how to use comparative associations to represent the concept of percentage change in units to the holder in such a fashion that the enumerator can calculate the percentage change and enter it on the questionnaire. This forecast estimation procedure has proven successful in past years and also avoids the serious problem, in Ethiopia, of many different local units of measure which the farmer could otherwise report an absolute yield. This subjective data on percentage yield change is recorded on the questionnaire for each temporary crop by interviewing all holders within selected 25 households in each enumeration area.

ii. Method of Crop Production Forecasting

The crop production forecast for 1997/98 (1990 E.C.) is based on what could be considered a three component production "model". The first production "model" component is the survey direct expansion estimate of the actual cultivated area (obtained from the objectively measured fields during the september-october field data collection period). The second production component uses last year's crop yield estimate obtained from objectively collected crop cuttings. The third production component is the average "condition" factor which estimates the yield of this year's crop comparing with the previous year. All specific conditions (such as weather, pest damage, etc.) affecting the crop growth for the rest of the current season have been taken into account by the holders in these "condition" factors and represents the holder's own subjective estimate on the future field production. Forecast estimates are published for all major temporary crops for which objective area field measurements were performed.

iii. Main Factors which Influence the Expected Crop Production

In order for the holder to intuitively formulate the future production of his field crop production there are numerous factors subjectively assessed. Besides the meteorological factor, there are a number of other factors that influence production and yield of major crops. These are:

a. Reason for expected decrease

- too much rain fall and lodging of the crop
- shortage of rain fall
- insect (locust), disease and other pest (birds) damage
- hail and frost damage
- wild and domestic animal damage
- shortage of seed
- depletion of the soil fertility

- others

b. Reason for expected increase

- favorable weather conditions
- improved seed and cultural practices
- application of fertilizers
- application of pesticides (absence of pests)
- others

8. EDITING, CODING AND VERIFICATION

The Agricultural Sample Survey editing and coding instruction manuals were prepared and printed prior to training. Before receipt of the completed questionnaires from the branch offices, the CSA regular editor/coder staff were given one full day of intensive training on proper questionnaire review techniques. Instructions and rules associated with correctly coding the questionnaire and correcting inconsistent records were thoroughly taught. In order to undertake this task at CSA headquarter a total of 36 editors/coders were involved.

During the coding process several of the professional staff members were assigned to assist the editors/coders in correction of the difficult problems on the filled-in questionnaire. These technical experts were also involved in answering questions, clearing doubts... etc. so as to facilitate the editing and coding activity. Each editor/coder was assigned to work on a single EA at a time to assure that all questionnaires were accounted for and completed. Next the edited and coded questionnaires were checked by about 13 supervisors/verifiers. All EAs were included in this final verification process.

9. DATA ENTRY, CLEANING AND PROCESSING

The data entry process at headquarters utilized about 20 data encoders and as many personal computers. The data was entered in the PCs using IMPS (Integrated Microcomputer Processing System) software which is a software package developed by the United States Bureau of the Census. Following data entry, the data was further reviewed for data inconsistencies, missing data, reasonableness... etc. by more than five of the regular professional staff skilled in data cleaning procedures. The final stage of data processing was to summarize the clean data using the PC based IMPS software. The summary tables required reformatting and merging with the report text file for publication purposes. Two programmers were responsible for all of the data processing activity.

10. BASIC CONCEPTS AND DEFINITIONS

The concepts and definitions used in the survey are described as follows:

Enumeration Area (EA): Is the survey primary sampling unit classified as located in the rural area of the Country which is less than or equal to a Peasant's Association's area and usually consists of 150-200 households.

Households: 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 more or less. They may be

related or unrelated persons, or a combination of both.

Holder: A holder is a person who exercises management control over the operations of the agricultural holdings and makes the major decisions 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.

Using the terminology of a traditional agricultural holding the holder may be regarded as the person, who with or without help of others, operates land or raises livestock for his own purposes, i.e. the person who decides on what, when, where and how to grow crops or raise livestock and has right to determine the utilization of the products.

Holding: A holding is all the land and livestock kept which is used wholly or partially for agricultural production and is operated as one administratively managed unit by one person alone, or with others, without regard to title, legal form, size or location. A holding may consist of one or more parcels.

Agricultural Households: 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 is a portion of land belonging to the holding which is any piece of land entirely surrounded by land, water road, forest, etc. which are not part of the holding. It may consist one or more cadastral units, plots or field adjacent to each other.

Field: A field is defined as any plot of land within a parcel which can be whole or part of a parcel under the same cultural practice.

Forecast of crop production: It is an estimation of the future realization of final crop production growing under conditions which introduce a random variable which can cause an uncertainty as to what the final production at harvest will be.

11. Summary of the Results of the 1997/98 (1990 E.C.) Crop Production Forecast Survey.

Within this report are presented the estimates for the 1997/98 (1990 E.C.) crop production forecast survey at the national, regional and contiguous group of zones levels. A discussions of some of the major findings and important points of the survey are presented below.

Based on the data collected for the 1997/98 (1990 E.C.) crop production forecast survey results, it is estimated that about **6.07 million hectares** are covered by **major crops**, of which in the coming harvest it is expected that about **59.86 million quintals** are to be produced resulting in a mean forecast yield of **9.86 qt/ha**.

Out of these total, the highest area, which is about **4.90 million hectares (80.73%)**, and with expected production of **50.93 million quintals (85.08 %)**, with mean yield of **10.39 qt/ha**, is reported for **cereals**, followed by **pulses**, with **0.79 million hectares (13.01 %)** and **7.62 million quintals (12.73%)** with mean yield of **9.65 qt/ha**, and then by **other crops (mainly oilseeds)** with **0.38 million hectares (6.26 %)** and **1.31 million quintals (2.19 %)**, with mean yield of **3.45 qt/ha**. See Table B.

It is important for data users who read this report to note that the objective of a probability sample survey is to make inferences about the true population value based on a sample drawn from that population. Statistical estimation can be separated into two forms: point estimates and interval estimates.

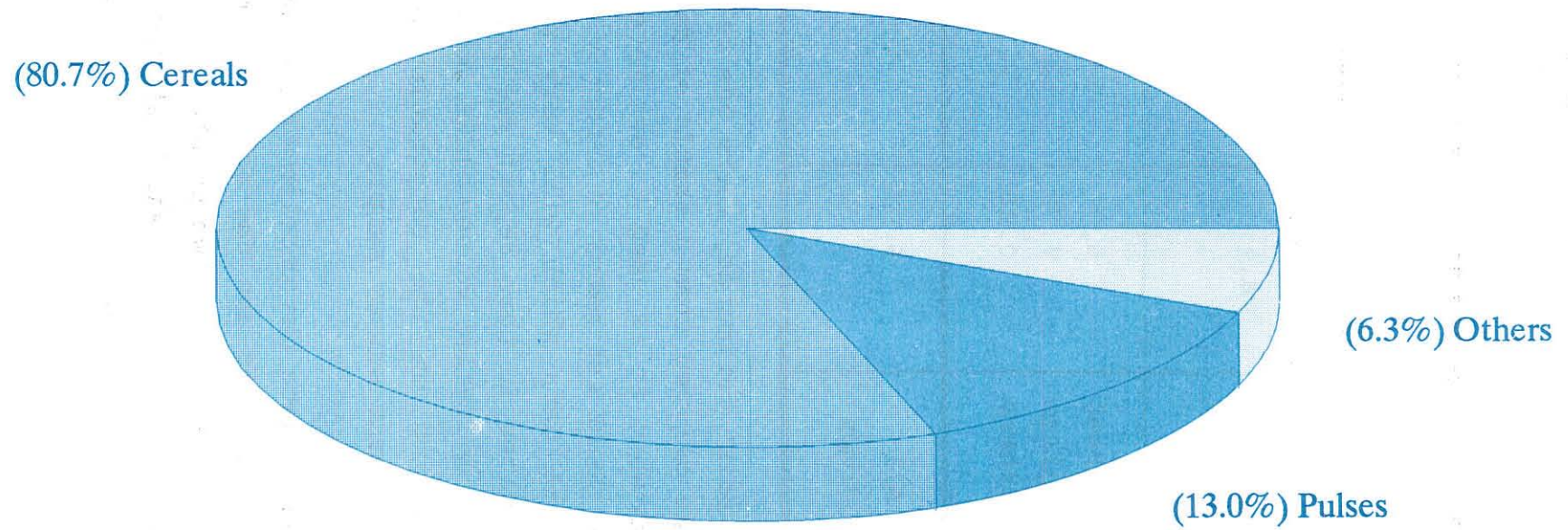
Table B. Forecast of Area and Expected Production of Major Crops
for Private Peasant Holdings in Ethiopia,
1997/98 (1990 E.C.)

| Crop Type | Area | | Production | | Yield Qt/ha |
|-----------|------------------|-------|------------------|-------|-------------|
| | In million (ha.) | % | In million (qt.) | % | |
| Cereal | 4.90 | 80.73 | 50.93 | 85.08 | 10.39 |
| Pulses | 0.79 | 13.01 | 7.62 | 12.73 | 9.65 |
| Others | 0.38 | 6.26 | 1.31 | 2.19 | 3.45 |
| All crops | 6.07 | 100 | 59.86 | 100 | 9.86 |

For point estimates, where one value is computed on the real number scale derived from a sample of data elements, e.g. x_1, x_2, \dots, x_n , such that it is used to estimate the true population value of x . This point estimator is directly dependent on the individual values of the data which will vary with multiple samples. Thus the estimates in this report are point estimates of their respective true population values which would differ on the real number scale depending on the composition of the data elements for each subsequent survey sample.

To alleviate the problem of not knowing the true population value, statisticians use the second form of estimation, called interval estimation, where two points are used to define an interval on the real number scale, which should contain the value of the true population value. Based on sample survey data this interval is

FIG 1. FORECAST OF AREA UNDER MAJOR CROPS FOR PRIVATE PEASANT HOLDINGS IN ETHIOPIA (MEHER SEASON) 1997/98(1990 E.C.)



constructed such that given a certain specified level of probability, the resulting confidence interval has a specific chance to produce a confidence interval which contains the true population value. Again it is important to note that every sample will have its own unique confidence interval which also has a specific probability of containing the true population value.

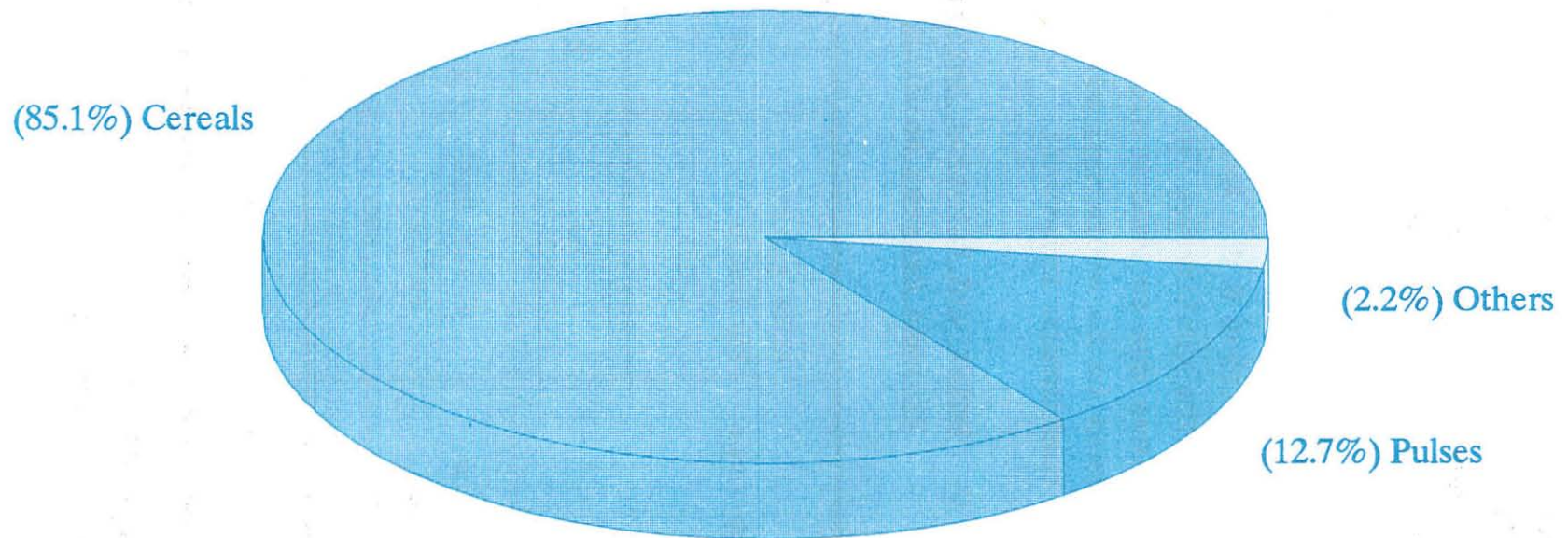
The point and interval estimates for the three types of crops and all crops based on the results obtained from the sample of EAs from the 1997/98 (1990 E.C.) Agricultural Sample Survey are Presented in Table C. The confidence intervals are based on a probability such that, unless due to chance alone, the true population values would be expected to be contained within the interval 9 out of 10 times (a 90% confidence interval).

Table C. Point and Interval Estimates for Area of Major Crops for Private Peasant Holdings in Ethiopia, 1997/98 (1990 E.C.)

| Crop type | Area point Estimate | CV | 90% Confidence Interval for Area |
|-----------|---------------------|------|----------------------------------|
| | ha. | % | ha. |
| Cereals | 4,901,850 | 2.68 | 4,685,392 - 5,118,308 |
| Pulses | 787,070 | 8.11 | 682,423 - 891,717 |
| Others | 381,880 | 9.10 | 324,902 - 438,858 |
| All Crops | 6,070,800 | 8.64 | 5,823,715 - 6,317,885 |

In Appendix III are estimates of the survey estimates of standard error (SE) and the coefficient of variation (CV) for the area and

FIG 2. FORECAST OF PRODUCTION UNDER MAJOR CROPS FOR PRIVATE PEASANT HOLDINGS IN ETHIOPIA (MEHER SEASON) 1997/98(1990 E.C.)



crop production forecasts. These estimates of the SE for production must be used with caution since they contain an unknown measure of forecast error.

Finally, users of this report should know that the information on what is called condition factors was collected in the months of September 1997 (Meskerem 1990 E.C.). Therefore, the results should be used with great caution in light of the favorable or adverse condition of weather and other factors which may affect the crop after the crop production forecast survey has been conducted. The effect of these are not examined in this report.

* Note:- *

* 1. If in some tables figures do not add up to total it *
* is due to rounding. *

* 2. Those forecasts designated by "***" in all tables could*
* not be reported because of high coefficient of *
* variation (i.e. they are less reliable). However they *
* are consolidated in the total forecast. *

* 3. In all tables "-" indicates not reported and "0.00" *
* indicates the value is insignificant. *

Table 1. Forecast of 1997/98 and Estimates of 1996/97 Area, Production and yield Of Major crops for private peasant holdings in Ethiopia (Meher Season)

| CROP TYPE | TOTAL AREA IN '000 HA | | | TOTAL PROD. IN '000 QTS | | | YIELD | | |
|-----------------|-----------------------|---------------------|--------------|-------------------------|---------------------|--------------|-----------------------|---------------------|--------------|
| | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change |
| CEREALS | 6,688.56 | 4,901.84 | -26.71 | 86,293.31 | 50,931.91 | -40.98 | 12.90 | 10.39 | -19.47 |
| Teff | 2,167.77 | 1,532.31 | -29.31 | 20,018.93 | 12,597.81 | -37.07 | 9.23 | 8.22 | -10.99 |
| Barley | 697.67 | 594.37 | -14.81 | 7,423.85 | 5,664.69 | -23.70 | 10.64 | 9.53 | -10.44 |
| Wheat | 772.23 | 683.66 | -11.47 | 10,015.90 | 8,218.51 | -17.95 | 12.97 | 12.02 | -7.33 |
| Maize | 1,316.87 | 992.27 | -24.65 | 25,320.03 | 12,959.46 | -48.82 | 19.23 | 13.06 | -32.08 |
| Sorghum | 1,399.95 | 801.94 | -42.72 | 20,073.46 | 8,649.48 | -56.91 | 14.34 | 10.79 | -24.75 |
| Millet | 290.66 | 259.74 | -10.64 | 2,961.65 | 2,326.73 | -21.44 | 10.19 | 8.96 | -12.07 |
| Oats | 43.41 | 37.55 | -13.50 | 479.49 | 515.23 | 7.45 | 11.05 | 13.72 | 24.21 |
| PULSES | 905.35 | 787.07 | -13.06 | 8,026.27 | 7,619.32 | -5.07 | 8.87 | 9.68 | 9.19 |
| Horse Beans | 329.31 | 252.68 | -23.27 | 3,206.76 | 2,345.73 | -26.85 | 9.74 | 9.58 | -1.62 |
| Field Peas | 158.11 | 120.95 | -23.50 | 1,063.03 | 785.36 | -26.12 | 6.72 | 6.49 | -3.47 |
| Haricot Beans | 112.81 | 72.33 | -35.88 | 947.64 | 370.39 | -60.91 | 8.40 | 5.12 | -39.05 |
| Chivk Peas | 147.90 | 152.90 | 3.38 | 1,264.61 | 1,327.05 | 4.94 | 8.55 | 8.68 | 1.52 |
| Lentils | 52.81 | 47.64 | -9.79 | 344.87 | 255.91 | -25.80 | 6.53 | 5.37 | -17.77 |
| Vetch | 104.41 | 140.57 | 34.63 | 1,199.36 | ** | ** | ** | ** | ** |
| OTHERS | 478.99 | 381.89 | -20.27 | 1,809.12 | 1,313.81 | -27.38 | 3.78 | 3.44 | -8.92 |
| Neug | 250.52 | 200.04 | -20.15 | 834.54 | 532.21 | -36.23 | 3.33 | 2.66 | -20.15 |
| Line seed | 148.71 | 111.95 | -24.72 | 676.23 | 399.55 | -40.92 | 4.55 | 3.57 | -21.49 |
| Rapeseed | 21.40 | 7.64 | -64.30 | ** | 80.55 | | 0.00 | 10.54 | |
| Ground Nuts | 17.43 | 13.70 | -21.40 | 125.28 | ** | ** | ** | ** | ** |
| Sunflower | 5.17 | 2.16 | -58.22 | ** | 9.05 | - | 0.00 | 4.19 | - |
| Sesame | 18.50 | 19.45 | 5.14 | 72.76 | 76.65 | 5.35 | 3.93 | 3.94 | 0.18 |
| Fenugreek | 17.26 | 26.95 | 56.14 | 100.31 | 195.70 | 95.10 | 5.81 | 7.26 | 24.92 |
| ALLCROPS | 8,072.90 | 6,070.80 | -24.80 | 96,128.70 | 59,865.04 | -37.72 | 11.91 | 9.86 | -17.20 |

FIG 3. FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 AREA OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA, REGION (MEHER SEASON)

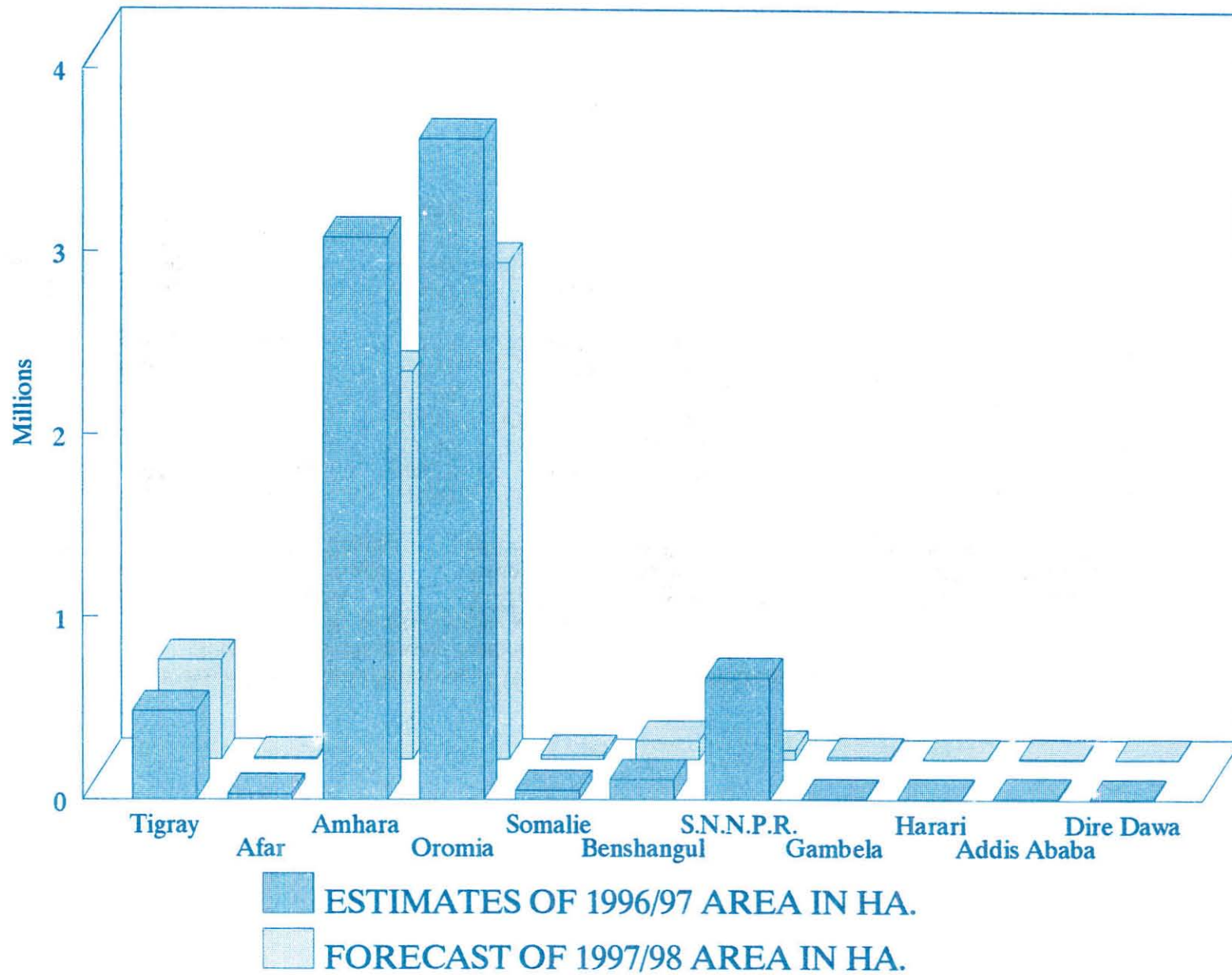


Table 2. Forecast of 1997/98 and Estimates of 1996/97 Area, Production and yield
Of major crops for peasant holdings in Ethiopia
By Region (Meher season)

| Region | TOTAL AREA IN '000 HA | | | TOTAL PROD. IN '000 QTS | | | YIELD | | |
|-------------|--------------------------|------------------------|-----------------|--------------------------|------------------------|-----------------|--------------------------|------------------------|-----------------|
| | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change | Estimate's of 1996/97 | Forecast of 1997/98 | % age Change |
| Tigray | 481.54 | 541.51 | 12.45 | 5,906.00 | 4,454.85 | -24.57 | 12.26 | 8.23 | -32.90 |
| Afar | 29.76 | 9.44 | -68.28 | 393.06 | 53.30 | -86.44 | 13.21 | 5.65 | -57.22 |
| Amhara | 3,081.22 | 2,128.62 | -30.92 | 31,426.59 | 18,885.55 | -39.91 | 10.20 | 8.87 | -13.03 |
| Oromiya | 3,625.48 | 2,723.74 | -24.87 | 47,852.22 | 30,141.86 | -37.01 | 13.20 | 11.07 | -16.13 |
| Somali | 50.91 | 23.56 | -53.72 | 1,164.11 | 79.31 | -93.19 | 22.87 | 3.37 | -85.26 |
| Benshangul | 110.45 | 102.60 | -7.11 | 1,164.11 | 955.03 | -17.96 | 10.54 | 9.31 | -11.67 |
| S.N.N.P | 666.35 | 514.73 | -22.75 | 9,009.70 | 5,027.14 | -44.20 | 13.52 | 9.77 | -27.74 |
| Gambela | 5.23 | 12.04 | 130.21 | 90.83 | 123.59 | 36.07 | 17.37 | 10.26 | -40.92 |
| Harari | 6.01 | 3.93 | -34.61 | 58.08 | 23.04 | -60.33 | 9.66 | 5.86 | -39.36 |
| Addis Ababa | 9.70 | 6.99 | -27.94 | 116.18 | 105.89 | -8.86 | 11.98 | 15.15 | 26.49 |
| DireDawa | 5.70 | 3.62 | -36.49 | 66.07 | 15.48 | -76.57 | 11.59 | 4.28 | -63.08 |
| All Regions | 8,072.35 | 6,070.78 | -24.80 | 97,246.95 | 59,865.04 | -38.44 | 12.05 | 9.86 | -18.14 |

FIG 4. FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 PRODUCTION OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA, REGION (MEHER SEASON)

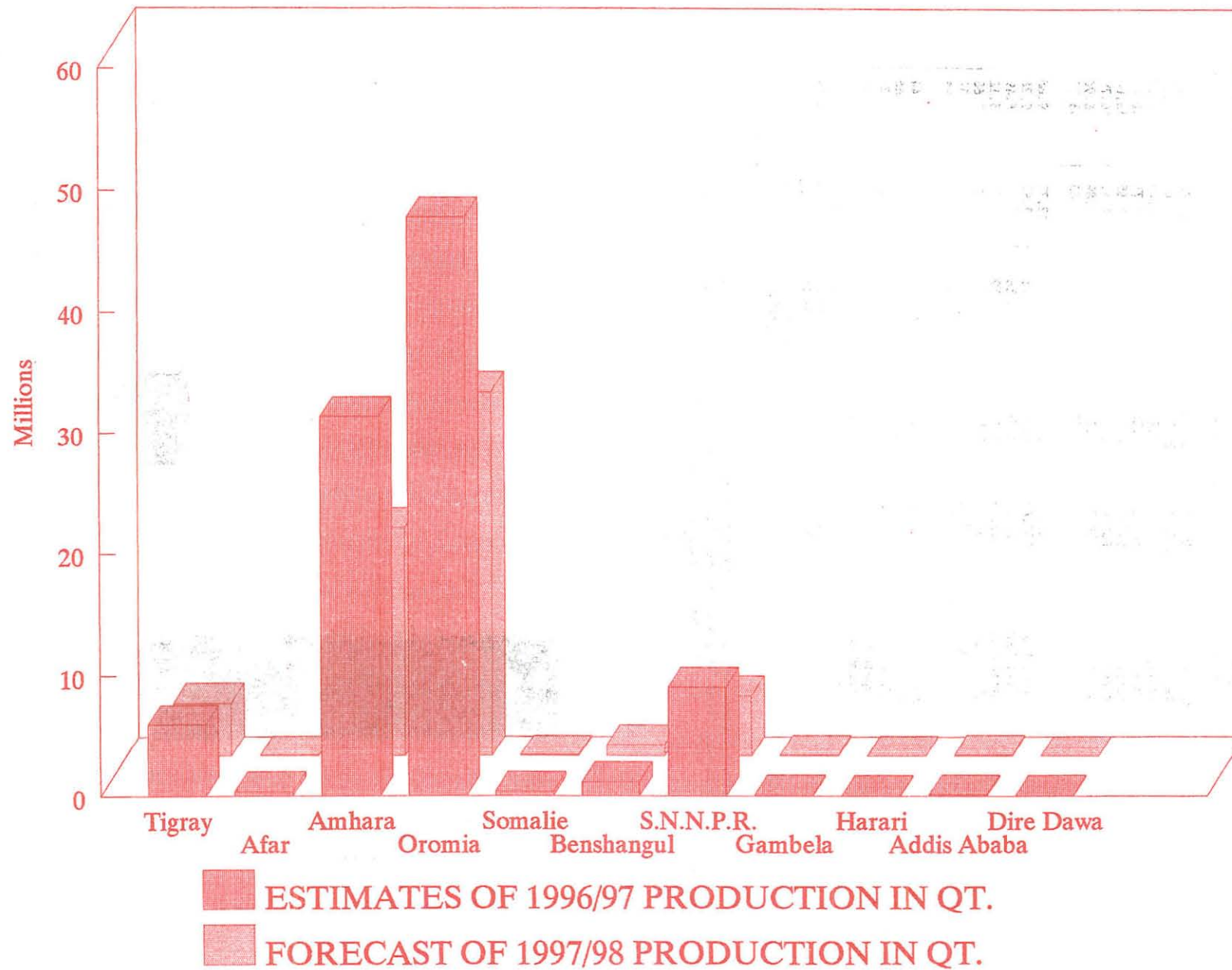


Table 3. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Ethiopia

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 4,901.85 | 80.74 | 50,931.91 | 85.08 | 10.39 |
| Teff | 1,532.31 | 25.24 | 12,597.81 | 21.04 | 8.22 |
| Barley | 594.37 | 9.79 | 5,664.69 | 9.46 | 9.53 |
| Wheat | 683.66 | 11.26 | 8,218.51 | 13.73 | 12.02 |
| Maize | 992.27 | 16.34 | 12,959.46 | 21.65 | 13.06 |
| Sorghum | 801.94 | 13.21 | 8,649.48 | 14.45 | 10.79 |
| Millet | 259.74 | 4.28 | 2,326.73 | 3.89 | 8.96 |
| Oats | 37.55 | .62 | 515.23 | .86 | 13.72 |
| Pulses | 787.07 | 12.96 | 7,619.32 | 12.73 | 9.68 |
| Horse Beans | 252.68 | 4.16 | 2,344.73 | 3.92 | 9.28 |
| Field Peas | 120.95 | 1.99 | 785.36 | 1.31 | 6.49 |
| Haricot Beans | 72.33 | 1.19 | 370.39 | .62 | 5.12 |
| Chick Peas | 152.90 | 2.52 | 1,327.05 | 2.22 | 8.68 |
| Lentils | 47.64 | .78 | 255.91 | .43 | 5.37 |
| Vetch | 140.57 | 2.32 | ** | ** | ** |
| Others | 381.88 | 6.29 | 1,313.81 | 2.19 | 3.44 |
| Neug | 200.04 | 3.30 | 532.21 | .89 | 2.66 |
| Linseed | 111.95 | 1.84 | 399.55 | .67 | 3.57 |
| Rapeseed | 7.64 | .13 | 80.55 | .13 | 10.54 |
| Ground Nuts | 13.70 | .23 | ** | ** | ** |
| Sunflower | 2.16 | .04 | 9.05 | .02 | 4.19 |
| Sesame | 19.45 | .32 | 76.63 | .13 | 3.94 |
| Fenugreek | 26.95 | .44 | 195.70 | .33 | 7.26 |
| All Crops | 6,070.80 | 100.00 | 59,865.04 | 100.00 | 9.86 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

FIG 5. FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 AREA AND PRODUCTION OF MAJOR CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA, REGION (MEHER SEASON)

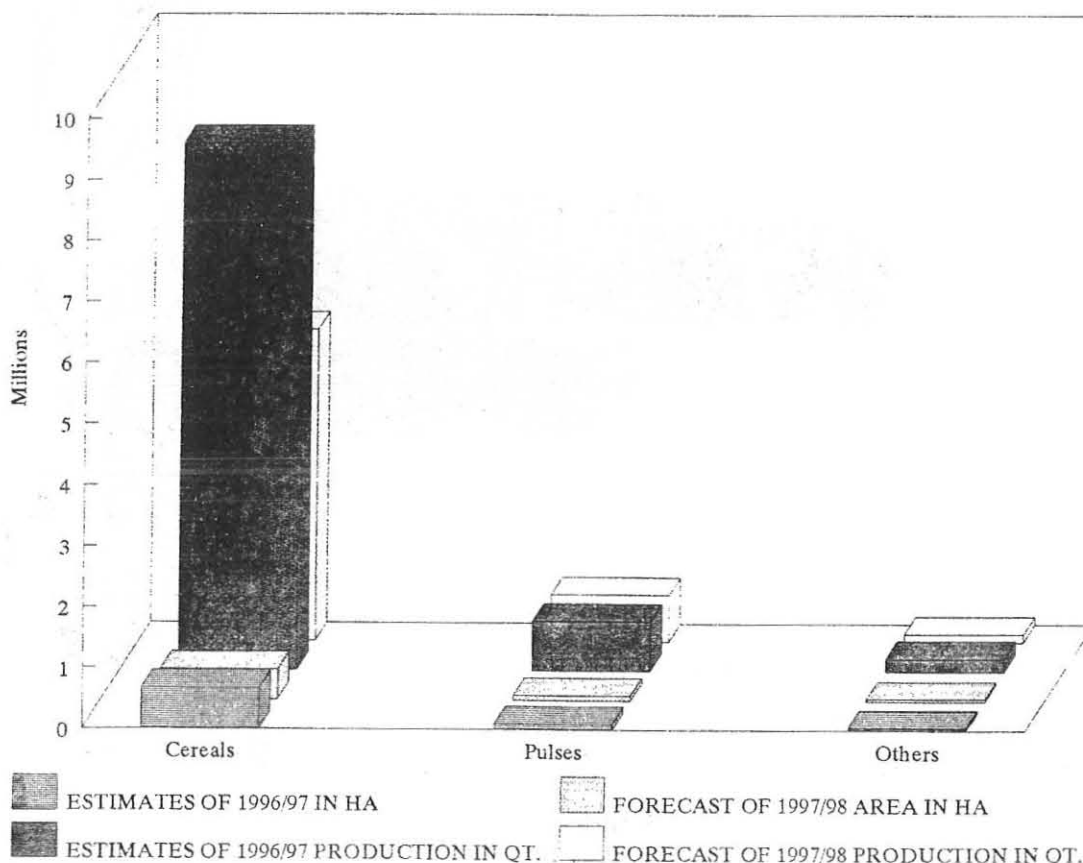


FIG 6. FORECAST OF 1997/98 AND ESTIMATES OF 1996/97 OF YIELD FOR CEREALS, PULSES, OTHERS AND ALL CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA (MEHER SEASON)

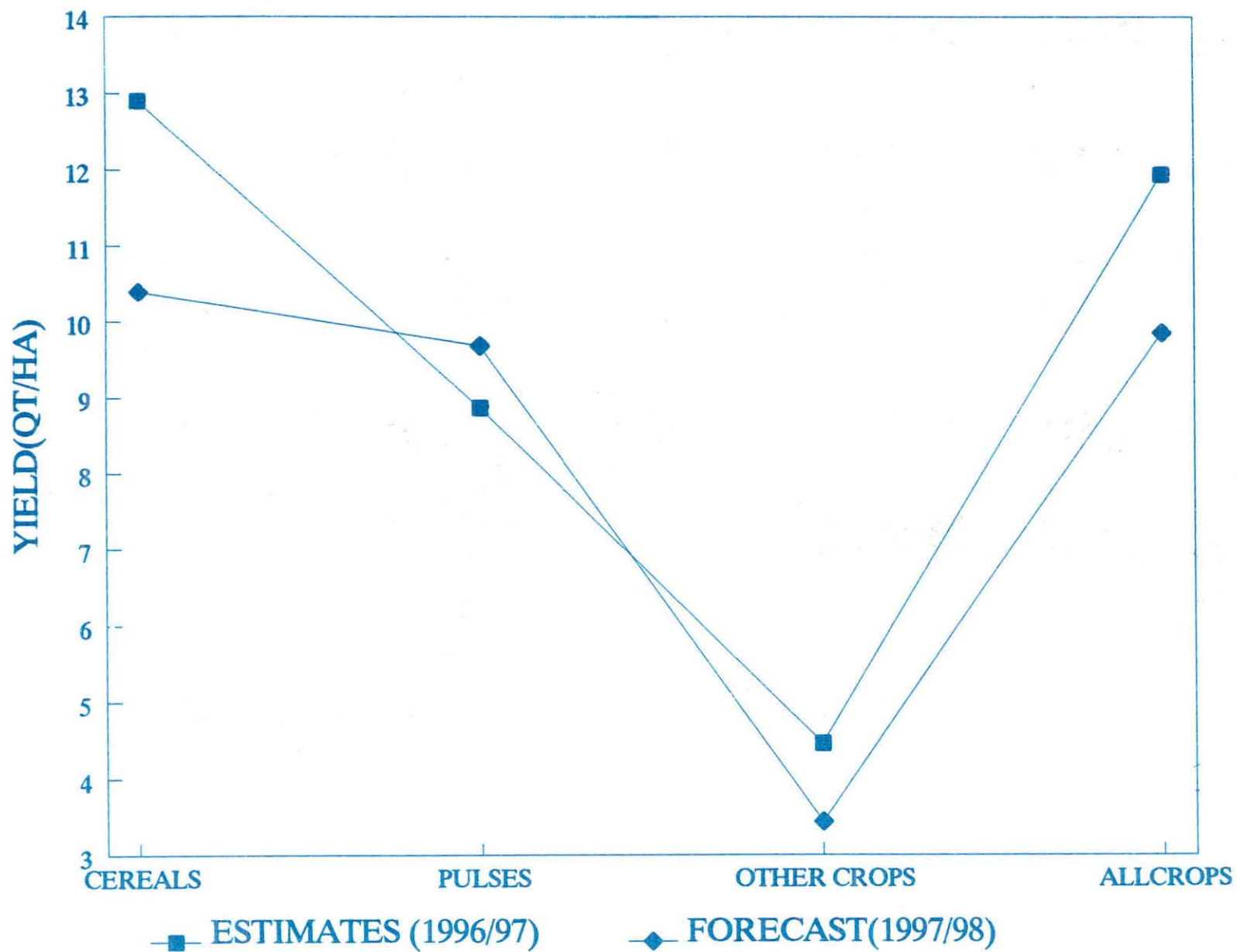


Table 4. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Tigray

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 495.34 | 91.47 | 4,202.29 | 94.33 | 8.48 |
| Teff | 122.02 | 22.53 | 861.97 | 19.35 | 7.06 |
| Barley | 68.84 | 12.71 | 584.20 | 13.11 | 8.49 |
| Wheat | 53.74 | 9.92 | 395.42 | 8.88 | 7.36 |
| Maize | 49.86 | 9.21 | 588.01 | 13.20 | 11.79 |
| Sorghum | 128.23 | 23.68 | 1,224.23 | 27.48 | 9.55 |
| Millet | 72.63 | 13.41 | 548.45 | 12.31 | 7.55 |
| Oats | ** | ** | - | - | - |
| Pulses | 30.91 | 5.71 | 212.01 | 4.76 | 6.86 |
| Horse Beans | 9.65 | 1.78 | 61.24 | 1.37 | 6.35 |
| Field Peas | 4.04 | .75 | ** | ** | ** |
| Haricot Beans | ** | .08 | ** | ** | ** |
| Chick Peas | 8.24 | 1.52 | 74.75 | 1.68 | 9.07 |
| Lentils | 4.41 | .81 | 10.59 | .24 | 2.40 |
| Vetch | 4.13 | .76 | 40.53 | .91 | 9.81 |
| Others | 15.26 | 2.82 | 40.55 | .91 | 2.66 |
| Neug | ** | ** | - | - | - |
| Linseed | 8.17 | 1.51 | 23.54 | .53 | 2.88 |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | - | - | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 541.51 | 100.00 | 4,454.85 | 100.00 | 8.23 |

Table 5. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Afar

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 8.54 | 90.47 | 52.73 | 98.93 | 6.17 |
| Teff | 2.06 | 21.82 | 6.81 | 12.78 | 3.31 |
| Barley | - | - | - | - | - |
| Wheat | - | - | - | - | - |
| Maize | ** | ** | ** | ** | ** |
| Sorghum | 2.40 | 25.42 | 11.29 | 21.18 | 4.70 |
| Millet | - | - | - | - | - |
| Oats | - | - | - | - | - |
| Pulses | .68 | 7.20 | .46 | .86 | .68 |
| Horse Beans | - | - | - | - | - |
| Field Peas | - | - | - | - | ** |
| Haricot Beans | ** | ** | - | - | - |
| Chick Peas | .24 | 2.54 | .46 | .86 | 1.92 |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | .22 | 2.33 | .12 | .23 | .55 |
| Neug | - | - | - | - | - |
| Linseed | - | - | - | - | - |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | - | - | - | - | - |
| All Crops | 9.44 | 100.00 | 53.30 | 100.00 | 5.65 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

FIG 7. FORECAST OF YIELD FOR CEREALS, PULSES, OTHERS AND ALL CROPS FOR PRIVATE HOLDINGS IN ETHIOPIA, BY REGION (MEHER SEASON) 1997/98(1990 E.C.)

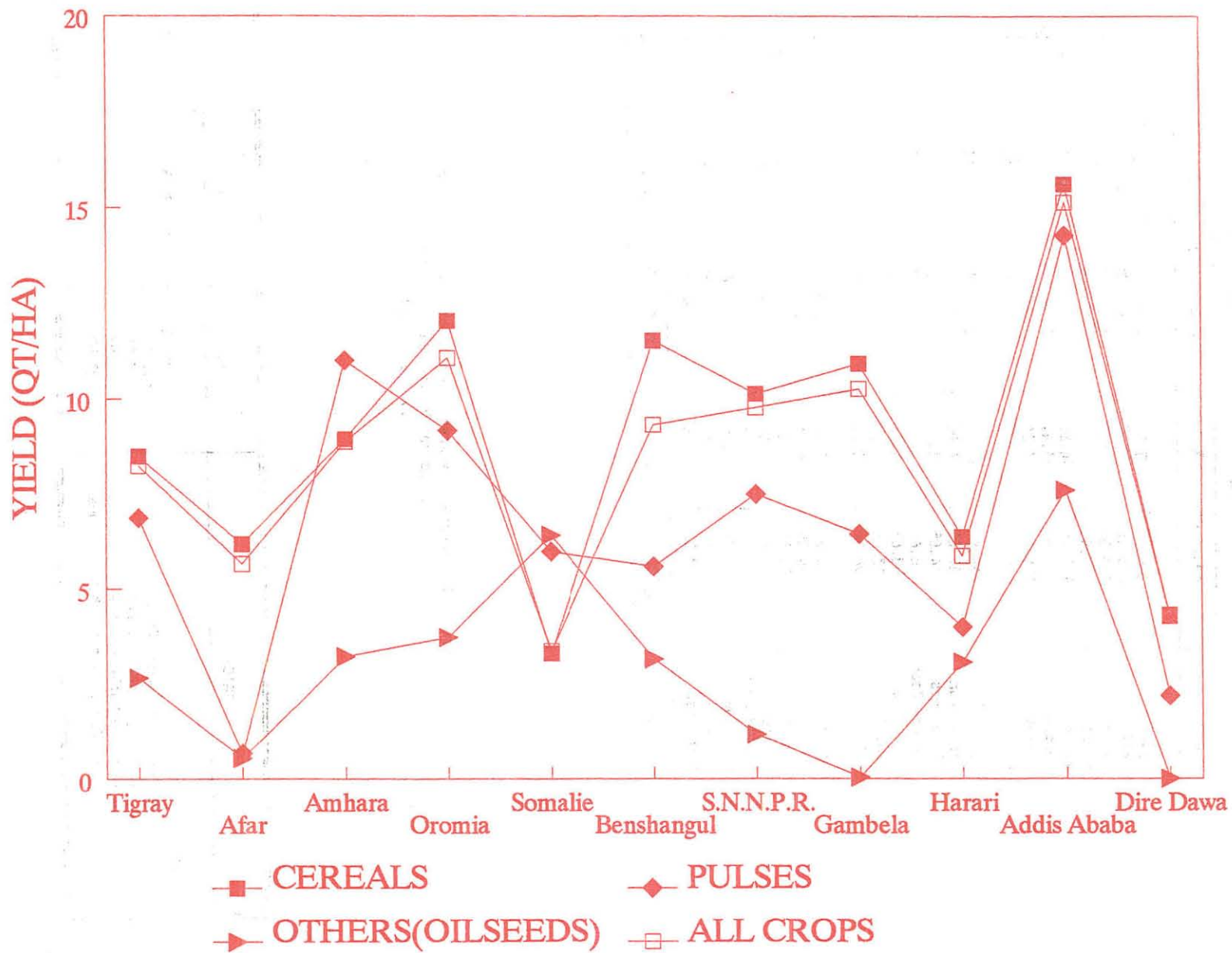


Table 6. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Amhara

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 1,659.19 | 77.95 | 14,814.83 | 78.45 | 8.93 |
| Teff | 645.86 | 30.34 | 4,915.98 | 25.03 | 7.61 |
| Barley | 196.54 | 9.23 | 1,408.25 | 7.46 | 7.17 |
| Wheat | 142.95 | 6.72 | 1,350.09 | 7.15 | 9.44 |
| Maize | 225.40 | 10.59 | 3,167.76 | 16.77 | 14.05 |
| Sorghum | 307.93 | 14.47 | 2,567.86 | 13.60 | 8.34 |
| Millet | 135.98 | 6.39 | 1,369.33 | 7.25 | 10.07 |
| Oats | 4.54 | .21 | 35.55 | .19 | 7.83 |
| Pulses | 328.51 | 15.43 | 3,616.78 | 19.15 | 11.01 |
| Horse Beans | 87.00 | 4.09 | 624.54 | 3.31 | 7.18 |
| Field Peas | 34.05 | 1.60 | 208.52 | 1.10 | 6.12 |
| Haricot Beans | 6.60 | .31 | 44.19 | .23 | 6.70 |
| Chick Peas | 88.67 | 4.17 | 721.89 | 3.82 | 8.14 |
| Lentils | 13.69 | .64 | 77.29 | .41 | 5.65 |
| Vetch | 98.50 | 4.63 | ** | ** | ** |
| Others | 140.91 | 6.62 | 453.93 | 2.40 | 3.22 |
| Neug | 94.89 | 4.46 | 269.38 | 1.43 | 2.84 |
| Linseed | 26.34 | 1.24 | 75.87 | .40 | 2.88 |
| Rapeseed | 2.40 | .11 | 18.43 | .10 | 7.68 |
| Ground Nuts | - | - | - | - | - |
| Sunflower | 1.89 | .09 | 8.87 | .05 | 4.69 |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | 7.20 | .34 | 42.07 | .22 | 5.84 |
| All Crops | 2,128.62 | 100.00 | 18,885.55 | 100.00 | 8.87 |

Table 6.1 Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

| REGION | TOTAL AREA (000'hectare) | TOTAL PRODUCTION (000' quintal) | YIELD (QT/HA) |
|---|--------------------------|---------------------------------|---------------|
| AMHARA | 2,128.62 | 18,885.55 | 8.87 |
| North and Sourh Gonder Zone | 609.43 | 4,060.16 | 6.66 |
| East, West Gojam and Agewawi zone | 859.54 | 9,692.45 | 11.28 |
| North Wolo and Waghamra zone | 256.08 | 1,511.85 | 5.90 |
| South wolo, Oromia and North Shewa Zone | 403.57 | 3,621.10 | 8.97 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 6.2. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

North and South Gonder Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 465.02 | 76.30 | 3,327.71 | 81.96 | 7.16 |
| Teff | 167.03 | 27.41 | 1,112.50 | 27.40 | 6.66 |
| Barley | 48.10 | 7.89 | 249.88 | 6.15 | 5.20 |
| Wheat | 32.83 | 5.39 | 197.32 | 4.86 | 6.01 |
| Maize | 54.05 | 8.87 | 366.71 | 9.03 | 6.78 |
| Sorghum | 119.93 | 19.68 | 987.95 | 24.33 | 8.24 |
| Millet | 43.07 | 7.07 | 413.35 | 10.18 | 9.60 |
| Oats | - | - | - | - | - |
| Pulses | 81.21 | 13.33 | 499.77 | 12.31 | 6.15 |
| Horse Beans | 22.13 | 3.63 | 97.84 | 2.41 | 4.42 |
| Field Peas | ** | ** | ** | ** | ** |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | 40.52 | 6.65 | 296.02 | 7.29 | 7.31 |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | ** | ** | ** | ** | ** |
| Others | 63.20 | 10.37 | 232.68 | 5.73 | 3.68 |
| Neug | 43.92 | 7.21 | 168.33 | 4.15 | 3.83 |
| Linseed | 8.09 | 1.33 | 24.13 | .59 | 2.98 |
| Rapeseed | .77 | .13 | 4.63 | .11 | 6.01 |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 609.43 | 100.00 | 4,060.16 | 100.00 | 6.66 |

Table 6.3. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

East, West Gojam and Agewawi Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 648.64 | 75.46 | 7,140.11 | 73.67 | 11.01 |
| Teff | 280.38 | 32.62 | 2,550.72 | 26.32 | 9.10 |
| Barley | 68.95 | 8.02 | 567.22 | 5.85 | 8.23 |
| Wheat | 34.82 | 4.05 | 432.08 | 4.46 | 12.41 |
| Maize | 134.17 | 15.61 | 2,290.39 | 23.63 | 17.07 |
| Sorghum | 38.16 | 4.44 | 349.64 | 3.61 | 9.16 |
| Millet | 90.63 | 10.54 | 938.67 | 9.68 | 10.36 |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 147.92 | 17.21 | 2,406.30 | 25.83 | 16.27 |
| Horse Beans | 25.30 | 2.94 | 215.35 | 2.22 | 8.51 |
| Field Peas | 14.65 | 1.70 | 107.88 | 1.11 | 7.36 |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | 25.17 | 2.93 | 264.29 | 2.73 | 10.50 |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | ** | ** | ** | ** | ** |
| Others | 62.98 | 7.33 | 146.03 | 1.51 | 2.32 |
| Neug | 47.41 | 5.52 | 93.67 | .97 | 1.98 |
| Linseed | 13.14 | 1.53 | 34.61 | .36 | 2.63 |
| Rapeseed | 1.62 | .19 | 13.79 | .14 | 8.51 |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | .62 | .07 | ** | ** | ** |
| All Crops | 859.54 | 100.00 | 9,692.45 | 100.00 | 11.28 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 6.4. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

North Wolo and Waghmra Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 210.18 | 82.08 | 1,255.52 | 83.05 | 5.97 |
| Teff | 72.15 | 28.17 | 324.10 | 21.44 | 4.49 |
| Barley | 41.27 | 16.12 | 206.35 | 13.65 | 5.00 |
| Wheat | 32.38 | 12.64 | 216.08 | 14.29 | 6.67 |
| Maize | 3.45 | 1.35 | 26.96 | 1.78 | 7.81 |
| Sorghum | 59.84 | 23.37 | 473.54 | 31.32 | 7.91 |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 41.66 | 16.27 | 238.40 | 15.77 | 5.72 |
| Horse Beans | 15.28 | 5.97 | 113.27 | 7.49 | 7.41 |
| Field Peas | 7.73 | 3.02 | 27.01 | 1.79 | 3.49 |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | 9.53 | 3.72 | 50.23 | 3.32 | 5.27 |
| Lentils | 5.83 | 2.28 | ** | ** | ** |
| Vetch | 1.16 | .45 | ** | ** | ** |
| Others | 4.24 | 1.66 | 17.92 | 1.19 | 4.23 |
| Neug | ** | ** | - | - | - |
| Linseed | 2.11 | .82 | ** | ** | ** |
| Rapeseed | ** | ** | ** | ** | ** |
| Ground Nuts | - | - | - | - | - |
| Sunflower | .52 | .20 | 3.50 | .23 | 6.73 |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | .88 | .34 | ** | ** | ** |
| All Crops | 256.08 | 100.00 | 1,511.85 | 100.00 | 5.90 |

Table 6.5. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

South Wolo, Oromia and North Shewa Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 335.36 | 83.10 | 3,091.48 | 85.37 | 9.22 |
| Teff | 126.29 | 31.29 | 928.67 | 25.65 | 7.35 |
| Barley | 38.21 | 9.47 | 384.80 | 10.63 | 10.07 |
| Wheat | 42.93 | 10.64 | 504.61 | 13.94 | 11.75 |
| Maize | 33.72 | 8.36 | 483.70 | 13.36 | 14.34 |
| Sorghum | 89.99 | 22.30 | 756.73 | 20.90 | 8.41 |
| Millet | ** | ** | ** | ** | ** |
| Oats | 2.48 | .61 | 19.77 | .55 | 7.97 |
| Pulses | 57.71 | 14.30 | 472.32 | 13.04 | 8.18 |
| Horse Beans | 24.30 | 6.02 | 198.08 | 5.47 | 8.15 |
| Field Peas | 7.10 | 1.76 | 55.32 | 1.53 | 7.79 |
| Haricot Beans | 1.69 | .42 | ** | ** | ** |
| Chick Peas | 13.44 | 3.33 | 111.36 | 3.08 | 8.29 |
| Lentils | 6.38 | 1.58 | 45.34 | 1.25 | 7.11 |
| Vetch | ** | ** | 38.52 | 1.06 | 8.03 |
| Others | 10.50 | 2.60 | 57.30 | 1.58 | 5.46 |
| Neug | 3.05 | .76 | ** | ** | ** |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | 2.41 | .60 | 20.39 | .56 | 8.46 |
| All Crops | 403.57 | 100.00 | 3,621.10 | 100.00 | 8.97 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 7. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Oromia

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 2,172.83 | 79.77 | 26,171.95 | 86.83 | 12.05 |
| Teff | 654.26 | 24.02 | 5,972.74 | 19.82 | 9.13 |
| Barley | 282.73 | 10.38 | 3,268.26 | 10.84 | 11.56 |
| Wheat | 404.22 | 14.84 | 5,437.80 | 18.04 | 13.45 |
| Maize | 513.16 | 18.84 | 6,722.47 | 22.30 | 13.10 |
| Sorghum | 244.81 | 8.99 | 3,946.20 | 13.09 | 16.12 |
| Millet | 40.91 | 1.50 | 345.67 | 1.15 | 8.45 |
| Oats | 32.74 | 1.20 | 478.82 | 1.59 | 14.62 |
| Pulses | 353.04 | 12.96 | 3,233.36 | 10.73 | 9.16 |
| Horse Beans | 127.18 | 4.67 | 1,364.37 | 4.53 | 10.73 |
| Field Peas | 62.81 | 2.31 | 405.38 | 1.34 | 6.45 |
| Haricot Beans | 45.77 | 1.68 | 260.04 | .86 | 5.68 |
| Chick Peas | 51.18 | 1.88 | 497.71 | 1.65 | 9.72 |
| Lentils | 28.82 | 1.06 | 162.76 | .54 | 5.65 |
| Vetch | 37.29 | 1.37 | 543.11 | 1.80 | 14.56 |
| Others | 197.86 | 7.26 | 736.55 | 2.44 | 3.72 |
| Neug | 87.98 | 3.23 | 228.23 | .76 | 2.59 |
| Linseed | 76.31 | 2.80 | 297.80 | .99 | 3.90 |
| Rapeseed | 4.89 | .18 | ** | ** | ** |
| Ground Nuts | ** | ** | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 2,723.74 | 100.00 | 30,141.86 | 100.00 | 11.07 |

Table 7.1 Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

| REGION | TOTAL AREA (000'hectare) | TOTAL PRODUCTION (000' quintal) | YIELD (QT/HA) |
|--|--------------------------|---------------------------------|---------------|
| OROMIA | 2,723.74 | 30,141.86 | 11.07 |
| East and West Welega Zone | 517.95 | 4,880.66 | 9.42 |
| Illubabor and Jima zone | 272.33 | 3,179.81 | 11.68 |
| North and West Shewa Zone | 716.67 | 7,362.74 | 10.27 |
| East Shewa, Arsi, Bale and Borena Zone | 1,006.17 | 11,416.27 | 11.35 |
| East and west Harerge Zone | 210.61 | 3,023.38 | 15.68 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 7.2. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

East and West Welega Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 421.56 | 81.39 | 4,400.94 | 90.17 | 10.44 |
| Teff | 151.53 | 29.26 | 1,173.24 | 24.04 | 7.74 |
| Barley | 14.79 | 2.86 | 107.38 | 2.20 | 7.26 |
| Wheat | 22.39 | 4.32 | ** | ** | ** |
| Maize | 145.20 | 28.03 | 1,875.11 | 38.42 | 12.91 |
| Sorghum | 51.93 | 10.03 | 642.72 | 13.17 | 12.38 |
| Millet | 35.59 | 6.87 | 308.28 | 6.32 | 8.66 |
| Oats | ** | ** | ** | ** | 7.67 |
| Pulses | 33.48 | 6.46 | 313.59 | 6.43 | 9.37 |
| Horse Beans | 17.98 | 3.47 | 191.97 | 3.93 | 10.68 |
| Field Peas | 8.63 | 1.67 | 71.66 | 1.47 | 8.30 |
| Haricot Beans | 6.87 | 1.33 | 49.94 | 1.02 | 7.27 |
| Chick Peas | - | - | - | - | - |
| Lentils | - | - | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | 62.91 | 12.15 | 166.13 | 3.40 | 2.64 |
| Neug | 57.88 | 11.17 | 142.74 | 2.92 | 2.47 |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | ** | ** | ** | ** | ** |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | ** | ** | - | - | - |
| Fenugreek | .15 | .03 | ** | ** | ** |
| All Crops | 517.95 | 100.00 | 4,880.66 | 100.00 | 9.42 |

Table 7.3. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Ilubabor and Jima Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 246.90 | 90.66 | 2,979.05 | 93.69 | 12.07 |
| Teff | 99.21 | 36.43 | 994.39 | 31.27 | 10.02 |
| Barley | 5.93 | 2.18 | 73.95 | 2.33 | 12.47 |
| Wheat | 4.52 | 1.66 | 53.61 | 1.69 | 11.86 |
| Maize | 97.37 | 35.75 | 1,326.94 | 41.73 | 13.63 |
| Sorghum | 35.90 | 13.18 | 495.21 | 15.57 | 13.79 |
| Millet | 3.95 | 1.45 | 34.95 | 1.10 | 8.85 |
| Oats | - | - | - | - | - |
| Pulses | 23.24 | 8.53 | 195.18 | 6.14 | 8.40 |
| Horse Beans | 10.27 | 3.77 | 91.10 | 2.86 | 8.87 |
| Field Peas | 7.41 | 2.72 | 53.60 | 1.69 | 7.23 |
| Haricot Beans | 3.99 | 1.47 | ** | ** | ** |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | 2.20 | .81 | 5.59 | .18 | 2.54 |
| Neug | 1.01 | .37 | ** | ** | ** |
| Linseed | 1.10 | .40 | ** | ** | ** |
| Rapeseed | ** | ** | ** | ** | ** |
| Ground Nuts | ** | ** | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 272.33 | 100.00 | 3,179.81 | 100.00 | 11.68 |

Table 7.4. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

North and West Shewa Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 536.03 | 74.79 | 5,982.66 | 81.26 | 11.16 |
| Teff | 236.17 | 32.95 | 2,414.04 | 32.79 | 10.22 |
| Barley | 86.10 | 12.01 | 675.04 | 9.17 | 7.84 |
| Wheat | 132.96 | 18.55 | 1,720.48 | 23.37 | 12.94 |
| Maize | 34.25 | 4.78 | ** | ** | ** |
| Sorghum | 45.42 | 6.34 | 706.10 | 9.59 | 15.55 |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 136.79 | 19.09 | 1,224.91 | 16.64 | 8.95 |
| Horse Beans | 38.61 | 5.39 | 407.55 | 5.54 | 10.56 |
| Field Peas | 18.20 | 2.54 | 123.70 | 1.68 | 6.80 |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | 35.42 | 4.94 | 276.80 | 3.76 | 7.81 |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | 23.55 | 3.29 | 308.31 | 4.19 | 13.09 |
| Others | 43.84 | 6.12 | 155.17 | 2.11 | 3.54 |
| Neug | 24.31 | 3.39 | ** | ** | ** |
| Linseed | 17.69 | 2.47 | 67.86 | .92 | 3.84 |
| Rapeseed | ** | ** | ** | ** | ** |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 716.67 | 100.00 | 7,362.74 | 100.00 | 10.27 |

Table 7.5. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

East Shewa, Arsi, Bale and Borena Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 787.08 | 78.23 | 9,742.00 | 85.33 | 12.38 |
| Teff | 163.95 | 16.29 | 1,369.94 | 12.00 | 8.36 |
| Barley | 168.00 | 16.70 | 2,253.99 | 19.74 | 13.42 |
| Wheat | 240.68 | 23.92 | 3,305.14 | 28.95 | 13.73 |
| Maize | 170.76 | 16.97 | 2,110.93 | 18.49 | 12.36 |
| Sorghum | 13.03 | 1.30 | ** | ** | ** |
| Millet | ** | ** | ** | ** | ** |
| Oats | 30.27 | 3.01 | 424.78 | 3.72 | 14.03 |
| Pulses | 139.78 | 13.89 | 1,269.15 | 11.12 | 9.08 |
| Horse Beans | 49.10 | 4.88 | 481.71 | 4.22 | 9.81 |
| Field Peas | 25.85 | 2.57 | 142.51 | 1.25 | 5.51 |
| Haricot Beans | 30.27 | 3.01 | 158.67 | 1.39 | 5.24 |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | 7.12 | .71 | ** | ** | ** |
| Vetch | 13.72 | 1.36 | ** | ** | ** |
| Others | 79.31 | 7.88 | 405.11 | 3.55 | 5.11 |
| Neug | ** | ** | ** | ** | ** |
| Linseed | 53.31 | 5.30 | 211.37 | 1.85 | 3.96 |
| Rapeseed | ** | ** | ** | ** | ** |
| Ground Nuts | ** | ** | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 1,006.17 | 100.00 | 11,416.27 | 100.00 | 11.35 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 7.6. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

East and West Harerge Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 181.27 | 86.07 | 3,067.29 | 92.88 | 16.92 |
| Teff | 3.40 | 1.61 | ** | ** | ** |
| Barley | ** | ** | ** | ** | ** |
| Wheat | 3.68 | 1.75 | 65.28 | 1.98 | 17.74 |
| Maize | 65.59 | 31.14 | 952.57 | 28.84 | 14.52 |
| Sorghum | 98.52 | 46.78 | 1,825.89 | 55.29 | 18.53 |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 19.75 | 9.38 | 230.54 | 6.98 | 11.67 |
| Horse Beans | 11.22 | 5.33 | 192.04 | 5.82 | 17.12 |
| Field Peas | ** | ** | ** | ** | ** |
| Haricot Beans | 4.38 | 2.08 | ** | ** | ** |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | ** | ** | ** | ** | ** |
| Others | 9.60 | 4.56 | 4.55 | .14 | .47 |
| Neug | ** | ** | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | ** | ** | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | ** | ** | ** | ** | ** |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 210.61 | 100.00 | 3,302.38 | 100.00 | 15.68 |

Table 8. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Somale

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 22.98 | 97.54 | 75.80 | 95.57 | 3.30 |
| Teff | .07 | .30 | ** | ** | ** |
| Barley | 2.84 | 12.05 | 4.96 | 6.25 | 1.75 |
| Wheat | 1.82 | 7.72 | ** | ** | ** |
| Maize | 7.20 | 30.56 | 21.93 | 27.65 | 3.05 |
| Sorghum | 10.87 | 46.14 | 44.53 | 56.15 | 4.10 |
| Millet | ** | ** | - | - | - |
| Oats | ** | ** | - | - | - |
| Pulses | .48 | 2.04 | 2.87 | 3.62 | 5.98 |
| Horse Beans | - | - | - | - | - |
| Field Peas | ** | ** | ** | ** | ** |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | .10 | .42 | .64 | .81 | 6.40 |
| Neug | - | - | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 23.56 | 100.00 | 79.31 | 100.00 | 3.37 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 9. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Benshangul-Gumuz

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 74.43 | 72.54 | 857.39 | 89.78 | 11.52 |
| Teff | 13.60 | 13.26 | ** | ** | ** |
| Barley | ** | ** | ** | ** | ** |
| Wheat | ** | ** | ** | ** | ** |
| Maize | 23.82 | 23.22 | 406.97 | 42.61 | 17.09 |
| Sorghum | 30.88 | 30.10 | 308.78 | 32.33 | 10.00 |
| Millet | 3.69 | 3.60 | 28.53 | 2.99 | 7.73 |
| Oats | - | - | - | - | - |
| Pulses | 3.65 | 3.56 | 20.39 | 2.14 | 5.59 |
| Horse Beans | ** | ** | ** | ** | ** |
| Field Peas | ** | ** | ** | ** | ** |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | ** | ** | ** | - | ** |
| Vetch | - | - | - | - | - |
| Others | 24.53 | 23.91 | 77.25 | 8.09 | 3.15 |
| Neug | 14.62 | 14.25 | 34.61 | 3.62 | 2.37 |
| Linseed | ** | ** | ** | .12 | ** |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | ** | ** | ** | 1.92 | ** |
| Sunflower | - | - | - | - | - |
| Sesame | 5.41 | 5.27 | 23.17 | 2.43 | 4.28 |
| Fenugreek | - | - | - | - | - |
| All Crops | 102.60 | 100.00 | 955.03 | 100.00 | 9.31 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 10. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

(S.N.N.P.R)

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 445.14 | 86.48 | 4,515.61 | 89.82 | 10.14 |
| Teff | 91.58 | 17.79 | 718.55 | 14.29 | 7.85 |
| Barley | 43.01 | 8.36 | 393.61 | 7.83 | 9.15 |
| Wheat | 76.51 | 14.86 | 963.08 | 19.16 | 12.59 |
| Maize | 159.35 | 30.96 | 1,933.94 | 38.47 | 12.14 |
| Sorghum | 68.28 | 13.27 | 472.51 | 9.40 | 6.92 |
| Millet | 6.19 | 1.20 | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 68.05 | 13.22 | 509.69 | 10.14 | 7.49 |
| Horse Beans | 27.75 | 5.39 | 285.86 | 5.69 | 10.30 |
| Field Peas | 19.80 | 3.85 | 145.84 | 2.90 | 7.37 |
| Haricot Beans | 17.74 | 3.45 | 57.80 | 1.15 | 3.26 |
| Chick Peas | 2.55 | .50 | ** | ** | ** |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | 1.55 | .30 | 1.84 | .04 | 1.19 |
| Neug | ** | ** | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | ** | ** | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 514.73 | 100.00 | 5,027.14 | 100.00 | 9.77 |

Table 10.1 Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

| REGION | TOTAL AREA (000'hectare) | TOTAL PRODUCTION (000' quintal) | YIELD (QT/HA) |
|---|--------------------------|---------------------------------|---------------|
| (S.N.N.P.R.) | 514.73 | 5,027.14 | 9.77 |
| Yeni, Keficho Shekicho, Bench Maji Zone | 81.23 | 924.53 | 11.38 |
| North and South Omo, Gardula and Konso zone | 154.75 | 902.86 | 5.83 |
| Gurage, Kembata and Hadiya Zone | 234.24 | 2,830.86 | 12.09 |
| Sidama, Gedio, Burji and Amaro Zone | 44.52 | 368.89 | 8.29 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 10.2. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Yem, Keficho Shekicho and Bench Maji Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 63.75 | 78.48 | 754.51 | 81.61 | 11.84 |
| Teff | 18.52 | 22.80 | 204.96 | 22.17 | 11.07 |
| Barley | 8.82 | 10.86 | 108.84 | 11.77 | 12.34 |
| Wheat | 9.60 | 11.82 | 137.74 | 14.90 | 14.35 |
| Maize | 15.05 | 18.53 | 194.26 | 21.01 | 12.91 |
| Sorghum | 11.70 | 14.40 | 108.51 | 11.74 | 9.27 |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 17.47 | 21.51 | 170.00 | 18.39 | 9.73 |
| Horse Beans | 9.36 | 11.52 | 120.69 | 13.05 | 12.89 |
| Field Peas | 7.69 | 9.47 | 46.47 | 5.03 | 6.04 |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | - | - | - | - | - |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | .01 | .01 | .01 | - | 1.00 |
| Neug | - | - | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | ** | ** | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | - | - | - | - | - |
| All Crops | 81.23 | 100.00 | 924.53 | 100.00 | 11.38 |

Table 10.3. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

North and South Omo, Gardula and Konso Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 134.14 | 86.68 | 817.64 | 90.56 | 6.10 |
| Teff | 22.71 | 14.68 | 77.20 | 8.55 | 3.40 |
| Barley | 14.23 | 9.20 | ** | ** | ** |
| Wheat | ** | ** | ** | ** | ** |
| Maize | 49.66 | 32.09 | 364.98 | 40.42 | 7.35 |
| Sorghum | 38.20 | 24.68 | 181.24 | 20.07 | 4.74 |
| Millet | 2.83 | 1.83 | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 20.49 | 13.24 | 85.07 | 9.42 | 4.15 |
| Horse Beans | 3.39 | 2.19 | 20.50 | 2.27 | 6.05 |
| Field Peas | 3.52 | 2.27 | 26.79 | 3.97 | 7.61 |
| Haricot Beans | 13.33 | 8.61 | 37.16 | 4.12 | 2.79 |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | .11 | .07 | .15 | .02 | 1.36 |
| Neug | - | - | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | ** | ** | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | ** | ** | ** | ** | ** |
| Sesame | ** | ** | - | - | - |
| Fenugreek | - | - | - | - | - |
| All Crops | 154.75 | 100.00 | 902.86 | 100.00 | 5.83 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 10.4. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Gurage, Kembata and Hadiya Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 216.01 | 92.22 | 2,651.87 | 93.68 | 12.28 |
| Teff | 47.78 | 20.40 | 409.05 | 14.45 | 8.56 |
| Barley | 14.19 | 6.06 | 122.73 | 4.34 | 8.65 |
| Wheat | 58.76 | 25.09 | 758.16 | 26.78 | 12.90 |
| Maize | 76.35 | 32.59 | 1,178.52 | 41.63 | 15.44 |
| Sorghum | 15.59 | 6.66 | 159.51 | 5.63 | 10.23 |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 16.85 | 7.19 | 177.33 | 6.26 | 10.52 |
| Horse Beans | 10.11 | 4.32 | 118.47 | 4.18 | 11.72 |
| Field Peas | 4.89 | 2.09 | 53.65 | 1.90 | 10.97 |
| Haricot Beans | 1.00 | .43 | 3.26 | .12 | 3.26 |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | ** | ** | ** | ** | ** |
| Vetch | - | - | - | - | - |
| Others | 1.38 | .59 | 1.66 | .06 | 1.20 |
| Neug | ** | ** | - | - | ** |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | ** | ** | - | - | ** |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 234.24 | 100.00 | 2,830.86 | 100.00 | 12.09 |

Table 10.5. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Sidama, Gedio, Burji and Amaro Zone

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 31.22 | 70.13 | 291.59 | 79.05 | 9.34 |
| Teff | ** | ** | ** | ** | ** |
| Barley | 5.76 | 12.94 | 26.14 | 7.09 | 4.54 |
| Wheat | ** | ** | ** | ** | ** |
| Maize | 18.29 | 41.08 | 196.19 | 53.18 | 10.73 |
| Sorghum | ** | ** | ** | ** | ** |
| Millet | ** | ** | ** | ** | ** |
| Oats | ** | ** | ** | ** | ** |
| Pulses | 13.24 | 29.74 | 77.27 | 20.95 | 5.84 |
| Horse Beans | 4.88 | 10.96 | 26.20 | 7.10 | 5.37 |
| Field Peas | 3.70 | 8.31 | 18.92 | 5.13 | 5.11 |
| Haricot Beans | 3.12 | 7.01 | ** | ** | ** |
| Chick Peas | ** | ** | ** | ** | ** |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | .05 | .11 | .03 | .01 | .60 |
| Neug | - | - | - | - | - |
| Linseed | - | - | ** | ** | ** |
| Rapeseed | ** | ** | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | ** | ** | ** | ** | ** |
| All Crops | 44.52 | 100.00 | 368.89 | 100.00 | 8.29 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 11. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Gambela

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 11.26 | 93.52 | 123.11 | 99.61 | 10.93 |
| Teff | - | - | - | - | - |
| Barley | - | - | - | - | - |
| Wheat | - | - | - | - | - |
| Maize | 8.50 | 70.60 | 77.46 | 62.67 | 9.11 |
| Sorghum | 2.59 | 21.51 | 44.05 | 35.64 | 17.01 |
| Millet | ** | ** | ** | ** | ** |
| Oats | - | - | - | - | - |
| Pulses | .07 | .58 | .45 | .36 | 6.43 |
| Horse Beans | - | - | - | - | - |
| Field Peas | - | - | - | - | - |
| Haricot Beans | ** | ** | ** | ** | ** |
| Chick Peas | - | - | - | - | - |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | .71 | 5.90 | .03 | .02 | .04 |
| Neug | - | - | - | - | - |
| Linseed | - | - | - | - | - |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | .06 | .50 | ** | ** | ** |
| Sunflower | - | - | - | - | - |
| Sesame | .65 | 5.40 | .02 | .02 | .03 |
| Fenugreek | - | - | - | - | - |
| All Crops | 12.04 | 100.00 | 123.59 | 100.00 | 10.26 |

Table 12. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Harari

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 3.34 | 84.99 | 21.23 | 92.14 | 6.36 |
| Teff | - | - | - | - | - |
| Barley | ** | ** | ** | ** | ** |
| Wheat | .05 | 1.27 | .23 | 1.00 | 4.60 |
| Maize | .82 | 20.87 | 6.01 | 26.09 | 7.33 |
| Sorghum | 2.47 | 62.85 | 14.95 | 64.89 | 6.05 |
| Millet | - | - | - | - | - |
| Oats | - | - | ** | ** | ** |
| Pulses | .01 | .25 | .04 | .17 | 4.00 |
| Horse Beans | - | - | - | - | - |
| Field Peas | - | - | - | - | - |
| Haricot Beans | - | - | ** | ** | ** |
| Chick Peas | - | - | ** | ** | ** |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | .58 | 14.76 | 1.78 | 7.73 | 3.07 |
| Neug | - | - | - | - | - |
| Linseed | - | - | - | - | - |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | .58 | 14.76 | ** | ** | ** |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | - | - | - | - | - |
| All Crops | 3.93 | 100.00 | 23.04 | 100.00 | 5.86 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

Table 13. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Addis Ababa

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 5.22 | 74.68 | 81.59 | 77.05 | 15.63 |
| Teff | 2.87 | 41.06 | 41.96 | 39.63 | 14.62 |
| Barley | ** | ** | ** | ** | ** |
| Wheat | 2.15 | 30.76 | 36.54 | 34.51 | 17.00 |
| Maize | - | - | ** | ** | ** |
| Sorghum | - | - | - | - | - |
| Millet | - | - | - | - | - |
| Oats | - | - | ** | ** | ** |
| Pulses | 1.62 | 23.18 | 23.15 | 21.86 | 14.29 |
| Horse Beans | ** | ** | ** | ** | ** |
| Field Peas | - | - | ** | ** | ** |
| Haricot Beans | - | - | - | - | - |
| Chick Peas | .56 | 8.01 | 8.62 | 8.14 | 15.39 |
| Lentils | .32 | 4.58 | 3.00 | 2.83 | 9.38 |
| Vetch | .66 | 9.44 | 10.87 | 10.27 | 16.47 |
| Others | .15 | 2.15 | 1.14 | 1.08 | 7.60 |
| Neug | - | - | - | - | - |
| Linseed | ** | ** | ** | ** | ** |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | .13 | 1.86 | 1.09 | 1.03 | 8.38 |
| All Crops | 6.99 | 100.00 | 105.89 | 100.00 | 15.15 |

Table 14. Forecast of Area, Production and Yield of Major Crops for Private Peasant Holdings 1997/98 (1990 E.C.)

Dire Dawa

| CROP | TOTAL AREA | | TOTAL PRODUCTION | | YIELD (QT/HA) |
|---------------|----------------|--------|------------------|--------|---------------|
| | (000' hectare) | % | (000' quintal) | % | |
| Cereals | 3.57 | 98.62 | 15.37 | 99.29 | 4.31 |
| Teff | - | - | - | - | - |
| Barley | - | - | ** | ** | ** |
| Wheat | - | - | - | - | - |
| Maize | .07 | 1.93 | ** | ** | ** |
| Sorghum | 3.50 | 96.69 | 15.09 | 97.48 | 4.31 |
| Millet | - | - | - | - | - |
| Oats | - | - | - | - | - |
| Pulses | .05 | 1.38 | .11 | .71 | 2.20 |
| Horse Beans | - | - | - | - | - |
| Field Peas | - | - | - | - | - |
| Haricot Beans | ** | ** | .11 | .71 | ** |
| Chick Peas | - | - | - | - | - |
| Lentils | - | - | - | - | - |
| Vetch | - | - | - | - | - |
| Others | - | - | - | - | - |
| Neug | - | - | - | - | - |
| Linseed | - | - | - | - | - |
| Rapeseed | - | - | - | - | - |
| Ground Nuts | - | - | - | - | - |
| Sunflower | - | - | - | - | - |
| Sesame | - | - | - | - | - |
| Fenugreek | - | - | - | - | - |
| All Crops | 3.62 | 100.00 | 15.48 | 100.00 | 4.28 |

** These Estimates could not be reported in this table because of high coefficient of variation (i.e. They are less reliable). However they are consolidated in the total estimates.

APPENDIX - I

NUMBER OF EAS' SAMPLED AND ACTUALLY COVERED
FOR 1997/98 CROP PRODUCTION FORECAST SURVEY

**APPENDIX I. NUMBER OF EAS SAMPLED AND ACTUALLY COVERED FOR 1997/98(1990 E.C.)
CROP PRODUCTION FORECAST SURVEY**

| REGION | REPORTING LEVEL (STRATA) | NUMBER OF EAS SAMPLED | NUMBER OF EAS COVERED | % COVERED FROM SAMPLED EAS |
|--------------------|------------------------------------|-----------------------|-----------------------|----------------------------|
| TIGRAY | TIGRAY | 83 | 61 | 73.49 |
| AFAR | AFAR | 39 | 37 | 94.87 |
| AMHARA | N & S. GONDER | 47 | 36 | 76.60 |
| | AGEWAWI, E & W. GOJAM | 56 | 51 | 91.07 |
| | N.WOLLO & WAGHAMRA | 38 | 36 | 94.74 |
| | S.WOLLO, OROMIA & N.SHEWA | 58 | 58 | 100.00 |
| | TOTAL | 199 | 181 | 90.95 |
| OROMIA | E & W.WELLEGA | 40 | 37 | 92.50 |
| | ILLUBABOR & JIMMA | 45 | 44 | 97.78 |
| | N & W.SHEWA | 41 | 41 | 100.00 |
| | E.SHEWA, ARSI, BALE & BORENA | 85 | 72 | 84.71 |
| | E & W.HARARGHE | 43 | 38 | 88.37 |
| TOTAL | 254 | 232 | 91.34 | |
| SOMALIE | SOMALIE | 44 | 35 | 79.55 |
| BENSHANGUL – GUMEZ | BENSHANGUL – GUMEZ | 42 | 26 | 61.90 |
| S.N.N.P.R. | YEM, KEFICHO SHEKICHO & BENCH MAJI | 47 | 48 | 102.13 |
| | N & S.OMO, DERSHE & KONSO | 63 | 59 | 93.65 |
| | HADIYA, KEMBATA & GURAGE | 60 | 54 | 90.00 |
| | SIDAMA, GEDIO, BURJI & AMARO | 69 | 67 | 97.10 |
| | TOTAL | 239 | 228 | 95.40 |
| GAMBELA | GAMBELA | 25 | 21 | 84.00 |
| HARARI | HARARI | 65 | 65 | 100.00 |
| ADDIS ABABA | ADDIS ABABA | 25 | 23 | 92.00 |
| DIREDAWA | DIREDAWA | 25 | 25 | 100.00 |
| | GRAND TOTAL | 1040 | 934 | 89.81 |

APPENDIX - II

ESTIMATION PROCEDURES OF TOTAL, RATIO AND
SAMPLING ERRORS

APPENDIX II

ESTIMATION PROCEDURES OF TOTAL, RATIO AND SAMPLING ERRORS

Estimator of Total

The estimate of stratum total \hat{Y}_h is given by:

$$\hat{Y}_h = \sum_{il}^{n_h} \left[\frac{M_h}{n_h M_{hi}} \frac{H_{hi}}{h_{hi}} \sum_{jl}^{h_{hi}} y_{hij} \right] \quad (1)$$

Where:

- N_h = total number of EAs in stratum h
- n_h = number of sample EAs in stratum h
- M_{hi} = total number of households of EA i in stratum h obtained from the 1994 census map work
- $M_h = \sum_{il}^{N_h} M_{hi}$, total number of households of stratum h
- H_{hi} = total number of agricultural households listed during the survey for EA i in stratum h
- h_{hi} = number of agricultural households and successfully covered
- Y_{hij} = the observed value of the variable y for agricultural households j, of EA i in stratum h

Estimator of Variance for Total

The variance of stratum total estimate \hat{Y}_h is:

$$v(\hat{Y}_h) = \frac{n_h}{n_h - 1} \left[\sum (\hat{Y}_{hi} - \frac{\hat{Y}_h}{n_h})^2 \right] \quad (2)$$

Where:

\hat{Y}_{hi} = estimated total for EA i in stratum h

\hat{Y}_h = estimated total for stratum h

Coefficient of variation of total

The coefficient of variation of total is defined as:

$$CV = \frac{\sqrt{v(\hat{Y}_h)}}{\hat{Y}_h} \times 100$$

Estimator of Ratio

The estimator of a given ratio \hat{R}_h in stratum h is the following:

$$\hat{R}_h = \frac{\hat{Y}_h}{\hat{X}_h}$$

Where:

\hat{R}_h = estimate for the ratio of \hat{Y}_h to X_h in stratum

h

\hat{Y}_h = estimated total for variable Y in stratum h,
given by formula (1)

\hat{X}_h = estimated total for variable X in stratum h,
given by formula (2)

Estimator of variance for ratio

The variance of a ratio is given by

$$v(\hat{R}_h) = \frac{1}{\hat{X}_h^2} [v(\hat{Y}_h) + \hat{R}_h^2 v(\hat{X}_h) - 2\hat{R}_h \text{cov}(\hat{X}_h, \hat{Y}_h)] \quad (3)$$

Coefficient of variation of ratio

The coefficient of variation of ratio is defined as:

$$cv = \frac{\sqrt{v(\hat{R}_h)}}{\hat{R}_h} \times 100$$

Confidence Interval for Total

The confidence interval (CI) for a total is:

$$CI_{(1-\alpha)} = \hat{Y} \pm t_{(1-\alpha)} \hat{SE}$$

Where:

\hat{Y} = estimate of a population total.

$t_{(1-\alpha)}$ = level of probability under the normal distribution, with α the acceptable level of error.

\hat{SE} = $\sqrt{v(\hat{Y})}$ = standard error of a total.

APPENDIX - III

STANDARD ERROR AND COEFFICIENT OF VARIATION
FOR AREA AND PRODUCTION FORECAST

APPENDIX III STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF AREA AND PRODUCTION, OF MAJOR CROPS, 1997/98 (1990 E.C.)

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF AREA AND PRODUCTION, OF MAJOR CROPS, ETHIOPIA 1997/98 (1990 E.C.)

NATIONAL

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|----------------|----------------|----------|----------------------|----------------|----------|
| TEFF | 1532.31 | 76.93 | 5.02 | 12597.81 | 800.57 | 6.35 |
| BARELY | 594.37 | 43.70 | 7.35 | 5664.69 | 525.05 | 9.27 |
| WHEAT | 683.66 | 51.36 | 7.51 | 8218.51 | 795.71 | 9.68 |
| MAIZE | 992.27 | 49.10 | 4.95 | 12959.46 | 839.03 | 6.47 |
| SORGHUM | 801.94 | 58.86 | 7.34 | 8649.48 | 741.34 | 8.57 |
| MILLET | 259.74 | 31.32 | 12.06 | 2326.73 | 323.04 | 13.88 |
| OATS | 37.55 | 9.92 | 26.43 | 515.23 | 159.76 | 31.01 |
| HORSEBEANS | 252.68 | 18.64 | 7.38 | 2345.73 | 211.52 | 9.02 |
| FIELDPEAS | 120.95 | 13.26 | 10.96 | 785.36 | 100.30 | 12.77 |
| HARICOTBEANS | 72.33 | 11.87 | 16.41 | 370.39 | 72.84 | 19.66 |
| CHICKPEAS | 152.90 | 26.09 | 17.07 | 1327.05 | 267.86 | 20.18 |
| LENTILS | 47.64 | 12.70 | 26.66 | 255.91 | 71.72 | 28.02 |
| VECTH | 140.57 | 50.65 | 36.03 | 2534.87 | 1543.54 | 60.89 |
| NEUG | 200.04 | 27.02 | 13.51 | 532.21 | 97.23 | 18.27 |
| LINSEED | 111.95 | 16.73 | 14.94 | 399.55 | 62.36 | 15.61 |
| RAPESEED | 7.64 | 2.54 | 33.27 | 80.55 | 37.01 | 45.94 |
| GROUDNUTS | 13.70 | 5.23 | 38.17 | 20.11 | 11.07 | 55.06 |
| SUNFLOWER | 2.16 | 0.64 | 29.70 | 9.05 | 2.57 | 28.40 |
| SEASAME | 19.45 | 7.59 | 39.04 | 76.63 | 29.54 | 38.55 |
| FENUGREEK | 26.95 | 10.26 | 38.06 | 195.70 | 80.53 | 41.15 |
| TOTAL | 6070.80 | 524.41 | 8.64 | 59865.02 | 6772.59 | 11.31 |

NOTE: For estimates of area and production with CV greater than or equal to 30 %, users are advised to use them cautiously. Because the higher the CV the more unreliable the estimate will be.

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF AREA AND PRODUCTION, OF MAJOR CROPS, 1997/98 (1990 E.C.)

TIGRAY

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|----------------|----------------|----------|----------------------|----------------|----------|
| TEFF | 122.02 | 15.52 | 12.72 | 861.97 | 181.85 | 21.10 |
| BARELY | 68.84 | 10.63 | 15.44 | 584.20 | 91.00 | 15.58 |
| WHEAT | 53.74 | 9.14 | 17.00 | 395.42 | 70.54 | 17.84 |
| MAIZE | 49.86 | 8.02 | 16.09 | 588.01 | 133.08 | 22.63 |
| SORGHUM | 128.23 | 30.59 | 23.85 | 1224.23 | 296.95 | 24.26 |
| MILLET | 72.63 | 17.73 | 24.42 | 548.45 | 126.67 | 23.10 |
| OATS | 0.02 | 0.02 | 100.00 | 0.00 | 0.00 | ** |
| HORSEBEANS | 9.65 | 2.81 | 29.12 | 61.24 | 22.54 | 36.80 |
| FIELDPEAS | 4.04 | 1.67 | 41.24 | 24.11 | 12.61 | 52.28 |
| HARICOTBEANS | 0.44 | 0.26 | 58.22 | 0.79 | 0.45 | 56.92 |
| CHICKPEAS | 8.24 | 3.52 | 42.71 | 74.75 | 35.07 | 46.92 |
| LENTILS | 4.41 | 1.44 | 32.72 | 10.59 | 3.64 | 34.33 |
| VECTH | 4.13 | 1.35 | 32.70 | 40.53 | 15.15 | 37.37 |
| NEUG | 2.35 | 1.36 | 57.71 | 0.00 | 0.00 | ** |
| LINSEED | 8.17 | 2.63 | 32.22 | 23.54 | 8.75 | 37.17 |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.13 | 0.13 | 100.00 | 0.00 | 0.00 | ** |
| SEASAME | 3.90 | 3.68 | 94.27 | 13.38 | 12.76 | 95.31 |
| FENUGREEK | 0.71 | 0.60 | 85.19 | 3.62 | 3.41 | 94.05 |

Abbreviations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARDERD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

AFAR

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|----------------|----------------|----------|----------------------|----------------|----------|
| TEFF | 2.06 | 0.78 | 38.11 | 6.81 | 2.94 | 43.15 |
| BARELY | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| WHEAT | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| MAIZE | 4.09 | 2.98 | 72.76 | 34.63 | 28.74 | 82.99 |
| SORGHUM | 2.40 | 0.84 | 35.22 | 11.29 | 5.01 | 44.41 |
| MILLET | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| OATS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HORSEBEANS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FIELDPEAS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HARICOTBEANS | 0.44 | 0.36 | 83.01 | 0.00 | 0.00 | ** |
| CHICKPEAS | 0.24 | 0.11 | 44.84 | 0.46 | 0.20 | 43.46 |
| LENTILS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| LINSEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.08 | 0.05 | 56.06 | 0.04 | 0.03 | 87.30 |
| SEASAME | 0.14 | 0.08 | 60.25 | 0.08 | 0.08 | 100.00 |
| FENUGREEK | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |

Abbriiations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARDERD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

AMHARA

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|----------------|----------------|----------|----------------------|----------------|----------|
| TEFF | 645.86 | 44.56 | 6.90 | 4915.98 | 407.99 | 8.30 |
| BARELY | 196.54 | 20.61 | 10.49 | 1408.25 | 208.38 | 14.80 |
| WHEAT | 142.95 | 19.56 | 13.68 | 1350.09 | 233.29 | 17.28 |
| MAIZE | 225.40 | 20.08 | 8.91 | 3167.76 | 440.23 | 13.90 |
| SORGHUM | 307.93 | 42.03 | 13.65 | 2567.86 | 379.98 | 14.80 |
| MILLET | 135.98 | 24.45 | 17.98 | 1369.33 | 283.47 | 20.70 |
| OATS | 4.54 | 1.84 | 40.58 | 35.55 | 14.75 | 41.50 |
| HORSEBEANS | 87.00 | 9.50 | 10.92 | 624.54 | 81.72 | 13.08 |
| FIELDPEAS | 34.05 | 6.31 | 18.53 | 208.52 | 50.99 | 24.45 |
| HARICOTBEANS | 6.60 | 2.95 | 44.67 | 44.19 | 17.47 | 39.53 |
| CHICKPEAS | 88.67 | 18.80 | 21.21 | 721.89 | 172.29 | 23.87 |
| LENTILS | 13.69 | 3.57 | 26.11 | 77.29 | 27.20 | 35.20 |
| VECTH | 98.50 | 49.68 | 50.44 | 1940.35 | 1534.53 | 79.07 |
| NEUG | 94.89 | 18.43 | 19.42 | 269.38 | 69.58 | 25.83 |
| LINSEED | 26.34 | 6.62 | 25.13 | 75.87 | 18.15 | 23.92 |
| RAPESEED | 2.40 | 0.70 | 29.05 | 18.43 | 5.66 | 30.71 |
| GROUNDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 1.89 | 0.63 | 33.06 | 8.87 | 2.57 | 28.94 |
| SEASAME | 8.19 | 6.31 | 76.98 | 39.32 | 25.14 | 63.94 |
| FENUGREEK | 7.20 | 2.62 | 36.40 | 42.07 | 13.70 | 32.57 |

Abbriiations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARDER ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS, 1997/98(1990 E.C)

OROMIYA

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 654.26 | 59.69 | 9.12 | 5972.74 | 654.75 | 10.96 |
| BARELY | 282.73 | 36.10 | 12.77 | 3268.26 | 459.42 | 14.06 |
| WHEAT | 404.22 | 45.19 | 11.18 | 5437.80 | 741.74 | 13.64 |
| MAIZE | 513.16 | 39.79 | 7.75 | 6722.47 | 632.48 | 9.41 |
| SORGHUM | 244.81 | 25.44 | 10.39 | 3946.20 | 553.79 | 14.03 |
| MILLET | 40.91 | 7.81 | 19.08 | 345.67 | 86.65 | 25.07 |
| OATS | 32.74 | 9.75 | 29.78 | 478.82 | 159.07 | 33.22 |
| HORSEBEANS | 127.18 | 15.35 | 12.07 | 1364.37 | 189.35 | 13.88 |
| FIELDPEAS | 62.81 | 11.06 | 17.61 | 405.38 | 80.94 | 19.97 |
| HARICOTBEANS | 45.77 | 10.63 | 23.23 | 260.04 | 68.92 | 26.50 |
| CHICKPEAS | 51.18 | 17.66 | 34.51 | 497.71 | 201.39 | 40.46 |
| LENTILS | 28.82 | 12.10 | 41.98 | 162.76 | 66.24 | 40.70 |
| VECTH | 37.29 | 9.76 | 26.17 | 543.11 | 165.72 | 30.51 |
| NEUG | 87.98 | 19.28 | 21.91 | 228.23 | 67.13 | 29.41 |
| LINSEED | 76.31 | 15.12 | 19.82 | 297.80 | 59.01 | 19.81 |
| RAPESEED | 4.89 | 2.43 | 49.73 | 62.13 | 36.57 | 58.81 |
| GROUNDNUTS | 8.98 | 4.78 | 53.16 | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.02 | 0.02 | 100.00 | 0.04 | 0.04 | 100.00 |
| SEASAME | 1.13 | 0.71 | 62.55 | 0.66 | 0.55 | 83.14 |
| FENUGREEK | 18.55 | 9.90 | 53.35 | 147.69 | 79.28 | 53.68 |

Abbriviations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

SOMALIE

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 0.07 | 0.07 | 100.00 | 92.00 | 0.92 | 100.00 |
| BARELY | 2.84 | 1.15 | 40.68 | 4.96 | 2.32 | 46.73 |
| WHEAT | 1.82 | 0.80 | 43.94 | 3.46 | 2.60 | 75.18 |
| MAIZE | 10.07 | 2.21 | 21.93 | 21.93 | 8.62 | 39.29 |
| SORGHUM | 10.90 | 3.70 | 33.97 | 44.53 | 19.24 | 43.20 |
| MILLET | 0.17 | 0.17 | 100.00 | 0.00 | 0.00 | ** |
| OATS | 0.02 | 0.02 | 100.00 | 0.00 | 0.00 | ** |
| HORSEBEANS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FIELDPEAS | 0.08 | 0.08 | 100.00 | 0.50 | 0.50 | 100.00 |
| HARICOTBEANS | 0.09 | 0.06 | 70.58 | 0.48 | 0.34 | 70.72 |
| CHICKPEAS | 0.15 | 0.11 | 71.11 | 0.61 | 0.43 | 71.22 |
| LENTILS | 0.15 | 0.15 | 100.00 | 1.28 | 1.28 | 100.00 |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| LINSEED | 0.02 | 0.02 | 100.00 | 0.06 | 0.04 | 70.00 |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUNDNUTS | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SEASAME | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | ** |
| FENUGREEK | 0.08 | 0.08 | 100.00 | 0.58 | 0.56 | 97.04 |

Abbriviations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

BENSHANGUL- GUMEZ

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 13.60 | 3.30 | 24.28 | 78.87 | 45.58 | 57.79 |
| BARELY | 0.22 | 0.22 | 100.00 | 2.35 | 2.35 | 100.00 |
| WHEAT | 2.22 | 2.22 | 100.00 | 31.89 | 31.89 | 100.00 |
| MAIZE | 23.82 | 5.65 | 23.71 | 406.97 | 18.40 | 29.09 |
| SORGHUM | 30.88 | 5.97 | 19.34 | 308.78 | 76.27 | 24.70 |
| MILLET | 3.69 | 1.61 | 43.92 | 28.53 | 12.10 | 42.43 |
| OATS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HORSEBEANS | 1.03 | 0.67 | 65.40 | 9.11 | 6.59 | 72.32 |
| FIELDPEAS | 0.15 | 0.15 | 100.00 | 0.95 | 0.94 | 98.48 |
| HARICOTBEANS | 1.12 | 0.69 | 61.34 | 6.54 | 4.12 | 62.94 |
| CHICKPEAS | 1.30 | 1.11 | 88.08 | 3.76 | 3.42 | 90.97 |
| LENTILS | 0.05 | 0.05 | 100.00 | 2.03 | 2.03 | 100.00 |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 14.62 | 4.14 | 28.30 | 34.61 | 10.36 | 29.94 |
| LINSEED | 0.42 | 0.26 | 60.64 | 1.15 | 0.83 | 72.28 |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUNDNUTS | 4.07 | 2.13 | 52.27 | 18.33 | 11.01 | 60.09 |
| SUNFLOWER | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SEASAME | 5.41 | 1.87 | 34.63 | 23.17 | 8.80 | 37.98 |
| FENUGREEK | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |

Abbriations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

S.N.N.P.R

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 91.58 | 10.81 | 11.81 | 718.55 | 102.34 | 14.24 |
| BARELY | 43.01 | 8.21 | 19.08 | 393.61 | 113.54 | 28.84 |
| WHEAT | 76.51 | 11.51 | 14.54 | 963.08 | 150.02 | 15.58 |
| MAIZE | 159.35 | 17.52 | 11.00 | 1933.94 | 276.06 | 14.27 |
| SORGHUM | 68.28 | 7.98 | 11.69 | 472.51 | 62.40 | 13.21 |
| MILLET | 6.19 | 2.23 | 37.19 | 33.14 | 17.44 | 52.62 |
| OATS | 0.22 | 0.15 | 68.90 | 0.79 | 0.64 | 81.02 |
| HORSEBEANS | 27.75 | 3.63 | 13.08 | 285.86 | 40.73 | 14.25 |
| FIELDPEAS | 11.80 | 3.28 | 16.58 | 145.86 | 27.37 | 18.77 |
| HARICOTBEANS | 17.74 | 4.30 | 24.24 | 57.80 | 15.25 | 26.79 |
| CHICKPEAS | 2.55 | 1.27 | 49.70 | 19.23 | 15.98 | 83.11 |
| LENTILS | 0.20 | 0.13 | 64.85 | 0.96 | 0.67 | 69.64 |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 0.20 | 0.20 | 100.00 | 0.00 | 0.00 | ** |
| LINSEED | 0.66 | 0.59 | 89.04 | 1.09 | 1.00 | 91.74 |
| RAPESEED | 0.34 | 0.22 | 62.61 | 0.00 | 0.00 | ** |
| GROUNDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.04 | 0.04 | 100.00 | 0.10 | 0.10 | 100.00 |
| SEASAME | 0.03 | 0.03 | 100.00 | 0.00 | 0.00 | ** |
| FENUGREEK | 0.28 | 0.18 | 67.92 | 0.66 | 0.45 | 67.97 |

Abbriations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS, 1996/97 (1989 E.C)

GAMBELA

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | - | - | - | 0.02 | 0.02 | 99.99 |
| BARELY | - | - | - | - | - | - |
| WHEAT | - | - | - | - | - | - |
| MAIZE | 3.94 | 1.47 | 37.42 | 142.44 | 68.54 | 48.12 |
| SORGHUM | 2.23 | 0.48 | 21.59 | 61.41 | 18.67 | 30.40 |
| MILLET | 0.01 | 0.01 | 100.00 | 0.21 | 0.21 | 99.22 |
| OATS | - | - | - | - | - | - |
| HORSEBEANS | - | - | - | - | - | - |
| FIELDPEAS | - | - | - | - | - | - |
| HARICOTBEANS | 0.01 | 0.01 | 64.71 | 0.11 | 0.07 | 64.11 |
| CHICKPEAS | - | - | - | - | - | - |
| LENTILS | - | - | - | - | - | - |
| VECTH | - | - | - | - | - | - |
| NEUG | - | - | - | - | - | - |
| LINSEED | - | - | - | - | - | - |
| RAPESEED | - | - | - | - | - | - |
| GROUNDNUTS | 0.02 | 0.01 | 58.31 | 0.01 | 0.01 | 87.76 |
| SUNFLOWER | - | - | - | - | - | - |
| SEASAME | 0.38 | 0.33 | 85.91 | 3.19 | 2.58 | 81.01 |
| FENUGREEK | - | - | - | - | - | - |

Abbreviations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARD ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS, 1997/98 (1990 E.C)

HARARI

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| BARELY | 0.01 | 0.00 | 0.00 | 0.02 | 0.02 | 100.00 |
| WHEAT | 0.05 | 0.02 | 37.71 | 0.23 | 0.09 | 40.34 |
| MAIZE | 0.82 | 0.09 | 10.89 | 6.01 | 0.78 | 12.96 |
| SORGHUM | 2.47 | 0.22 | 9.02 | 14.95 | 1.97 | 13.18 |
| MILLET | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| OATS | 0.00 | 0.00 | ** | 0.02 | 0.01 | 76.96 |
| HORSEBEANS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FIELDPEAS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HARICOTBEANS | 0.00 | 0.00 | ** | 0.01 | 0.01 | 100.00 |
| CHICKPEAS | 0.00 | 0.00 | ** | 0.02 | 0.02 | 100.00 |
| LENTILS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| LINSEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUNDNUTS | 0.58 | 0.12 | 20.95 | 1.78 | 1.17 | 66.07 |
| SUNFLOWER | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SEASAME | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FENUGREEK | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |

Abbreviations.

S.E. = Standard Error

C.V. = Coefficient of Variation

- Insignificant or not available

STANDARDER ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

ADDIS ABABA

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 2.87 | 0.64 | 22.43 | 41.96 | 11.03 | 26.27 |
| BARELY | 0.19 | 0.12 | 62.92 | 3.03 | 2.28 | 75.15 |
| WHEAT | 2.15 | 0.47 | 21.88 | 36.54 | 6.83 | 18.69 |
| MAIZE | 0.00 | 0.00 | ** | 0.01 | 0.01 | 100.00 |
| SORGHUM | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| MILLET | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| OATS | 0.00 | 0.00 | ** | 0.05 | 0.03 | 66.32 |
| HORSEBEANS | 0.08 | 0.06 | 73.78 | 0.60 | 0.45 | 74.63 |
| FIELDPEAS | 0.00 | 0.00 | ** | 0.05 | 0.05 | 100.00 |
| HARICOTBEANS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| CHICKPEAS | 0.56 | 0.20 | 34.99 | 8.62 | 2.70 | 31.37 |
| LENTILS | 0.32 | 0.10 | 30.56 | 3.00 | 0.76 | 25.19 |
| VECTH | 0.66 | 0.31 | 46.95 | 10.87 | 24.20 | 38.59 |
| NEUG | 0.02 | 0.01 | 62.94 | 0.00 | 0.00 | ** |
| LINSEED | 0.00 | 0.00 | ** | 0.05 | 0.04 | 69.19 |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUNDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SEASAME | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FENUGREEK | 0.13 | 0.04 | 31.52 | 1.09 | 0.36 | 33.19 |

Abbriviations.

S.E.= Standard Error

C.V.= Coefficient of Variation

- Insignificant or not available

STANDARDER ERROR AND COEFFICIENT OF VARIATION FOR FORECAST OF
AREA AND PRODUCTION, OF MAJOR CROPS,1997/98(1990 E.C)

DIREDAWA

| TYPE OF CROP | AREA (000' HA) | S.E. (000' HA) | C.V. (%) | PRODUCTION (000' QT) | S.E. (000' QT) | C.V. (%) |
|--------------|-------------------|-------------------|-------------|-------------------------|-------------------|-------------|
| TEFF | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| BARELY | 0.00 | 0.00 | ** | 0.01 | 0.01 | 100.00 |
| WHEAT | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| MAIZE | 0.07 | 0.02 | 34.84 | 0.27 | 0.16 | 59.68 |
| SORGHUM | 3.50 | 0.62 | 17.83 | 15.09 | 2.35 | 15.57 |
| MILLET | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| OATS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HORSEBEANS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FIELDPEAS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| HARICOTBEANS | 0.05 | 0.03 | 56.80 | 0.11 | 0.05 | 45.65 |
| CHICKPEAS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| LENTILS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| VECTH | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| NEUG | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| LINSEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| RAPESEED | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| GROUNDNUTS | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SUNFLOWER | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| SEASAME | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |
| FENUGREEK | 0.00 | 0.00 | ** | 0.00 | 0.00 | ** |

Abbriviations.

S.E.= Standard Error

C.V.= Coefficient of Variation

- Insignificant or not available

APPENDIX - IV

NUMBER OF FIELDS MEASURED UNDER MAJOR CROPS

APPENDIX IV. NUMBER OF FIELDS MEASURED UNDER MAJOR CROP II
1997/98 (1990 E.C.) CROP PRODUCTION FORECAST SURVEY

| REGION | REPORTING LEVEL (STRATA) | NUMBER OF FIELDS MEASURED |
|-------------------|--------------------------------------|---------------------------|
| TIGRAY | TIGRAY | 2853 |
| AFAR | AFAR | 440 |
| AMHARA | N & S.GONDER | 1618 |
| | AGEWAWI, E & W.GOJAM | 2370 |
| | N.WOLLO & WAGHAMRA | 1387 |
| | S.WOLLO, OROMIA & N.SHEWA | 2298 |
| | TOTAL | 7673 |
| OROMIA | E & W.WELLEGA | 2265 |
| | ILLUBABOR & JIMMA | 2165 |
| | N & W.SHEWA | 2183 |
| | E.SHEWA, ARSI, BALE & BORENA | 3308 |
| | E.W.HARARGHE | 1421 |
| | TOTAL | 11342 |
| SOMALE | SOMALE | 708 |
| BENSHANGULE-GUMEZ | BENESHANGULE-GUMEZ | 1296 |
| S.N.N.P.R | YEM, KEFICHO, MAJI, SHEKICHO & BENCH | 2349 |
| | N & S.OMO, DERASHE & KONSO | 2006 |
| | HADIYA, KEMBATA & GURAGE | 2006 |
| | SIDAMA, GEDIO, BURJI & AMARO | 2579 |
| | TOTAL | 8940 |
| GAMBELA | GAMBELA | 680 |
| HARARI | HARARI | 2801 |
| ADDIS ABABA | ADDIS ABABA | 942 |
| DIRE DAWA | DIRE DAWA | 517 |
| | GRAND TOTAL | 38192 |

APPENDIX - IV

NUMBER OF FIELDS MEASURED UNDER MAJOR CROPS

