I. INTRODUCTION AND OBJECTIVES OF THE SURVEY

1.1 INTRODUCTION

Country's experience showed that farmers' attitude and tendency to adopte and accept new innovations, modern agricultural techniques and technologies, such as use of fertilizers, irrigation, improved seeds and pesticides that help to improve their living standards through attaining inhanced productivity, do have positive or negative impact on the development of the agricultural sector as a whole.

The extent of adopting modern agricultural practices, such as utilization of fertilizer, irrigation, pesticides and improved seeds, by the peasant farmers can be considered as important indicators for estimating the rate of adoption of modern technologies.

This report which is volume VI of the six series reports, presents quantitative information about the use of modern agricultural inputs for Belg season crops of 2003/04 (1996 E.C.) of the private peasant holdings for the country and regions as it was obtained from the results of the Belg Season Crop Production Sample Survey conducted in June, 2004 by Central Statistical Authority (CSA).

1.2 Objectives of the 2003/04 (1996 E.C) Belg Season Crop Production Sample Survey

The objectives of the 2003/04 (1996 E.C.) Belg Season Crop Production Sample Survey is to produce basic quantitative information on cropland area, production and yield, of major Belg season crops, as well as to provide quantitative information on:-

- Cropland area, production and Yield of major belg season crops
- The extent and use of different farm management practices on belg season crops such as fertilized crop land area and quantity of fertilizer used by crop and fertilizer type, irrigated crop land area under improved seed, pesticide treated cropland area … etc.

The adequate and timely supply of this information to ultimate users is therefore, important for use as a primary input in the process of policy formulation, designing developmental agricultural projects and programmmes. This report therefore, presents quantitative information on the above-mentioned major variables at country and regional levels.

II.Survey Methodology, Data Collection and Processing

2.1 Scope and Coverage

The 2003/04 (1996 E.C) Annual Agricultural Sample Survey (Belg season) covered the entire rural parts of the country except three zones of Afar regional state and six zones of Somali regional state where its inhabitants are predominantly pastoralists. Accordingly, the survey took into account of all parts of Harari, Addis Ababa and Dire Dawa, and 58 additional Zones / Special weredas (that are treated as zones) of other regions. Besides, the survey could not also be accomplished in all the zones of Gambella region.

To be covered by the survey, a total of 2,072 enumeration areas were selected initially, however, due to various reasons that are beyond the control of the CSA, totally 59 EA's (56 EA's in Gambella region and 3 EA's from other regions) were not covered and the survey was successfully carried out in 2,013 (97.15 %) EA's. As regards the ultimate sampling unit, it was planned to conduct the survey on 51,800 agricultural households, however, 49,803 (96.14 %) agricultural households were actually covered by the Belg season agricultural sample survey. Distribution of the number of sampling units (planned and covered) by reporting level is presented in Table 1 below.

Table 1. Number of Zones / Strata Covered, Planned and Covered Enumeration Areas & Households by reporting level.

Reporting level	Number of Zones Covered	Enumeration Areas		Households	
		Planned	Covered	Planned	Covered
Tigray	5	164	163	4100	4045
Afar	2	56	56	1400	1350
Amhara	10	396	395	9900	9806
Oromia	14	536	536	13400	13222
Somali	3	84	84	2100	2070
Benishangul-Gumuz	3	84	84	2100	2056
SNNP	21	624	623	15600	15477
Gambella	-	56	-	1400	-
Harari*	1	24	24	600	597
Addis Ababa*	1	24	24	600	582
Dire Dawa*	1	24	24	600	598
Total	**61**	**2072**	**2013**	**51800**	**49803**

**** = Values for these regions refer only the number of strata (domain of estimation)***

2.2 Sample Design

A stratified two-stage cluster sample design was used to select the sample. Enumeration Areas (EA's) were taken to be the primary sampling units (PSU's) and the secondary sampling units (SSU's) were agricultural households. Sample enumeration areas from each stratum were sub-samples of the 2001/02 (1994 E.C) Ethiopian Agricultural Sample Enumeration. They were selected using probability proportional to size systematic sampling; size being number of agricultural households obtained from the 1994 Population & Housing Census and adjusted for the sub-sampling effect. Within each sample EA a fresh list of households was prepared and 25 agricultural households from each sample EA were systematically selected at the second stage. The survey questionnaire was finally administered for those 25 agricultural households selected at the second stage. Information on area under crops, Belg season production of crops, agricultural practices, crop damage, and quantity of agricultural inputs used were obtained from the 25 households that were ultimately selected.

The sample size for the 2003/04 Agricultural Sample Survey was determined by taking into account of both the required level of precision for the most important estimates within each domain and the amount of resources allocated to the survey. In order to reduce non-sampling errors manageability of the survey in terms of quality and operational control was also in addition considered.

Except Harari, Addis Ababa and Dire Dawa, where the region as a whole was taken to be the domain of estimation, each zone of a region / special wereda that is considered to be a zone by itself was adopted as a stratum for which major findings of the survey are computed. However, by aggregating the results obtained from each zone the final report was presented only at regional and country level.

Estimation procedures for totals and ratios and their sampling errors are given in Appendix I. Estimates of Standard Errors and Coefficient of Variations for selected estimates are also presented in Appendix II.

2.3 Field Organization

The Central Statistical Authority (CSA) branch statistical office heads, field supervisors and enumerators, other supporting staff and drivers were all involved in the field operation activities of the 2003/04(1996 E.C.) Belg season Crop Production Sample survey. To accomplish the data

collection activities, all field enumerators were equipped with the necessary survey equipment (i.e. compass, programmable calculator, protractor, ruler, measuring tape, balance scale, iron peg, ropes, sample bags…etc) at the completion of training. To assist with the field work and data collection activities all available four-wheel drive vehicles were used for supervision and collection of completed questionnaires.

2.4 Training of Field Staff

The field staff-training program was carried out in two stages. The first stage consisted of trainees from the head office, branch statistical office heads, statisticians and some of the field supervisors have been given training for one week at CSA's headquarters in Addis Ababa. Many of those trained in the first stage conducted similar training for field supervisors and enumerators for 10 days in CSA's 24 branch offices, which are distributed all over the country. During the second stage training, the field staff were given detailed classroom instruction on the objectives and uses of the Agricultural Sample Survey (AgSS) concepts, definitions of terms used, the method of area measurement, method of crop cutting, as well as correct interviewing procedures, … etc. The enumerator's and supervisors' training also included a field practice to reinforce the concepts discussed in the classroom with regard to field measurement and crop cutting data collection.

2.5 Methods of Data Collection.

Except Cropland area of major Belg Season Crop, the data of which collected objectively using compasses and measuring tape, the information on production of major Belg Season crops and agricultural practices (uses of fertilizer, pesticide, improved seed and irrigation) were subjectively collected by interviewing the holders of sampled households. **Appendix II,** illustrates the total number of EAs and households reporting for the 2003/04 (1996E.C) Belg crop productions by region.

A major characteristic of Ethiopian agriculture is the existence of two well-known crop production seasons referred to as the Meher (or main) and Belg Seasons. The generally accepted definition of the Meher season is that of the long rainy season, which normally occurs from June to September. The Belg Season most often refers to small but timely rainy season, which normally occurs from February to May but in limited areas of the country. Generally, the Meher Season rainy period provides ideal growing conditions for the longer maturing crops. Planting and harvest of Meher

crops can extend to December or January in some areas. Most of the time holders rely on short maturing crops for planting during the Belg rainy period and harvest of the crops is in June or July.

A point of contention arises with respect to the pure definition of the Belg crop. Belg cropping practices are heterogeneous across different portions of the country. The nature of the sowing period also overlaps with some of the Meher Season crops. Consequently, the report on Belg Season crops in the past faced a problem of a clearly defined growing period. It is important not to overlook or miss agricultural practices performed all year round due to use of irrigation or soil moister from sufficiently dried areas that from time-to-time are swampy or marshy. To help clarify the two-crop season, the following definition has been in use since 1987/88:

Belg Season Crops were defined as any crops that are harvested during the months of March to August, while those crops that are harvested during September to February are considered Meher (or main) season crops.

This report consists of estimates of area, production and yield per hectare of major Belg Season crops for the year 2003/04 (1996 E.C). The data collection period for obtaining the area, production and agricultural practices of the Belg season crops ranged from 'Sene' 15-30, 1996 E.C. (i.e. From June 23 to July 7, 2004). Data on area under Belg season crop are collected objectively using compass and measuring tapes, while data on production of belg season crops were using subjective method based on face-to-face interviewing of the holder by the enumerator. Data on production of belg season crops are usually reported in local production measuring units that require conversion to an equivalent metric unit using the conversion factors available for local units at Wereda level prepared by CSA. The conversions factors have been constructed from experimentally derived data using actual holder production data associated with each local unit.

2.6 Data Processing

a. Editing, Coding and Verifcation

To insure the quality of the collected survey data an editing, coding, and verification instruction manual was written, and seventeen editors, data coders and verifiers were trained for one day to edit, code and verify the data using the aforementioned manual as a reference and teaching aid.

The enumerator completed, edited and coded questionnaires sent to the head office were thoroughly verified by trained verifiers on a 100% basis before the questionnaires were sent to data entry unit. The editing, coding, verification and data entry of all questionnaires was completed in thirty-one days.

b. Data Entry, Cleaning and Tabulation

Before starting data entry computer edit specifications were prepared for use on personal computers utilizing the Integrated Microcomputer Processing System (IMPS) Software for data consistency checking purposes.

The data on the coded questionnaires were then entered into the IMPS software on personal computers. The data was then checked and cleaned using the computer edit specifications prepared earlier for this purpose. Fifty-six data encoders were involved in this total process and it took fourteen days to complete the job. Finally, tabulation was done on personal computers to produce results as indicated in the tabulation plan.

2.7 BASIC CONCEPTS AND DEFINITIONS

For better understanding and ultimate use of the data presented in this report, the definitions of concepts and terminology used for the collection of all types of data of the 2003/04 (1996 E.C.) Belg season Crop Production Sample survey are presented here below:-

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

Household:- A household may be either;

a) a one person household, that is a person who makes provision for his own food or other essentials for living without combining with any other person to form part of a multi person household or
b) a multi person household, that is, a group of two or more persons who live together and make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to greater or lesser extent. They may be related unrelated persons, or a combination of both.

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

Holder:- A holder is a person who exercises management control over the operations of the agricultural holding and takes the major decision regarding the utilization of the available resources. He has technical and economic responsibility for the holding. He may operate the holding directly as an owner or as a manager.

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

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

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

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

Belg Season Crops:- are defined as any crops that are harvested during the months of March (Megabit) to August (Nehase).

Meher Season Crops:- are those crops that are harvested during September (Meskerem) to February (Yekatit) are considered as main (Meher) season crops.

Irrigated area:- refers to the area of land purposely and actually provided with water, other than by rain, for improving the production of crops. The uncontrolled flooding of land by the over flow of rivers or streams is not categorized as irrigation practice although sometimes farmers use this incidence for production.

Improved Seed: is defined as crop variety which gives significantly higher yield, better quality and/or better benefit compared to traditional varieties of seeds, and usually produced by the Ethiopian Seed Enterprise (ESE) in Ethiopia.

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

Pesticides: Pesticides are chemicals useful for the mitigation, control or elimination of pests which are trouble some or harmful to crop. Insecticides, herbicides and fungicides are all considered as pesticides.

III. SUMMARY OF THE RESULTS OF THE 2003/04 (1996 E.C.) FARM MANAGEMENT PRACTICES OF BELG SEASON SURVEY

In this part of the report, the results of the 2003/04 (1996 E.C) Belg Season Crop Production Sample Survey on the extent and use of Belg season farm management practices are presented. The following are brief desscusions on the major findings of the survey.

According to 2003/04 (1996 E.C) Belg Season Crop Production Sample Survey results, it was estimated that Belg season major crops covered 897.42 thousand hectares of land, where 3.52 million holders were engaged in the production activity. Of this total area under Belg season crops 217.75 thousand hectares (43.53%) was under the use of improved farm management practices in which 915.37 (34.42%) thousand agricultural holders reported for utilizing different agricultural inputs. Moreover, in 2003/04 (1996 E.C) it was estimated that a total of 69,010 quintals of commercial fertilizers was utilized for Belg season crop production.

Summary Table A: Total Cropland Area and Number of holdersengaged in 2003/04(1996 e.c.) belg season crop production activity

• Belg crop Area (`000 ha)	897.42
• Number of Belg Crop Producing Holders (in million)	3.52
• Improved Farm Management practices (`000 ha)	318.72
• Number of holders reporting the use of farm management practices (in million)	2.21
• Quantity of commercial fertilizer applied (`000 qt.)	395.12

3.1 Total Area Under Different Farm Management Practices

According to the 2003/04 (1996 E.C) Belg season Crop Production Sample Survey results, it was estimated that Belg season crops covered about 897.42 thousands hectares of land. Of this total, 318.72 hectares (35.52%) was under the use of improved farm management practices. Moreover, of the above mentioned total cropland area under improved farm inputs, 247.41 thousand hectares (77.63%) was under fertilizer (Both Natural and Commercial), 31.31 thousand hectares (9.82%) was under irrigation, 27.36 thousand hectares (8.58%) was treated with pesticides and 12.64 thousand hectares (3.97%) was under improved seeds. The coverage of the above mentioned farm management practices accounted for 27.57%, 3.49%, 3.05% and 1.41% of the total area under Belg season crops respectively. (See Summary Table B).

Summary Table B. Total Area Under Improved Farm Management Practices For Belg Season Crops of Private Holdings in Ethiopia 2003/04 (1996 E.C.)

TYPE OF FARM MANAGEMENT PRACTICES	TOTAL AREA IN '000HA.	%	% FROM TOTAL BELG CROP AREA
IRRIGATION	31.31	9.82	3.49
IMPROVED SEEDS	12.64	3.97	1.41
FERTILIZER	247.41	77.63	27.57
PESTICIDES	27.36	8.58	3.05
TOTAL	**318.72**	**100.00**	**35.52**

The estimate of total cropland area under different farm management practices for Belg season crops of 2003/04 (1996 E.C**)** is presented in Summary Table C. As it is indicated in the summary Table, the highest proportion of cropland area under different farm management practices was reported to be covered by Cereals, which accounted for 786.55 thousand hectares (87.65%). Furthermore, about 101.63 thousand hectares (11.32%) was accounted for Belg Pulses and the remaining 9.24 thousands hectares (1.03%) was reported as other Belg crops.

Summary Table C. Total Area Under Improved Farm Management Practices for Belg Season Crops of Private Holdings in Ethiopia, 2003/04 (1996 E.C.)

CROP TYPE	TOTAL BELG CROP AREA		CROPLAND AREA UNDER IMP. FARM MANAGEMENT PRAC.	
	`000 HA.	**%**	**`000 HA.**	**%**
CEREALS	786.55	87.65	290.79	91.37
PULSES	101.63	11.32	27.02	8.49
OILSEEDS	9.24	1.03	0.43	0.14
GRAINS	**897.42**	**100**	**318.24**	**100**

In all most all Belg producing regions of the country, improved farm inputs were utilized for Belg crop production. As indicated in Summery Table D, the largest area under Belg season crops was reported by Oromiya Region, covering 52.17% (468.19 thousand hectares). The second and third were S.N.N.P.R. and Amhara Regions with the coverage of 31.87% (285.98 thousand hectares) and 11.49% (103.12 thousand hectares) , respectively.

Summary Table D. Total Cropland Area Under Improved Farm Management Practices for Belg seasocrops of private Holdings in Ethiopia, 2003/04 (1996 E.C.)

REGION	TOTAL BELG CROP AREA		CROPLAND AREA UNDER FARM MANAGEMENT PRACTCES	
	`000 HA.	%	`000 HA.	%
Tigray	25.00	2.79	7.49	2.38
Afar	1.24	0.14	*	
Amhara	103.12	11.49	32.64	10.37
Oromia	468.19	52.17	183.82	58.41
Somalie	12.84	1.43	1.02	0.32
Benshangul-Gumz	0.82	0.09	*	
S.N.N.P.R	285.98	31.87	89.54	28.45
Gambela	-	-	-	-
Harari	0.09	0.01	0.07	0.02
Addis Ababa		-	-	-
Dire Dawa	0.15	0.02	0.15	0.05
TOTAL	897.42	100	314.73	100

3.2 Total Cropland Area Under Fertilizer by type

The results of the survey indicate that belg season cropland area under both natural and commercial fertilizers were estimated to be 247.11 thousand hectares, covering 63.55% of the total area under Belg seasons crops of the private holdings. Of the total fertilized area 157.05 thousand hectares (63.55%) was reported to be under natural fertilizers. The coverage of commercial fertilizers was estimated to be 90.36 thousand hectares (36.57 %), constituting of 33.13% DAP, 0.79% UREA and 2.15% mixture of the two fertilizers (DAP+UREA). (For details see Summary Table E.)

SUMMARY TABLE E: TOTAL CROPLAND AREA UNDER FERTILIZER BY TYPE OF FERTILIZER FOR PRIVATEHOLDINGS IN ETHIOPIA, 1998/99 (1991 E.C)

TYPE OF FERTILIZER	FERTILIZAER APPLIED AREA IN		PERCENTAGE FROM TOTAL BELG CROP AREA
	000'HA	%	
NATURAL	157.05	63.35	17.50
COMMERCIAL	90.36	36.57	10.07
DAP	81.87	33.13	9.12
UREA	1.95	0.79	0.22
DAP+UREA	6.54	2.65	0.73
TOTAL	247.11	100	37.64

3.3.1 Use of Natural Fertilizers

In general, the application of natural fertilizers for Belg season crops in 2003/04 (1996 E.C.), varies from crop to crop. Of the total area under fertilizer, the highest proportion was reported for maize crop, which was estimated at 41.30 thousand hectares (54.87 %). The fertilized area (naturalfertilizer) under barley was the second and estimated to be 16.53 thousand hectares (21.96%), while area under haricot beans stood third i.e. 13.21 thousand hectares, 17.55% (see Table 2.1).

3.3.2 Use of Commercial Fertilizers

Out of the total land area under commercial fertilizers in 2003/04 (1996 E.C) Belg season, the area under DAP was the highest which accounted for 81.87% while the mix of the two fertilizers (DAP+UREA) and UREA were covering 2.65 % and 1.95 % of the Belg crop area, respectively (see Fig 3.)

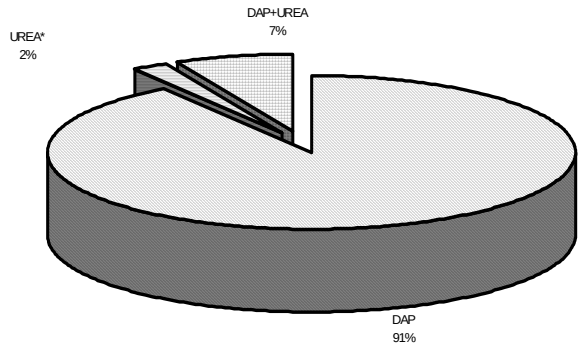
Similarly, the application of commercial fertilizers varied from crop to crop. Of the total area under commercial fertilizers the highest area was reported for barley at 47.77 thousand hectares (54.03%). The second highest area reported under commercial fertilizers was for maize i.e. 15.39 thousand hectares (17.41%).

The regional distribution of both natural and commercial fertilizers application varied from region to region. For instance, of the total area under both (Natural + Commercial) fertilizers, the highest was reported for Oromia Region, which accounted for 142,451 hectares (57.58% of the total), S.N.N.P and Amhara Regions were the second and third to report the highest area under both (Natural and Commercial) fertilizers which were estimated to be 77,383 hectares (31.28%) and 23,056 hectares (9.34%), respectively.

3.4 Total Quantity of Commercial Fertilizer Applied by Type

In 2003/04 (1996 E.C.) the total quantity of commercial fertilizer used for Belg season crop production was estimated at 395,117 quintals. Of this total, the share of DAP was the highest accounting for 98.48% (389,075 quintals). The mixture of the two types of fertilizers (DAP+UREA) was the second highest accounting for 1.52% (6042 quintals). (See Fig 1).

Figure 1. Estimates of total quantity of commercial fertilizer applied by type for Belg season crops of private holdings in Ethiopia, 2003/2004(1996 E.C.)



Note

***** The value of UREA has got a high coefficient of variation, therefore, users are advised to use the estimate with caution.

Table 1: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Ethiopia

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	897419	247411	467213	1479742	157055	257801	81865	389075
Cereals	786550	223744	429288	1390034	142739	215769	74036	358929
Teff	73535	8765	8102	50948	5985	10038	1884	4937
Barley	155305	68579	206192	151575	20607	105639	47041	201816
Wheat	67420	21520	64700	50298	8763	34295	12188	62888
Maize	424001	111738	139391	1182954	96752	100363	10616	79310
Sorghum	52176	9431	1429	46259	9266	*	*	*
Finger millet	*	*	*	3853	*	*	*	*
Oats/ 'Aja'	11797	2982	9397	7490	655	12281	2212	9349
Rice	*	*	-	*	*	-	-	-
Pulse	101627	23233	37925	250250	13883	60023	7829	30146
Horse/Faba beans	1467	254	*	7878	233	*	*	*
Field peas	17202	2243	*	13286	1707	4968	*	*
Haricot beans	57211	17581	33481	212472	9513	50176	6698	26419
Chick peas	13808	2209	*	12825	1865	*	*	*
Lentiles	5744	*	-	5723	*	*	*	-
Vetch/Grass peas	3897	*	*	1734	*	*	*	*
Soya beans	*	*	-	*	*	-	-	-
Fenugreek	1586	*	147	*	*	*	*	67
Gibto	*	-	-	-	-	-	-	-
Oile seeds	9242	434	-	6584	434	-	-	-
Nueg	*	*	-	*	*	-	-	-
Linseed	7620	*	-	1851	*	-	-	-
Ground nuts	*	*	-	*	*	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	*	*	-	*	*	-	-	-
Rapeseed	77	*	-	1680	*	-	-	-

Ethiopia **Table 1(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	13256	1948	*	48334	6543	60419	3494012	884772	677392
Cereals	12162	1863	*	36454	5106	52889	3216687	774532	571275
Teff	*	*	*	2612	*	*	270671	72654	24378
Barley	1479	*	*	6015	727	3825	632550	154995	257198
Wheat	1900	*	*	*	*	*	255398	67390	103524
Maize	4776	452	*	28901	3918	47718	2481128	413947	159647
Sorghum	*	*	*	*	*	*	171681	51485	8818
Finger millet	-	-	-	-	-	-	7367	*	*
Oats/ 'Aja'	-	-	-	*	*	*	71211	11767	16019
Rice	-	-	-	-	-	-	3006	*	*
Pulse	1093	85	*	16147	1436	7530	897175	101021	102352
Horse/Faba beans	-	-	-	-	-	-	31483	1459	1492
Field peas	-	-	-	*	*	-	115138	17128	16920
Haricot beans	1093	85	*	14472	1284	6813	662605	56943	*
Chick peas	-	-	-	-	-	-	78638	13560	6757
Lentiles	-	-	-	*	*	-	57146	5736	4224
Vetch/Grass peas	-	-	-	*	*	*	26985	3897	2938
Soya beans	-	-	-	-	-	-	*	*	-
Fenugreek	-	-	-	526	17	80	16378	1586	511
Gibto	-	-	-	-	-	-	*	*	*
Oile seeds	-	-	-	-	-	-	41404	9219	3764
Nueg	-	-	-	-	-	-	*	*	*
Linseed	-	-	-	-	-	-	25469	7620	2659
Ground nuts	-	-	-	-	-	-	8824	*	*
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	*	*	*
Rapeseed	-	-	-	-	-	-	5067	77	*

Ethiopia **Table 1(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	86789	12643	3368	68075	27355	251714	31307	119311	33038
Cereals	82031	12013	3156	66058	27140	238010	27891	113196	31693
Teff	2117	*	*	17063	5657	7593	1174	*	*
Barley	2464	*	*	33757	*	18051	2126	22004	*
Wheat	*	*	*	15037	*	5482	435	5098	*
Maize	72190	10050	2705	8435	750	215425	23992	80791	12073
Sorghum	2718	*	*	-	-	742	113	*	*
Finger millet	2202	*	*	-	-	2274	*	-	-
Oats/ 'Aja'	*	*	-	*	*	*	*	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	5461	605	*	2352	215	23063	2968	10484	1342
Horse/Faba beans	*	*	-	-	-	*	*	-	-
Field peas	*	*	*	*	*	*	*	*	*
Haricot beans	3260	268	56	1025	*	5021	291	6469	503
Chick peas	*	*	*	*	*	5623	1117	1995	*
Lentiles	*	*	*	-	-	3105	268	2672	*
Vetch/Grass peas	-	-	-	-	-	*	857	-	-
Soya beans	-	-	-	-	-	*	*	-	-
Fenugreek	-	-	-	-	-	*	*	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	*	*	*	-	-	*	*	*	*
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	*	*	-	-
Ground nuts	*	*	*	-	-	-	-	*	*
Safflower	-	-	-	-	-	-	-	-	-
Sesame	*	*	*	-	-	*	*	-	-
Rapeseed	-	-	-	-	-	*	*	-	-

Table 1.1: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Tigray Region

Crop type	All crop land Area	All Fertilizer		Natural		DAP		
		Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	25002	3878	23453	15166	1766	3304	753	5690
Cereals	23380	3535	21754	14967	1689	2965	504	4072
Teff	*	*	-	*	*	-	-	-
Barley	2214	1002	*	7349	892	*	*	*
Wheat	*	*	*	*	*	-	-	-
Maize	4270	2080	19707	5328	365	2965	481	3950
Sorghum	*	-	-	-	-	-	-	-
Finger millet	1	1	-	1925	1	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	1622	*	*	*	*	*	*	*
Horse/Faba beans	*	*	-	*	*	-	-	-
Field peas	*	*	-	*	*	-	-	-
Haricot beans	-	-	-	-	-	-	-	-
Chick peas	*	*	*	-	-	*	*	*
Lentiles	*	*	-	*	*	-	-	-
Vetch/Grass peas	*	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	29	18	121	-	-	206	1	40
Gibto	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Tigray Region **Table 1.1(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	*	91	777	8922	1268	*	59051	23798	16045
Cereals	*	91	777	8716	1251	*	54943	*	14973
Teff	-	-	-	-	-	-	16800	*	*
Barley	-	-	-	*	*	*	13868	2176	3200
Wheat	-	-	-	*	*	*	*	*	*
Maize	*	91	777	6995	1143	*	27746	3754	1489
Sorghum	-	-	-	-	-	-	*	*	*
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	526	17	80	7324	1374	1072
Horse/Faba beans	-	-	-	-	-	-	*	*	*
Field peas	-	-	-	-	-	-	*	*	*
Haricot beans	-	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	2938	657	320
Lentiles	-	-	-	-	-	-	*	*	*
Vetch/Grass peas	-	-	-	-	-	-	*	*	*
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	526	17	80	1078	29	*
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Tigray Region **Table 1.1(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	4946	*	*	206	5	32629	4561	38178	*
Cereals	4606	956	339	206	5	29132	3285	37300	*
Teff	*	*	*	-	-	*	*	*	*
Barley	*	*	*	-	-	3588	206	7631	1448
Wheat	-	-	-	-	-	*	*	*	*
Maize	*	*	*	206	5	23500	2949	22601	3636
Sorghum	-	-	-	-	-	-	-	*	*
Finger millet	1925	1	-	-	-	1925	1	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	*	*	*	-	-	5604	*	2879	*
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	*	*
Haricot beans	-	-	-	-	-	-	-	-	-
Chick peas	*	*	*	-	-	3056	*	*	*
Lentiles	-	-	-	-	-	*	*	*	*
Vetch/Grass peas	-	-	-	-	-	*	*	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	872	28	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.2: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Afar Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain crops	1243	*	-	505	*	-	-	-
Cereals	1081	*	-	481	*	-	-	-
Teff	305	*	-	481	*	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	*	-	-	-	-	-	-	-
Maize	*	-	-	-	-	-	-	-
Sorghum	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	152	*	-	*	*	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	120	*	-	*	*	-	-	-
Chick peas	*	*	-	*	*	-	-	-
Lentiles	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	*	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oile seeds	*	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	*	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Afar Region **Table 1.2(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	-	-	-	-	-	-	1826	625	162
Cereals	-	-	-	-	-	-	1728	463	125
Teff	-	-	-	-	-	-	1481	299	67
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	*	*	*
Maize	-	-	-	-	-	-	*	*	*
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	527	152	37
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	359	120	23
Chick peas	-	-	-	-	-	-	*	*	*
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	*	*	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	*	*	*
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	*	*	*
Rapeseed	-	-	-	-	-	-	-	-	-

Afar Region **Table 1.2(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	*	*	*	-	-	*	*	*	*
Cereals	*	*	*	-	-	*	*	*	*
Teff	*	*	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	*	*	*	-	-	*	*	*	*
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	*	*	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	*	*	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.3: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Amhara Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	103116	23059	11356	159910	21149	11555	1298	9270
Cereals	81031	20030	9751	152019	18537	9175	953	8302
Teff	12923	4187	*	39328	3803	-	-	-
Barley	39883	9048	*	64947	8781	*	*	*
Wheat	13766	1985	*	24529	1888	-	-	-
Maize	12146	4633	*	55291	3887	*	686	*
Sorghum	*	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	*	*	-	*	*	-	-	-
Rice	*	-	-	-	-	-	-	-
Pulse	21929	2955	*	18677	2539	*	*	*
Horse/Faba beans	*	-	-	-	-	-	-	-
Field peas	2381	*	-	2446	*	*	*	-
Haricot beans	2247	*	-	*	*	-	-	-
Chick peas	11008	1802	*	11957	1725	*	*	*
Lentiles	3350	*	-	2200	*	*	*	-
Vetch/Grass peas	1845	*	*	1523	*	*	*	*
Soya beans	*	-	-	-	-	-	-	-
Fenugreek	*	-	-	-	-	-	-	-
Gibto	*	-	-	-	-	-	-	-
Oile seeds	*	*	-	*	*	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	*	*	-	*	*	-	-	-
Ground nuts	*	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	*	-	-	-	-	-	-	-

Amhara Region **Table 1.3(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	*	*	*	*	*	*	433091	102751	99054
Cereals	*	*	*	*	*	*	384811	80673	84730
Teff	*	*	*	-	-	-	88185	12860	3277
Barley	-	-	-	-	-	-	188979	39830	62180
Wheat	*	*	*	-	-	-	75914	13750	12398
Maize	*	*	*	*	*	*	129602	11919	4297
Sorghum	-	-	-	-	-	-	*	*	*
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	11687	*	1800
Rice	-	-	-	-	-	-	1484	*	*
Pulse	-	-	-	*	*	*	128320	21922	14253
Horse/Faba beans	-	-	-	-	-	-	*	*	*
Field peas	-	-	-	-	-	-	21182	2381	2370
Haricot beans	-	-	-	-	-	-	20676	2247	814
Chick peas	-	-	-	-	-	-	61744	11008	5501
Lentiles	-	-	-	-	-	-	29684	3343	3344
Vetch/Grass peas	-	-	-	*	*	*	17521	1845	1524
Soya beans	-	-	-	-	-	-	*	*	-
Fenugreek	-	-	-	-	-	-	6067	*	*
Gibto	-	-	-	-	-	-	*	*	*
Oile seeds	-	-	-	-	-	-	3295	*	71
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	1982	*	*
Ground nuts	-	-	-	-	-	-	*	*	*
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	*	*	*

Amhara Region **Table 1.3(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	4847	366	252	2521	410	79398	8777	12518	*
Cereals	4553	358	246	1842	333	73985	7616	*	*
Teff	*	*	*	*	*	4289	422	-	-
Barley	*	*	*	-	-	10875	897	*	*
Wheat	*	*	*	*	*	4493	371	-	-
Maize	*	*	*	*	*	62474	5910	*	*
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	*	*	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	*	*	*	*	*	11813	1156	*	*
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	*	*	*	*	-	-
Haricot beans	-	-	-	-	-	*	*	-	-
Chick peas	-	-	-	*	*	*	*	*	*
Lentiles	*	*	*	-	-	*	*	*	*
Vetch/Grass peas	-	-	-	-	-	*	*	-	-
Soya beans	-	-	-	-	-	*	*	-	-
Fenugreek	-	-	-	-	-	*	*	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	*	*	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	*	*	-	-

Table 1.4: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Oromia Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	468186	142451	311146	507776	75244	120374	64741	285177
Cereals	412464	136321	307149	470826	70100	117407	63979	283022
Teff	32588	2369	3779	4271	815	4313	1291	2716
Barley	101488	54991	200288	49302	8009	100457	46414	198841
Wheat	51263	19120	63997	22619	*	33977	12070	62407
Maize	195279	51425	*	412194	48694	8922	1951	9469
Sorghum	20016	4909	*	19809	4794	*	*	*
Finger millet	*	*	-	*	*	-	-	-
Oats/ 'Aja'	10534	2799	9349	4285	475	12281	2212	9349
Rice	*	-	-	-	-	-	-	-
Pulse	47729	5878	3997	79273	4892	8910	763	2155
Horse/Faba beans	854	166	*	3402	148	*	*	*
Field peas	13121	1468	*	8068	960	4626	*	*
Haricot beans	26745	3742	*	64665	3333	2686	250	1090
Chick peas	1803	*	-	*	*	-	-	-
Lentiles	2255	*	-	*	*	-	-	-
Vetch/Grass peas	*	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	*	*	*	*	*	*	*	*
Gibto	-	-	-	-	-	-	-	-
Oile seeds	7992	*	-	2999	*	-	-	-
Nueg	*	*	-	*	*	-	-	-
Linseed	7467	*	-	*	*	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	*	*	-	*	*	-	-	-
Rapeseed	57	*	-	*	*	-	-	-

Oromia Region **Table 1.4(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	5198	1087	*	7328	1378	11514	1492805	464809	454889
Cereals	5198	1087	*	5137	1154	*	1378287	409320	376622
Teff	*	*	*	-	-	-	111098	32201	12864
Barley	*	*	*	*	*	*	335811	101287	181558
Wheat	*	*	*	*	*	-	162097	51249	82679
Maize	*	*	*	3387	*	*	1030719	193376	81095
Sorghum	*	*	*	-	-	-	78000	19407	3036
Finger millet	-	-	-	-	-	-	*	*	*
Oats/ 'Aja'	-	-	-	*	*	-	58958	10503	14213
Rice	-	-	-	-	-	-	*	*	*
Pulse	-	-	-	2901	224	*	376267	47517	*
Horse/Faba beans	-	-	-	-	-	-	17174	851	899
Field peas	-	-	-	*	*	-	78854	13083	13400
Haricot beans	-	-	-	2488	158	*	276035	26572	*
Chick peas	-	-	-	-	-	-	13131	1803	*
Lentiles	-	-	-	*	*	-	25894	2255	747
Vetch/Grass peas	-	-	-	-	-	-	*	*	*
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	8094	*	*
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	27952	7973	2663
Nueg	-	-	-	-	-	-	*	*	*
Linseed	-	-	-	-	-	-	22959	7467	2627
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	*	*	*
Rapeseed	-	-	-	-	-	-	*	57	*

Oromia Region **Table 1.4(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
All	16587	3376	724	54235	24220	116210	13779	27934	*
Cereals	14917	3144	679	53569	24114	112278	12871	25833	*
Teff	*	*	*	10911	3211	*	*	*	*
Barley	*	*	-	32832	*	3434	1016	*	*
Wheat	*	*	*	14325	*	*	*	*	*
Maize	11344	1903	502	2872	425	107431	11527	18113	*
Sorghum	*	*	*	-	-	-	-	*	*
Finger millet	-	-	-	-	-	*	*	-	-
Oats/ 'Aja'	*	*	-	*	*	*	*	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	2303	213	*	*	*	4295	475	2627	*
Horse/Faba beans	*	*	-	-	-	*	*	-	-
Field peas	*	*	-	*	*	-	-	*	*
Haricot beans	1562	*	*	*	*	2349	*	2627	*
Chick peas	-	-	-	-	-	*	*	-	-
Lentiles	-	-	-	-	-	*	*	*	*
Vetch/Grass peas	-	-	-	-	-	*	*	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	*	*	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	*	*	*	-	-	*	*	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	*	*	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	*	*	*	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	*	*	-	-

Table 1.5: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Somale Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	12841	344	*	2201	333	*	*	*
Cereals	12442	341	*	2201	330	*	*	*
Teff	*	-	-	-	-	-	-	-
Barley	*	-	-	-	-	-	-	-
Wheat	198	-	-	-	-	*	-	-
Maize	12106	335	*	2182	324	*	*	*
Sorghum	87	6	-	36	6	-	-	-
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	399	*	-	*	*	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-
Field peas	*	-	-	-	-	-	-	-
Haricot beans	278	*	-	*	*	-	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Somale Region **Table 1.5(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	-	-	-	-	-	-	25330	12575	3964
Cereals	-	-	-	-	-	-	25158	12176	3849
Teff	-	-	-	-	-	-	*	*	*
Barley	-	-	-	-	-	-	*	*	*
Wheat	-	-	-	-	-	-	1926	198	122
Maize	-	-	-	-	-	-	24872	11846	3676
Sorghum	-	-	-	-	-	-	674	82	*
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	2796	399	116
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	*	*	*
Haricot beans	-	-	-	-	-	-	2320	277	104
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Somale Region **Table 1.5(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	712	266	*	-	-	1854	406	*	*
Cereals	712	265	*	-	-	1854	406	*	*
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	689	261	*	-	-	1706	382	*	*
Sorghum	*	*	-	-	-	221	23	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	*	*	-	-	-	-	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	*	*	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.6: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Benshangul-Gumuz Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	818	*	-	*	*	-	-	-
Cereals	547	*	-	*	*	-	-	-
Teff	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-
Maize	547	*	-	*	*	-	-	-
Sorghum	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	*	*	-	*	*	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	*	*	-	*	*	-	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Benshangul-Gumuz Region **Table 1.6(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
All	-	-	-	-	-	-	9630	815	214
Cereals	-	-	-	-	-	-	6707	547	147
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	-	-	-	-	-	-	6707	547	147
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	*	*	*
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	*	*	*
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Benshangul-Gumuz Region **Table 1.6(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	*	*	-	-	-	*	*	*	*
Cereals	-	-	-	-	-	*	*	*	*
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	-	-	-	-	-	*	*	*	*
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	*	*	-	-	-	*	*	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	*	*	-	-	-	*	*	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.7: Number of Holders,Inputs Applied Area and Quantity of Inputs used (S.N.N.P.R) Region

	All crop	All Fertilizer		Natural		DAP		
Crop type	land Area	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	285977	77383	120768	791283	58279	122369	15053	88626
Cereals	255383	63238	90144	746790	51816	86023	8581	63221
Teff	17206	1695	3276	5222	853	5725	593	2222
Barley	11675	3538	2662	29976	2925	3898	336	1473
Wheat	1881	377	502	2952	254	251	118	481
Maize	198814	53148	83407	705681	43368	80186	7485	58873
Sorghum	25311	4453	172	25894	4413	*	29	*
Finger millet	468	*	*	-	-	*	*	*
Oats/ 'Aja'	*	*	*	*	*	-	-	-
Rice	*	*	-	*	*	-	-	-
Pulse	29513	14041	30624	151389	6358	47961	6472	25405
Horse/Faba beans	526	*	*	*	*	*	*	*
Field peas	1324	*	*	2574	*	*	*	*
Haricot beans	27541	13657	30549	145049	5998	47490	6448	25329
Chick peas	59	*	*	-	-	*	*	*
Lentiles	30	-	-	-	-	-	-	-
Vetch/Grass peas	*	*	-	*	*	-	-	-
Soya beans	*	*	-	*	*	-	-	-
Fenugreek	16	*	-	*	*	-	-	-
Gibto	*	-	-	-	-	-	-	-
Oile seeds	*	*	-	2565	*	-	-	-
Nueg	*	-	-	-	-	-	-	-
Linseed	16	-	-	-	-	-	-	-
Ground nuts	*	*	-	*	*	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	*	*	-	*	*	-	-	-

(S.N.N.P.R) Region Table 1.7(Cont'd)

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	3291	261	1056	30441	3790	31087	1468918	279179	102825
Cereals	2198	176	807	21680	2664	26116	1361841	248722	90593
Teff	*	*	*	2612	*	*	53043	17181	5435
Barley	*	*	215	2998	215	973	93224	11656	10235
Wheat	*	*	*	-	-	-	13205	1881	1640
Maize	1511	98	*	17646	2197	24012	1259075	192294	68668
Sorghum	-	-	-	*	*	*	83129	25233	4485
Finger millet	-	-	-	-	-	-	4140	449	114
Oats/ 'Aja'	-	-	-	*	*	*	*	*	*
Rice	-	-	-	-	-	-	*	*	*
Pulse	1093	85	*	11998	1126	4970	378242	29380	11201
Horse/Faba beans	-	-	-	-	-	-	13652	520	414
Field peas	-	-	-	*	*	-	13404	1288	*
Haricot beans	1093	85	*	11985	1125	4970	359515	27449	10001
Chick peas	-	-	-	-	-	-	633	59	17
Lentiles	-	-	-	-	-	-	438	30	*
Vetch/Grass peas	-	-	-	-	-	-	*	*	*
Soya beans	-	-	-	-	-	-	*	*	-
Fenugreek	-	-	-	-	-	-	1117	16	1
Gibto	-	-	-	-	-	-	*	*	*
Oile seeds	-	-	-	-	-	-	10086	*	*
Nueg	-	-	-	-	-	-	*	*	*
Linseed	-	-	-	-	-	-	528	16	3
Ground nuts	-	-	-	-	-	-	8272	*	*
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	*	*	*

(S.N.N.P.R) Region **Table 1.7(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	58621	6794	1791	11113	2719	16385	2647	39559	6875
Cereals	56292	6656	1763	10441	2688	15789	2606	37206	6533
Teff	*	*	*	*	2268	*	*	*	*
Barley	*	*	*	926	*	*	*	*	*
Wheat	-	-	-	57	*	-	-	*	*
Maize	54546	6515	1729	4882	303	15538	2135	35890	6282
Sorghum	696	*	*	-	-	*	*	1201	211
Finger millet	*	*	*	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	2138	134	*	*	*	812	41	3901	338
Horse/Faba beans	*	*	-	-	-	*	*	-	-
Field peas	*	*	*	-	-	*	*	-	-
Haricot beans	1538	*	*	*	*	746	*	3842	337
Chick peas	-	-	-	-	-	-	-	*	*
Lentiles	-	-	-	-	-	*	*	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	*	*	*	-	-	-	-	*	*
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	*	*	*	-	-	-	-	*	*
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.8: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Harari Region

Crop type	All crop land Area	All Fertilizer		Natural		DAP		
		Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	90	68	*	820	56	*	*	*
Cereals	76	61	*	726	49	*	*	*
Teff	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-
Maize	23	16	*	358	14	*	*	*
Sorghum	53	45	*	389	35	*	*	*
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	*	*	-	*	*	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	*	*	-	*	*	-	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oile seeds	*	*	-	*	*	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	*	*	-	*	*	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Harari Region **Table 1.8(Cont'd)**

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
Grain Crops	*	*	*	*	*	*	1347	89	9
Cereals	*	*	*	*	*	*	1200	75	*
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	*	*	*	-	-	-	585	22	*
Sorghum	*	*	*	*	*	*	687	53	*
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	151	*	*
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	151	*	*
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	*	*	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	*	*	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Harari Region **Table 1.8(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	*	*	*	-	-	*	*	*	*
Cereals	*	*	*	-	-	-	-	*	*
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	*	*	*	-	-	-	-	*	*
Sorghum	-	-	-	-	-	-	-	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	*	*	*	-	-	*	*	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	*	*	*	-	-	*	*	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Table 1.9: Number of Holders,Inputs Applied Area and Quantity of Inputs used

Dire Da wa Region

Crop type	All crop land Area	All Fertilizer		Natural		DAP		
		Hectare	Quintal	Holder	Hectare	Holder	Hectare	Quintal
Grain Crops	147	63	-	957	63	-	-	-
Cereals	147	63	-	957	63	-	-	-
Teff	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-
Maize	103	46	-	852	46	-	-	-
Sorghum	*	*	-	132	*	-	-	-
Finger millet	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-

Dire Da wa Region Table 1.9(Cont'd)

Crop type	UREA			UREA + DAP			Indigenous seed		
	Holder	Hectare	Quintal	Holder	Hectare	Quintal	Holder	Hectare	Quintal
All	-	-	-	-	-	-	2013	131	*
Cereals	-	-	-	-	-	-	2013	131	*
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	-	-	-	-	-	-	1629	86	*
Sorghum	-	-	-	-	-	-	466	*	*
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

Dire Da wa Region **Table 1.9(Cont'd)**

Crop type	Improved seed			Pesticide		Irrigation		Extension package	
	Holder	Hectare	Quintal	Holder	Hectare	Holder	Hectare	Holder	Hectare
Grain Crops	*	*	*	-	-	1492	91	-	-
Cereals	*	*	*	-	-	1492	91	-	-
Teff	-	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-
Maize	*	*	*	-	-	1296	72	-	-
Sorghum	-	-	-	-	-	*	*	-	-
Finger millet	-	-	-	-	-	-	-	-	-
Oats/ 'Aja'	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	-	-	-
Horse/Faba beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-
Vetch/Grass peas	-	-	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-
Oile seeds	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-	-

3.4 Total Number of Belg Crop Producing holders Reporting use of Improved Farm Management Practices, by Holders Educational Status.

Holders Educational Stuts plays important role in the adoption new and improved farming technologies, therefore, in this report an attempt is made to categorize holders reporting use of modern farming practice during the 2003/04 Belg Season Crop Production activities depending up on their educational status. According to the results of the 2003/04 Belg Season Crop Production sample Survey, out of the total number of i.e.3.52 million holders , the highest number of holders (about 311.96 thousand holders) used chemical fertilizers , followed by use of irrigation scheme (251.17 thousand holders). It was also estimated that illiterate holders were recoded more in all application of agricultural in put as compared to litrate holders.

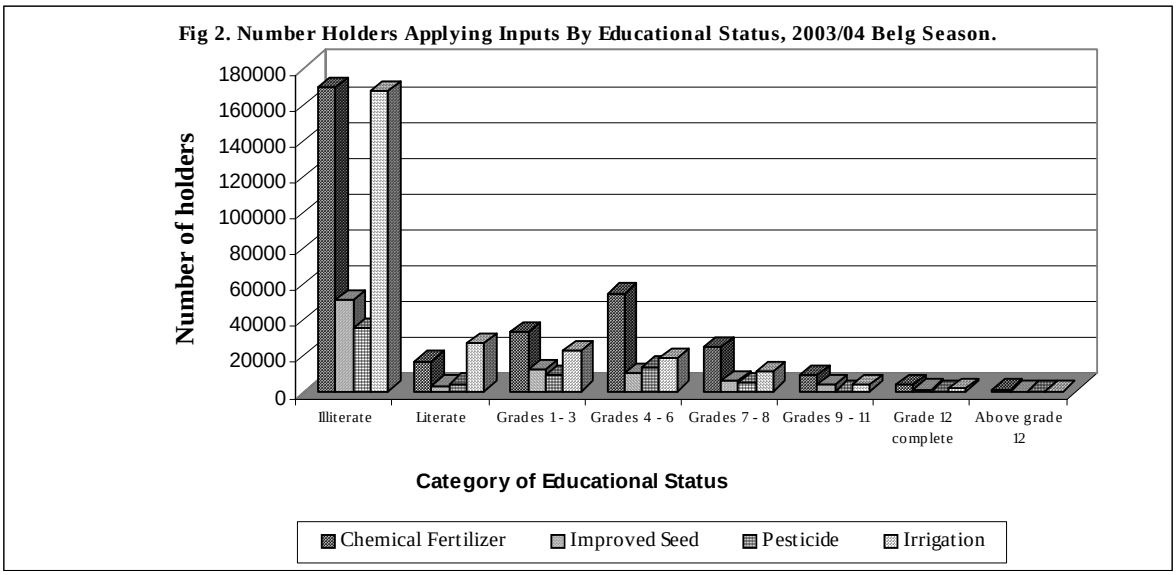


Table 2. Holders Applying Inputs by Educational Status

Ethiopia

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	2381780	169328	50875	35147	166648
Literate	224365	16720	3179	4285	26810
Grades 1 - 3	333511	33193	11633	9110	22916
Grades 4 - 6	365633	54472	10048	13632	18644
Grades 7 - 8	141828	24999	5860	4546	10843
Grades 9 - 11	50254	8680	3606	*	4032
Grade 12 complete	20640	3428	1048	*	1782
Above grade 12	3464	1143	*	*	*
Total	3521476	311963	86789	68075	251714

Table 2.1 Holders Applying Inputs by Educational Status

Tigray Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	46626	7143	3639	206	22957
Literate	9809	4211	*	-	6330
Grades 1 - 3	3019	*	*	-	1475
Grades 4 - 6	2729	1393	*	-	1558
Grades 7 - 8	*	*	*	-	*
Grades 9 - 11	*	-	-	-	*
Grade 12 complete	-	-	-	-	-
Above grade 12	-	-	-	-	-
Total	62915	13394	4946	206	32629

Table 2.2 Holders Applying Inputs by Educational Status

Afar Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	1960	-	*	-	*
Literate	472	-	*	-	*
Grades 1 - 3	*	-	-	-	-
Grades 4 - 6	*	-	*	-	*
Grades 7 - 8	*	-	*	-	*
Grades 9 - 11	-	-	-	-	-
Grade 12 complete	-	-	-	-	-
Above grade 12	-	-	-	-	-
Total	2670	-	*	-	*

Table 2.3 Holders Applying Inputs by Educational Status

Amhara Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	319388	11959	3181	*	54334
Literate	61990	*	*	*	14650
Grades 1 - 3	22036	*	-	-	4378
Grades 4 - 6	24413	*	*	*	3244
Grades 7 - 8	5348	*	*	-	*
Grades 9 - 11	2565	-	*	-	*
Grade 12 complete	*	-	-	-	-
Above grade 12	-	-	-	-	-
Total	436820	15428	4847	2521	79398

Table 2.4 Holders Applying Inputs by Educational Status

Oromia Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	1023865	72593	10962	26242	73281
Literate	113890	8191	*	3660	5065
Grades 1 - 3	137161	13769	2778	7450	14046
Grades 4 - 6	143881	24532	*	12340	11963
Grades 7 - 8	54730	8754	*	3509	7684
Grades 9 - 11	19264	2728	*	*	2687
Grade 12 complete	6502	1600	-	*	1483
Above grade 12	*	*	-	*	-
Total	1500251	132491	16587	54235	116210

Table 2.5 Holders Applying Inputs by Educational Status

Somale Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	17451	*	475	-	1483
Literate	6024	-	*	-	*
Grades 1 - 3	1138	-	*	-	*
Grades 4 - 6	883	-	-	-	*
Grades 7 - 8	268	-	-	-	-
Grades 9 - 11	*	-	-	-	*
Grade 12 complete	*	-	-	-	-
Above grade 12	-	-	-	-	-
Total	25817	*	712	-	1854

Table 2.6 Holders Applying Inputs by Educational Status

Benshangul-Gumuz Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	7558	-	*	-	*
Literate	567	-	-	-	*
Grades 1 - 3	766	-	-	-	*
Grades 4 - 6	*	-	-	-	*
Grades 7 - 8	*	-	-	-	-
Grades 9 - 11	-	-	-	-	-
Grade 12 complete	-	-	-	-	-
Above grade 12	-	-	-	-	-
Total	9630	-	*	-	*

Table 2.7 Holders Applying Inputs by Educational Status

(S.N.N.P.R) Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	962166	77423	31910	7002	10598
Literate	31486	3109	*	*	*
Grades 1 - 3	169236	18211	8460	*	2619
Grades 4 - 6	192585	27434	8078	954	1373
Grades 7 - 8	80888	15641	4955	1038	1183
Grades 9 - 11	27991	5930	2690	*	*
Grade 12 complete	13022	1828	1048	*	*
Above grade 12	2507	*	*	-	*
Total	1479882	150396	58621	11113	16385

Table 2.8 Holders Applying Inputs by Educational Status

Harari Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	1035	144	*	-	-
Literate	*	-	-	-	-
Grades 1 - 3	*	-	-	-	-
Grades 4 - 6	264	*	-	-	*
Grades 7 - 8	-	-	-	-	-
Grades 9 - 11	*	*	-	-	-
Grade 12 complete	-	-	-	-	-
Above grade 12	-	-	-	-	-
Total	1393	187	*	-	*

Table 2.9 Holders Applying Inputs by Educational Status

Dire Dawa Region

Educational Status of Holders	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Illiterate	1731	-	*	-	1228
Literate	*	-	-	-	*
Grades 1 - 3	*	-	-	-	*
Grades 4 - 6	*	-	-	-	*
Grades 7 - 8	*	-	-	-	-
Grades 9 - 11	-	-	-	-	-
Grade 12 complete	-	-	-	-	-
Above grade 12	-	-	-	-	-
Total	2098	-	*	-	1492

3.5 Total number of Belg Crop Producing holders reporting use of Improved Farm Management Practices by age.

To easily identify the age category of holders who used to practice modern farm management on their holdings,Belg crop producing holder's ages have been categorized in to nine groups. These are:

The group categories by age

Group	1	-	Under 18 Years
Group	2	-	18-20 Years
Group	3	-	21-24 Years
Group	4	-	25-29 Years
Group	5	-	30-39 Years
Group	6	-	40-49 Years
Group	7	-	50-59 Years
Group	8	-	60 years& above
Group	9	-	not state

Based on the survey results, a total of 3.52 million holders were engaged in the over all Belg season agricultural activities in 2003/04 (1996 E.C) Belg season. As mentioned above, these holders are categorized in to nine age groups based on the age of the holder. Accordingly, the highest number 962,930 (27.34%) of holders was estimated to fall in the age group 30-39. The second (20.94%) and third (16.50%) highest number of holders fall in the age groups 40-49 and 60 and above, respectively. Moreover, it was estimated that a total of 619,347 Belg crop-producing holders (about 17.59% of the total) reported the use of improved farm management practices. (see summary Table G)

Summary Table G: Total number of Belg Crop Producing holders reporting use of Farm Management Practices by age for Private holdings in Ethiopia,2003/04 (1996 E.C.)

Age Group Category	Total Number of Holders		Number of holders Reporting use of Farm Management Practices	
	Number	%	Number	%
Under 18	25660	0.73	5555	21.65
18-20	80464	2.28	13031	16.19
21-24	190106	5.40	29390	15.46
25-29	484605	13.76	84978	17.54
30-39	962930	27.34	174876	18.16
40-49	737557	20.94	130988	17.76
50-59	454067	12.89	87435	19.26
60 & ABOVE	580917	16.50	92681	15.95
NOT STATED	5170	0.15	*	*
TOTAL	3521476	100.00	619347	17.59

Fig. 3 Number of holders applying agricultural in puts by Age Group, 2003/04 Belg Season

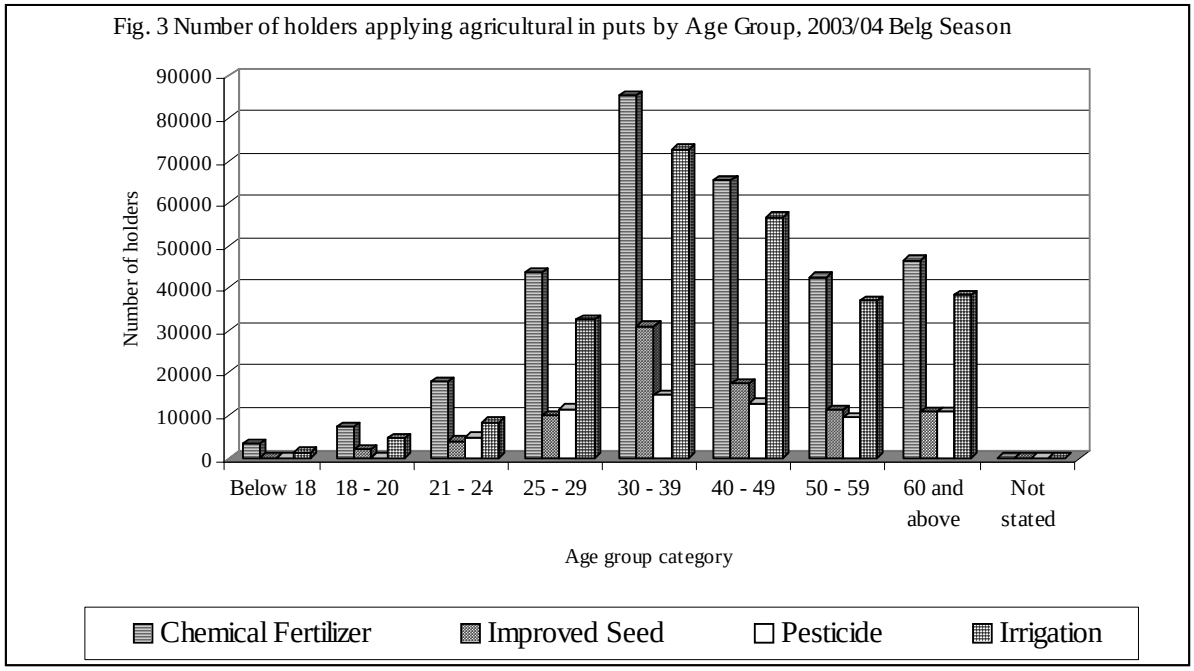


Table 3. Holders Applying Inputs by Age Group

Ethiopia

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	25660	3356	*	*	1308
18 - 20	80464	7258	1985	*	4597
21 - 24	190106	18002	4020	4859	8364
25 - 29	484605	43548	9899	11521	32467
30 - 39	962930	85460	30987	14780	72689
40 - 49	737557	65330	17610	12920	56799
50 - 59	454067	42497	11247	9531	36953
60 and above	580917	46512	10800	10998	38224
Not stated	5170	-	*	-	*
Total	3521476	311963	86789	68075	251714

Table 3.1. Holders Applying Inputs by Age Group

Tigray Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	*	-	-	-	*
18 - 20	-	-	-	-	-
21 - 24	2310	*	*	-	*
25 - 29	4595	722	*	-	1708
30 - 39	13024	3451	*	-	6706
40 - 49	14122	4546	948	-	7825
50 - 59	14066	2912	2916	206	7739
60 and above	14601	*	-	-	8054
Not stated	-	-	-	-	-
Total	62915	13394	4946	206	32629

Table 3.2. Holders Applying Inputs by Age Group

Afar Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	-	-	-	-	-
18 - 20	*	-	-	-	-
21 - 24	*	-	*	-	*
25 - 29	395	-	*	-	*
30 - 39	828	-	*	-	*
40 - 49	516	-	*	-	*
50 - 59	362	-	*	-	*
60 and above	432	-	*	-	*
Not stated	-	-	-	-	-
Total	2670	-	*	-	*

Table 3.3. Holders Applying Inputs by Age Group

Amhara Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	2817	-	-	-	-
18 - 20	8464	*	-	-	*
21 - 24	15641	*	-	-	3591
25 - 29	40458	*	*	*	9782
30 - 39	105827	3978	2530	*	20951
40 - 49	105063	3687	*	*	20531
50 - 59	67467	*	*	*	14115
60 and above	91084	2878	*	*	9124
Not stated	-	-	-	-	-
Total	436820	15428	4847	2521	79398

Table 3.4. Holders Applying Inputs by Age Group

Amhara Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	12291	*	-	*	*
18 - 20	38319	3180	*	*	3105
21 - 24	91214	10423	1856	4095	3669
25 - 29	219899	20555	1874	9638	16857
30 - 39	403794	32790	4814	12022	39457
40 - 49	309780	27912	2786	9744	23037
50 - 59	178796	15801	2107	6744	11923
60 and above	243277	20576	2063	*	16786
Not stated	2881	-	-	-	*
Total	1500251	132491	16587	54235	116210

Table 3.5. Holders Applying Inputs by Age Group

Somale Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	*	-	-	-	9
18 - 20	686	-	-	-	8
21 - 24	1320	-	-	-	96
25 - 29	4066	-	*	-	384
30 - 39	6545	-	*	-	435
40 - 49	5004	-	*	-	431
50 - 59	3514	-	*	-	244
60 and above	4303	*	*	-	247
Not stated	-	-	-	-	-
Total	25817	*	712	-	1854

Table 3.6. Holders Applying Inputs by Age Group

Benshangul-Gumuz Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	-	-	-	-	-
18 - 20	*	-	-	-	-
21 - 24	491	-	-	-	-
25 - 29	1864	-	-	-	*
30 - 39	1942	-	-	-	*
40 - 49	1819	-	-	-	*
50 - 59	1667	-	-	-	*
60 and above	1478	-	-	-	*
Not stated	*	-	*	-	-
Total	9630	-	*	-	*

Table 3.7. Holders Applying Inputs by Age Group

(S.N.N.P.R) Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	9977	2103	*	-	*
18 - 20	32805	3388	*	*	*
21 - 24	78991	6666	1921	764	*
25 - 29	212765	20654	7108	1492	2891
30 - 39	429922	45199	22447	2182	3904
40 - 49	300366	29118	12962	2805	3567
50 - 59	187768	21839	5411	1714	2056
60 and above	225305	21429	7734	2131	3235
Not stated	*	-	-	-	-
Total	1479882	150396	58621	11113	16385

Table 3.8. Holders Applying Inputs by Age Group

Harari Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	-	-	-	-	-
18 - 20	*	*	-	-	-
21 - 24	-	-	-	-	-
25 - 29	305	*	-	-	*
30 - 39	378	*	-	-	-
40 - 49	343	*	*	-	-
50 - 59	*	*	-	-	-
60 and above	*	-	*	-	-
Not stated	-	-	-	-	-
Total	1393	187	*	-	*

Table 3.9. Holders Applying Inputs by Age Group

Dire Dawa Region

Age Group	All Crop Holders	Chemical Fertilizer	Improved Seed	Pesticide	Irrigation
Below 18	-	-	-	-	-
18 - 20	*	-	-	-	-
21 - 24	*	-	-	-	*
25 - 29	257	-	-	-	233
30 - 39	672	-	*	-	458
40 - 49	545	-	*	-	364
50 - 59	*	-	-	-	*
60 and above	308	-	-	-	226
Not stated	-	-	-	-	-
Total	2098	-	*	-	1492

3. 6 Number of Holders Reporting Damaged Cropland Area by causes of damage

The total number of bel crop producing private peasant holders who reported their crops were damaged by different causes of damage during the year 2003/04 Belg Season Crop Production harvest were estimated to be about 1.19 million and the damaged cropland area was estimated to be 129.96 thousand hectares. As indicated in Table 4, the highest cropland area was reported for cereals that is 92.85 thousand hectares , followed by pulses and the oilseeds.

With regard to the causes of crop it is reported that 1.03 million hectares was damged due to weeds, the second highest crop damage which is estimated at 7.77 thousand hecares was damaged by locust. For details see Table 4.

Fig 4. Total damaged cropland area by causes of Damage and crop category

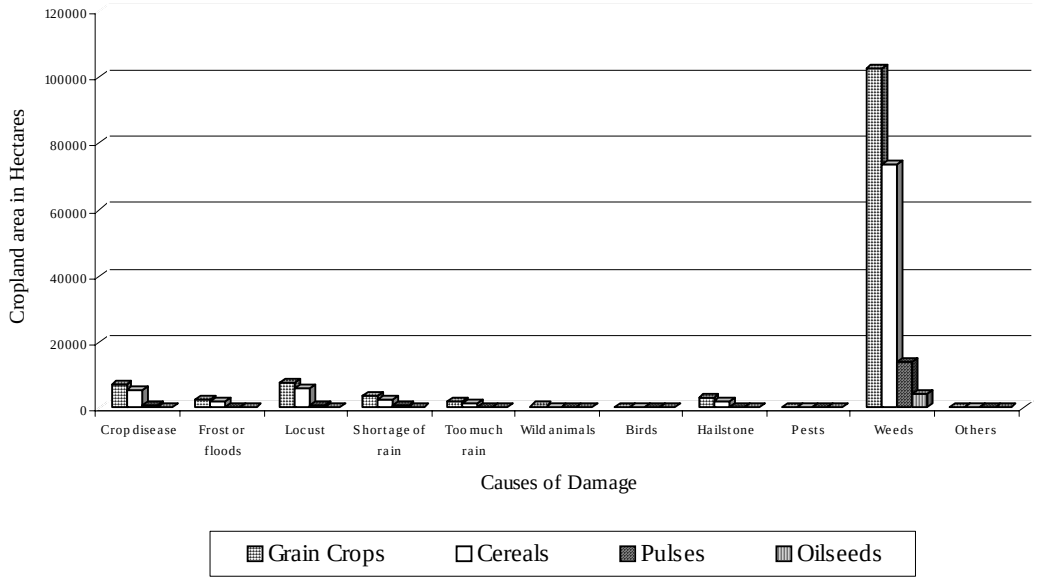


Table 4. Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Ethiopia

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	1187209	129969	92848	18039	4460
Crop disease	117656	7078	5086	806	*
Frost or floods	61578	2646	2054	251	*
Locust	117943	7768	6129	672	*
Shortage of rain	44025	3469	2255	874	-
Too much rain	28708	2016	1500	179	-
Wild animals	9029	476	*	*	-
Birds	*	*	*	-	-
Hailstone	37870	3269	1864	*	*
Pests	2020	225	155	*	-
Weeds	835555	102945	73504	14016	4202
Others	*	*	*	*	-

Table 4.1 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Tigray Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	29066	7619	*	205	-
Crop disease	2078	*	*	*	-
Frost or floods	*	*	*	*	-
Locust	*	*	*	-	-
Shortage of rain	*	*	*	-	-
Too much rain	*	*	*	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	*	*	*	-	-
Pests	*	*	*	-	-
Weeds	22800	6519	*	178	-
Others	-	-	-	-	-

Table 4.2 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Afar Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	786	220	*	135	-
Crop disease	*	*	-	-	-
Frost or floods	-	-	-	-	-
Locust	*	*	-	-	-
Shortage of rain	-	-	-	-	-
Too much rain	-	-	-	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	*	*	-	-	-
Pests	-	-	-	-	-
Weeds	685	198	*	135	-
Others	-	-	-	-	-

Table 4.3 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Amhara Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	192974	19089	10220	5478	*
Crop disease	11479	815	201	190	*
Frost or floods	5789	127	*	57	-
Locust	19812	894	559	*	-
Shortage of rain	3397	*	*	*	-
Too much rain	6367	541	255	*	-
Wild animals	*	*	*	*	-
Birds	-	-	-	-	-
Hailstone	6600	*	166	*	-
Pests	*	*	*	*	-
Weeds	146428	15365	8819	4053	*
Others	-	-	-	-	-

Table 4.4 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Oromia Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	460272	66179	45846	8915	3757
Crop disease	70547	4179	3155	466	*
Frost or floods	18835	1150	941	98	-
Locust	34668	2787	1894	353	*
Shortage of rain	17856	1507	958	441	-
Too much rain	9945	689	557	*	-
Wild animals	*	*	*	*	-
Birds	*	*	*	-	-
Hailstone	20957	1684	*	*	-
Pests	*	*	*	*	-
Weeds	306071	53883	36906	7217	*
Others	*	*	*	*	-

Table 4.5 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Somale Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	3716	446	*	*	-
Crop disease	*	*	*	-	-
Frost or floods	*	*	*	-	-
Locust	*	*	*	*	-
Shortage of rain	-	-	-	-	-
Too much rain	27	1	1	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	-	-	-	-	-
Pests	-	-	-	-	-
Weeds	1984	*	*	*	-
Others	-	-	-	-	-

Table 4.6 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Benshangul-Gumuz Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	1154	24	*	*	-
Crop disease	814	18	*	*	-
Frost or floods	*	*	*	-	-
Locust	*	*	*	-	-
Shortage of rain	-	-	-	-	-
Too much rain	*	*	*	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	*	*	-	-	-
Pests	-	-	-	-	-
Weeds	-	-	-	-	-
Others	-	-	-	-	-

Table 4.7 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

(S.N.N.P.R) Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	498017	36337	29369	3278	*
Crop disease	31402	1527	1308	119	*
Frost or floods	35368	1283	978	93	*
Locust	60385	3828	3435	188	-
Shortage of rain	22347	1720	1243	293	-
Too much rain	11706	758	672	40	-
Wild animals	*	*	*	*	-
Birds	-	-	-	-	-
Hailstone	9688	398	186	48	*
Pests	573	44	42	-	-
Weeds	356522	26549	21359	2417	*
Others	*	*	*	-	-

Table 4.8 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Harari Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	*	*	-	*	-
Crop disease	-	-	-	-	-
Frost or floods	-	-	-	-	-
Locust	-	-	-	-	-
Shortage of rain	-	-	-	-	-
Too much rain	-	-	-	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	-	-	-	-	-
Pests	-	-	-	-	-
Weeds	*	*	-	*	-
Others	-	-	-	-	-

Table 4.9 Number of Holders and Damaged Crop Area in Hectare by Category of Crops and Cause of Damage

Dire Da wa Region

Cause of damage	All holders	Grain Crops	Crop category		
			Cereals	Pulses	Oilseeds
All damage	1198	54	*	*	-
Crop disease	*	*	*	-	-
Frost or floods	-	-	-	-	-
Locust	*	*	-	-	-
Shortage of rain	-	-	-	-	-
Too much rain	-	-	-	-	-
Wild animals	-	-	-	-	-
Birds	-	-	-	-	-
Hailstone	-	-	-	-	-
Pests	-	-	-	-	-
Weeds	1039	51	*	*	-
Others	-	-	-	-	-

APPENDIX I Estimation Procedures of Totals, Ratios and Sampling Errors

The following formulas were used to estimate total area of land under specific crop, total holders and ratios in a stratum.

1. For estimating Total Area of Land under Specific Crop:

$$\hat{A}_h = \sum_{i=1}^{n_h} W_{hi} \sum_{j=1}^{h_{hi}} a_{hij} = \sum_{i=1}^{n_h} W_{hi} a_{hi}$$

in which, $W_{hi} = \frac{M_h H_{hi}}{n_h m_{hi} h_{hi}}$ is the basic weight.

Where:

h represents the stratum

n_h is the total number of sample EAs successfully covered in the hth stratum.

M_h is the measure of size of the hth stratum as obtained from the sampling frame.

m_{hi} is the measure of size of the ith sample EA in the hth stratum obtained from the sampling frame.

H_{hi} is the total number of agricultural households of the ith sample EA in the hth stratum.

h_{hi} is the number of sample agricultural households successfully covered in the ith sample EA in the hth stratum.

a_{hij} is the value of area for agricultural households j, in the ith EA in the hth strtatum under a specific crop.

a_{hi} is the sample total area under specific crop for EA i in stratum h.

$\hat{A}_h$ estimate of total area under specific crop in stratum h.

2. For estimating Total number of Holders:

$$\hat{Y}_h = \sum_{i=1}^{n_h} W_{hi} y_{hi}$$

Where:

y_{hi} is the sample total number of holders of ith EA in the hth stratum.

$\hat{Y}_h$ is estimate of total number of holders for the hth stratum.

W_{hi} is as defined above.

3. For estimating quantity of fertilizer in stratum h:

$$\hat{Q}_h = \sum_{i=1}^{n_h} W_{hi} q_{hi}$$

where,

$\hat{Q}_h$ is estimate of total quantity of a specific fertilizer applied for a specific crop land in the hth stratum.

q_{hi} is the sample total of a specific fertilizer applied for a specific crop land in the ith EA in the hth stratum.

W_{hi} is as defined above.

4. For estimating Ratios in stratum h:

$$\hat{R}_h = \frac{\hat{Z}_h}{\hat{X}_h},$$

Where the numerator and denominator are estimates of domain totals for characteristic z and x, respectively.

5. Sampling Variance of Estimates:

Sampling variance for the estimate of stratum total of area for a specific crop and holders, and ratios are estimated by the following formulas.

$$Var(\hat{A}_h) = (1 - f_h)\frac{n_h}{n_h - 1}\sum_{i=1}^{n_h}\left(\hat{A}_{hi} - \frac{\hat{A}_h}{n_h}\right)^2 + f_h\sum_{i=1}^{n_h}(1 - f_{hi})\left(\frac{h_{hi}}{h_{hi} - 1}\right)\sum_{j=1}^{h_{hi}}\left(\hat{A}_{hij} - \frac{\hat{A}_{hi}}{h_{hi}}\right)^2$$

$$Var(\hat{Y}_h) = (1 - f_h)\frac{n_h}{n_h - 1}\sum_{i=1}^{n_h}\left(\hat{Y}_{hi} - \frac{\hat{Y}_h}{n_h}\right)^2 + f_h\sum_{i=1}^{n_h}(1 - f_{hi})\left(\frac{h_{hi}}{h_{hi} - 1}\right)\sum_{j=1}^{h_{hi}}\left(\hat{Y}_{hij} - \frac{\hat{Y}_{hi}}{h_{hi}}\right)^2$$

$$Var(\hat{Q}_h) = (1 - f_h)\frac{n_h}{n_h - 1}\sum_{i=1}^{n_h}\left(\hat{Q}_{hi} - \frac{\hat{Q}_h}{n_h}\right)^2 + f_h\sum_{i=1}^{n_h}(1 - f_{hi})\left(\frac{h_{hi}}{h_{hi} - 1}\right)\sum_{i=1}^{n_h}\left(\hat{Q}_{hij} - \frac{\hat{Q}_{hi}}{h_{hi}}\right)^2$$

$$Var(\hat{R}_h) = \frac{1}{\hat{X}_h^{\,2}}\left[Var(\hat{Z}_h) + \hat{R}_h^{\,2}Var(\hat{X}_h) - 2\hat{R}_h Cov(\hat{Z}_h, \hat{X}_h)\right]$$

Where,

$$Cov(\hat{Z}_h, \hat{X}_h) = (1 - f_h)\frac{n_h}{n_h - 1}\sum_{i=1}^{n_h}\left(\hat{Z}_{hi} - \frac{\hat{Z}_h}{n_h}\right)\left(\hat{X}_{hi} - \frac{\hat{X}_h}{n_h}\right) + f_h\sum_{i=1}^{n_h}(1 - f_{hi})\left(\frac{h_{hi}}{h_{hi} - 1}\right)\sum_{j=1}^{h_{hi}}\left(\hat{Z}_{hij} - \frac{\hat{Z}_{hi}}{h_{hi}}\right)\left(\hat{X}_{hij} - \frac{\hat{X}_{hi}}{h_{hi}}\right)$$

f_h = average first stage probability of selection of EAs within stratum *h*.

$f_{hi} = \frac{h_{hi}}{H_{hi}}$ = average second stage probability of selection within the i^{th} sample EA in stratum *h*.

$\hat{A}_{hi}, \hat{Y}_{hi}, \hat{Q}_{hi}, \hat{Z}_{hi}, \hat{X}_{hi}$ are weighted total area, holder, quantity of fertilizer, characteristics z and x, respectively, in the i^{th} EA and h^{th} stratum.

$\hat{A}_{hij}, \hat{Y}_{hij}, \hat{Q}_{hij}, \hat{Z}_{hij}, \hat{X}_{hij}$ are weighted value of area, holder, quantity of fertilizer, characteristics z and x, respectively, from j^{th} agricultural household in the i^{th} EA and h^{th} stratum.

Since all strata are independent, the total variance at regional and country level is computed by aggregating the result obtained at Zone/Special Wereda level, i.e.

$$Var(\hat{A}) = \sum_h^L Var(\hat{A}_h), Var(\hat{Y}) = \sum_h^L Var(\hat{Y}_h), Var(\hat{Q}) = \sum_{i=1}^L Var(\hat{Q}_h), Var(\hat{R}) = \sum_h^L Var(\hat{R}_h)$$

Where, *L* is the number of strata (Zone/Special Wereda).

In estimating the sampling variance by the above formula, selection of EAs within a stratum is assumed to be with replacement. By so doing the variance estimate may be slightly over estimated but it greatly simplifies the estimation procedure.

6. Coefficient of Variation (CV) of Estimates:

Coefficient of Variation (CV) in percentage of estimate of stratum total of area and holder production for a specific crop are given by:

$$CV(\hat{A}_h)=\frac{\sqrt{Var(\hat{A}_h)}}{\hat{A}_h}*100, CV(\hat{Y}_h)=\frac{\sqrt{Var(\hat{Y}_h)}}{\hat{Y}_h}*100, CV(\hat{Q}_h)=\frac{\sqrt{Var(\hat{Q}_h)}}{\hat{Q}_h}*100, CV(\hat{R}_h)=\frac{\sqrt{Var(\hat{R}_h)}}{\hat{R}_h}*100$$

7. Ninety-five percent confidence interval (CI) of stratum total of area:

$$\hat{A}_h \pm 1.96 * SE(\hat{A}_h) \quad ,$$

Where $SE(\hat{A}_h)=\sqrt{Var(\hat{A}_h)}$ is standard error of the estimate of the stratum total of area.

Estimates of standard error and confidence interval for the other estimates can also be calculated by adopting the above formulas.

Table 1 (Continued)

Crop	Irrigation						Extension packege					
	Holder			Area(Ha)			Holder			Aea (Ha)		
	Estimate	S.E	C.V	Estimate	S.E	C.V	Estimate	S.E	C.V	Estimate	S.E	C.V
All	251714	21780	8.65	31307	3261	10.41	119311	15880	13.31	33038	11395	34.49
Cereals	238010	21212	8.91	27891	2846	10.2	113196	15653	13.83	31693	11345	35.8
Teff	7593	2197	28.94	1174	346	29.48	9641	5330	55.28	4969	3464	69.71
Barley	18051	4156	23.02	2126	469	22.08	22004	7986	36.29	6314	3318	52.55
Wheat	5482	1913	34.9	435	181	41.67	5098	2394	46.96	1885	1367	72.5
Maize	215425	20681	9.6	23992	2696	11.24	80791	12105	14.98	12073	2199	18.21
Sorghum	742	194	26.12	113	44	38.74	6910	5313	76.89	6451	6039	93.61
Finger millet	2274	346	15.22	6	5	85.48	-	-	-	-	-	-
Oats/ 'Aja'	857	493	57.47	46	32	70.86	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-	-	-	-
Pulse	23063	5406	23.44	2968	860	28.99	10484	2102	20.05	1342	445	33.2
Horse/Faba beans	356	313	87.89	26	24	91.29	-	-	-	-	-	-
Field peas	294	254	86.47	11	11	94.75	1010	722	71.52	204	153	74.96
Haricot beans	5021	1507	30.02	291	111	38.07	6469	1658	25.63	503	186	37.02
Chick peas	5623	1522	27.07	1117	503	45.04	1995	905	45.38	376	255	67.8
Lentiles	3105	1239	39.92	268	127	47.49	2672	1227	45.94	259	154	59.27
Vetch/Grass peas	6362	3402	53.47	857	379	44.25	-	-	-	-	-	-
Soya beans	308	306	99.22	11	11	99.22	-	-	-	-	-	-
Fenugreek	4523	2604	57.58	387	248	64.12	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-	-	-	-
Oile seeds	1677	1339	79.81	448	433	96.62	204	203	99.04	4	4	99.04
Nueg	-	-	-	-	-	-	-	-	-	-	-	-
Linseed	1287	1287	100	419	419	99.94	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	204	203	99.04	4	4	99.04
Safflower	-	-	-	-	-	-	-	-	-	-	-	-
Sesame	22	14	63.1	10	8	80.57	-	-	-	-	-	-
Rapeseed	689	490	71.14	19	15	78.6	-	-	-	-	-	-

Agricultural Sample Survey of Ethiopia
Area Measurements of Crop fields and / or Other Land use
Belg Season 2003/04 (1996 E.C)

Part I – Identification Particular

1	2	3	4	5	6	7	8
Region	Zone	Wereda	Farmers, Ass.	Enumeration Area	Household ID	Holder ID	Holder's Name

9	10	11	12	13		14			15	16
Parcel No.	Field No.	Field / Land Use Type Temporary crop field = 1 Permanent crop field = 2 Mixed crop field = 3 Other land Use = 4	Serial No.	Crop name / Land Use Type		Quantity of production In local units				If field is under Mixed crop only Percent of area Under each crop type
		Code				Local unit				
					code	name	code	Quantity		
			1							
			2							
			3							

Part II – result of area measurement of crop fields and /or other land use

1		2		3		4	5	
Date of area measurement		Area in square meters		Area in local unit			If no area measurement State the reason	
date	month			Name of Local unit	code	area	Reason	code

Part III – Area Measurements

Side	A-B	B-C	C-	D-	E-	F-	G-
Bearing (0)							
Length (m)							
Side	H-	I-	J-	K-	L-	M-	N-
Bearing (0)							
Length (m)							
Side	O-	P-	Q-	R-	S-	T-	U-
Bearing (0)							
Length (m)							

Part IV – For Vegetables, root crops and permanent crops only

0		1	2		3		4	
This year's productivity compared with that of last year								
		Increase = 1 Same = 2 Decrease = 3	If increase is reported Increment in Percent		If decrease is reported Decrement in percent		Change of percent	
Crop name	Code			%		%		%

Ag.S.S Form 96/8A

Agricultural Sample Survey of Ethiopia
List of Fields Under Temporary Crops and Farm Management Practices
Belg Season 2003/04 (1996 E.C)

Part I – Identification Particular

1	2	3	4	5	6	7	8	9	10	11	12	13
Region	Zone	Wereda	Farmers Association	E.A	Household ID	Holder ID	Holder's Name	Age	Sex M = 1 F = 2	Educational Level Highest grade Completed	Holder's Family Size	Farm Type Crop = 1 Livestock = 2 Both = 3

Part II – List of Fields Under Temporary Crops and Farm management Practice

1	2	2	3	4	5	6
Serial No.		Questions to the Holder	parcel No. / Field No. / Crop Name code	parcel No. / Field No. / Crop Name code	parcel No. / Field No. / Crop Name code	parcel No. / Field No. / Crop Name code
01		Holding Type Owned = 1 Other = 3 Rented = 2				
02		Field Area in Local unit	Local unit / code / area	Local unit / code / area	Local unit / code / area	Local unit / code / area
03		Production in Local Unit	Local unit / code / Prod	Local unit / code / Prod	Local unit / code / Prod	Local unit / code / Prod
03		If Field Under Ext. Package Yes = 1 No. = 2				
04		If Irrigation used Yes = 1 No = 2				
05		Seed Type Improved = 1 Indigenous = 2				
06		For Cereals, Pulses and Oilseeds only if indigenous seed used Quantity in Kilogram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram
07		For Cereals, Pulses and Oilseeds only if improved seed used Quantity in Kilogram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram
08		For Cereals, Pulses and Oilseeds only if improved seed used price	Birr Cents	Birr Cents	Birr Cents	Birr Cents
09		Was there Crop Damage? Yes = 1 No = 2				
10		If there was crop damage Cause of the damage	Cause code	Cause code	Cause code	Cause code
11		Percent of damage				
12		Any measure taken to prevent the damage? Yes = 1 No = 2				
13		Type of measure taken if any Chemical = 1 Both = 3 Non chemical = 2				
14		Type of chemicals used Pesticide = 1 2&3 = 6 Herbicide = 2 All = 7 Anti disease = 3 1&2 = 4 1&3 = 5				
15		Have you used any fertilizer? Yes = 1 No = 2				
16		If yes type of fertilizer Natural = 1 Both = 3 Chemical = 2				
17		If no chemical fertilizer used, reason for not using it	Reason code	Reason code	Reason code	Reason code
18		If chemical fertilizer used, 18.1 type Urea = 1 both = 3 Dap = 2				
		18.2 quantity in kilogram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram
19		If natural fertilizer used type Cow dung = 1 both = 3 Compost = 2 Others = 4				

Ag.S.S Form 96/8B

Agricultural Sample Survey of Ethiopia
List of Fields Under Mixed Crops and Farm Management Practices
Belg Season, 2003/04 (1996 E.C)

Part I – Identification Particular

1	2	3	4	5	6	7	8	9	10	11	12	13
Region	Zone	Wereda	Farmers Association	E.A	Household ID	Holder ID	Holder's Name	Age	Sex M = 1 F = 2	Educational Level Highest grade Completed	Holder's Family Size	Farm Type Crop = 1 Livestock = 2 Both = 3

Part II – List of Fields Under Mixed Crops and Farm management Practice

1		2	3			4		
Serial No.		Questions to the Holder	Parcel no. / Field no. / Crop name / code	Crop name / code	Crop name / code	Parcel no. / Field no. / Crop name / code	Crop name / code	Crop name / code
0	1	Holding Type Owned = 1 Other = 3 Rented = 2						
0	2	Field Area in Local unit	Local unit name / Code / Area			Local unit name / Code / Area		
0	3	Production in Local Units	Local unit name / Code / prod			Local unit name / Code / prod		
0	3	If Field Under Ext. Package Yes = 1 No. = 2						
0	4	Percent of area under each crop by crop type						
0	5	Number of fruit trees (excluding coffee, chat pineapple and sugarcane)						
0	6	Number of fruit bearing trees (excluding coffee, chat pineapple and sugarcane)						
0	7	If Irrigation used Yes = 1 No = 2						
0	8	Seed Type Improved = 1 Indigenous = 2						
0	9	For Cereals, Pulses and Oilseeds only if indigenous seed used Quantity in Kilogram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram
1	0	For Cereals, Pulses and Oilseeds only if improved seed used Quantity in Kilogram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram	Kilo Gram
1	1	For Cereals, Pulses and Oilseeds only if improved seed used price	Birr Cents	Birr Cents	Birr Cents	Birr Cents	Birr Cents	Birr Cents
1	2	Was there Crop Damage? Yes = 1 No = 2						
1	3	If there was crop damage Cause of the damage	Reason code	Reason code	Reason code	Reason code	Reason code	Reason code
1	4	Percent of damage						
1	5	Any measure taken to prevent the damage? Yes = 1 No = 2						
1	6	Type of measure taken if any Chemical = 1 Both = 3 Non chemical = 2						
1	7	Type of chemicals used Pesticide = 1 1&2 = 4 2&3 = 6 Herbicide = 2 1&3 = 5 All = 7 Anti disease = 3						
1	8	Have you used any fertilizer? Yes = 1 No = 2						
1	9	If yes, type of fertilizer used Natural = 1 Both = 3 Chemical = 2						
2	0	If no chemical fertilizer used, reason for not using it	Reason / Code			Reason / Code		
2	1	If chemical fertilizer used, 21.1 type Urea = 1 both = 3 Dap = 2						
		21.2 quantity in kilogram	Kilo Gram			Kilo Gram		
2	2	If natural fertilizer used type Cow dung = 1 both = 3 Compost = 2 Others = 4						