

Federal Democratic Republic Of Ethiopia
CENTRAL AGRICULTURAL CENSUS COMMISSION

**ETHIOPIAN AGRICULTURAL
SAMPLE ENUMERATION, 2001/02(1994 E.C.)**

Results for **DireDawa Administrative
Council**



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**STATISTICAL REPORT ON
SOCIO-ECONOMIC CHARACTERISTICS OF THE POPULATION
IN AGRICULTURAL HOUSEHOLDS, LAND USE, AREA AND
PRODUCTION OF CROPS, FARM MANAGEMENT PRACTICES,
LIVESTOCK AND FARM IMPLEMENTS**

**Addis Ababa
July ,2003**

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FOREWORD

An agricultural census, which would serve as a source of a benchmark data for the sector has not been conducted in Ethiopia. However, in order to provide basic agricultural information to data users, annual agricultural sample surveys have been carried-out since 1980/81 by the Central Statistical Authority (CSA). Although, these annual sample surveys have some limitations in terms of scope, coverage and level of disaggregation, these surveys have served as a means of narrowing the data gap in the sector.

Considering the importance of the agricultural sector and the need for a comprehensive data, the CSA has requested the concerned government authority to initiate the undertaking of a National Agricultural Census several times. That is, it has submitted a project proposal immediately after the launching of the 1984 National Population and Housing Census. Moreover, it has also attempted to materialize this census in late 1980's and in early 1990's i.e. immediately after the undertaking of the 1994 National Population and Housing Census. The attempt continued till CSA got a positive response from the government in 1998. Hence, the CSA has been carrying out the Agricultural Census preparatory activities from September 1999, to August 2001.

Thus, in order to overcome the above-mentioned limitations on the data generated from the Annual Agricultural Sample Surveys and provide a benchmark data on the agriculture sector, the CSA launched the fieldwork of the first ever Ethiopian Agricultural Sample Enumeration in September 2001. Prior to launching the sample enumeration a number of preparatory activities such as the preparation of the census documents, undertaking the pretests and the pilot censuses, ...etc were also carried-out.

The 2001/02 Ethiopian Agricultural Sample Enumeration was launched under the auspices of the Ethiopian Agricultural Census Commission that was set up

under Proclamation No. 238/2001. The Commission is chaired by the Prime Minister and the members of the Commission are drawn from various relevant Federal Ministries and other government organizations. The Central Statistical Authority serves as the Secretariat Office of the Commission. Hence the collection, processing, evaluation and analysis of the census data as well as its dissemination are the responsibilities of this office.

The 2001/02 Ethiopian Agricultural Sample Enumeration is a huge nation wide operation, which could not be undertaken by a single organization. Hence, in order to enhance and facilitate the census enumeration activities Regional, Zonal, and Wereda Census Commissions have been established and Census Committees were set-up at Kebele levels. In the conduct of this census, full cooperation and assistance of governmental and non-governmental organizations, external donor agencies and the public in general have been obtained.

It is worth mentioning that the 2001/02 Crop Production Forecast Report, which is the first phase of the Agricultural Census was prepared, printed and disseminated to agricultural data users in December, 2001.

On the other hand, the census data on area under crop, production and yield of temporary crops consisted of cereals, pulses, oil seeds, vegetables and root crops for Meher Season was processed, compiled, evaluated and a report has been prepared and printed. This report entitled as a "Report on the Preliminary Results of Area, Production and Yield of Temporary Crops" (Meher Season, Private Peasant Holdings) is the Second Census Report so far published printed and disseminated to agricultural data users in October, 2002. It should be noted that during the census, huge sets of data on agriculture and related topics were collected. Given the limited resources (skilled manpower, computers...) available at the head quarters, data processing and summarization of results require quite longer period, than originally expected.

Since the release of the above mentioned Census Preliminary Report, the CSA, have put all the necessary efforts and made all the available resources, (skilled manpower computers,...) at the disposal of the census data processing activities. Consequently, the Authority has reached a stage where the agricultural census data processing activities have advanced to a stage where the data can be evaluated, reports can be prepared and released at regional levels and eventually at national level.

Thus, the Agricultural Census Report on Dire Dawa Administrative Council is the seventh series of this census report. This regional report is a comprehensive one and it consists all the agricultural data collected during the 2001/02 Ethiopian Agricultural Sample Enumeration. These data include: the socio-economic characteristics of the population in agricultural households; land use; area, production and yield of temporary and permanent crops; farm management practices; livestock, poultry and beehives; and farm implements, draught animals and storage facilities. Similar comprehensive reports for the other regions will follow and would be released consecutively.

The Office of the Ethiopian Agricultural Census Commission would like to thank all government and non-government agencies who participated in the organization of the census, the supervision of the field work, the data collection, and the respondents who participated in providing the necessary census data. The Ethiopian government has given huge financial and unreserved administrative support in undertaking the 2001/02 Ethiopian Agricultural Sample Enumeration. This indicates the continuous commitment and high priority offered by the Ethiopian Government for the development of the agricultural sector statistics as well as the other socio-economic and demographic statistics.

Finally, the Office would also like to take this opportunity to express its many thanks to the United States Agency for International Development (USAID) for its generous financial and technical assistance for the census. Moreover, thanks are due to the European Union (EU) for its financial assistance and the British Department for International Development (DFID) for its material assistance for the census.

Abdulahi . Hassen (Ph.D.)

Member and Secretary,

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CHAPTER I

BACKGROUND

1. INTRODUCTION

A nation has to feed its people adequately to have healthy and wealthy citizens for the promotion of its development and growth. A government concerned with the well being of its people and aiming at the rectification of the national economy makes agriculture its top priority for the achievement of the above goals. Policy making and decision taking are essential in this regard. But there are recognized constraints such as the availability of adequate and comprehensive statistical data on agriculture that guides policies and decisions for attaining development targets in the agricultural sector.

In recognition of these constraints, and in an effort to provide accurate, reliable and timely data on the nation's agriculture that policies and decisions entail, the Central Statistical Authority (CSA) has been conducting annual agricultural sample surveys since 1980/81 (1973 E.C.). As a result, data on area, production and yield of major crops, farm management practices, land use, livestock, poultry and beehives have been produced at country, regional and zonal levels for both Meher and Belg seasons on a yearly basis.

Despite this effort, the economic policy has recently focused on agricultural sector and data users became more sophisticated demanding for various data in greater detail on timely basis, with improved accuracy and reliability and highly disaggregated to levels where project planning and implementation take place. Hence, the existing data that has resulted from the regular annual agricultural sample survey could not meet these demands. Accordingly, these needs led the CSA to reappraise the agricultural data it has produced so far and realized the gap between the demand for agricultural data and the data supplied is widening. Thus, as an organization situated between the data and its users, the CSA was prompted by the gravity of the demand for more detailed data to embark upon a census of agriculture in the year 2001/02 and narrow the existing data gap.

Development and monitoring of the agricultural sector require data on a wide range of indicators. A census of agriculture is the leading source of such data. It provides an image of a nation's farming and agricultural activity at a particular point in time (an agricultural production year) for the data disaggregated at the lowest level of reporting.

In Ethiopia, prospects and policies regarding agriculture have evolved significantly over recent years. Economic problems have been the major factor in development and implementation of these policies and programs. The agricultural policies and programs are targeted at ensuring that food crops will be made available to those who need it and don't obtain enough of it or guaranteeing everyone access to safe and nutritious food. To put it in a nutshell: it is to create and maintain food security. The realization of this goal requires the implementation of the policies and programs at woreda level and make available agricultural statistics at corresponding administrative level. It is against this background that the census was conducted to monitor the trends and the changing patterns in agricultural production with the acquisition of agricultural statistics at wereda, zonal, regional and country levels.

2. OBJECTIVES OF THE CENSUS

There are fundamental problems prevailing in the agricultural sector that are especially affecting the rural population and often perceived as the maladies of the Ethiopian economy. In order to solve these problems gradually but steadily, the Ethiopian government has been developing various agricultural programs and schemes. To effect these programs and meet other objectives, the census is the appropriate method of data collection for providing much needed and more detailed statistical information on agriculture.

2.1 The general objectives are to: -

- Provide benchmark data on the structure of agriculture for planning, policy making and other uses during intercensal years,
- Provide detailed data at lower administrative level,

- Use the census as a vehicle for developing the national agricultural statistics system,
- Secure data for items whose production is limited (rare crops),
- Secure benchmark data for improving the annual agricultural sample survey in the future,
- Make use of the census experience and trained personnel for capacity building and strengthening the Ethiopian Statistical Authority in the field of agricultural statistics, and
- Develop data bank with facility for updating consistency checks and retrieval of data in various forms tailored to the needs of the users.

2.2 The specific objectives are to provide: -

- Basic information on the country's agriculture to the government for formulating and implementing timely food security measures and to alert policy makers about the food situation in the country,
- Information to the government to develop and monitor farm programs, study historical trends, appraise current conditions and plan for the future,
- Information for the government to design and allocate funding for extension service projects, and
- Data for the private sector in order to execute the effective production and distribution system in the agricultural sector.

This report presents the Agricultural Sample Enumeration results for Dire Dawa Administrative Council. It comprises of eight chapters: Chapter I presents the Background and the Objectives of the Census, Chapter II discusses the Census Methodology and Operations which is composed of Scope and Coverage of the Census, Sampling Frame, Sample Design, Sample Selection, Organization of Field Work, Training of Field Staff, Method of Enumeration, Concepts and Definitions and Data Processing. Chapter III deals with Socio-Economic Characteristics of the Population in Agricultural Households. Chapter IV covers Land Utilization and Chapter V deals with Area and Production of Crops and Crop Utilization .

Moreover, Chapter VI treats Farm Management Practices. Further, in Chapter VII of this report, Size, Characteristics and Purpose of Livestock and Livestock Products are discussed. Finally, in Chapter VIII the census results are presented on Farm Implements, Draught Animals and Storage Facilities.

Also, the report encompasses Appendix I that shows the Estimation Procedures of Totals, Ratios and Sampling Errors and Appendix II shows the Agricultural Sample Enumeration Questionnaires. Moreover, tables that show the Standard Errors (S.E.) and Coefficients of Variation (C.V.) are given as an annex at the end of the relevant chapters.

CHAPTER II

CENSUS METHODOLOGY AND OPERATIONS

1. INTRODUCTION

As explained in the introductory chapter of this publication, the census of Agriculture is a large-scale, periodic statistical operation for the collection of quantitative information on the structure of agriculture. Such a huge operation demands sequence of standard activities. In order to collect, process and produce reliable and internationally comparable data, the different technical procedures and operations that have to be applied during the census should follow what has been globally recommended.

Hence, this chapter highlights what has been exercised before and during the census operations in areas of subject and area coverage, census methodology, (such as sampling frame, sample design, listing and selection of primary sampling units and households), and census operations that included organization of field work, training, method of enumeration, quality control and data processing.

The scope of the agricultural census concerns the type and dimension of data to be collected. When the CSA has launched the planning of the census, it solicited the demand of data from various government and non-government organizations which are the major users of the resulting census data. The response was just overwhelming and put the CSA in an awkward position to decide on the scope. The decision on the range and extent of data items to be dealt with by the census is really hard to make given the size of the country's population engaged in agriculture, the limited human and financial resources, and the magnitude of the census work. The CSA had to strike a balance between the scope on the one hand and the available resources and time on the other hand so that there was a trade-off between the two.

Since the census of agriculture is not a frequent data collection activity, it is best suited for collecting more data on various characteristics relating to area and production of crops. It

lends the opportunity of capturing as much data as possible, especially when it is conducted for the first time. But agricultural census is not a practical means of providing all data. Not all agricultural statistics can be collected through a census of agriculture. Hence, there was caution against overloading the agricultural census forms with extensive scope. Thus, with regard to the scope, the census had to be restricted to a coherent and manageable range of data items.

In this census the data collected include: demographic and economic characteristics of population in agricultural households and holders during the reference period; area, production and yield of both temporary and permanent crops harvested in the farming of Meher as well as Belg Seasons; farm management practices envisaged during both seasons; land use under major categories; and livestock, poultry and beehives. It also includes data on farm tools, implements, draught animals and storage facilities. The data collection on the production of vegetables and root crops, which was not covered by the annual agricultural sample survey, was also included in this census.

The cost of data collection is one of the most important factors in the planning and execution of a census. In a country like Ethiopia where in addition to the problems mentioned above, transportation and communications are poor and the resources available are limited to meet the cost of a census tend to be major problems. The problem is more pronounced when deciding on the extent of census coverage.

A decision whether to carry out a complete enumeration or to plan a sample enumeration of holdings depends on the availability of resources and the level at which the census results are required. This holds true whether the results will be provided at wereda level or higher administrative hierarchies. With these constraints and extremely large number of holdings in the country's agricultural system and considering the huge cost required and timely production of the data, with the aim of providing the results at wereda level where almost all the agriculture is undertaken by small holders, a census of agriculture on the basis of sample enumeration was adopted by the CSA. In a census that aims in securing data on more agricultural items with reasonable accuracy at wereda level, a well-defined sample

enumeration was adopted by the CSA. In a census that aims in securing data on more agricultural items with reasonable accuracy at wereda level, a well-defined sample enumeration is more manageable, efficient and is expected to produce equal or better quality data than a complete enumeration and is able to provide results in a more timely fashion.

Dire Dawa is an Administrative Council with an estimated population of 342 thousand in July 2002 and an area of 1,213.20 sq. kms. Agriculture is the dominant sector in the Administrative Council and biggest employer of the economically active population. The sector in the Administrative Council is further characterized by extremely small holdings, mostly private peasant holdings, dispersion of cropland holdings, traditional farming and low level of literacy among the holders.

The Dire Dawa Administrative Council Agricultural Sample Enumeration has covered adequately representative and sufficiently large number of units (holdings) engaged in agriculture both in rural and urban areas to produce relatively reliable data at wereda level. For the purpose of this census, three farming categories have been identified: rural private holdings, urban private holdings and commercial farms. All the categories have been treated in the census on sample bases except the last one that was enumerated completely. These farming categories were enumerated at different times of the census year in order to capture the data as the events happened. The census data collection operation took about six months for Meher seasons and 2 months for Belg season to cover the rural private holdings, about 10 days to cover the urban private holdings and about one month to cover the commercial farms.

In order to improve the coverage, there has been extensive census publicity in the census operation exercise. This helped to sensitize and gain the cooperation of the respondents during data collection. In these efforts, adhoc census committees have been established and replicated to the lowest level of administration that is Farmers Associations and this helped the smooth conduct of the census and raising public awareness to achieve the intended coverage.

2. CENSUS METHODOLOGY

2.1 Scope and Coverage

The 2001/02 (1994 E.C.) Ethiopian Agricultural Sample Enumeration (EASE) was designed to cover the rural and urban parts of all weredas in the country on a large-scale sample basis. This coverage encompasses 460 weredas in 58 administrative zones of the country excluding the pastoralist areas of the Afar and Somali Regional States. In these weredas the originally selected primary sampling units amounted to 11,292 rural and 4,378 urban Enumeration Areas (EA's). These EA's were selected at wereda level to be covered in the EASE, in order to provide data on agriculture at these administrative levels in the country.

Dire Dawa Administrative Council consists of two reporting domains: urban and rural. The rural parts of the Administrative Council have a total of 68 EAs while the urban parts have a total of 208 EAs in two towns. In this Administrative Council, all sampled rural and urban EAs numbering 50 were covered. With respect to ultimate sampling units (agricultural households), it was planned to cover 750 agricultural households in rural areas and 648 in urban areas but about 749 rural and 647 urban agricultural households were actually covered. Based on the results of the census, the response rate of sampled agricultural households in both rural urban domain was nearly 100 percent.

TABLE II:1 AREA COVERAGE OF THE 2001/02 (1994 E.C.) AGRICULTURAL SAMPLE ENUMERATION IN DIRE DAWA ADMINISTRATIVE COUNCIL

Dire Dawa Administrative Council				EA's Covered		Agricultural Households			
Total		Covered				Sampled		Covered	
Wereda	Town	Wereda	Town	Rural	Urban	Rural	Urban	Rural	Urban
1	2	1	2	25	25	750	648	749	647
Total			1	25	25	750	648	749	647

2.2 Sampling Frame

The list of enumeration areas was compiled from the 1994 Ethiopian Population and Housing Census cartographic work for Dire Dawa Administrative Council and was used as the frame for the selection of the Primary Sampling Units (PSU). The 1994 Population and Housing Census enumeration maps of the region for the sample EAs were updated, and the EA boundaries and descriptions were further clarified to reflect the current physical situation. The sampling frame used for the selection of ultimate sampling units (agricultural households) was a fresh list of households, which was prepared by the enumerator assigned in the sample EAs using a prescribed listing instruction at the beginning of the launching of the census enumeration.

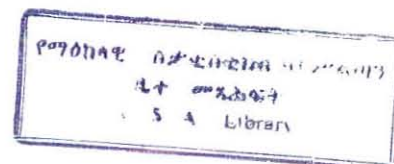
2.3 Sample Design

In order to meet the objectives and requirements of the EASE, a stratified two-stage cluster sample design was used for the selection of ultimate sampling units. Thus, in the Administrative Council, urban - rural domain was treated as stratum for which major findings of the sample census are reported. The primary sampling units are enumeration areas and agricultural households are the secondary (ultimate) sampling units. Finally, after the selection of sample households, the various census forms were administered to all agricultural holders within the sampled agricultural households.

For the private peasant holdings a fixed number (25) of sample EAs in each urban and rural domain, and 30 agricultural households in each EA were randomly selected (determined). The sample size determination in each domain and thereby in each EA was based upon the required precision level of the major estimates and the cost consideration. The pilot survey and the previous year annual agricultural sample survey results were used to determine the required sample sizes per urban - rural domain.

2.4 Sample Selection of Primary Sampling Units

Within each wereda (stratum) in the region, the selection of EAs was carried out using probability proportional to size. In this case, size being total number of agricultural



households in each EA obtained from the listing exercise undertaken in the 1994 Ethiopian Population and Housing Census of the region.

2.5 Listing of Households and Selection of Agricultural Households

In each sampled enumeration area of the region, a complete and fresh listing of households was carried out by canvassing the households in the EA. After a complete listing of the households and screening of the agricultural households during the listing operation in the selected EA, the agricultural households were serially numbered. From this list, a total of 30 agricultural households were selected systematically using a random start from the pre-assigned column table of random numbers. The sampling interval for each EA was determined by dividing the total number of agricultural households by 30. For crop cutting exercise purposes (rural domain) a total of 20 agricultural households were randomly selected from the 30 sampled agricultural households. The systematic random sampling technique was employed in this case, because its application is simple and flexible, and it can easily yield a proportionate sample.

In urban domain, 25 EA's in the two towns were covered. Then, the listing of households in each sampled EA was carried-out. In the listing exercise households that are considered agricultural households were identified. Then, the agricultural households listed in the E.A. amounted upto 30, all such households were covered in the enumeration. However, if such households exceeded 30, then 30 households were systematically selected among the listed and identified agricultural households in the EA and were covered in the enumeration.

Estimation procedure of parameters of interest like total, yield and ratio and their sampling errors is presented in Appendix I. Standard Errors and Coefficients of Variation of estimates for selected variables are given as an annex at the end of the relevant chapter.

3. CENSUS OPERATIONS

3.1 Organization of Field Work

The magnitude of the census operation was a challenge to the CSA to organize and mobilize human, material and financial resources. But the CSA's capacity was enhanced to cope with

these limitations, especially the logistics involved in the operation by the issuance of the Agricultural Census Act and establishment of adhoc structures.

Since the census operation was too large to direct and control effectively from the Head Quarters, field organization was used as a link between the sources of data and the central office. Field organization comprised the branch statistical office in the region constituting an office in Dire Dawa town. This office was augmented with supervisors, enumerators, other support staff, logistics and the temporary structures. The temporary structures included the establishment of census committees at the regional, and at the lowest administrative hierarchies, i.e. to the peasant association levels in order to enlist support and cooperation from the local people. In addition to the committees, commendable cooperation and assistance were also extended by other governmental and non-governmental organizations in the region at different stages of the census.

The field organization was required for the data collection operations and for the strict control and supervision of the fieldwork. The enumerators were the responsible field staff for data collection. They were full time enumerators hired on a contract basis. Most of them were recruited from localities in which they were assigned to undertake the data collection activities. At country level, for census undertaking in the rural parts of the region, a total of 12,398 enumerators were recruited, trained and hired for the census data collection and 1,199 of whom were held as reserve. Moreover, for undertaking the census in the urban parts of the country, a total of 4,378 enumerators were selected from those who were hired for the rural parts of the country. Of this total, the Dire Dawa Administrative Council had a share of 28 enumerators, where 3 of them were held as reserves. For undertaking the census in the urban parts of the region the same enumerators who were assigned in the rural EA's were used. The enumerators had an educational background of grade 12 and above. During the data collection operation, the enumerators lived in their places of assignment i.e. the sample EA. During the census, each enumerator was accompanied by a guide and an

assistant who are familiar with the people and well informed about the agricultural practices in the area.

The CSA permanent supervisors in the region were responsible for recruitment, selection, and training of enumerators, and census supervisors. Moreover, they were responsible for supervision of data collection, remuneration, retrieving and dispatching the completed forms to their respective Branch Statistical Offices. They were also responsible for handling administrative and other technical problems. At country level, a total of 2,240 supervisors were involved in the census. The supervisor-enumerator ratio was 1:5 and supervision was carried out on regular basis. The supervision was coordinated and monitored by professional staff of the CSA. The logistics equipment of the census included programmable calculators, field compasses, measuring tapes and kitchen balances each numbering about 14,000. Moreover, it included 273 four wheel drive vehicles and numerous other instruments. Each enumerator was provided with all the necessary logistics equipment for the data collection. In Dire Dawa Administrative Council, a total of 6 supervisors and 28 enumerators were involved and various field equipment were given to these field staff. The equipment used include 4 field vehicle, 26 programmable calculators, 26 field compasses, 26 measuring tapes, 26 kitchen balances, ... etc.

3.2 Training

The success of a census operation and data quality depend on the type of training given to the enumerators and supervisors. The training helps the enumerators and supervisors secure a common understanding of the tasks to be performed and the standard procedures to be followed in census undertaking. Good data quality is assured when the training meets its objectives and the enumerators and supervisors show a sense of responsibility and enthusiasm in the exercise of the census operation.

In view of the above point, the CSA organized a two stage training programme, that is, training of trainers followed by training of the field staff. The first stage training was given at the CSA Head Quarters in Addis Ababa, to the trainers consisting of professional staff from the CSA Head Quarters and the CSA Branch Statistical Offices and other relevant

federal, regional and zonal government organizations and senior CSA supervisors. The training that lasted for 30 days, included classroom sessions, field practices and demonstrations 550 trainers took part in the training.

The first stage training was then followed by the second stage training, which took place in 47 training centers located in different zones and the training exercises for the Administrative Council were held in Dire Dawa Town. Extensive training was given to the field staff. The instructions in the training focused more on the procedures and techniques of data collection and the responsibility shouldered both by the enumerators and the supervisors. The instructions, details of techniques and procedures of enumeration were covered in the manual. The manual served as an instruction text and a reference guide. The rigorous theoretical training was emphasized by a series of field practice and demonstrations. After about 50 days of training and field practice, a rigorous examination prepared at the census headquarters, in Addis Ababa, was given to the enumerators and supervisors at each training center. Based on the examination results only those enumerators who passed the exam were hired and assigned to their enumeration areas.

3.3 Method of Enumeration

In Ethiopia, where a significant number of the farming population live in remote and inaccessible areas, data collection is time consuming and cumbersome. The problem is further aggravated by the large number of peasant holding operators, their geographical spread, high level of illiteracy among the operators and scattered land holdings. In such a situation where the agricultural statistics system has not been fully developed, besides the above problems, the appropriate enumeration method is house to house interviewing of holders and objective measurement of their holdings and crop yields.

Accordingly, most of the information on crop area and yield was elicited from the holders through interview and the remaining information was obtained by physically measuring the data items of interest. This was done by enumerators who identified the selected holders, interviewed them, measured all their crop fields using measuring tapes, field compasses, and

scientific calculators. Moreover, they harvested and weighed the yields obtained using kitchen balances from plots of randomly selected crop fields.

As in many countries, a phased approach to the census was also used in Ethiopia in order to make the workload of manageable size and capture the data as the events unfolded. The first phase of the census was collection of data on demographic and economic characteristics of the rural peasant household; the second one was farm management practices of these rural peasant households using an interview method for both seasons. Data on crop area and yield of temporary and permanent crops was collected in the third phase of the census by visiting the farm operators and physically measuring the crop fields since the farmers are not familiar with standard units.

All crop fields of the randomly selected holders in each enumeration area were measured using the FAO recommended method. That is, first by identifying the boundaries of the fields, determining their shape which was mostly irregular and taking compass bearings of each side with respect to the north. This is followed by measuring the length of each side of the field and using a programmable calculator to arrive at both the area of the field and the closure error. The objective of arriving at the closure error is to find out how well the field was measured.

The responses to the interview and results of the measurement were recorded on a structured questionnaire. The interview method helped on the spot clarification of objectives, concepts and form of information sought from the respondents during the interview.

Since crop production is a function of area and yield, yield measurement was done using the crop-cutting method. The method involved crop-cutting from small subplots of rectangular shape of different sizes randomly placed in the selected crop field for each crop type and subsequent threshing, drying and weighing and recording the weight of the harvest. The crop cutting was performed for a sub-sample of 20 out of the 30 households selected in each enumeration area. A 4x4 meter plot was randomly demarcated for cereals, pulses, and oil

seeds and one square meter or 1 meter x 2 rows plot was designated for vegetables and root crops for the crop-cutting exercise.

The yields harvested from the plots were immediately weighed (green weight) and /or weighed again after two weeks of drying to conform to the normal holder harvesting and drying practices. The green and dry weights were recorded on the appropriate form.

Data collection activity on livestock, poultry and beehives in the rural areas; all agricultural data in urban areas; commercial farms, and farm implements including miscellaneous items were the fourth, the fifth, the sixth and the seventh phases of the census, respectively, where subjective approach was applied for all these phases. However, the Belg season area, production and farm management practices data, which was the eighth phase of the census, involved both objective and subjective methods, i.e., fields under temporary crops were objectively measured while the production and farm management practices data were collected by interviewing the sample agricultural holders.

3.4 Census Forms And Field Equipment

3.4.1 Census Forms

Forms and equipment are instrumental in gathering information from various sources. The census forms are the vehicle and basic document for collecting the desired data. These include general-purpose forms covering farm management practices, demographic and economic characteristics, area, production of both temporary and permanent crops; livestock, poultry and beehives, ...etc. These forms are formulated for recording data generated through interview as well as objective measurements.

Although the planning, organization and execution of the census were the responsibilities that rested within the CSA, development of the census forms was a tedious task that involved the formation of a working group composed of members of government and non-government organizations who are major users of agricultural data. Members of the working group were given the opportunity to identify their data requirements, define the needs of others and determine the specific questions that the forms should contain. The

working group included the staff of the organizations that are involved in agricultural planning, collection of agricultural statistics and the use of data within the agricultural sector.

The working group designed different forms for the various data items on crop area, production, and other variables of interest to meet the needs of current data users and also considered the future expectations. Attempt was made to make the content of the forms of acceptable length by distributing the variables to be collected in the different census forms. As can be observed in the census questionnaires presented in Appendix III, the rural census questionnaires/forms include:-

- ◆ The listing forms 94/0 and 94/1 that are used to record all households in the enumeration area, identify the agricultural households and select the units to be covered by the census.
- ◆ Form 94/2 is developed to list all the members of the sampled agricultural households and record the demographic and economic characteristics of each of the members.
- ◆ Forms 94/3A, 94/3B, 94/3C and 94/3D *¹ are prepared to enumerate crop data through interview and objective measurement.
- ◆ Form 94/5 is designed to record crop area data via the physical or objective measurement of crop fields.
- ◆ Form 94/6 is used to list all the fields under crop and select a crop field for each type of crop randomly for crop cutting exercise.
- ◆ Forms 94/7A, 94/7B, and 94/7C are developed for recording yield data on cereals, oil seeds, pulses, vegetables root crops and permanent crops by weighing their yields obtained from sub-plots and/or trees selected for crop-cuttings.

* Form 94/4 was the questionnaire used for collecting data on crop production forecast for 2001/02 and the data collected using this form was published in December 2001

- ◆ Form 94/8 is prepared to enumerate livestock, poultry and beehives data by type, age, sex and purpose including products through interview (subjective approach).
- ◆ Forms 94/9, 94/10 and 94/11 are used to collect data on crop and livestock product usage; miscellaneous items and farm tools, implements, draught animals and storage facilities, in that order, by interviewing the sample holders.
- ◆ The last but not least forms are the Belg season questionnaires identified as :- 94/12A and 94/12B that are used to record data on farm management practices of the season subjectively, while 94/12C is for recording Belg season crop area through objective measurement and volume of production through interview approach.
- ◆ On the other hand, the census questionnaires/forms used in the urban areas include:-
- ◆ Form U-94/1 which used to record all households in the EA, identify the agricultural households and select the units to be covered by the census.
- ◆ Form U-94/2 is developed to list all the members of the sampled agricultural household and record the demographic and economic characteristics of each of the members.
- ◆ Form U-94/3 is prepared to enumerate crop data through interview method.
- ◆ Form U-94/4 is prepared to enumerate livestock, poultry and beehives data by type, sex, age and purpose including products through interview (subjective approach).
- ◆ Form U-94/5 is used to collect data on crop and livestock usage.

The clarity of the forms was reinforced by the enumerators' as well as the supervisors' instruction manuals that dealt with an extensive elaboration on data collection with regard to the variables in the various forms.

3.4.2 Field Equipment

A census of agriculture involves the coverage of a large number of variables. Moreover, most of the data (variables) needed are of quantitative nature. But, as in most developing countries where illiteracy is high, in Ethiopia and thereby in the region, holders neither keep the records of the size of their holdings' and amount of their crop production, nor do they know standard units to measure the size of land they operate and volume of crop they produce. Under such circumstances, collecting data only through an interview has many limitations and it is not easy for an enumerator to obtain relatively accurate information on the volume of production and area under crops.

In order to overcome these shortcomings in the census, quantitative data on area under crop and yield of crops have been collected through objective measurements from designated plots of crop field. Fields under crops were measured by compass traversing. That is, by measuring the lengths of the sides of each crop field and taking compass bearings. Measuring tapes each 20-50 meters, compasses with a half degree precision, metal pegs and programmable calculators for computing the area were used. Besides the above equipment, balance scales and bags made of cloth were used for yield measurements and drying. Area and yield measurements were the most cumbersome and time consuming aspects of the census as the enumerators had to visit all the fragmented and scattered crop fields of the holders.

3.5 Quality Control in Data Collection

The quality of official agricultural statistics should be relatively high in order to provide maximum benefit to users. The CSA, as a producer of statistics, has been concerned about the quality of the data right from the conception of the agricultural census. It has made every endeavor to maintain the data quality by lending more attention to those aspects of the census that affect the quality of the data.

Nearly all census activities starting from the designing of the questionnaires to data processing have significant impact on the quality of data. Efforts have been put into each

activity of the census to assure data quality. Forms were designed sufficiently in advance of the commencement of the census enumeration in the field in order to have ample time for pre-testing, under-taking the pilot census and providing training to the enumerators. The forms were pre-tested in different parts of the country for about three times in addition to their application in the pilot census. Concepts and definitions used in the forms were expounded in the instruction manual. Attempts were made to formulate the questions with clarity and logical order. Questions about different subjects were written on different forms to avoid the mix of issues and restrict the length of the forms.

An enumerators' instruction manual was prepared and used as a training and reference guide to help the enumerators in understanding clearly all the details and procedures followed in the census and answer questions raised during the interviews. It contained questions on the forms with explanations, concepts, definitions, techniques of interviewing, duties and obligations of enumerators. A separate instruction manual was also prepared for supervisors in a similar fashion to all intents and purposes of supervision.

Training and supervision are also factors that affect data quality. The standard of training given to enumerators and supervisors is well reflected in the census results. With this in mind, the CSA offered a rigorous and thorough training to the enumerators and supervisors. Ample time has been allotted to it to help the trainees grasp the theoretical and practical aspects of data collection. The training sessions were repeatedly supplemented by field practice and demonstrations to reinforce the trainees understanding of the course. A written examination was given to all the trainees to screen and assign the best ones for the census. The supervisors have had a separate training in supervision in which the responsibilities of supervisors, field supervision, checking and editing completed forms and preparations of progress reports were reiterated. The supervisors reviewed the enumerators' work, re-interviewed samples of holders and re-measured samples of fields as part of supervision to verify the enumerators' work.

Data quality is also contingent on the cooperation and willingness of the holders to provide the desired information. In order to seek the cooperation of the holders (respondents)

promotional efforts have been made using the electronic and print media. Thus, regarding the census publicity, poems, dramas and other programs were presented on the country's TV, Radio and the Press. The CSA prepared, customized and distributed census materials such as brochures, fact sheets, posters, caps with census emblem, calendars and other items to relevant institutions and government officials. Moreover, with respect to the progress of the census operations, CSA gave a number of press releases to foster public support and cooperation. Branch offices and supervisors worked with local officials and adhoc committees to obtain written and verbal support of the census operations in their speeches and public appearances.

3.5.1 Concepts and Definitions

Information on all items of agriculture is not useful until the items are distinctly defined and understood. The procedure of stating data items and related terms is a prerequisite for making standards and definitions for collection and compilation of agricultural data. The intent of using standard concepts and definitions is not only to provide quality data but also to ensure that the right items are enumerated and measured accurately to reflect the agricultural situation.

Standard concepts and definitions used in a census setup provide clear linkages between various tables of the census and previous surveys and maintain consistent enumeration and measurement of variables of interest. To this end, the CSA has put a lot of efforts into communicating concepts and definitions to the census field staff through training and instruction manuals. The concepts and definitions used in the census were made to conform to the FAO standard with a slight adaptation of a few of them to suit the agricultural situation in Ethiopia. The concepts and definitions used in the census included the following: -

Enumeration Area (EA): an enumeration area in the rural parts of the country is a locality that is in most of the cases less than and only in some cases equal to a farmers' association in geographical area and usually consists of 150-200 households.

Household: a household may be either:

- a) a one person household, that is a person who makes provisions for his own 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 provisions for food and other essentials of living. The persons in the group may pool their incomes and have a common budget to a greater or lesser extent. They may be related or unrelated persons, or a combination of both. These persons are taken as members of the household.

Agriculture: the growing of crops and/or raising of animals for own consumption and/or sale.

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

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

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

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

Field: a field is defined as any plot of land which is a parcel or part of a parcel under the same or mixed crops or any other form of private holding.

Crop: includes cereals, pulses, oilseeds, vegetables, root crops, fruits, coffee, enset, chat, hops, sugar cane, cotton, tobacco, . . . etc produced for food, making drinks, stimulation and making fabrics or clothings.

Crop production: the processes of growing and harvesting of the above crops for own consumption and/or sale.

Temporary Crops/Annual: Annual temporary crops are crops which are grown in less than a year's time, sometimes only a few months with an objective to sow or replant again for additional production following the current harvest. Continuously grown crops planted in rotation are also considered as temporary crops since each is harvested and destroyed by ploughing in preparation for each successive crop.

Permanent Crops: Crops which are grown and occupy land for a long period of time, not requiring replanting for several years after each harvest, are considered as permanent crops. All fruit trees (i.e., oranges, mandarin, banana, ...etc.) and trees for beverages (i.e., coffee, tea, Gesho, ... etc.) are considered permanent crops but meadows and pastures are excluded.

Meher (main) Season Crop: any crop harvested between Meskerem (September) and Yekatit (February) is considered as Meher season crop.

Belg Season Crop: Any crop harvested during the months of March (Megabit) and August (Nehase) is considered to be Belg season crop.

Fallow Land: land which has been or intended to be kept at rest for at least one agricultural year and a maximum idleness of less than five years is considered fallow land.

Grazing Land: Land used for growing herbaceous forage crops, either through cultivation or naturally is considered to be grazing land.

Wood Land: All tracts of timber, natural or planted as part of the holding, which has a value as wood, timber, other wood products and/or used for protection. Forest land used for recreational purposes would not be included as Wood land.

Other Land Uses: Land occupied by the holders' houses and/or buildings, parking areas, gardens, barn, wells and ponds would be included as other land uses.

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, wood ashes,...etc., while commercial fertilizers are DAP (Di- Ammonium Phosphate), UREA (Ammonium Nitrate), ...etc.

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

Draught Animal: Refers to animals that are engaged in activities such as ploughing, threshing, ...etc

Dairy Cow: Refers to any type of cow used to give milk previously and/or provide milk currently or have never given milk before and pregnant now. Heifers are not included in this category.

Milking Cow: Refers to cows actually milked during the reference period, i.e. February 10, 2001 to February 9, 2002.

Laying Hens: Refers to all hens and pullets of all types which have laid eggs during the reference period, i.e., Feb 10, 2001 to Feb 9, 2002.

Extension Package Programs: Are outreach programs operating in rural areas for private holdings aiming to transfer modern agricultural technologies to increase crop and livestock productivity.

4. DATA PROCESSING

4.1 Editing, Coding and Verification

In the 2001/2002 Ethiopian Agricultural Sample Enumeration (EASE), the filled-in forms that were retrieved from 47 Branch Statistical Offices were primarily received and systematically registered at the documentation unit of the CSA head quarters in Addis Ababa. Before launching the actual editing and coding activities, the Natural Resources and Agricultural Statistics Department staff gave adequate training to the 157 editors and coders. These editors and coders carried out the manual editing, coding and verification of the filled-in EASE questionnaires in two shifts.

At the outset, the editing and coding activities for the filled-in forms on area and agricultural practices took place, this was followed up by the editing and coding of the forms on the production of temporary crops (cereals, pulses, oil seeds, vegetables and root crops), livestock, farm implements, permanent crops, Belg and miscellaneous questionnaires region by region. For the filled-in forms on area and agricultural practices, verification was carried out on 100% basis for the first five weeks from the launching of the activity and then considering the quality performance of editor-coders the activity was dropped to 66% of the forms gradually. On the other hand, the verification activity has been carried out on 100% basis for the filled-in forms on production of the temporary and permanent crops, livestock, farm implements and all other completed forms.

For Dire Dawa Administrative Council, the editing, coding and verification of the filled-in forms in general took about 1.3 working days. That is, the editing, coding and verification of the filled-in forms for area, agricultural practice, the production of the temporary and permanent crops, and livestock took about 0.6 working days, while that of the filled-in forms on farm implements, demographic characteristics, Belg season and the urban forms took around 0.7 working days.

4.2 Data Entry, Cleaning and Tabulation

About 144 data encoders were assigned to undertake the data entry activity of 2001/02 EASE and it has been carried out on two-shift basis. Before the starting of the data entry operation data encoders were trained for about 5 days using computer programs developed by the Data Processing Department staff. The Programmers prepared the data entry programs using CENTRY, which is a data entry module of IMPS (Integrated Microcomputer Processing System).

The data entry exercise has been carried out using 76 personal computers (PC's). Like that of the manual editing and coding activity, the filled-in forms on area and agricultural practices were entered first and this was followed by entry of the filled-in forms on the production of temporary crops, livestock, farm implements, permanent crops, Belg and miscellaneous questionnaires region by region.

In order to ensure the quality of the data entry work, verification exercise was carried out. The entry of the filled-in forms on area and agricultural practices were verified on 100 % basis. Then the verification exercise was dropped to 66 % from the 6th week of the launching of the operation and was further reduced to 50% from the 10th week onwards by observing and assessing the magnitude of the percentage of errors. Later on verification process was carried out on 100% basis for the filled-in forms on the production of temporary and permanent crops, livestock, farm implements and all other completed forms. The verification activity was carried out through the process of re-entering the data.

For Dire Dawa Administrative Council, the whole data entry process of the filled-in forms on area, agricultural practice, the production of the temporary and permanent crops, and livestock took around 0.7 working days, while that of the filled-in forms on farm implements, demographic characteristics, Belg season and the urban forms took about 1.1 working days.

Data entered into the computer needs to be checked for completeness, consistency and validity. For this purpose computer edit programs were prepared by programmers using CONCOR, which is the editing module of IMPS. Using print-outs from these programs and referring to the filled-in census forms, corrections were made by nine trained manual data cleaning technicians. Moreover, nine other data-cleaning computer operators were involved in making the actual corrections of the data on the computer.

Additionally, an intermediate set of instructions or programs were made available and applied on the data to prepare information suitable for tabulation. These programs were prepared using CSPro and IMPS softwares. Like IMPS Software, CSPro is used as a tool for entering, editing and tabulating data. CSA used the CSPro software for data editing and calculation of CVs.

Data made ready for tabulation through the process of cleaning and intermediate programs was finally used to generate the required tables. This was done using tabulation programs

developed by the senior programmers of the Data Processing Department. The CENTS software, a tabulation component of IMPS, was used in producing the 2001/02 EASE results.

5. MEASURES OF PRECISION

These are measures that indicate the variable error that may be expected in the estimates derived from the sample. The common measures are variances, standard errors and coefficients of variation (CV). Out of these measures, the results of standard errors and coefficients of variation of estimates for selected variables are presented as an annex at the end of each chapter.

For comparing the variability of different crop estimates or of the same crop estimates in different reporting domains, the coefficient of variation (the standard deviation expressed as a percentage of the estimate), should be used since it is a unit-less measure.

In general, estimates with CV less than 30% are considered as reliable estimates (assuming no bias). Estimates between the ranges of 30% to 50% CV's are considered less reliable and users are advised to use them cautiously. This is due to the fact that the higher the CV the more unreliable the estimate will be. Estimates with CV greater than 50% are not shown or were suppressed, and instead they are marked with asterisk (*), because these estimates (with CV > 50%) are not reliable to be used for any demand.

CHAPTER III

SOCIO-ECONOMIC CHARACTERISTICS OF THE POPULATION IN AGRICULTURAL HOUSEHOLDS

1 INTRODUCTION

Population as a producer and consumer is closely related with agriculture. On the one hand, population affects production in general and agricultural outputs in particular by furnishing the required labour. On the other hand, the size of a population and its anticipated growth is the main factor determining food consumption requirements. Regarding the balance between population and consumption, if more people are to be fed than the food or services produced, saving and capital investments will be negatively affected. Moreover, population growth also negatively influences agriculture by putting pressure on the environment, such as water, fertility of land,...etc. Population size further influence productivity mainly through the diversification and specialization of the economy, the size of the market, and the importance of foreign trade.

Not only the size, but also the socio-economic characteristics of the population of the agricultural households are important to the agricultural production. Study of the nature of the agricultural sector of a country will not be complete without proper understanding of the socio-economic characteristics of the population engaged in it. The population statistics of the agricultural households can be used to describe the characteristics and distribution of the population in space, its density and degree of concentration, the fluctuation in its rate of growth and the movement from one area to another. Data on population and agriculture will also help in finding out what percentage of resources will be needed at a particular time for the meeting of basic needs of the people and what amount of socially useful and productive labour is available in the country, regardless of whether labour or capital intensive techniques will suit the nation's economy.

Generally, an analysis of statistical data on population residing in agricultural households is important to assess the size, structure and characteristics of the human resources involved in and supported by the sector. Such kind of information will provide the human background for planners and policy makers in their attempt to formulate policies that helps improve the sector's output as well as the living conditions of the rural population.

Cognizant of this fact, the 2001/2002 Ethiopian Agricultural Sample Enumeration has collected basic social and economic characteristics of the population in agricultural households in October 2001. This chapter assesses the resulting data related to the size, the structure and distribution of the population in agricultural households with some selected variables. These variables include size and age-sex structure, household size, relationship to the head of the household, marital status, literacy, educational level, working status, reason for not working, type of occupation, and employment status. In the Annex to this chapter are given tables showing Estimates, Standard Errors (S.E.) and Coefficient of Variations (C.V.) for some relevant variables.

2 SIZE AND AGE-SEX STRUCTURE OF THE POPULATION IN AGRICULTURAL HOUSEHOLDS

In this section, the size and age-sex composition of the population in agricultural households of Dire Dawa Administrative Council will be assessed. The population in agricultural households comprises of all persons residing in households with at least one agricultural holder, where a holder is defined as a person who exercises management and control over the operation of the agricultural holding such as land and livestock and makes the major decision regarding the utilization of the available resources (detailed explanation of holder and holdings are provided in Chapter II of this report in the section that deals with concepts and definitions). Whenever is appropriate the assessment will be done separately for non-holders, holders and type of holding.

2.1 Size of the Population in Agricultural Households

Summary Table III.1 presents the estimated population size of the agricultural households in Dire Dawa Administrative Council classified by sex, place of residence and holding status. According to the result of this sample enumeration, the population in agricultural households of the region is estimated to be 94,964. Of the total the population in agricultural households, 79, 904 are residing in rural areas and the remaining 15,060, that is, only 15.9 percent of the population in agricultural households are residing in urban areas.

Summary Table III.1 size of the population in Agricultural Households by Sex and Place of Residence

Place of Residence/ Sex	Total Population in Agricultural Households		Holders		Members Other Than Holders	
	No.	%	No.	%	No.	%
Rural + urban						
Both Sexes	94,964	100	18,163	19.1	76,801	80.9
Male	47,381	100	15,388	32.5	31,992	67.5
Female	47,583	100	2,774	5.8	44,809	94.2
Rural						
Both Sexes	79,904	100	15,516	19.4	64,387	80.6
Male	39,928	100	13,617	34.1	26,311	65.9
Female	39,976	100	1,899	4.8	38,077	95.2
Urban						
Both Sexes	15,060	100	2,646	17.6	12,414	82.4
Male	7,453	100	1,771	23.8	5,682	76.2
Female	7,607	100	875	11.5	6,732	88.5

The enumeration results show that there were 18,163 agricultural holders in the region, making up 19.1 percent of the total population residing in agricultural households. Further break down of agricultural holder by type of holding is presented in Summary Table III.2. Accordingly, holders practicing crop and livestock farms constitute the largest proportion (77.3%) of total holders. Holders practicing live stock only farms make up about 18.6% while those practicing crop only are 4.07 of total holders.

The enumeration result further shows that the proportion of holders among the males to be significantly higher than their female counterparts. In the Rural and the Urban areas, the proportion of the holders among the males are about seven times and two times higher than that of the females, respectively.

Summary Table III.2 size of Agricultural Holders by Sex, Type of Holding and Place of Residence

Place of Residence/Sex	Total Holders		Crop Only		Livestock Only		Crop and Livestock	
	No	%	No	%	No	%	No	%
Rural + urban								
Both Sexes	18,163	100	740	4.0	3,389	18.7	14,034	77.3
Male	15,388	100	670	4.4	2,128	13.8	12,590	81.8
Female	2,774	100	70	2.5	1,260	45.4	1,444	52.1
Rural								
Both Sexes	15,516	100	630	4.1	1,370	8.8	13,516	87.1
Male	13,617	100	588	4.3	857	6.3	12,172	89.4
Female	1,899	100	42	2.2	513	27.0	1,344	70.8
Urban								
Both Sexes	2,646	100	110	4.2	2,018	76.2	518	19.6
Male	1,771	100	82	4.6	1,271	71.8	418	23.6
Female	875	100	28	3.2	747	85.4	100	11.4

2.2 Age-Sex Structure of the Population in Agricultural Households

Age and sex are among the important factors that determine the status of individuals in their community in general and their involvement in production process in particular. The age-sex composition of a population of an area is the product of past fertility, mortality and migration trends. Age and sex structure are important for the functioning of the economy including the agricultural economy, since these two attributes constitute main criteria for determining entrance into the work force and the division of labour. It is also important for several purposes. Among others, age-sex data is useful for in-depth analysis of socio-economic characteristics of a given population. Also, age-sex data is vital for making component and sectorial projections.

The percentage distribution of the population in agricultural households by sex, age group, place of residence, and holding status and type is presented in Summary Table III.3. Also, The single year age and five years age distribution of the population in agricultural households are presented in Figure III.1 and Figure III.2, respectively. The population in agricultural households in both rural and urban areas is characterized by young age. As the data in the table shows, 55.1% and 52.1% of rural and urban population in agricultural households are under 18 years of age. Those persons aged 60 years and above constitute only small proportion (5% in rural and 4.4% in urban areas). According to the age pyramid the age pattern of the region's population in agricultural households appears to be fluctuating (See Figures III.1 to III.3). This can be observed in these figures, particularly from the distortion at age group 20-24 years. As expected, holders are concentrated in the age groups 30 - 39 and 40-49 years (See Figure III.3).

The age pattern observed at regional level among total holders also holds true for both livestock only and crop and livestock holders, with less than 2% of the young under age 18 years practicing only livestock agriculture. In the case of persons who are engaged in livestock only, however, the involvement of the young population who are under age 25 years is insignificant (1.8%). Also, unlike the other types of holdings the proportion of old

Fig. III.1 Distribution of population in agricultural households by sex and age in single year (rural+urban)

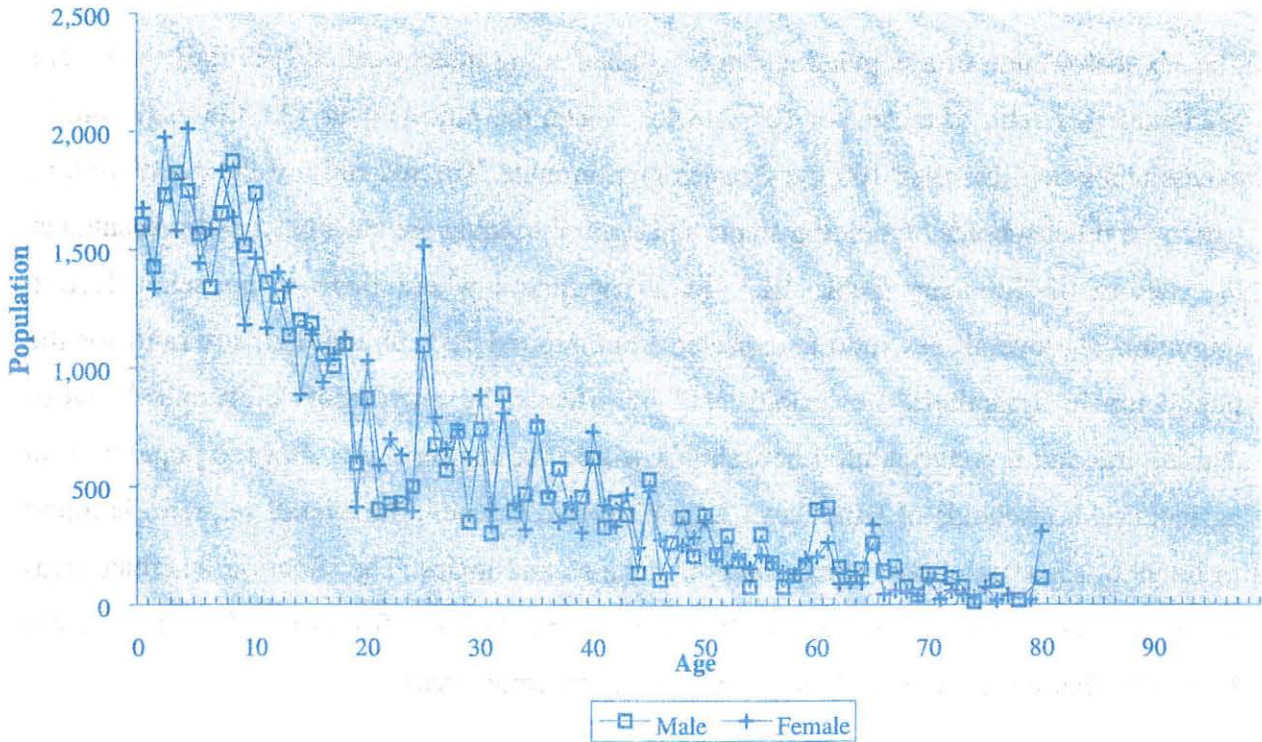


Figure III.2 Age-Sex Distribution of Population in Agricultural Households (urban +rural)

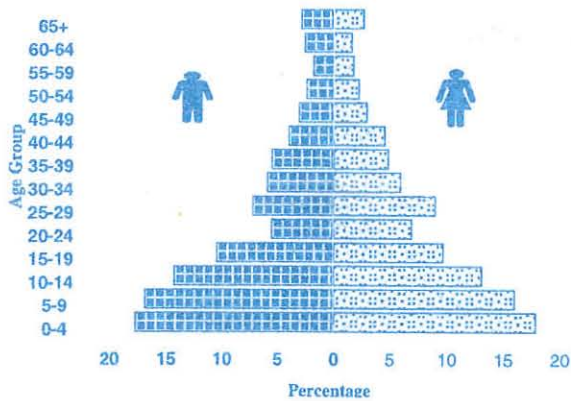
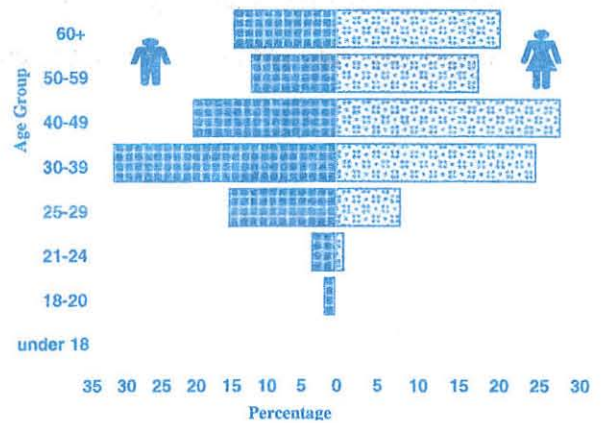


Figure III.3 Age-Sex Distribution of population of Agricultural Holders (urban + rural)



persons aged/60+ is less than those aged 50-59 years. This phenomenon of proportion of the young being livestock only holders is particularly true in urban areas.

The sex distribution of a population can be studied using indices called "sex ratios" that are calculated as a ratio of males per 100 females. When the ratio is over 100, the males are in excess and when less than 100 the females predominate. The sex ratio of the population in agricultural households by holding status and type of holding are calculated and presented at the bottom of Summary Table III.3. In a population where there is no sex selective migration, the overall sex ratio is expected to be around 100. In addition, sex ratio for the population in agricultural households will be affected by movements of people between agricultural and non-agricultural households within the region itself. For the population in agricultural households of Dire Dawa Administrative Council, the overall sex ratio is found to be 99.6, showing almost equal share of females and males. The situation in urban areas where the result show a sex ratio of 98 is, however, different from that of the rural areas indicating that there are more females than males in urban areas.

The table further shows a sex ratio of 554.7 for agricultural holders. That is, for every 100 female holders there are 555 male holders. The excess of male holders over female holders is extremely large among those practicing crop only and crop and livestock holding. The pattern observed at regional level also holds true in both urban and rural areas with urban holders showing relatively lower sex ratios for livestock only and crop only holders and higher sex ratio for those practicing crop and livestock.

Summary Table III.3 Distribution of Population in Agricultural Households by Sex, Age Group, Holding Status, Type of Holding and Place of Residence

Age Group And Sex	Rural + Urban					Rural					Urban					
	Total Population in Agricultural HHs	Total Holders	Holders by Type of Holding			Total Population in Agricultural HHs	Total Holders	Holders by Type of Holding			Total Population in Agricultural HHs	Total Holders	Holders by Type of Holding			
			Crop Only	Livestock Only	Crop and Livestock			Crop Only	Livestock Only	Crop and Livestock			Crop Only	Livestock Only	Crop and Livestock	
Both Sexes																
All Ages	94,964	18,163	740	3,389	14,034	79,904	15,516	630	1,370	13,516	15,060	2,646	110	2,018	518	
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Under 18	54.6	*	-	1.8	*	55.1	*	-	*	*	52.1	0.9	-	1.1	-	
18 - 20	5.4	1.5	-	1.5	1.6	5.1	1.5	-	*	1.6	6.8	1.4	-	1.5	*	
21 - 24	4.3	3.1	-	3.8	3.0	4.2	3.2	-	*	3.1	4.7	2.0	-	2.5	*	
25 - 29	8.1	14.1	15.1	8.8	15.4	8.4	15.6	16.5	12.7	15.9	6.6	5.6	*	6.1	3.3	
30 - 39	11.1	30.7	26.9	29.4	31.2	11.0	30.8	27.6	27.2	31.3	12.0	30.0	23.6	31.0	27.4	
40 - 49	7.4	21.5	24.9	23.9	20.8	7.1	20.2	25.9	15.8	20.3	8.8	29.7	20.0	29.4	32.6	
50 - 59	4.1	13.0	18.2	15.0	12.2	4.0	12.2	17.6	13.1	11.9	4.6	17.2	21.8	16.3	19.9	
60+	4.9	15.4	14.9	15.8	15.4	5.0	15.8	0.0	21.5	15.4	4.4	13.2	27.3	12.0	14.9	
Male																
All Ages	47,381	15,388	670	2,128	12,590	39,928	13,617	588	857	12,172	7,453	1,771	82	1,271	418	
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Under 18	55.4	*	-	*	*	55.8	*	-	*	*	53.3	1.3	-	1.8	-	
18 - 20	5.4	1.7	-	*	1.8	5.0	1.7	-	*	1.8	7.7	1.8	-	2.0	*	
21 - 24	3.7	3.4	-	*	3.4	3.5	3.7	-	*	3.5	5.0	1.5	-	1.9	*	
25 - 29	7.2	15.3	13.4	10.6	16.2	7.5	16.7	*	19.6	16.6	5.5	4.3	*	4.6	*	
30 - 39	11.4	31.8	28.8	29.3	32.3	11.8	32.1	29.6	27.9	32.5	9.6	29.4	24.4	30.3	27.5	
40 - 49	7.1	20.4	23.1	24.2	19.7	6.7	19.0	24.1	*	19.1	9.6	31.8	15.9	31.2	36.4	
50 - 59	4.2	12.1	18.8	13.8	11.5	4.0	11.5	18.9	*	11.3	5.0	16.9	19.5	16.7	17.2	
60+	5.5	14.6	15.7	13.3	14.7	5.8	14.8	0.0	*	14.8	4.3	13.0	30.5	11.5	14.4	
Female																
All Ages	47,583	2,774	70	1,260	1,444	39,976	1,899	*	513	1,344	7,607	875	28	747	100	
	100	100	100	100	100	100	100	*	100	100	100	100	100	100	100	
Under 18	53.9	*	-	*	-	54.4	*	-	*	-	51.0	-	-	-	-	
18 - 20	5.4	*	-	*	-	5.3	-	-	-	-	5.9	*	-	*	-	
21 - 24	4.9	1.0	-	2.1	-	5.0	-	-	-	-	4.3	3.1	-	3.6	-	
25 - 29	9.1	7.9	*	5.6	8.7	9.3	7.6	*	*	8.8	7.7	8.3	-	8.8	*	
30 - 39	10.9	24.7	*	29.7	21.2	10.2	21.7	-	26.1	20.8	14.3	31.2	*	32.1	26.0	
40 - 49	7.6	27.7	*	23.6	30.7	7.5	28.8	*	0.0	31.7	8.1	25.5	*	26.5	17.0	
50 - 59	4.1	17.6	*	17.0	18.4	4.0	17.5	-	18.9	17.5	4.2	17.9	*	15.7	31.0	
60+	4.2	20.3	*	20.2	21.0	4.2	23.4	-	30.8	21.3	4.5	13.5	*	12.9	17.0	
Sex Ratio	99.6	554.7	957.1	168.9	871.9	99.9	717.0	-	167.1	905.7	98.0	202.4	292.9	170.1	418.0	

2.3 Household Size

Size of household refers to the entire number of persons- related or unrelated who comprise one private household. In this survey a household is defined as either single person who makes provisions for his own or a group of two or more persons who live together and make common provisions for food and other essentials of living.

Summary Table III.4 presents the distribution of the agricultural households by number of persons per household and average household size for male and female-headed households. According to the sample enumeration, on September 2001 there were 17,848 agricultural households in Dire Dawa Administrative Council. These households all together accommodate 94,964 persons, resulting in average household size of 5.3 persons per agricultural household. Regarding the distribution of persons per household, the data in the table shows that, the majority of households have 6-9 persons (38.3 percent) followed by those with 4-5 persons (33.8 percent) and 2-3 persons (20.8 percent). Single person households and households with 10 and more persons comprise 2.2 percent and 4.9 percent, respectively.

Summary Table III.4 Distribution of Agricultural Households by Household Size, Sex of Head and Place of Residence

Rural/ Urban and Sex of Head	Total Population in Agricultural HHs	Total Agricultural Households		Household Sizes					Average Household Size
		N ^o	%	One Member HHs	2-3 Members HHs	4-5 Members HHs	6-9 Members HHs	10 & above Members HHs	
Rural + Urban									
Total	94,964	17,848	100	2.2	20.8	33.8	38.3	4.9	5.3
Male Head	84,065	15,152	100	0.8	18.4	33.9	41.4	5.5	5.5
Female Head	10,899	2,695	100	9.9	34.4	33.2	21.0	1.4	4.0
Rural									
Total	79,904	15,210	100	2.1	21.4	34.1	38.1	4.3	5.3
Male Head	72,452	13,243	100	0.9	18.9	34.4	40.9	5.0	5.5
Female Head	7,452	1,968	100	10.4	38.0	32.1	19.4	-	3.8
Urban									
Total	15,060	2,637	100	2.7	17.7	32.0	39.5	8.1	5.7
Male Head	11,613	1,909	100	0.4	15.1	30.4	44.9	9.2	6.1
Female Head	3,447	728	100	8.7	24.6	36.3	25.1	5.4	4.7

Average household size for agricultural households in urban areas is slightly higher than that in rural areas. The enumeration results further show that the size of households differs by the sex of head. In both rural and urban areas, male headed agricultural households appear to have larger household size, with the difference slightly higher in rural areas. As can be observed in Summary Table III.4, on average, male headed agricultural households in rural and urban areas of the region have about 2 and 1 more persons, respectively. In rural areas, about 10 percent of female headed agricultural households are occupied by women living alone.

3. SOCIO-ECONOMIC CHARACTERISTICS OF THE POPULATION IN AGRICULTURAL HOUSEHOLDS

In addition, the 2001/2002 Ethiopian Agricultural Sample Enumeration has collected some basic social and economic characteristics of the population residing in agricultural households. The information collected included relationship to the head of the household, marital status, literacy status and educational level, work status, employment status and type of occupation. In this respect, this section of the chapter presents some of the major findings of the sample census.

3.1 Relationship with the Head of Household

Relationship to the head of the household is an important measure of household formation and hence it is a pivot on which modern method of projecting households and families turns. Relationship to the head of the household is considered in this report for its influence on agricultural holding status and certain decision to be taken related to agricultural activities. In the sample census, the head of a household is any member of the household who is recognized as a head by the other members.

Summary Table III.5 presents the distribution of the population in agricultural households by sex, relationship to the head of the household, holding status and type of holdings for Dire

Summary Table III.5 Size of Population in Agricultural Households by Sex, Relationship to the Head of Household, Holding Status and Type of Holding

Sex and Relationship to The Head	Rural + Urban					Rural					Urban				
	Total Population in Agricultural Households	Total Holders	Holders by Type of Holding			Total Population in Agricultural Households	Total Holders	Holders by Type of Holding			Total Population in Agricultural Households	Total Holders	Holders by Type of Holding		
			Crop Only	Livestock Only	Crop and Livestock			Crop Only	Livestock Only	Crop and Livestock			Crop Only	Livestock Only	Crop and Livestock
Both Sexes															
All Persons	94,964	18,163	740	3,389	14,034	79,904	15,516	630	1,370	13,516	15,060	2,646	110	2,018	518
Head	18.8	95.9	97.3	87.3	97.9	19.0	96.6	96.8	84.2	97.8	17.5	91.9	100.0	89.4	100.0
Spouse	15.2	1.2	-	5.7	*	15.7	*	-	*	*	12.6	5.6	-	7.4	-
Children	55.7	1.6	-	*	1.0	55.9	1.7	-	*	1.1	54.9	1.5	-	2.0	-
Mother/Father	2.0	-	-	-	-	2.1	-	-	-	-	1.7	-	-	-	-
Sister/Brother	2.2	*	-	*	-	2.1	*	-	*	-	3.2	*	-	*	-
Other Relatives	5.3	0.9	-	1.7	*	4.8	0.9	-	*	*	8.0	0.8	-	1.0	-
Non-Relative	0.6	*	*	-	*	0.4	*	*	-	*	2.2	-	-	-	-
Male															
All Persons	47,381	15,388	670	2,128	12,590	39,928	13,617	588	857	12,172	7,453	1,771	82	1,271	418
Head	32.0	96.8	97.0	90.5	97.9	33.2	96.7	96.6	82.1	97.8	25.6	97.2	100.0	96.1	100.0
Spouse	0.4	*	-	*	-	*	-	-	-	0.0	1.8	*	-	*	-
Children	58.6	1.9	-	*	1.1	58.6	1.9	-	*	1.2	58.6	1.8	-	2.5	-
Mother/Father	0.5	-	-	-	-	0.5	-	-	-	-	0.7	-	-	-	-
Sister/Brother	2.7	*	-	*	-	2.5	-	-	-	-	3.9	*	-	*	-
Other Relatives	5.2	1.0	-	*	*	4.8	1.1	-	*	*	7.8	0.5	-	0.6	-
Non-Relative	0.5	*	*	-	*	0.3	*	*	-	*	1.5	-	-	-	-
Female															
All Persons	47,583	2,774	70	1,260	1,444	39,976	1,899	*	513	1,344	7,607	875	28	747	100
Head	5.7	90.8	100.0	81.8	98.2	4.9	95.3	*	87.5	98.1	9.6	81.1	100.0	77.9	100.0
Spouse	30.0	7.8	-	15.1	*	31.3	*	-	*	*	23.2	16.5	-	19.3	-
Children	52.8	0.3	-	0.6	-	53.1	-	-	-	-	51.2	0.9	-	1.1	-
Mother/Father	3.6	-	-	-	-	3.7	-	-	-	-	2.6	-	-	-	-
Sister/Brother	1.8	*	-	*	-	1.6	*	-	*	-	2.5	-	-	-	-
Other Relatives	5.4	0.4	-	1.0	-	4.9	-	-	-	-	8.2	1.4	-	1.6	-
Non-Relative	0.8	-	-	-	-	*	-	-	-	-	2.8	-	-	-	-

Dawa Administrative Council. Among both the males and the females the majority of the population in agricultural households are children of heads. Next to children of heads are the heads (18.8 percent) and the spouses (15.2 percent). The proportion of heads among the males is substantially higher than that of the females, reflecting the fact that males in most societies assume execution of the major roles of the agricultural activities and the head is considered as the main bread winner in the household as well as the one who merely bear responsibility.

The overwhelming majority of both male and female holders (96.8 percent and 90.8 percent, respectively) are heads of households and this dominancy of heads of households is more pronounced in the crop and livestock and crop only holdings. Spouses have some contribution (5.7 percent) among livestock only holders and this phenomenon is more pronounced in the urban areas than rural areas.

3.2 Marital Status

This section presents the level and pattern of marital status of the population in the agricultural households in Dire Dawa Administrative Council. In addition to being one of the important proximate determinants of fertility, marriage has economic and social implications. Generally, marriage is basic to family formation. In countries like Ethiopia, where the agriculture is subsistence farming, families play central role in the production processes, income maintenance, economic status, ...etc.

In the census questionnaire, information was collected on the marital status of the population 10 years of age and older. The marital status was categorized into four main groups, namely never married (single), married, divorced and widowed. A person who had never been married is considered to be single, whereas married persons include couples who are living together bonded by any kind of marital engagement at the time of the census (traditional, religious or civil marriage). Separated couples are also considered to be married, unless they had dissolved their marriage agreement legally. A person who had been married but whose marriage was

dissolved through divorce before the census day is categorized as divorced, and a person whose marriage was dissolved through the death of the spouse is categorized as widowed.

Summary Table III.6 presents the distribution of the population in agricultural households by marital status and broad age group. As the data in the table indicates, almost half of the population in the agricultural households in the region is in marital union at the time of the enumeration. Those who never married constitute about 41.6 percent while 7.9 percent have dissolved their marriage due to divorce or the death of the spouse. The data further shows that a higher proportion of the males to be in single-hood status while the incidence of dissolution of marriage is significantly higher among the females than the males. Regarding the marital status of the agricultural holders in the region, the data in the table shows that, the majority (82.2 percent) were in marital union at the time of the census.

A higher proportion, i.e., about 96 percent and 98 percent of the young (age 10-17 years) female and male, population respectively, in agricultural households are single. These proportions drop to 21.6% and 58.7% at age 18-29 years indicating relatively late start of marriage in the region's female population. Further, marriage is universal in the region as evidenced by the fact that at age 50 and over the proportion of single is negligible for both males and females.

Summary Table III.6a Population Aged 10 Years and Over in Agricultural Households by Sex, Age Group, Marital Status* and Holding Status in Dire Dawa Administrative Council

Age Group and Holding Status	Total			Never Married			Married			Divorced			Widowed		
	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F
All Population in Agricultural HHs															
All Ages	62,434	31,101	31,333	41.6	47.7	35.5	50.3	49.4	51.3	1.6	0.8	2.5	6.3	2.0	10.6
10 - 17	19,362	9,971	9,391	96.7	97.8	95.5	3.1	1.9	4.3	*	-	*	-	-	-
18 - 29	16,917	7,733	9,184	38.5	58.7	21.6	58.5	40.1	74.1	1.7	0.6	2.7	1.1	*	1.6
30 - 49	17,590	8,792	8,798	3.6	5.6	1.6	87.0	91.8	82.2	2.3	1.0	3.6	7.1	1.5	12.6
50+	8,565	4,605	3,959	1.0	*	*	65.8	86.9	41.3	3.6	2.1	5.4	29.5	9.8	52.5
Holders															
All Ages	18,163	15,388	2,774	4.2	4.6	2.0	82.2	91.8	28.9	2.0	0.7	8.8	11.6	2.8	60.3
10 - 17	*	*	*	*	*	*	*	*	-	-	-	-	-	-	-
18 - 29	3,396	3,146	250	12.5	13.1	4.4	83.6	85.7	57.6	1.1	*	8.0	*	*	*
30 - 49	9,488	8,032	1,456	2.2	2.3	1.8	87.3	95.7	40.7	1.6	0.4	8.3	8.9	1.6	49.3
50+	5,161	4,110	1,050	*	*	-	73.5	90.7	6.3	3.2	1.6	9.7	22.6	6.9	84.0

Summary Table III.6b Population Aged 10 Years and Over in Agricultural Households by Sex, Age Group, Marital Status* and Holding Status in Rural Areas

Age Group and Holding Status	Total			Never Married			Married			Divorced			Widowed		
	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F
All Population in Agricultural HHs															
All Ages	51,620	25,793	25,826	39.7	45.8	33.6	52.6	51.5	53.7	1.3	0.5	2.0	6.4	2.1	10.6
10-17	15,761	8,147	7,614	96.8	98.0	95.6	3.0	1.8	4.2	-	-	-	-	-	-
18-29	14,191	6,372	7,819	33.4	53.4	17.2	64.1	45.6	79.1	1.3	*	2.1	1.2	0.0	0.0
30-49	14,455	7,361	7,094	3.0	5.3	*	88.1	92.6	83.3	1.6	*	2.7	7.3	1.6	13.3
50+	7,213	3,913	3,299	*	*	*	67.4	87.3	43.8	3.2	*	4.7	28.5	9.7	50.9
Holders															
All Ages	15,516	13,617	1,899	4.1	4.5	*	83.7	92.1	23.8	1.1	*	*	11.1	2.9	69.9
10-17	*	*	*	*	*	*	-	-	-	-	-	-	-	-	-
18-29	3,155	3,011	145	11.6	12.1	-	85.3	86.7	*	*	*	-	*	*	*
30-49	7,910	6,949	960	2.0	2.2	*	88.9	96.1	36.3	*	-	*	8.7	1.7	59.8
50+	4,356	3,580	776	*	*	-	75.1	90.8	*	2.7	*	*	21.7	7.2	88.9

Summary Table III.6c Population Aged 10 Years and Over in Agricultural Households by Sex, Age Group, Marital Status* and Holding Status in Urban Areas

Age Group and Holding Status	Total			Never Married			Married			Divorced			Widowed		
	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F	M + F	M	F
All Population in Agricultural HHs															
All Ages	10,814	5,308	5,507	50.5	56.8	44.5	39.5	39.1	39.9	3.5	2	4.8	6.2	1.7	10.6
10-17	3,602	1,824	1,777	96.1	97	95.3	3.5	2.5	4.5	*	-	*	-	-	-
18-29	2,726	1,361	1,365	65.2	83.2	47.1	29.7	14.4	44.9	4.1	2.4	5.8	0.7	-	1.5
30-49	3,135	1,431	1,704	6.5	7.5	5.7	81.9	87.4	77.3	5.6	3.6	7.3	5.8	1.3	9.6
50+	1,352	692	660	1.7	*	2.3	57.2	84.2	28.8	6	3.3	8.8	34.8	10.5	60.3
Holder															
All Ages	2,646	1,771	875	5	5.8	3.5	72.9	89.1	40	7.2	2.4	16.9	14.6	2.2	39.5
10-17	23	23	-	56.5	56.5	-	*	*	-	-	-	-	-	-	-
18-29	240	135	105	25	36.3	10.5	62.1	63	61	9.2	*	19	*	-	*
30-49	1,578	1,083	495	3.2	3	4	79.4	93.2	49.1	7.6	3	17.8	9.8	*	29.1
50+	805	530	275	*	*	-	64.7	90.2	15.3	6.1	1.9	14.5	27.6	5.5	69.8

*Percentages of persons who do not state their Marital Status are not shown in the table

3.3 Level of Education of the Population in Agricultural Households

Education is another important social characteristic that affects the well-being of individuals or societies in general. Level of education is associated with the participation as well as the productivity of agriculture. Education improves knowledge and use of agricultural practices and applied technology in agricultural operations. Therefore, compiling and analyzing data on the educational attainment of the population in the agricultural households is essential for development planning.

The 2001/02 Agriculture Sample Enumeration of Ethiopia provides two types of data regarding education, namely, literacy status and educational attainment of persons aged 5 years or more. In the census a person is considered as literate if he/she can read and write simple sentence in any language. Educational attainment was obtained by asking individuals who can read and write concerning the highest grade completed and response were classified as non formal education and grades completed in the formal school system. Formal education /regular school/ is used to describe the educational system that provides a ladder by which individuals may progress from primary school through universities. On the other hand, the non-formal education that are entertained in this census includes those persons that were not in the formal schools such as self directed, or religious/socially directed learning or teachings to read and write, with any of the languages.

The population in the agricultural households aged 10 years and over in Dire Dawa Administrative Council classified by sex, literacy status and level of education, holding status and type of holding and place of residence is presented in Summary Table III. 7. The level of education in this table is classified as: primary level education which include grades 1-6, and above primary level education.

The data in the table reveals that 27.5 percent of the population in the agricultural households of Dire Dawa Administrative Council to be literate. The literacy level among the urban dwellers (58.2 percent) is substantially higher than that of the rural areas (21 percent). The census result also shows that, relatively, more males than females are found to be literate in

both rural and urban areas. For instance, in rural areas, 32.3 of males against 9.8 percent of females were literate.

About 6.5 percent and 8.3 percent of the rural and the urban agricultural household population, respectively, were able to read and write through non formal education. Those who attained primary level education make up 13.9 percent and 28.8 percent of the population in agricultural households of the rural and urban areas, respectively. On the other hand, very small (only 0.3 percent) proportion of the population in the rural areas of agricultural households and a substantial proportion (21 percent) of the population in of the urban agricultural households have attained an educational level of above primary school.

The proportion of literates did not show much variation among the agricultural holders and non-holders. On the other hand, those who are only livestock holders are better off in terms of level of education than those engaged in crop only and crop and livestock holders, probably due to relatively higher proportion of young population among only livestock holders as compared to the other types of holdings.

Summary Table III.7 Distribution of Population Aged 10 Years and Over in Agricultural Household by Sex, Literacy Status and Educational Level, Holdings Status, Type of Holding and Place of Residence

Level of Education and Sex	Total Population in Agricultural Household	Non-Holders	All Holders	Type of Holding		
				Crop Only	Livestock Only	Crop & Livestock
Rural + Urban						
Male + Female						
Total	62,434	44,271	18,163	750	3,397	14,015
	100	100	100	100	100	100
Illiterate	72.5	70.3	77.8	91.3	66.0	80.0
Non-Formal	6.9	5.8	9.6	-	8.5	10.1
Primary	16.5	19.3	9.7	-	13.1	9.2
Above Primary	4.0	4.5	2.9	-	12.5	0.7
Male						
Total	31,101	15,713	15,388	680	2,131	12,577
	100	100	100	100	100	100
Illiterate	61.1	47.0	75.5	90.4	56.4	77.9
Non-Formal	10.1	9.3	10.9	-	11.5	11.1
Primary	23.8	36.2	11.0	-	17.3	10.3
Above Primary	5.1	7.4	2.7	-	14.7	0.7

Summary Table III.7 (Cont'd)

Level of Education and Sex	Total Population in Agricultural Household	Non-Holders	All Holders	Type of Holding		
				Crop Only	Livestock Only	Crop & Livestock
Female						
Total	31,333	28,559	2,774	70	1,267	1,437
	100	100	100	100	100	100
Illiterate	83.8	83.2	90.9	100	82.2	98.2
Non-Formal	3.8	3.9	2.5	-	3.2	-
Primary	9.4	10.0	2.7	-	5.9	-
Above Primary	3.0	2.9	3.9	-	8.6	-
Rural						
Male + Female						
Total	51,620	36,103	15,516	630	1,370	13,516
	100	100	100	100	100	100
Illiterate	79	77.9	81.4	93.7	87.4	80.2
Non-Formal	6.6	5.6	9.1	-	-	10
Primary	14	16.1	9	-	9.9	9.2
Above Primary	0.5	0.5	-	-	-	-
Male						
Total	25,793	12,176	13,617	588	857	12,172
	100	100	100	100	100	100
Illiterate	67.7	55.1	79	93	79.9	78.2
Non-Formal	10	9.9	10.2	-	-	10.9
Primary	21.5	34.2	10.3	-	15.8	10.2
Female						
Total	25,826	23,927	1,899	-	513	1,344
	100	100	100	-	100	100
Illiterate	90.2	89.5	98.8	-	100	98.4
Non-Formal	3.2	3.4	-	-	-	-
Primary	6.4	6.9	-	-	-	-
Above Primary	-	-	-	-	-	-
Urban						
Male + Female						
Total	10,814	8,168	2,646	120	2,027	499
	100	100	100	100	100	100
Illiterate	41.8	36.9	56.9	80	51.6	73.1
Non-Formal	8.2	6.9	12.4	10	12.4	13.2
Primary	28.9	33.8	14	-	15.2	10.4
Above Primary	21.1	22.5	16.7	-	20.9	3.2
Male						
Total	5,308	3,536	1,771	92	1,273	406
	100	100	100	100	100	100
Illiterate	29.2	19.4	48.6	73.9	40.6	68.2
Non-Formal	10.2	7.3	15.9	13	16.4	15
Primary	34.4	43.4	16.7	-	18.4	12.8
Above Primary	26.2	29.9	18.8	-	24.6	3.9
Female						
Total	5,507	4,632	875	28	754	93
	100	100	100	100	100	100
Illiterate	53.9	50.2	73.6	100	70	95.7
Non-Formal	6.4	6.6	5.3	-	5.4	-
Primary	23.6	26.4	8.6	-	9.9	-
Above Primary	16.1	16.8	12.5	-	14.5	-

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3.4 Work Status of the Population in Agricultural Households

All persons aged 10 years and over who are members of the agricultural households in both urban and rural areas were asked whether or not they have been engaged in productive activity during most of the 12 months prior to the census date. In the census economic or productive activity was defined in terms of production of goods and services that fall within the United Nations System of National Accounts (SNA) production boundary (ILO, 1990). Hence, in the 2001/2002 Agricultural Sample Enumeration, economic activity or productive activity is defined as a work that involves the production of goods and/or services for sale or exchange and production of certain products for own consumption. According to the above general definition, economic activity covers production of goods and services intended for sale on the market, production of other goods and services such as government activities; production and processing of primary products (agriculture, hunting, fishing, forestry and logging; and mining and quarrying) for own consumption, processing of primary products by the producers themselves, production of other commodities where part of it is sold on the market; and own account construction and fixed asset formation (expected life use of one year or more). Such economic activities could be performed for an individual, family or private enterprise, government establishment or public organization. The remuneration may be on daily, weekly, monthly, yearly or contract basis.

For a person to be counted as working during most of the last 12 months, he/she has to be engaged in any kind of economic activity at least for half of the reference year. In the case of persons engaged in agriculture, it was decided to consider them as being engaged in economic activity during most of the last 12 months if they have worked during most of the main agricultural season of the reference year. The distribution of the population aged 10 years and over in agricultural households of Dire Dawa Administrative Council classified by sex, age group work status, and is presented in Summary Table III.8. According to the census result, out of the total 62,387 persons aged 10 years and over who are members of the agricultural households in the region, 69.1 percent were reported to have engaged in some kind of productive activity during the 12 months prior to the enumeration date. The proportion of

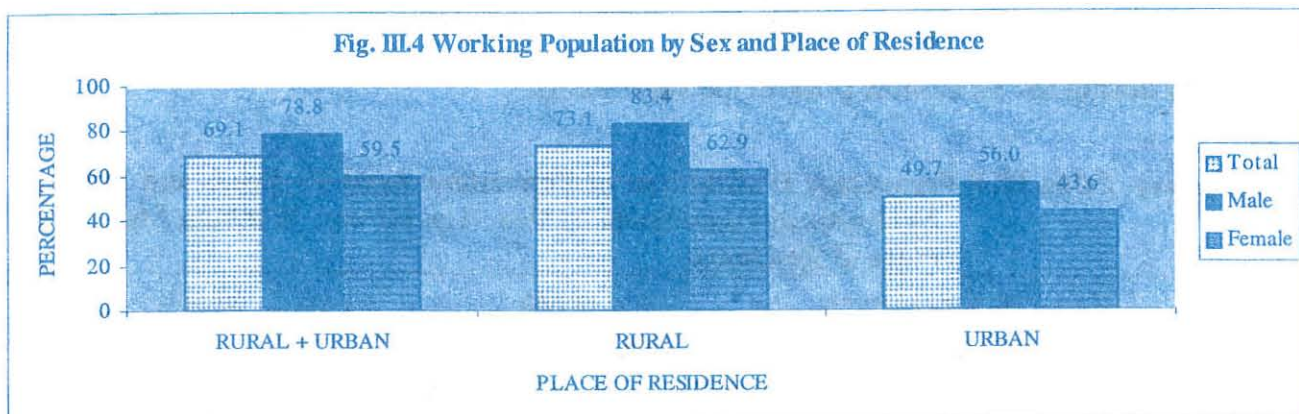
working population among the male is relatively higher than that of females, that is, 78.8 percent of the males against 59.5 percent of the females were engaged in productive activity during the 12 months prior to the survey date.

Summary Table III.8 Percentage Distribution of Population Aged 10 Years and Over in Agricultural Households by Sex, Age Group, Working Status and Place of Residence

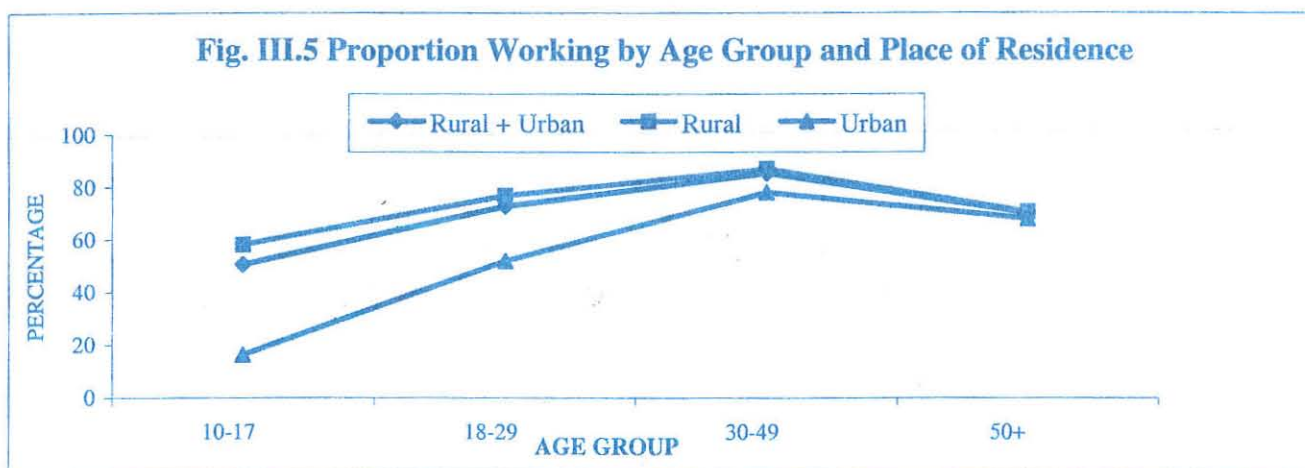
Sex/Age Group	RURAL + URBAN				RURAL				URBAN			
	Total		Percent Working	Percent Not Working	Total		Percent Working	Percent Not Working	Total		Percent Working	Percent Not Working
	No.	%			No.	%			No.	%		
Both Sexes												
All Ages	62,387	100	69.1	30.9	51,620	100	73.1	26.8	10,814	100	49.7	50.2
10-17	19,317	100	50.6	49.4	15,761	100	58.2	41.5	3,602	100	16.3	83.5
18-29	16,917	100	72.8	27.2	14,191	100	76.8	23.2	2,726	100	51.9	48.1
30-40	17,589	100	85.4	14.6	14,455	100	87	13	3,135	100	78.1	21.8
50+	8,565	100	70.2	29.8	7,213	100	70.6	29.4	1,352	100	68	32
Male												
All Ages	31,072	100	78.8	21.2	25,793	100	83.4	16.5	5,308	100	56	43.8
10-17	9,944	100	54.4	45.6	8,147	100	62.8	36.9	1,824	100	16.1	83.7
18-29	7,733	100	84.3	15.7	6,372	100	90.2	9.8	1,361	100	56.8	43.2
30-40	8,790	100	97	3	7,361	100	97.7	2.3	1,431	100	93.6	6.2
50+	4,606	100	87.3	12.7	3,913	100	88.2	11.8	692	100	82.1	17.9
Female												
All Ages	31,315	100	59.5	40.5	25,826	100	62.9	37.1	5,507	100	43.6	56.4
10-17	9,373	100	46.5	53.5	7,614	100	53.3	46.5	1,777	100	16.5	83.3
18-29	9,184	100	63.1	36.9	7,819	100	65.9	34.1	1,365	100	47.1	52.9
30-40	8,799	100	73.8	26.2	7,094	100	76	24	1,704	100	65.1	34.9
50+	3,959	100	50.3	49.7	3,299	100	49.7	50.3	660	100	53.3	46.7

*Percentages of persons who do not state their Work Status are not shown in the table.

Consistent with previous surveys, engagement in productive activity in the rural areas is higher than that of the urban areas of the region. In rural areas almost three fourths (73.1%) of the agricultural population was working during most of the 12 months prior to the survey date. Whereas, the working population in urban areas constituted about half of (49.7 percent) the population in question. In both rural and urban areas, the proportion working among males is higher than that of the females with a wider gender disparity in rural areas (See Figure III.4).



As can be seen from Figure III.5 engagement in productive activity is highest for persons of middle age (30 -49 years). As expected, the proportion working is low for the children aged 10-17 and for the old (50 years or more). This phenomenon holds true for both the males and the females in rural as well as in urban areas. One special feature in urban areas is that the population of the working children aged 10-17 years is very low compared to those persons in the upper age groups (See Figure III.5).



3.5 Reason for Not Working

The distribution of non-working population in agricultural households by main reason for not working and selected background variables is presented in Summary Table III.9. In both the rural and the urban areas of the region, the two most important reasons for not working are home making and being a student or attending school together, constituting 83.3 percent (49.7% + 33.6%). About one in ten non working population reported old age/pension as a reason. Disability or illness has very little contribution. The patterns, in the urban and the rural

areas are not similar in that the higher proportion of students in urban areas, and higher proportion of home makers in rural areas.

The distribution of reasons for not working among the male population is different from that of the females. Students make up the overwhelming majority (65.6 percent) among non-working males while homemaking is the major (68.2 percent) reason for not working among the females.

The pattern of reason for not working varies as age increases. As expected, students make up the majority (55.6 percent) of non working population aged 10-17 years, while homemakers have higher contribution than students among those aged 18-29 years. On the other hand, homemakers constitute the majority (84.9 percent) of non-working population aged 30-49 years, while old age/pension is the major reason for not working among those aged 50 years and above.

Summary Table III.9 Population in Agricultural Households by Reason for Not Working and Some Background Variables

Back ground Variables	Reason for not Working					
	Total not Working	Student	Home Maker	Disabled /ill	Old Age/ Pension	Others
All Persons	19,272	33.6	49.7	0.8	9.9	6.0
Place of Residence						
Rural	13,839	23.9	59.0	1.0	11.1	4.9
Urban	5,433	58.3	26.0	0.4	6.7	8.5
Sex						
Male	6,593	65.6	14.2	*	6.8	12.3
Female	12,679	16.9	68.2	0.7	11.5	2.7
Age						
10 - 17	9,551	55.6	39.7	-	-	4.8
18 - 29	4,604	24.7	66.5	*	-	7.4
30 - 49	2,563	1.0	84.9	*	*	7.9
50+	2,554	-	21.8	*	70.8	6.0

3.6 Type of Occupation for Working Population

Data on type of occupation was collected for all persons who have reported to have been engaged in productive activity during most of the last 12 months. The response to the question is classified as fully agricultural, partially agricultural and non-agricultural. This information provides the extent to which the agricultural population is engaged in other activities.

Summary Table III.10 presents the distribution of the population in the agricultural households age 10 years and over who are engaged in productive activity by type of occupation and background variables. The census result shows that 72 % of the population in agricultural households age 10 years and over was engaged in fully agricultural activities, while only about 20 percent of the population aged 10 years and over was engaged in partially agricultural activities. The proportion of population engaged only in non-agricultural activities was lower, amounting to 8 percent. As expected, in urban areas the proportion engaged in partial or non- agricultural activities is larger than those who engaged in fully agricultural activities. Similar pattern of type of occupation was observed among the males and the females. Higher proportion of females than males tend to get engaged in partially and non agricultural activities. Among the young aged (10-17) most of them (84%) are fully engaged in agricultural activities, less proportion (16%) are engaged in partially and non agricultural activities.

Summary Table III.10 Percentage Distribution of Population who were Engaged in Productive Activities by Type of Occupation and Some Background Variables

Back ground Variables	Total Working		Fully Agricultural	Partially Agricultural	Non Agricultural
	No.	%			
All Persons	43,115	100	71.8	20.4	7.8
Place of Residence					
Rural	37,743	100	78.6	16.6	4.8
Urban	5,373	100	24.0	47.3	28.7
Sex					
Male	24,479	100	79.3	16.4	4.3
Female	18,636	100	62.0	25.7	12.3
Age					
10 - 17	9,766	100	83.7	10.0	6.3
18 - 29	12,313	100	70.1	19.2	10.7
30 - 49	15,026	100	65.1	26.9	8.0
50+	6,011	100	73.0	23.5	3.5

3.7 Employment Status of Population Engaged in Agricultural Activities

Employment status of working population indicates the level of involvement and degree of decision-making in the respective activities. In this sample enumeration persons engaged in fully or partially agricultural activities were asked to report the employment status in that activity.

According to the data presented in Summary Table III.11, unpaid family workers constituted the highest proportion (56 percent) of the population in agricultural households who are engaged in agricultural activities. About 43.2 percent of the population were own account workers working in their farms alone or with the help of family members but with out hiring labor. The proportion who hire others in their farm are negligible only; i.e., 0.4 percent, indicating the non existence of agricultural industry in the Administrative Council and less employment opportunity for non holders. On the other hand, only 0.4 percent of the population in agricultural households engaged in agricultural activities were employees.

Summary Table III.11 Percentage Distribution of Population in Agricultural Households Engaged in Agricultural Activities by Employment Status and Some Background Variables

Place of Residence Age/Sex	Total Engaged in Agricultural Activities		Employer	Own Account Worker	Employee	Unpaid Family Worker
	No	%				
All Persons	39,766	100	0.4	43.2	0.4	56
Place of Residence						
Rural	35,933	100	0.3	40.8	*	58.7
Urban	3,832	100	1.0	66.4	1.6	30.9
Sex						
Male	23,427	100	0.4	62.1	*	37.2
Female	16,339	100	*	16.2	0.4	83.1
Age						
10 - 17	9,149	100	-	0.9	0.1	99.1
18 - 29	10,995	100	*	28.4	0.9	70.4
30 - 49	13,821	100	0.6	66.7	*	32.5
50+	5,800	100	*	82.4	*	16.9

The situations in urban and rural areas are different, where the tendency to work for the family without payment is less common in urban areas. Also, being employer is relatively more pronounced in the urban areas than the rural areas. The overwhelming majority (83.1 percent) of female respondents in agricultural households who are engaged in agricultural activities are unpaid family workers while self employment (own account) is the common type of employment status (62.1%) among males, showing the dominance of males over female in the tradition/culture of the society.

ANNEX TABLES PRESENTING ESTIMATES,
STANDARD ERRORS AND COEFFICIENTS OF VARIATION
FOR SELECTED SOCIO-ECONOMIC CHARACTERISTICS OF THE
POPULATION IN AGRICULTURAL HOUSEHOLDS VARIABLES

Annex Table 3.1

Annex Table 3.1 Distribution of Population in Agricultural Household by Status and Type of Holding, Percent Female, Rural and Urban Areas, Zone and Wereda

Geographic Area	Total Agricultural Population			All Non-Holders			Agricultural Holders												
							All Holders									Type of Holdings			
	Total	SE	CV	Total	SE	CV	Total	SE	CV	Total	SE	CV	Total	SE	CV	Total	SE	CV	
Dire Dawa Administrative Council																			
Rural + Urban	94,964	4,229	4	76,801	3,650	5	18,163	644	4	740	147	20	3,389	344	10	14,034	776	6	
Rural	79,904	4,114	5	64,387	3,553	6	15,516	625	4	630	145	23	1,370	312	23	13,516	771	6	
Urban	15,060	979	7	12,414	833	7	2,646	153	6	110	24	22	2,018	145	7	518	94	18	

CHAPTER IV

LAND UTILIZATION

1. INTRODUCTION

From agricultural point of view, land is an indispensable factor for production of crops, raising of livestock and other ancillary agricultural activities. The proper utilization of land holdings under different components will contribute to the development of the nation's agricultural products. In order to scrutinize this development as well as farmers' attitude towards land use practices, a timely and comprehensive land use data has paramount importance for governmental, non-governmental and private sector data users. According to the international recommendations for Agricultural Census, the total land use is categorized into five main land use types, which are land under temporary crops, land under permanent crops, grazing land, fallow land, woodland and land for other purposes. Based on these major land use categories, the 2001/02 (1994 E.C.) Ethiopian Agricultural Sample Enumeration (EASE) provides quantitative information on land utilization at Regional, Zonal and Wereda levels.

The 2001/02(1994 E.C.) EASE covered all land holdings i.e., rural and urban holdings. In urban areas, size of land holdings was restricted to only cropland area and urban agricultural households were required to have a minimum size of 250 square meters in order to be covered in the census. On the other hand, in the rural areas land use data were collected without any size limitation of land holdings.

The coverage of land use data items in rural private holdings included all the categories of land used. However, in urban private holdings, the coverage of land use data item is limited to cropland area, which includes land under temporary and permanent crops. To have consistent and comparable land use information, a standard concepts and definitions were applied for the aforementioned data items.

In the 2001/02 EASE, a number of land use data was collected based on objective and subjective methods of enumeration. That is, in rural private holdings land area was obtained by forwarding relevant questions on size of land to the holder and by objective area

measurement using compass, measuring tape and programmable calculator. On the other hand, in urban private holdings data on land area was collected subjectively by interviewing the holder /responsible operator/ in standard or metric units (in some cases, local measuring units were reported).

This chapter deals with the data on land holding for rural and urban private holdings on land use findings from the results of the agricultural census for Dire Dawa Region. It covers data on farm holdings by type and size of land holdings; population in agricultural households both in rural and urban areas of private holding that are disaggregated by size of land holdings; land area and fragmentation by type of land use and size of holding; cropland area by crop categories and finally it treats data on area under land tenure systems.

Furthermore, since Dire Dawa is a small region without zone and wereda, tables providing different regional results are presented in statistical Tables 4.1-4.7. Moreover, estimates, standard errors (SE) and coefficient of variations (CV) are given in Annex Tables 4.1-4.4.2 for some variables.

2. FARM HOLDINGS BY TYPE AND SIZE OF LAND HOLDINGS

Farm holding is referred to all land or livestock holdings, which are mainly used for both crop and livestock production. Depending on the type of activities, an agricultural holder is engaged with farm holding has been categorized into three groups. These are “crop only” (crop production), “livestock only” and ” both crop and livestock” (the production of both crop and livestock). All three types of holdings are practiced in both rural and urban private holdings. Furthermore, the total area of land holdings under different uses is classified into seven-area size of holdings in hectare. The classification is given as follows:

- i- Under 0.10 hectare
- ii- 0.10-0.50 hectare
- iii- 0.51-1.00 hectare
- iv- 1.01-2.00 hectares
- v- 2.01-5.00 hectares
- vi- 5.01-10.00 hectares

vii- Above 10 hectares

Hence, the number of agricultural holders is disaggregated by type and previous size of land holdings. From this point of view, one can realize that the total number of farm holdings within a given size of land holding is equal in magnitude with the corresponding reported number of agricultural holders.

The total number of agricultural holders that are involved in all types of farm-holding activities and the reported land use of Dire Dawa Region was estimated to be about 15,902. Out of the total holders those who are engaged in crop production, livestock, and both crop and livestock productions were estimated to be about 740 (4.7%), 1,202 (7.6%) and 13,960 (87.8%) respectively. In general, most of agricultural holders (40.2%) had a total size of land holdings that ranges from 0.10 to 0.50 hectare and followed by 31.5% of the total holders with area size of holding that fall between 0.51 and 1.00 hectare. Moreover, with regard to type of farm activities, holders that are engaged in “crop only”, “livestock only” and “both crop and livestock production” are reported to have land holdings that ranges from 0.1 to 0.5 hectare (63.4% for “crop only”), less than 0.1 hectare (100% for “livestock only” and 0.1 to 0.5 hectare (42.4% for mixed crop and livestock production), respectively (See Summary Table IV.1 and Figure IV.1).

In rural areas of Dire Dawa Region, the total number of agricultural holders was estimated to be 15,275 (96.1%) and this total is composed of holders producing crop production (4.1%), livestock (7.9%) and holders that are engaged in mixed crop and livestock production (88.0%). In general, the majority of agricultural holders (39.0%) had a total size of land holdings that ranges from 0.10 to 0.50 hectare, followed by size of land holdings that fall within 0.51 to 1.00 hectare (32.4%). Similarly, agricultural holders that are involved in crop, livestock, and mixed crop and livestock production are estimated to have an area size of holdings that ranges from 0.10 to 0.50 hectare (63.5% “crop only”), under 0.1 hectare (100% “livestock Only”) and 0.10 to 0.50 hectare (41.3% “crop and livestock production”), respectively (For details refer to Summary Table IV.1).

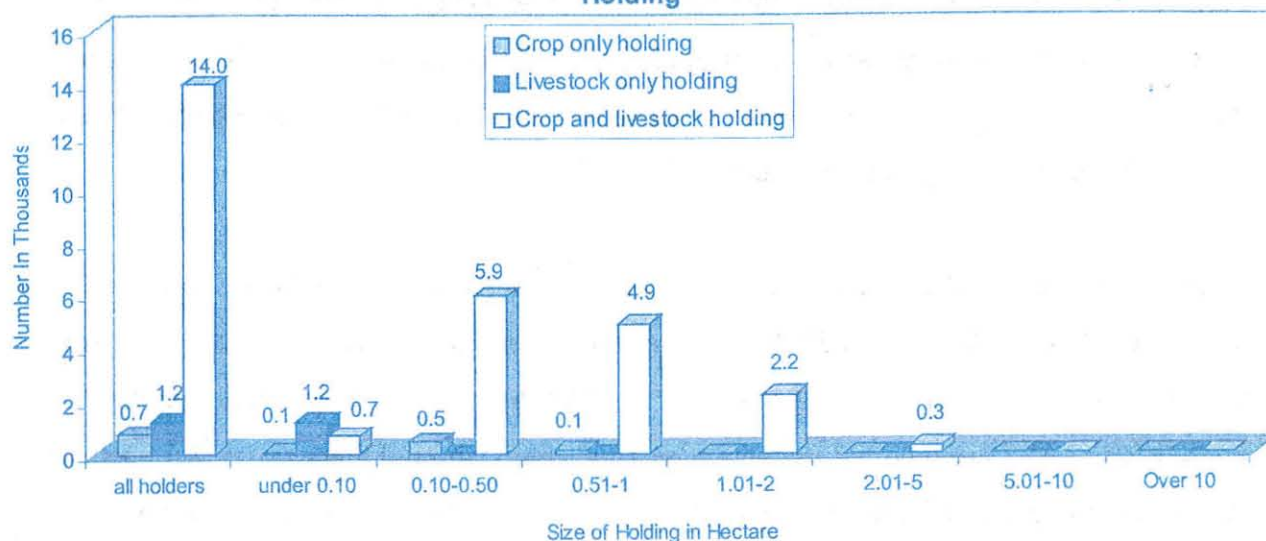
On the other hand, in urban areas of the Dire Dawa Region, the type of land use considered during the census were only crop field i.e., temporary and permanent crops. Thus, the census result indicates that 628 agricultural holders (4.0%) are reported in the urban areas of the region. Of this total, 17.5 percent are only crop growing holders while the remaining 82.5 percent are practicing mixed farming (i.e., both crop and livestock production). Most of the holders (69.4%) in the urban areas had a land holding that is between 0.1 and 0.5 hectare. Among the total 110 (17.5%) crop-producing holders, 62.7% were holders with a holding size of 0.10 to 0.50 hectare, followed by those with under 0.1 hectare (30.9%). Furthermore, among holders with mixed crop and livestock production, the highest number is reported with holding size 0.1 to 0.50 hectare (70.9%) followed by holding size below 0.1 hectare (15.6%). See Summary Table IV.1.

Summary Table IV.1 Distribution Of Agricultural Holders By Type And Size Of Holdings Rural And Urban Areas, For Private Holdings

Items	All Holders	Size of holding in hectare						
		Under 0.1	0.1-0.50	0.51-1.00	1.01-2.00	2.01-5.00	5.01-10	over 10
RURAL + URBAN								
All holders	15902	1945	6390	5009	2282	276	0	0
Percent..	100	12.2	40.2	31.5	14.4	1.7	0.0	0.0
Crop only holding	740	77	469	143	*	0	0	0
Percent..	4.7	10.4	63.4	19.3	*	0.0	0.0	0.0
Livestock only holding	1202	1202	0	0	0	0	0	0
Percent..	7.6	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Crop and livestock holding	13960	667	5921	4866	2230	276	0	0
Percent..	87.8	4.8	42.4	34.9	16.0	2.0	0.0	0.0
RURAL								
All holders	15275	1831	5954	4956	2258	276	0	0
Percent..	96.1	12.0	39.0	32.4	14.8	1.8	0.0	0.0
Crop only holding	630	*	400	138	*	0	0	0
Percent..	4.1	*	63.5	21.9	*	0.0	0.0	0.0
Livestock only holding	1202	1202	0	0	0	0	0	0
Percent..	7.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Crop and livestock holding	13442	586	5554	4817	2209	276	0	0
Percent..	88.0	4.4	41.3	35.8	16.4	2.1	0.0	0.0
URBAN								
All holders	628	115	436	53	24	0	0	0
Percent..	4.0	18.3	69.4	8.4	3.8	0.0	0.0	0.0
Crop only holding	110	34	69	*	*	0	0	0
Percent..	17.5	30.9	62.7	*	*	0.0	0.0	0.0
Crop and livestock holding	518	81	367	49	20	0	0	0
Percent..	82.5	15.6	70.9	9.5	3.9	0.0	0.0	0.0

Note: Those holders with "Livestock only" reported land holding that might include grazing, woodland or land for other purposes.

Figure IV.1: Distribution Of Agricultural Holders By Type And Size of Holdings, For private Holding



3. POPULATION IN AGRICULTURAL HOUSEHOLDS AND SIZE OF LAND HOLDING

The census data shows that the total population in agricultural households that depend on agricultural holdings are estimated and classified by area size of holdings. However, the total area size of holdings that are associated with agricultural households does not necessarily indicate the owner of the land, since the total land holding might include other land tenure systems at the time of enumeration.

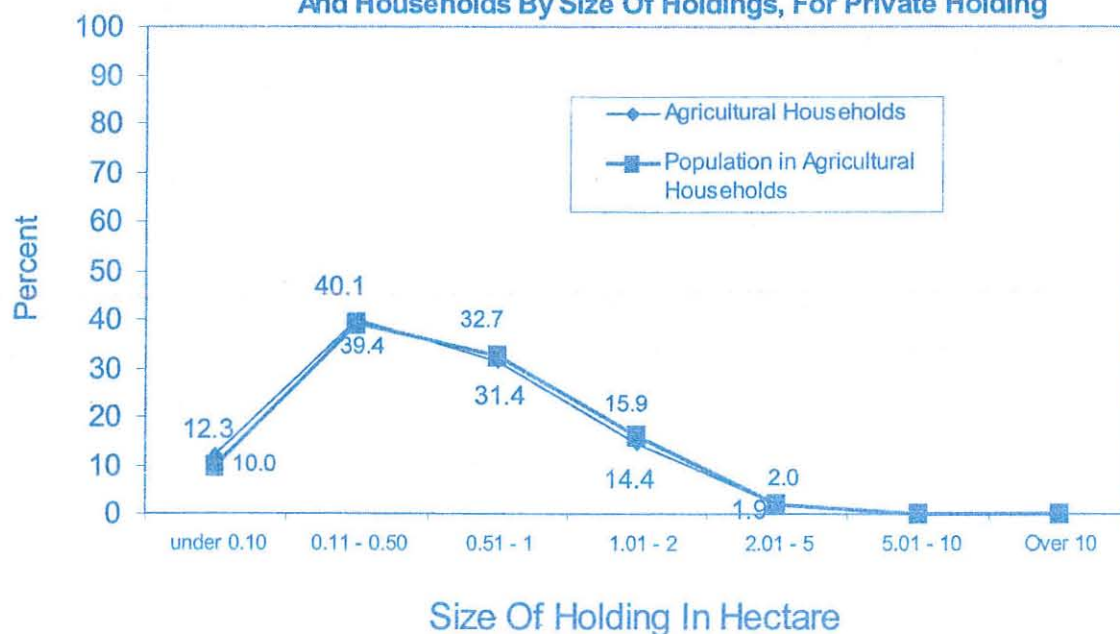
The population in agricultural households is composed of agricultural and non-agricultural holders residing within the agricultural households. As the data in Summary Table IV.2 depicts, the total population in agricultural households in the region were estimated to be about 83,542. The results also indicate that out of the total population in agricultural households, 15,902 were agricultural holders found in 15,838 agricultural households that have reported land holding. As shown in Summary Table IV.2, about 40.1% of agricultural households reported to have an estimated land area size between 0.10 and 0.50 hectare. This is followed by 31.4% of agricultural households who reported to have an area size ranging from 0.51 to 1.00 hectare and about 14.4% to have a land area size that fall between 1.01 to 2.00 hectares. The data also indicated that the average household size for the region was

estimated to be 5.27 persons or 527 members per 100 agricultural households. Furthermore, the largest average household size (5.84 persons) was reported for those households with an average area size of holding of 1.01 to 2.00 hectares. The result shows that there is a general trend of increase in average household size with an increase in land holdings (See Summary Table IV.2 and Figure IV.2).

In the rural areas of the region, the total (79,904) population is reported to be in 15,210 agricultural households. About 38.9 percent of the agricultural households are operating on the land area size that ranges from 0.10 to 0.50 hectare. A very small numbers of households (2.0%) are reported to operate on an average land holding of over 2.0 hectares. As can be observed in Summary Table IV.2, here also there is a general trend that as the land area size increases the average household size also increases. Also the average household size in the rural area is estimated to be 5.25 persons.

The contribution of urban areas to the total agricultural households and population in agricultural households is estimated to be 4.0% and 4.4%, respectively. Compared to the rural area, relatively larger numbers of urban agricultural households (about 18.3%) are reported to operate on land area size of below 0.1 hectare. Furthermore, the average household size of urban area is 5.79 persons which is higher than that reported in the rural areas (See Summary Table IV.2).

Figure IV.2: Percentage Distribution Of Population in Agricultural Households And Households By Size Of Holdings, For Private Holding



Summary Table IV.2: Distribution Of Population In Agricultural Households And Agricultural Households By Size Of Holdings In Rural And Urban Areas, For Private Holdings

Items	Size of Holding (Hectares)							
	All Holdings	Under 0.1	0.10-0.50	0.51-1.00	1.01-2.00	2.01-5.00	5.01-10.00	over 10
RURAL + URBAN								
Agricultural households	15838	1945	6349	4965	2280	299	0	0
Percent..	100	12.3	40.1	31.4	14.4	1.9	0.0	0.0
Population in Agricultural Households	83542	8330	32941	27300	13313	1658	0	0
Percent..	100	10.0	39.4	32.7	15.9	2.0	0.0	0.0
Average members per household....	5.27	4.28	5.19	5.50	5.84	5.55	-	-
RURAL								
Agricultural households	15210	1831	5913	4912	2256	299	0	0
Percent..	96.0	12.0	38.9	32.3	14.8	2.0	0.0	0.0
Population in Agricultural Households	79904	7707	30462	26912	13166	1658	0	0
Percent..	95.7	9.7	38.1	33.7	16.5	2.1	0.0	0.0
Average members per household....	5.25	4.21	5.15	5.48	5.84	5.55	-	-
URBAN								
Agricultural households	628	115	436	53	24	0	0	0
Percent..	4.0	18.3	69.4	8.4	3.8	0.0	0.0	0.0
Population in Agricultural Households	3638	623	2480	388	147	0	0	0
Percent..	4.4	17.1	68.2	10.7	4.0	0.0	0.0	0.0
Average members per household....	5.79	5.42	5.69	7.32	6.13	-	-	-

Note: In the urban areas, the number of agricultural households, holders and all members presented in Chapter III are considered as agricultural households whether they have or do not have land holdings. Whereas in this chapter the number of agricultural households are those who reported to have land holdings. Due to this reason estimate of agricultural households, holders and all members are slightly different in these two chapters.

4. LAND AREA AND FRAGMENTATION BY TYPE OF LAND USE AND SIZE OF HOLDING

Land area is referred to area under all private holdings. In general, the total area of a holding consists of land in the following classifications:

- i. Agricultural land (that includes land under temporary as well as permanent crops, fallow land and grazing land)
- ii. Woodland or forest

- iii. All other land that is, unused and undeveloped potentially productive land, homestead, etc.

On the other hand, land fragmentation is the breaking down of land holdings into parts with some distance apart from one another. Land fragmentation is measured by the number of parcels that are reported in the total land holdings of a holder. In general, a parcel of a holding is any pieces of land entirely surrounded by other land, water, road, forest or other boundaries that are not part of the holding.

4.1. Land Area By Type Of Land Use

As presented in Summary Table IV.3, the total land holding area under different land uses was estimated to be about 9,192 hectares, in the region. This area is composed of 97.9% of the rural holdings and 2.1% of the urban holdings. Of this land, area under temporary crop accounted for 6,931 hectares (75.4%); land under permanent crops estimated to be 997 hectares (10.9%); grazing land amount to be 559 hectares (6.1%); fallow land is reported to be 439 hectares (4.8%) and land for other uses is estimated to be 264 hectares (2.9%). The result for woodland is unreliable, hence, not stated here.

The census result indicated that out of the total estimated holders (15,902) almost all (15,203) used their holding for other land purpose. Which is followed by 14,636 holders who had used their holding to cultivate temporary crops. It was also reported that 9,829 holders used their land for cultivating permanent crops and 3,449 holders left their land as fallow during the census year. On the other hand, number of holders reported grazing land account for about 2,782. Reported figure for woodland is not reliable. In general, the regional average size of land holding per holder was estimated to be 0.58 hectare. The result also shows that the highest average size of land holding area per holder is ascribed for the cultivation of temporary crops that was estimated as 0.47 hectare and followed by grazing land, which is about 0.2 hectare. (For details, refer to Summary Table IV.3 and Figure IV.3).

In rural private holdings, the total land area under different land uses was estimated to be 9,002 hectares contributing 97.9% to the regional total land area. Out of this total land area, the highest (75.3%) and lowest (2.9%) proportion of areas were used for cultivating

temporary crops and for other land use, respectively. The average size of land holding was estimated to be 0.59 hectare per holder. Moreover, the highest average size of land holding per holder was reported as area under temporary crops (0.48 hectare), followed by land under grazing, which is about 0.2 hectare (See Summary Table IV.3).

Summary Table IV.3. Distribution of Area and Holders by Type of Land Use in Rural And Urban Areas, For Private Holdings

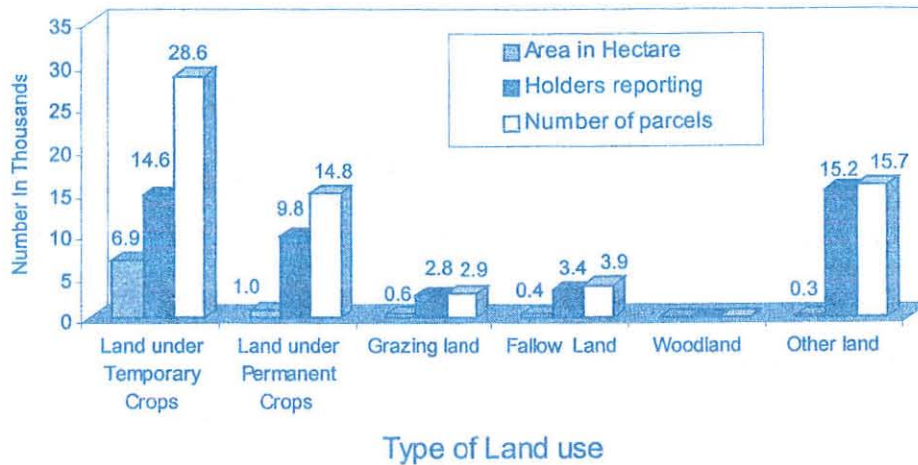
Items	Land Area Under						
	Total Number	Temporary Crops	Permanent Crops	Grazing	Fallow Land	Woodland	Other Land
RURAL + URBAN							
Area in hectares (ha)	9192	6931	997	559	439	*	264
Percent..	100	75.4	10.9	6.1	4.8	*	2.9
All parcels	45553	28633	14793	2873	3893	*	15725
Holders reporting	15902	14638	9829	2782	3449	*	15203
Average area per holder (ha).....	0.58	0.47	0.1	0.2	0.13	*	0.02
Average parcels per holder.....	3	2	2	1	1	*	1
Average area per parcel (ha)	0.2	0.24	0.07	0.19	0.11	*	0.02
RURAL							
Area in hectares (ha)	9002	6780	957	559	439	*	264
Percent..	97.9	75.3	10.6	6.2	4.9	*	2.9
All parcels	44787	28022	14587	2873	3893	*	15725
Holders reporting	15275	14051	9643	2782	3449	*	15203
Average area per holder (ha).....	0.59	0.48	0.1	0.2	0.13	*	0.02
Average parcels per holder.....	3	2	2	1	1	*	1
Average area per parcel (ha)	0.2	0.24	0.07	0.19	0.11	*	0.02
URBAN							
Area in hectares (ha)	190	151	40				
Percent..	2.1	79.5	21.1				
All parcels	766	611	206				
Holders reporting	628	588	186				
Average area per holder (ha).....	0.3	0.26	0.22				
Average parcels per holder.....	1	1	1				
Average area per parcel (ha)	0.25	0.25	0.19				

Note: The number of holders and parcels that reported under land use classification are not mutually exclusive.

On the other hand, in urban private holdings, the total land area under both temporary and permanent crops was estimated to be 190 hectares contributing 2.1% to the regional total land area. Out of which temporary crops accounted for 151 (79.5%) hectares and permanent crops accounted for only 40 (21.1%) hectares. From the census data one can observe that the majority of urban holders in Dire Dawa region tend to use most of their land for growing temporary crops (588), which is followed by permanent crops (186). In general, the average size of land area per holder was estimated to be 0.3 hectare. With regards to

temporary and permanent crops, average size of land holding per holder was estimated to be 0.26 hectare and 0.22 hectare, respectively (See Summary Table IV.3).

Figure IV.3: Distribution of Area, Holders and Parcels by Type of Land use, For Private Holdings



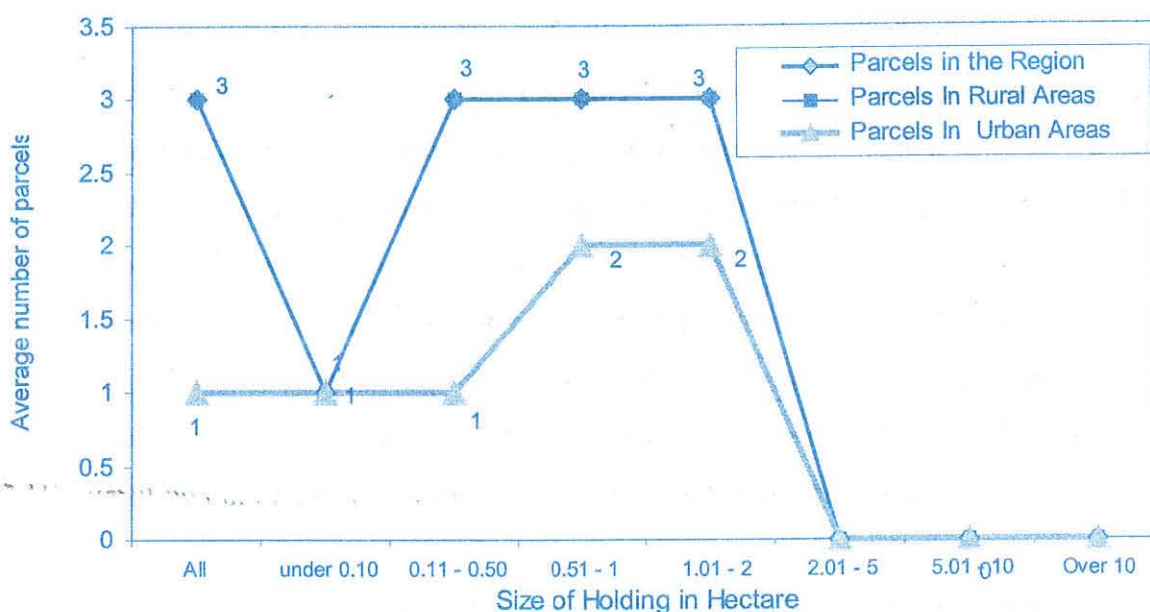
4.2. Land Fragmentation By Size Of Holding

Providing information on land fragmentation is important to show how farmers waste their valuable working time, energy and other resources when the number of parcels are many and very far apart from one another. Taking this into consideration in the 2001/2002 EASE, data on number of parcels was collected for private holding in rural and urban areas of the region. Accordingly, the census result indicates that 45,553 parcels were estimated under the total land holdings in the region, which constituted 98.3% of rural holdings and 1.3% of urban holdings. Of this total parcels, the highest and smallest number of parcels or fragmentation of land are reported in area size of holding 0.1 to 0.50 hectare (40.7%) and over 5 hectares (0.0%), respectively. Generally, temporary and permanent crops were cultivated on 28,633 parcels and 14,793 parcels, respectively. Moreover, except the result of woodland that is unreliable, grazing land, fallow land, and land for other purpose were found on 2,873 parcels, 3,893 parcels, and 15,725 parcels, respectively. However, the number of parcels reported by land use categories is not mutually exclusive. The average size of land area per parcel and average number of parcels per holder were estimated to be about 0.2 hectare and three parcels, respectively (See Summary Table IV.3, Summary Table IV.4 and Figure IV.4).

Summary Table IV.4. Distribution Of Parcels By Size Of Holdings In Rural And Urban Areas, For Private Holdings

Items	All Number	Size of holding in hectare						
		Under 0.1	0.1-0.50	0.51-1.00	1.01-2.00	2.01-5.0	5.01-10	over 10
RURAL + URBAN								
All parcels	45553	2731	18560	16011	7283	*	0	0
Percent..	100	6.0	40.7	35.2	16.0	*	0.0	0.0
All holders	15902	1945	6390	5009	2282	276	0	0
All area in hectare.....	9192	59	1923	3546	3001	663	0	0
Average parcels per holder.....	3	1	3	3	3	*	-	-
Average area per parcels	0.2	0.02	0.1	0.22	0.41	*	-	-
RURAL								
All parcels	44787	2614	18046	15924	7236	*	0	0
Percent..	98.3	5.8	40.3	35.6	16.2	*	0.0	0.0
All holders	15275	1831	5954	4956	2258	276	0	0
All area in hectare.....	9002	54	1808	3508	2969	663	0	0
Average parcels per holder ..	3	1	3	3	3	*	-	-
Average area per parcels.....	0.2	0.02	0.1	0.22	0.41	*	-	-
URBAN								
All parcels	766	116	515	87	47	0	0	0
Percent..	1.7	15.1	67.2	11.4	6.1	0.0	0.0	0.0
All holders	628	115	436	53	24	0	0	0
All area in hectare.....	190	5	115	37	32	0	0	0
Average parcels per holder ..	1	1	1	2	2	-	-	-
Average area per parcels.....	0.25	0.04	0.22	0.43	0.68	-	-	-

Figure IV.4: Average Number Of Parcels By Size Of Holdings In Rural And Urban Areas, For Private Holdings



In rural areas, the average number of parcels per holder was estimated at 3 parcels and the average area per parcel was 0.2 hectare. On the other hand, in urban areas, the extent of

land fragmentation is estimated and the average number of parcels per holder is found to be one while the average size of land area per parcel is 0.25 hectare. For details refer to Summary Table IV.4.

5. CROPLAND AREA BY CROP CATEGORIES

The 2001/02 (1994 E.C.) Agricultural Sample Enumeration covered the area under temporary and permanent crops in Meher/main and Belg seasons. In general, cropland area is described as part of the total land area, which comprises land under temporary and permanent crops.

5.1. Cropland Area Under Meher/Main Season

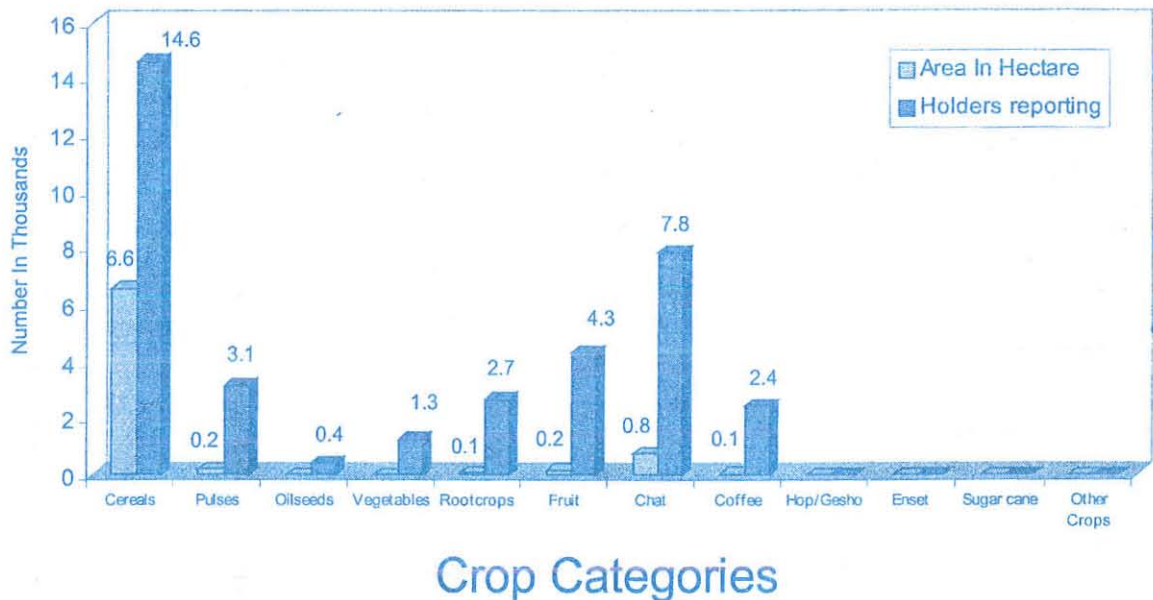
The data in Summary Table IV.5 illustrates that the total cropland area for Meher/ main season in the region was estimated to be 7,928 hectares, which consisted of 97.6% in rural and 2.4% in urban areas of private holdings. Out of the total cropland, area under temporary crops accounted to 87.4% and the remaining was the share of permanent crops. Considering the area under temporary crops, cereals, followed by pulses, which accounted for 94.9% and 2.9%, respectively, covered the highest proportions. Of all the area under permanent crops, chat took the largest area, which account for 753 hectares (75.5%) and the smallest was all permanent crops other than fruit, chat and coffee, contributing no hectares of area. Among the total holders in the region who grows temporary crops (14,638) the largest number of holders (14,611) was cultivating cereals followed by holders (3,143) producing pulses. Similarly, among all holders (9,829) that are involved in growing permanent crops, the highest number (7,813) are growing chat while no holders reported as cultivating crops other than fruit, chat and coffee. The overall average cropland area per holder in the region was estimated to be 0.54 hectare while area under temporary and permanent was estimated to be 0.47 hectare and 0.1 hectare, respectively. (See Summary Table IV.5 and Figure IV.5).

In rural areas, temporary and permanent crops contribute about 87.6% and 12.4%, for private holdings, respectively. Out of the total area under temporary crops, the largest cultivated area was under cereal crops, followed by pulses, which contribute about 6,426 hectares (94.8%) and 204 hectares (3.0%), respectively. The number of holders producing

these crops was estimated to be about 14,032 and 3,143 with corresponding average size of land area per holder of about 0.46 hectare and 0.06 hectare, respectively. (For details, refer to Summary Table IV.5).

In urban areas, the total cropland area is estimated to be 190 hectares, of which temporary crops and permanent crops accounted for 79.5% and 21.1%, for private holdings, respectively. Considering the total areas under temporary crops, cereals accounted for 149 hectares (98.7%) and the corresponding holders that cultivated cereal crops are estimated to be 579. Among land under permanent crops, fruit crops took the highest cultivated area i.e., 38 hectares (95.0%) and operated by 176 holders. Like the rural areas, holders in urban area did not have Enset, Hops and other permanent crops (See Summary Table IV.5).

Figure IV.5: Distribution of Cropland Area And Holders By Crop Categories For Private Holdings, Meher Season



Summary Table IV.5. Distribution Of Cropland Area And Holders By Crop Categories In Rural And Urban Areas, For Private Holdings

Crop Categories	Area in Hectare		Holders Reporting	Average Area per Holder(in Hectare)
	Number	Percent		
RURAL + URBAN				
All cropland.....	7928		14701	0.54
All temporary crops.....	6931	100.0	14638	0.47
Cereals	6575	94.9	14611	0.45
Pulses	204	2.9	3143	0.06
Oilseeds	34	0.5	439	0.08
Vegetables.....	31	0.5	1258	0.02
Root crops.....	86	1.2	2675	0.03
Other temporary.....	*	*	*	*
All permanent crops	997	100.0	9829	0.10
Fruit crops.....	182	18.3	4312	0.04
Chat.....	753	75.5	7813	0.10
Coffee	62	6.2	2444	0.03
Hops (Gesho).....	0	0.0	0	-
Enset	0	0.0	0	-
Sugar cane.....	0	0.0	0	-
Other permanent	0	0.0	0	-
RURAL				
All cropland.....	7737		14073	0.55
All temporary crops.....	6780	100.0	14051	0.48
Cereals	6426	94.8	14032	0.46
Pulses	204	3.0	3143	0.06
Oilseeds	34	0.5	439	0.08
Vegetables.....	30	0.4	1247	0.02
Root crops.....	85	1.3	2669	0.03
Other temporary.....	*	*	*	*
All permanent crops	957	12.4	9643	0.10
Fruit crops.....	144	100.0	4136	0.03
Chat.....	752	78.6	7802	0.10
Coffee	61	6.4	2436	0.03
Hops (Gesho).....	0	0.0	0	-
Enset	0	0.0	0	-
Sugar cane.....	0	0.0	0	-
Other permanent	0	0.0	0	-
URBAN				
All cropland.....	190		628	0.30
All temporary crops.....	151	100.0	588	0.26
Cereals	149	98.7	579	0.26
Pulses	0	0.0	0	-
Oilseeds	0	0.0	0	-
Vegetables.....	*	*	11	*
Root crops.....	*	*	*	*
Other temporary.....	0	0.0	0	-
All permanent crops	40	100.0	186	0.22
Fruit crops.....	38	95.0	176	0.22
Chat.....	*	*	*	*
Coffee	*	*	*	*
Hops(Gesho).....	0	0.0	0	-
Enset	0	0.0	0	-
Sugar cane.....	0	0.0	0	-
Other permanent	0	0.0	0	-

Note: Holders that reported by crop categories are not mutually exclusive.

5.2. Cropland Area Under Belg Season

The census result indicated that in the rural private holdings about 385 hectares of land was cultivated under temporary crops during Belg season and the estimated total number of holders practicing Belg season crops were found to be 4,737. Of the total temporary cropland area, cereals took the highest share of the cultivated area (66.8%). The overall average area per holder during Belg season was estimated at 0.08 hectare (See Summary Table IV.6).

Summary Table IV.6: Area Under Crop Categories And Number Of Holders- Belg season

Type of Crop Categories	Area in Hectare		Holders reporting	Average area per holder
	Number	%		
RURAL				
All temporary crops	385	100.0	4737	0.08
Cereals	257	66.8	3521	0.07
Pulses	*	*	*	*
Oilseeds	0	0.0	0	-
Vegetables	54	14.0	1487	0.04
Root crops	75	19.5	1936	0.04
Other temporary crops	0	0.0	0	-

Note: Data users should not attempt to sum up cropland area under Belg season to the total land use area since the Belg season cropland area is part of the total land use area. However, providing Belg season information in this section is to show only how the holders shift the Meher/main season cropland area, fallow land and/or any other land into Belg season. On the other hand, data on Belg season crops of the urban area was not covered in the census.

6. AREA UNDER LAND TENURE SYSTEMS

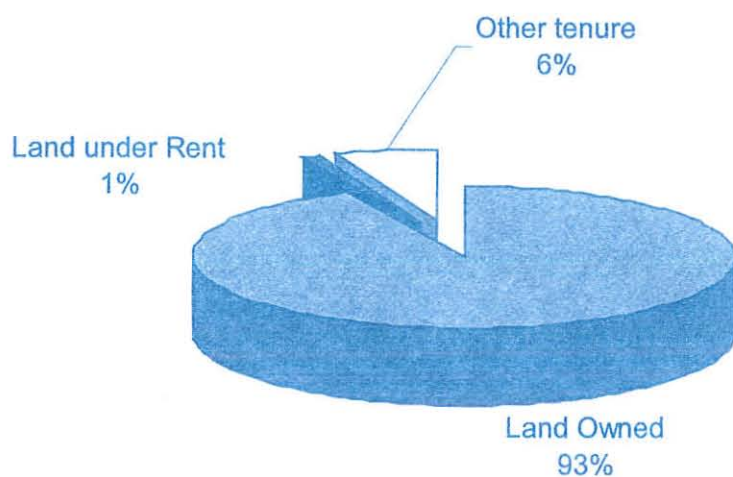
Land tenure refers to the arrangements or rights under which the holder uses or owns the land of the holding. In this Agricultural Sample Census, tenure system is classified into three categories. The first is land owned or held in owner like possession having recognition from local government/Kebele; the second is land rented from other person either in cash or proper share of the produce or other rental agreement and the third is land possession in other forms (neither owned nor rented such as land given temporarily to others without any

rental agreement or any other means). Based on this concept, data on land tenure systems was collected and the result indicates that, of the total land area (9,192 hectares), land owned by the operators accounted for 8,540 hectares (92.9%) land rented from other person accounted for 92 hectares (1.0%) and land obtained from other system was estimated to be 561 hectares (6.1%) in the region. Of the total holders (15,902) in the region, 15,646 holders owned the land they operated, while 415 holders operated the land by rental agreement and 1,146 holders used the land in other system of tenure. The average size of area per holder by type of tenure is estimated to be 0.55 hectare (for land owned), 0.22 hectare (for rented land) and 0.49 hectare (for other tenure). (Refer Summary Table IV.7 and Figure IV.6).

Similarly in rural private holdings, of the total area (9,002 hectares), most of the land area was accounted to the title of ownership, which is estimated to be 8,355 hectares (92.8%) and operated by 15,044 holders. The average size of land area per holder under land owned, rented and other tenure system is 0.56 hectare 0.22 hectare and 0.49 hectare, respectively (See Summary Table IV.7).

In urban private holdings, the tenure system is more or less similar to the rural except that reliable information could not be given for those who are cultivating their land under rental agreement. The proportion of land owned is 97.4% and that of other tenure system is 2.6%. On the other hand, the average size of land holding by type of tenure is estimated to be about 0.31 hectare and 0.25 hectare per holder for land owned and land under other tenure system, respectively. The average size of owned land area per holder is higher in rural (0.56) than in urban, which is 0.31 (See Summary Table IV.7).

Figure IV.6: Percentage Distribution Of Total Area By Tenure Systems, For Private Holdings



Summary Table IV.7: Distribution of Land Area and Holders by Tenure Systems In Rural And Urban Areas, For Private Holdings

Items	All Number	Type of Land Tenure Systems		
		Land Owned	Land Rented	Other Tenure
RURAL + URBAN				
All area in hectare.....	9192	8540	92	561
Percent	100	92.9	1.0	6.1
All holder	15902	15646	415	1146
Average area per holder.....	0.58	0.55	0.22	0.49
RURAL				
All area in hectare.....	9002	8355	91	556
Percent	97.9	92.8	1.0	6.2
All holder	15275	15044	409	1126
Average area per holder	0.59	0.56	0.22	0.49
URBAN				
All area in hectare	190	185	*	5
Percent	2.1	97.4	*	2.6
All holder	628	602	*	20
Average area per holder	0.3	0.31	*	0.25

Note: Since holders in each tenure systems are not mutually exclusive, holders that reported different type of land tenure systems should not be summed up to get the total number of holders.

**STATISTICAL TABLES PRESENTING
RESULTS AT
ADMINISTRATIVE COUNCIL LEVEL**

Tables 4.1 – 4.7

TABLE 4.1 NUMBERS OF AGRICULTURAL HOLDERS BY TYPE AND SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

TYPE OF HOLDING	All Number	Number of holders by size of holdings (In hectares)						
		Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
All	15902	1945	6390	5009	2282	276	-	-
Crop Only	740	77	469	143	*	-	-	-
Livestock Only	1202	1202	-	-	-	-	-	-
Crop and Livestock	13960	667	5921	4866	2230	276	-	-

TABLE 4.1.1 RURAL HOLDINGS

TYPE OF HOLDING	All Number	Number of holders by size of holdings (In hectares)						
		Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
All	15275	1831	5954	4956	2258	276	-	-
Crop Only	630	*	400	138	*	-	-	-
Livestock Only	1202	1202	-	-	-	-	-	-
Crop and Livestock	13442	586	5554	4817	2209	276	-	-

TABLE 4.1.2 URBAN HOLDINGS

TYPE OF HOLDING	All Number	Number of holders by size of holdings (In hectares)						
		Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
All	628	115	436	53	24	-	-	-
Crop Only	110	34	69	*	*	-	-	-
Crop and Livestock	518	81	367	49	20	-	-	-

TABLE 4.2 NUMBERS OF AGRICULTURAL HOUSEHOLD MEMBERS AND AGRICULTURAL HOOUSEHOLDS
BY SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

Size of Holdings	All		Number of Households				
	Number of Members	Number of Households	Households with One Member	Households with 2-3 Members	Households with 4-5 Members	Households with 6-9 Members	Households with 10 or More Members
All Holdings.....	83542	15838	332	3365	5355	6075	710
Under 0.10 Hectare.....	8330	1945	185	591	631	522	*
0.10 – 0.50 Hectare.....	32941	6349	*	1382	2192	2471	220
0.51 – 1.00 Hectare.....	27300	4965	*	876	1795	2034	217
1.01 – 2.00 Hectares.....	13313	2280	*	408	701	916	232
2.01 – 5.00 Hectares.....	1658	299	-	*	*	131	*
5.01 – 10.00 Hectares.....	-	-	-	-	-	-	-
Over 10 Hectares.....	-	-	-	-	-	-	-

TABLE 4.2.1 RURAL HOLDINGS

Size of Holdings	All		Number of Households				
	Number of Members	Number of Households	Households with One Member	Households with 2-3 Members	Households with 4-5 Members	Households with 6-9 Members	Households with 10 or More Members
All Holdings.....	79904	15210	318	3250	5182	5802	659
Under 0.10 Hectare.....	7707	1831	178	578	596	463	*
0.10 – 0.50 Hectare.....	30462	5913	*	1289	2071	2291	186
0.51 – 1.00 Hectare.....	26912	4912	*	870	1781	2014	205
1.01 – 2.00 Hectares.....	13166	2256	*	405	697	903	228
2.01 – 5.00 Hectares.....	1658	299	-	*	*	131	*
5.01 – 10.00 Hectares.....	-	-	-	-	-	-	-
Over 10 Hectares.....	-	-	-	-	-	-	-

TABLE 4.2.2 URBAN HOLDINGS

Size of Holdings	All		Number of Households				
	Number of Members	Number of Households	Households with One Member	Households with 2-3 Members	Households with 4-5 Members	Households with 6-9 Members	Households with 10 or More Members
All Holdings.....	3638	628	14	116	174	273	51
Under 0.10 Hectare.....	623	115	*	13	36	59	-
0.10 – 0.50 Hectare.....	2480	436	8	92	120	181	35
0.51 – 1.00 Hectare.....	388	53	-	*	14	20	*
1.01 – 2.00 Hectares.....	147	24	-	*	*	13	*
2.01 – 5.00 Hectares.....	-	-	-	-	-	-	-
5.01 – 10.00 Hectares.....	-	-	-	-	-	-	-
Over 10 Hectares.....	-	-	-	-	-	-	-

TABLE 4.3. NUMBER OF HOLDERS, AREA OF HOLDING AND NUMBER OF PARCELS BY LAND USE AND SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

Land Use By Size Of Holdings	Number Of Holders	Holding Area in Hectares	Number Of Parcels
Holdings Of All Sizes			
All	15902	9192	45553
Land Under Temporary Crops	14638	6931	28633
Land Under Permanent Crops	9829	997	14793
Grazing Land	2782	559	2873
Fallow Land	3449	439	3893
Woodland	*	*	*
All Other Land	15203	264	15725
Holdings Under 0.10 Hectares Sizes			
All	1945	59	2731
Land Under Temporary Crops	708	28	867
Land Under Permanent Crops	332	8	455
Grazing Land	*	*	*
Fallow Land	*	*	*
Woodland	-	-	-
All Other Land	1808	19	1814
Holdings Of 0.10-0.50 Hectares Sizes			
All	6390	1923	18560
Land Under Temporary Crops	6369	1551	11808
Land Under Permanent Crops	4180	221	5901
Grazing Land	389	26	389
Fallow Land	838	49	878
Woodland	-	-	-
All Other Land	5928	77	6109
Holdings Of 0.51-1.00 Hectares Sizes			
All	5009	3546	16011
Land Under Temporary Crops	5003	2729	10191
Land Under Permanent Crops	3541	402	5512
Grazing Land	1238	192	1272
Fallow Land	1340	145	1505
Woodland	-	-	-
All Other Land	4956	78	5090
Holdings Of 1.01-2.00 Hectares Sizes			
All	2282	3001	7283
Land Under Temporary Crops	2282	2128	5042
Land Under Permanent Crops	1585	297	2485
Grazing Land	958	306	996
Fallow Land	1005	207	1203
Woodland	*	*	*
All Other Land	2235	62	2414
Holdings Of 2.01-5.00 Hectares Sizes			
All	276	663	*
Land Under Temporary Crops	276	496	725
Land Under Permanent Crops	190	*	*
Grazing Land	*	*	149
Fallow Land	*	*	*
Woodland	*	*	*
All Other Land	276	*	297
Holdings Of 5.01-10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Grazing Land	-	-	-
Fallow Land	-	-	-
Woodland	-	-	-
All Other Land	-	-	-
Holdings Over 10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Grazing Land	-	-	-
Fallow Land	-	-	-
Woodland	-	-	-
All Other Land	-	-	-

TABLE 4.3.1 RURAL HOLDINGS

Land Use By Size Of Holdings	Number Of Holders	Holding Area in Hectares	Number Of Parcels
Holdings Of All Sizes			
All	15275	9002	44787
Land Under Temporary Crops	14051	6780	28022
Land Under Permanent Crops	9643	957	14587
Grazing Land	2782	559	2873
Fallow Land	3449	439	3893
Woodland	*	*	*
All Other Land	15203	264	15725
Holdings Under 0.10 Hectares Sizes			
All	1831	54	2614
Land Under Temporary Crops	607	24	765
Land Under Permanent Crops	309	7	433
Grazing Land	*	*	*
Fallow Land	*	*	*
Woodland	-	-	-
All Other Land	1808	19	1814
Holdings Of 0.10-0.50 Hectares Sizes			
All	5954	1808	18046
Land Under Temporary Crops	5954	1454	11389
Land Under Permanent Crops	4057	203	5768
Grazing Land	389	26	389
Fallow Land	838	49	878
Woodland	-	-	-
All Other Land	5928	77	6109
Holdings Of 0.51-1.00 Hectares Sizes			
All	4956	3508	15924
Land Under Temporary Crops	4956	2704	10134
Land Under Permanent Crops	3511	389	5476
Grazing Land	1238	192	1272
Fallow Land	1340	145	1505
Woodland	-	-	-
All Other Land	4956	78	5090
Holdings Of 1.01-2.00 Hectares Sizes			
All	2258	2969	7236
Land Under Temporary Crops	2258	2103	5009
Land Under Permanent Crops	1575	290	2471
Grazing Land	958	306	996
Fallow Land	1005	207	1203
Woodland	*	*	*
All Other Land	2235	62	2414
Holdings Of 2.01-5.00 Hectares Sizes			
All	276	663	*
Land Under Temporary Crops	276	496	725
Land Under Permanent Crops	190	*	*
Grazing Land	*	*	149
Fallow Land	*	*	*
Woodland	*	*	*
All Other Land	276	*	297
Holdings Of 5.01-10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Grazing Land	-	-	-
Fallow Land	-	-	-
Woodland	-	-	-
All Other Land	-	-	-
Holdings Over 10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Grazing Land	-	-	-
Fallow Land	-	-	-
Woodland	-	-	-
All Other Land	-	-	-

TABLE 4.3.2 URBAN HOLDINGS

Land Use By Size Of Holdings	Number Of Holders	Holding Area in Hectares	Number Of Parcels
Holdings Of All Sizes			
All	628	190	766
Land Under Temporary Crops	588	151	611
Land Under Permanent Crops	186	40	206
Holdings Under 0.10 Hectares Sizes			
All	115	5	116
Land Under Temporary Crops	102	4	102
Land Under Permanent Crops	23	1	23
Holdings Of 0.10-0.50 Hectares Sizes			
All	436	115	515
Land Under Temporary Crops	415	98	419
Land Under Permanent Crops	124	18	133
Holdings Of 0.51-1.00 Hectares Sizes			
All	53	37	87
Land Under Temporary Crops	47	24	57
Land Under Permanent Crops	30	13	37
Holdings Of 1.01-2.00 Hectares Sizes			
All	24	32	47
Land Under Temporary Crops	24	25	34
Land Under Permanent Crops	10	8	14
Holdings Of 2.01-5.00 Hectares Sizes			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Holdings Of 5.01-10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-
Holdings Over 10.00 Hectares			
All	-	-	-
Land Under Temporary Crops	-	-	-
Land Under Permanent Crops	-	-	-

TABLE 4.4 NUMBER OF HOLDERS AND AREA OF HOLDING BY TYPE OF CROP AND SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

Type of Crop	Number Of Holders Reporting	All Area In Hectare	Area By Size Of Holdings (In Hectare)						
			Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
Total Cropland	14701	7928	45	2206	3362	1901	414		
Temporary Crops	14638	6931	35	1948	2940	1646	361		
Grain Crops	14611	6814	32	1892	2897	1632	361		
Cereals	14611	6575	32	1855	2791	1554	344		
Barley	*	*	*	*	*	*	*		
Maize	4740	268	*	104	127	29			
Millet	*	*	*	*	*	*	*		
Oats/'Aja'	*	*	*	*	*	*	*		
Rice	*	*	*	*	*	*	*		
Sorghum	14302	6298	24	1748	2659	1524	344		
Teff	*	*	*	*	*	*	*		
Wheat	*	*	*	*	*	*	*		
Pulses	3143	204		29	93	65	*		
Chick Peas	*	*		*	*	*	*		
Fenugreek	*	*		*	*	*	*		
Field Peas	*	*		*	*	*	*		
Gibto	*	*		*	*	*	*		
Haricot beans	3101	201		29	92	64	*		
Horse beans	*	*		*	*	*	*		
Soya beans	*	*		*	*	*	*		
Lentils	*	*		*	*	*	*		
Vetch	*	*		*	*	*	*		
Other Pulses	*	*		*	*	*	*		
Oilseeds	439	34		*	*	*	*		
Groundnuts	308	25		*	*	*	*		
Linseed	*	*		*	*	*	*		
Neug	*	*		*	*	*	*		
Rape seed	*	*		*	*	*	*		
Sesame	*	*		*	*	*	*		
Sufflower	*	*		*	*	*	*		
Other Grains	*	*		*	*	*	*		
Vegetables	1258	31	*	14	*	*	*		
Head Cabbage	*	*	*	*	*	*	*		
Green peppers	*	*	*	*	*	*	*		
Ethiopian	*	*	*	*	*	*	*		
Lettuce	*	*	*	*	*	*	*		
Red peppers	*	*	*	*	*	*	*		
Swiss chard	*	*	*	*	*	*	*		
Tomatoes	1210	30	*	13	*	*	*		
Other vegetables	*	*	*	*	*	*	*		
Root Crops	2675	86	2	43	32	*	*		
Beet root	*	*	*	*	*	*	*		
Carrot	*	*	*	*	*	*	*		
Garlic	*	*	*	*	*	*	*		
Taro/'Godere'	*	*	*	*	*	*	*		
Onion	*	*	*	*	*	*	*		
Potatoes	*	*	*	*	*	*	*		
Sweet Potatoes	2208	64	2	33	25	*	*		
Other root	*	*	*	*	*	*	*		
Permanent Crops	9829	997	9	258	422	255	*		
Fruit crops	4312	182	*	59	89	27	*		
Avocados	*	*	*	*	*	*	*		
Bananas	538	6	*	*	*	*	*		
Guavas	762	*	*	*	*	*	*		
Lemons	147	2	*	*	*	*	*		
Mangoes	515	15	*	5	*	*	*		
Oranges	287	17	*	5	7	*	*		
Papayas	2088	45	*	12	23	9	*		
Pineapples	*	*	*	*	*	*	*		
Other fruits	1803	87	*	28	45	10	*		
Stimulant crops	8667	815	5	199	333	228	*		
Chat	7813	753	*	167	314	220	*		
Coffee	2444	62	*	32	20	8	*		
Hops/'Gesho'	*	*	*	*	*	*	*		
Other stimulants	*	*	*	*	*	*	*		
Other permanent	*	*	*	*	*	*	*		
Enset	*	*	*	*	*	*	*		
Sugar Cane	*	*	*	*	*	*	*		
Other s	*	*	*	*	*	*	*		

TABLE 4.4.1 RURAL HOLDINGS

Type of Crop	Number Of Holders Reporting	All Area In Hectare	Area By Size Of Holdings (In Hectare)						
			Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
Total Cropland	14073	7737	39	2091	3325	1869	414		
Temporary Crops	14051	6780	31	1851	2916	1621	361		
Grain Crops	14032	6665	28	1795	2873	1607	361		
Cereals	14032	6426	28	1758	2767	1529	344		
Barley	*	*	*	*	*	*	*		
Maize	4690	257	*	102	124	23			
Millet	*	*	*	*	*	*	*		
Oats/'Aia'	*	*	*	*	*	*	*		
Rice	*	*	*	*	*	*	*		
Sorghum	13750	6160	20	1654	2638	1505	344		
Teff	*	*	*	*	*	*	*		
Wheat	*	*	*	*	*	*	*		
Pulses	3143	204		29	93	65	*		
Chick Peas	*	*			*	*	*		
Fenugreek	*	*			*	*	*		
Field Peas	*	*			*	*	*		
Gibto	*	*			*	*	*		
Haricot beans	3101	201		29	92	64	*		
Horse beans	*	*			*	*	*		
Soya beans	*	*			*	*	*		
Lentils	*	*			*	*	*		
Vetch	*	*			*	*	*		
Other Pulses	*	*			*	*	*		
Oilseeds	439	34		*	*	*	*		
Groundnuts	308	25		*	*	*	*		
Linseed	*	*			*	*	*		
Neug	*	*			*	*	*		
Rape seed	*	*			*	*	*		
Sesame	*	*			*	*	*		
Sufflower	*	*			*	*	*		
Other Grains	*	*			*	*	*		
Vegetables	1247	30	*	13	*	*	*		
Head Cabbage	*	*			*	*	*		
Green peppers	*	*			*	*	*		
Ethiopian	*	*			*	*	*		
Lettuce	*	*			*	*	*		
Red peppers	*	*			*	*	*		
Swiss chard	*	*			*	*	*		
Tomatoes	1200	29	*	13	*	*	*		
Other vegetables	*	*			*	*	*		
Root Crops	2669	85	2	43	31	*	*		
Beet root	*	*			*	*	*		
Carrot	*	*			*	*	*		
Garlic	*	*			*	*	*		
Taro/'Godere'	*	*			*	*	*		
Onion	*	*			*	*	*		
Potatoes	*	*			*	*	*		
Sweet Potatoes	2208	64	2	33	25	*	*		
Other root	*	*			*	*	*		
Permanent Crops	9643	957	8	240	409	248	*		
Fruit crops	4136	144	*	42	77	19	*		
Avocados	*	*			*	*	*		
Bananas	537	6	*	*	*	*	*		
Guavas	762	*	*	*	*	*	*		
Lemons	142	*	*	*	*	*	*		
Mangoes	465	9	*	*	*	*	*		
Oranges	189	*	*	*	*	*	*		
Papayas	2066	43	*	11	22	9	*		
Pineapples	*	*			*	*	*		
Other fruits	1687	72	*	*	39	7	*		
Stimulant crops	8653	813	5	198	332	228	*		
Chat	7802	752	*	167	313	220	*		
Coffee	2436	61	*	32	20	8	*		
Hops/'Gesho'	*	*			*	*	*		
Other	*	*			*	*	*		
Other permanent									
Enset									
Sugar Cane									
Other s									

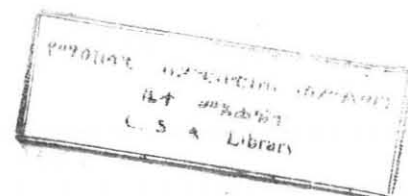


TABLE 4.4.2 URBAN HOLDINGS

Type of crop	Number Of Holders Reporting	All Area In Hectare	Area By Size Of Holdings (In Hectare)						
			Less Than 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 - 5.00	5.01 - 10	Over 10
Total Cropland	628	190	5	115	37	32			
Temporary Crops	588	151	4	98	24	25			
Grain Crops	579	149	4	97	24	25			
Cereals	579	149	4	97	24	25			
Barley	*	*	*	*	*	*			
Maize	50	11	*	2	*	*			
Millet									
Oats/'Aja'									
Rice									
Sorghum	552	138	4	94	21	19			
Teff									
Wheat									
Pulses									
Chick Peas									
Fenugreek									
Field Peas									
Gibto									
Haricot beans									
Horse beans									
Soya beans									
Lentils									
Vetch									
Other Pulses									
Oilseeds									
Groundnuts									
Linseed									
Neug									
Rape seed									
Sesame									
Sufflower									
Other Grains									
Vegetables	11	*	*	*	*	*			
Head Cabbage	*	*	*	*	*	*			
Green peppers									
Ethiopian									
Lettuce									
Red peppers									
Swiss chard									
Tomatoes	10	*	*	*	*	*			
Other vegetables									
Root Crops	*	*	*	*	*	*			
Beet root									
Carrot									
Garlic									
Taro/'Godere'									
Onion	*	*	*	*	*	*			
Potatoes									
Sweet Potatoes									
Other root									
Permanent Crops	186	40	1	18	13	*			
Fruit crops	176	38	1	17	12	*			
Avocados	*	*	*	*	*	*			
Bananas	*	*	*	*	*	*			
Guavas	*	*	*	*	*	*			
Lemons	*	*	*	*	*	*			
Mangoes	50	6	*	5	*	*			
Oranges	99	14	*	5	5	*			
Papayas	22	*	*	1	*	*			
Pineapples									
Other fruits	115	16	*	7	*	*			
Stimulant crops	*	*	*	*	*	*			
Chat	*	*	*	*	*	*			
Coffee	*	*	*	*	*	*			
Hops/'Gesho'									
Other stimulants									
Other permanent									
Enset									
Sugar Cane									
Other s									

TABLE 4.5 NUMBER OF HOLDERS UNDER ALL LAND TENURE SYSTEMS BY LAND USE AND SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

Land Use By Size of Holding	All Holders	Number of Holders By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	15902	15646	415	1146
Land Under Temporary Crops	14638	14156	372	644
Land under Permanent Crops	9829	9680	138	*
Grazing Land	2782	2634	*	*
Fallow Land	3449	3346	*	*
Woodland	*	*	*	*
All Other Land	15203	14791	*	*
Holdings Under 0.10 Hectares Sizes				
All	1945	1731	*	*
Land Under Temporary Crops	708	654	*	*
Land under Permanent Crops	332	332	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	*	*	*	*
All Other Land	1808	1553	*	*
Holdings Of 0.10-0.50 Hectares Sizes				
All	6390	6375	241	270
Land Under Temporary Crops	6369	6214	219	125
Land under Permanent Crops	4180	4095*	*	*
Grazing Land	389	389	*	*
Fallow Land	838	838	*	*
Woodland	*	*	*	*
All Other Land	5928	5818*	*	*
Holdings Of 0.51-1.00 Hectares Sizes				
All	5009	5006	*	241
Land Under Temporary Crops	5003	4866	*	*
Land under Permanent Crops	3541	3495	*	*
Grazing Land	1238	1152	*	*
Fallow Land	1340	1295	*	*
Woodland	*	*	*	*
All Other Land	4956	4933	*	*
Holdings Of 1.01-2.00 Hectares Sizes				
All	2282	2282	*	*
Land Under Temporary Crops	2282	2192	*	*
Land under Permanent Crops	1585	1567	*	*
Grazing Land	958	913	*	*
Fallow Land	1005	983	*	*
Woodland	*	*	*	*
All Other Land	2235	2235	*	*
Holdings Of 2.01-5.00 Hectares Sizes				
All	276	252	*	166
Land Under Temporary Crops	276	230	*	166
Land under Permanent Crops	190	190	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	*	*	*	*
All Other Land	276	252	*	*
Holdings Of 5.01-10.00 Hectares				
All				
Land Under Temporary Crops				
Land under Permanent Crops				
Grazing Land				
Fallow Land				
Woodland				
All Other Land				
Holdings Over 10.00 Hectares				
All				
Land Under Temporary Crops				
Land under Permanent Crops				
Grazing Land				
Fallow Land				
Woodland				
All Other Land				

TABLE 4.5.1 RURAL HOLDINGS

Land Use By Size of Holding	All Holders	Number of Holders By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	15275	15044	409	1126
Land Under Temporary Crops	14051	13594	366	624
Land under Permanent Crops	9643	9493	138	*
Grazing Land	2782	2634	*	*
Fallow Land	3449	3346	*	*
Woodland	*	*	*	*
All Other Land	15203	14791	*	*
Holdings Under 0.10 Hectares				
All	1831	1624	*	*
Land Under Temporary Crops	607	560	*	*
Land under Permanent Crops	309	309	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	-	-	-	-
All Other Land	1808	1553	*	*
Holdings Of 0.10-0.50 Hectares				
All	5954	5954	237	259
Land Under Temporary Crops	5954	5814	215	114
Land under Permanent Crops	4057	3971	*	*
Grazing Land	389	389	*	*
Fallow Land	838	838	*	*
Woodland	-	-	-	-
All Other Land	5928	5818	*	*
Holdings Of 0.51-1.00 Hectares				
All	4956	4956	*	238
Land Under Temporary Crops	4956	4822	*	*
Land under Permanent Crops	3511	3465	*	*
Grazing Land	1238	1152	*	*
Fallow Land	1340	1295	*	*
Woodland	-	-	-	-
All Other Land	4956	4933	*	*
Holdings Of 1.01-2.00 Hectares				
All	2258	2258	*	*
Land Under Temporary Crops	2258	2168	*	*
Land under Permanent Crops	1575	1557	*	*
Grazing Land	958	913	*	*
Fallow Land	1005	983	*	*
Woodland	*	*	*	*
All Other Land	2235	2235	*	*
Holdings Of 2.01-5.00 Hectares				
All	276	252	*	166
Land Under Temporary Crops	276	230	*	166
Land under Permanent Crops	190	190	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	*	*	*	*
All Other Land	276	252	*	*
Holdings Of 5.01-10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-
Holdings Over 10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-

TABLE 4.5.2 URBAN HOLDINGS

Land Use By Size of Holding	All Holders	Number of Holders By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	628	602	*	20
Land Under Temporary Crops	588	562	*	20
Land under Permanent Crops	186	186	-	-
Holdings Under 0.10 Hectares Sizes				
All	115	108	*	*
Land Under Temporary Crops	102	94	*	*
Land under Permanent Crops	23	23	-	-
Holdings Of 0.10-0.50 Hectares Sizes				
All	436	421	*	*
Land Under Temporary Crops	415	400	*	*
Land under Permanent Crops	124	124	-	-
Holdings Of 0.51-1.00 Hectares Sizes				
All	53	50	-	*
Land Under Temporary Crops	47	44	-	*
Land under Permanent Crops	30	30	-	-
Holdings Of 1.01-2.00 Hectares Sizes				
All	24	24	-	-
Land Under Temporary Crops	24	24	-	-
Land under Permanent Crops	*	*	-	-
Holdings Of 2.01-5.00 Hectares Sizes				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Holdings Of 5.01-10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Holdings Over 10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-

TABLE 4.6. AREA OF HOLDINGS UNDER ALL LAND TENURE SYSTEMS BY LAND USE AND SIZE OF HOLDING

BOTH RURAL AND URBAN HOLDINGS

Land Use By Size of Holding	Total Area	Area In Hectares By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	9192	8540	92	561
Land Under Temporary Crops	6931	6389	69	473
Land under Permanent Crops	997	947	*	*
Grazing Land	559	514	*	*
Fallow Land	439	429	*	*
Woodland	*	*	*	*
All Other Land	264	257	*	*
Holdings Under 0.10 Hectares Sizes				
All	59	51	*	*
Land Under Temporary Crops	28	25	*	*
Land under Permanent Crops	8	8	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	-	-	*	*
All Other Land	19	14	*	*
Holdings Of 0.10-0.50 Hectares Sizes				
All	1923	1854	34	36
Land Under Temporary Crops	1551	1488	30	32
Land under Permanent Crops	221	216	*	*
Grazing Land	26	26	*	*
Fallow Land	49	49	*	*
Woodland	-	-	*	*
All Other Land	77	75	*	*
Holdings Of 0.51-1.00 Hectares Sizes				
All	3546	3405	*	*
Land Under Temporary Crops	2729	2619	*	*
Land under Permanent Crops	402	397	*	*
Grazing Land	192	170	*	*
Fallow Land	145	142	*	*
Woodland	-	-	*	*
All Other Land	78	77	*	*
Holdings Of 1.01-2.00 Hectares Sizes				
All	3001	2827	*	*
Land Under Temporary Crops	2128	1993	*	*
Land under Permanent Crops	297	274	*	*
Grazing Land	306	291	*	*
Fallow Land	207	206	*	*
Woodland	*	*	*	*
All Other Land	62	62	*	*
Holdings Of 2.01-5.00 Hectares Sizes				
All	663	404	*	259
Land Under Temporary Crops	496	264	*	232
Land under Permanent Crops	*	*	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	*	*	*	*
All Other Land	*	*	*	*
Holdings Of 5.01-10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-
Holdings Over 10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-

TABLE 4.6.1 RURAL HOLDINGS

Land Use By Size of Holding	Total Area	Area In Hectares By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	9002	8355	91	556
Land Under Temporary Crops	6780	6244	68	468
Land under Permanent Crops	957	908	*	*
Grazing Land	559	514	*	*
Fallow Land	439	429	*	*
Woodland	*	*	*	*
All Other Land	264	257	*	*
Holdings Under 0.10 Hectares Sizes				
All	54	46	*	*
Land Under Temporary Crops	24	21	*	*
Land under Permanent Crops	7	7	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	-	-	*	*
All Other Land	19	14	*	*
Holdings Of 0.10-0.50 Hectares Sizes				
All	1808	1742	33	34
Land Under Temporary Crops	1454	1394	29	30
Land under Permanent Crops	203	198	*	*
Grazing Land	26	26	*	*
Fallow Land	49	49	*	*
Woodland	-	-	*	*
All Other Land	77	75	*	*
Holdings Of 0.51-1.00 Hectares Sizes				
All	3508	3369	*	*
Land Under Temporary Crops	2704	2597	*	*
Land under Permanent Crops	389	384	*	*
Grazing Land	192	170	*	*
Fallow Land	145	142	*	*
Woodland	-	-	*	*
All Other Land	78	77	*	*
Holdings Of 1.01-2.00 Hectares Sizes				
All	2969	2795	*	*
Land Under Temporary Crops	2103	1968	*	*
Land under Permanent Crops	290	267	*	*
Grazing Land	306	291	*	*
Fallow Land	207	206	*	*
Woodland	*	*	*	*
All Other Land	62	62	*	*
Holdings Of 2.01-5.00 Hectares Sizes				
All	663	404	*	259
Land Under Temporary Crops	496	264	*	232
Land under Permanent Crops	*	*	*	*
Grazing Land	*	*	*	*
Fallow Land	*	*	*	*
Woodland	*	*	*	*
All Other Land	*	*	*	*
Holdings Of 5.01-10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-
Holdings Over 10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Grazing Land	-	-	-	-
Fallow Land	-	-	-	-
Woodland	-	-	-	-
All Other Land	-	-	-	-

TABLE 4.6.2 URBAN HOLDINGS

Land Use By Size of Holding	Total Area	Area In Hectares By Type of Land Tenures		
		Land Owned	Land Rented	Other Tenure
Holdings Of All Sizes				
All	190	185	*	5
Land Under Temporary Crops	151	145	*	5
Land under Permanent Crops	40	40	-	-
Holdings Under 0.10 Hectares Sizes				
All	5	5	*	*
Land Under Temporary Crops	4	4	*	*
Land under Permanent Crops	1	1	-	-
Holdings Of 0.10-0.50 Hectares Sizes				
All	115	112	*	*
Land Under Temporary Crops	98	94	*	*
Land under Permanent Crops	18	18	-	-
Holdings Of 0.51-1.00 Hectares Sizes				
All	37	36	-	*
Land Under Temporary Crops	24	22	-	*
Land under Permanent Crops	13	13	-	-
Holdings Of 1.01-2.00 Hectares Sizes				
All	32	32	-	-
Land Under Temporary Crops	25	25	-	-
Land under Permanent Crops	*	*	-	-
Holdings Of 2.01-5.00 Hectares Sizes				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Holdings Of 5.01-10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-
Holdings Over 10.00 Hectares				
All	-	-	-	-
Land Under Temporary Crops	-	-	-	-
Land under Permanent Crops	-	-	-	-

TABLE 4.7. NUMBER OF HOLDERS AND AREA OF HOLDING UNDER ALL CROPLAND AND SIZE OF HOLDING

RURAL HOLDINGS-BELG SEASON

TYPE OF CROP	Number Of Holders Reporting	All Area In Hectare	Area By Size Of Holdings in Hectare						
			Under 0.10	0.1 - 0.50	0.51 - 1.00	1.01 - 2.00	2.01 -	5.01 - 10	Over 10
Temporary Crops	4737	385	169	205	*				
Grain Crops	3521	257	98	149	*				
Cereals	3521	257	98	149	*				
Barley	-	-	-	-	*				
Maize	3133	197	77	110	*				
Millet	-	-	-	-					
Oats/'Aja'	-	-	-	-					
Rice	-	-	-	-					
Sorghum	787	60	21	*					
Teff	-	-	-	-					
Wheat	-	-	-	-					
Pulses	*	*	*						
Chick Peas	-	-	-	-					
Fenugreek	-	-	-	-					
Field Peas	-	-	-	-					
Gibto	-	-	-	-					
Haricot beans	*	*	*						
Horse beans	-	-	-	-					
Soya beans	-	-	-	-					
Lentils	-	-	-	-					
Vetch	-	-	-	-					
Other Pulses	-	-	-	-					
Oilseeds	-	-	-	-					
Groundnuts	-	-	-	-					
Linseed	-	-	-	-					
Neug	-	-	-	-					
Rape seed	-	-	-	-					
Sesame	-	-	-	-					
Sufflower	-	-	-	-					
Other Grains	-	-	-	-					
Vegetables	1487	54	22	*	*				
Head Cabbage	-	-	-	-					
Green peppers	*	*	*	*	*				
Ethiopian Cabbage	-	-	-	-					
Lettuce	-	-	-	-					
Red peppers	-	-	-	-					
Swiss chard	-	-	-	-					
Tomatoes	1438	49	21	*	*				
Other vegetables	-	-	-	-					
Root Crops	1936	75	49	25	*				
Beet root	-	-	-	-					
Carrot	-	-	-	-					
Garlic	-	-	-	-					
Taro/'Godere'	-	-	-	-					
Onion	896	34	24	*	*				
Potatoes	*	*	*	*					
Sweet Potatoes	984	30	19	11					
Other root	-	-	-	-					

**ANNEX TABLES PRESENTING ESTIMATES,
STANDARD ERRORS AND COEFFICIENTS OF VARIATION
FOR SELECTED LAND USE VARIABLES**

Annex Tables 4.1 - 4.4.2

Annex Table 4.1: Estimates of Agricultural holders by Type of holdings and their Standard errors and Coefficients of Variation

Both Rural and Urban holdings

Type of holding	All Numbers			Size of Holding In Hectare								
				Under 0.10			0.10-0.50			0.51-1.00		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	15902	634	4	1945	360	18	6390	599	9	5009	585	12
Crop only	741	147	20	77	29	38	469	101	22	143	61	43
Livestock only	1202	279	23	1202	279	23	-	-	-	-	-	-
Crop and Livestock	13960	761	5	667	163	24	5921	571	10	4866	593	12

Table 4.1 Continued

Type of holding	Size of Holding In Hectare											
	1.01-2.00			2.01-5.00			5.01-10.00			Over 10		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	2282	388	17	276	115	42	-	-	-	-	-	-
Crop only	52	48	92	-	-	-	-	-	-	-	-	-
Livestock only	-	-	-	-	-	-	-	-	-	-	-	-
Crop and Livestock	2230	385	17	276	115	42	-	-	-	-	-	-

Annex Table 4.1.1 Rural holdings

Type of holding	All Numbers			Size of Holding In Hectare								
				Under 0.10			0.10-0.50			0.51-1.00		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	15275	624	4	1831	359	20	5954	594	10	4956	585	12
Crop only	630	145	23	43	27	62	400	100	25	138	61	44
Livestock only	1202	279	23	1202	279	23	-	-	-	-	-	-
Crop and Livestock	13442	755	6	586	162	28	5554	566	10	4817	593	12

Table 4.1.1 Continued

Type of holding	Size of Holding In Hectare											
	1.01-2.00			2.01-5.00			5.01-10.00			Over 10		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	2258	388	17	276	115	42	-	-	-	-	-	-
Crop only	49	48	98	-	-	-	-	-	-	-	-	-
Livestock only	-	-	-	-	-	-	-	-	-	-	-	-
Crop and Livestock	2209	385	17	276	115	42	-	-	-	-	-	-

Annex Table 4.1.2 Urban holdings

Type of holding	All Numbers			Size of Holding In Hectare								
				Under 0.10			0.10-0.50			0.51-1.00		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	628	108	17	115	24	21	436	80	18	53	16	30
Crop only	111	24	22	34	11	33	69	16	24	5	3	65
Livestock only	-	-	-	-	-	-	-	-	-	-	-	-
Crop and Livestock	517	94	18	81	21	25	367	70	19	49	16	32

Table 4.1.2 Continued

Type of holding	Size of Holding In Hectare											
	1.01-2.00			2.01-5.00			5.01-10.00			Over 10		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
All	24	9	40	-	-	-	-	-	-	-	-	-
Crop only	3	3	83	-	-	-	-	-	-	-	-	-
Livestock only	-	-	-	-	-	-	-	-	-	-	-	-
Crop and Livestock	20	9	43	-	-	-	-	-	-	-	-	-

Annex Table 4.2 : Estimates of Agricultural holders, Area of holding and number of parcels by Type of Land use and their Standard errors and Coefficients of Variation

Both Rural and Urban holdings

Land Use By Size Of Holding	Number of Holders			Holding Area in Hectare			Number Of Parcels		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes									
All	15902	634	4	9192	851	9	45553	3051	7
Land Under Temporary Crops	14638	743	5	6931	625	9	28633	2173	8
Land Under Permanent Crops	9829	966	10	997	151	15	14793	1811	12
Grazing Land	2782	614	22	559	161	29	2873	630	22
Fallow Land	3449	473	14	439	91	21	3893	565	15
Woodland	42	30	72	3	2	76	42	30	72
All Other Land	15203	623	4	264	34	13	15725	629	4
Holdings Under 0.10 Hectares									
All	1945	360	18	59	13	21	2731	503	18
Land Under Temporary Crops	708	161	23	28	7	25	867	205	24
Land Under Permanent Crops	332	117	35	8	3	38	455	167	37
Grazing Land	66	44	67	1	1	74	66	44	67
Fallow Land	78	54	69	3	2	71	78	54	69
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	1808	359	20	19	5	27	1814	359	20
Holdings Of 0.10-0.50 Hectares									
All	6390	599	9	1923	167	9	18560	2381	13
Land Under Temporary Crops	6369	599	9	1551	134	9	11808	1627	14
Land Under Permanent Crops	4180	633	15	221	34	15	5901	996	17
Grazing Land	389	128	33	26	9	35	389	128	33
Fallow Land	838	153	18	49	12	25	878	165	19
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	5928	595	10	77	9	12	6109	616	10
Holdings Of 0.51-1.00 Hectares									
All	5009	585	12	3546	419	12	16011	2111	13
Land Under Temporary Crops	5003	585	12	2729	328	12	10191	1339	13
Land Under Permanent Crops	3541	491	14	402	65	16	5512	954	17
Grazing Land	1238	325	26	192	60	31	1272	345	27
Fallow Land	1340	249	19	145	36	25	1505	296	20
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	4956	585	12	78	10	13	5090	585	12
Holdings Of 1.01-2.00 Hectares									
All	2282	388	17	3001	527	18	7283	1239	17
Land Under Temporary Crops	2282	388	17	2128	368	17	5042	896	18
Land Under Permanent Crops	1585	334	21	297	83	28	2485	534	22
Grazing Land	958	277	29	306	127	41	996	281	28
Fallow Land	1005	219	22	207	56	27	1203	271	23
Woodland	24	25	105	1	1	106	24	25	105
All Other Land	2235	383	17	62	18	28	2414	421	17
Holdings Of 2.01-5.00 Hectares									
All	276	115	42	663	280	42	968	487	50
Land Under Temporary Crops	276	115	42	496	210	42	725	358	49
Land Under Permanent Crops	190	87	46	68	35	51	440	255	58
Grazing Land	131	66	51	34	20	57	149	72	49
Fallow Land	188	95	51	34	21	61	229	121	53
Woodland	18	18	99	2	2	99	18	18	99
All Other Land	276	115	42	29	24	83	297	123	42
Holdings Of 5.01-10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-

Annex Table 4.2.1 Rural Holdings

Land Use By Size Of Holding	Number of Holders			Holding Area in Hectare			Number Of Parcels		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes									
All	15275	624	4	9002	850	9	44787	3048	7
Land Under Temporary Crops	14051	736	5	6780	624	9	28022	2170	8
Land Under Permanent Crops	9643	965	10	957	150	16	14587	1811	12
Grazing Land	2782	614	22	559	161	29	2873	630	22
Fallow Land	3449	473	14	439	91	21	3893	565	15
Woodland	42	30	72	3	2	76	42	30	72
All Other Land	15203	623	4	264	34	13	15725	629	4
Holdings Under 0.10 Hectares									
All	1831	359	20	54	12	23	2614	502	19
Land Under Temporary Crops	607	159	26	24	7	29	765	203	27
Land Under Permanent Crops	309	117	38	7	3	44	433	167	39
Grazing Land	66	44	67	1	1	74	66	44	67
Fallow Land	78	54	69	3	2	71	78	54	69
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	1808	359	20	19	5	27	1814	359	20
Holdings Of 0.10-0.50 Hectares									
All	5954	594	10	1808	165	9	18046	2379	13
Land Under Temporary Crops	5954	594	10	1454	133	9	11389	1625	14
Land Under Permanent Crops	4057	632	16	203	33	16	5768	996	17
Grazing Land	389	128	33	26	9	35	389	128	33
Fallow Land	838	153	18	49	12	25	878	165	19
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	5928	595	10	77	9	12	6109	616	10
Holdings Of 0.51-1.00 Hectares									
All	4956	585	12	3508	419	12	15924	2111	13
Land Under Temporary Crops	4956	585	12	2704	328	12	10134	1339	13
Land Under Permanent Crops	3511	491	14	389	65	17	5476	954	17
Grazing Land	1238	325	26	192	60	31	1272	345	27
Fallow Land	1340	249	19	145	36	25	1505	296	20
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	4956	585	12	78	10	13	5090	585	12
Holdings Of 1.01-2.00 Hectares									
All	2258	388	17	2969	527	18	7236	1238	17
Land Under Temporary Crops	2258	388	17	2103	368	17	5009	896	18
Land Under Permanent Crops	1575	334	21	290	83	29	2471	534	22
Grazing Land	958	277	29	306	127	41	996	281	28
Fallow Land	1005	219	22	207	56	27	1203	271	23
Woodland	24	25	105	1	1	105	24	25	105
All Other Land	2235	383	17	62	18	28	2414	421	17
Holdings Of 2.01-5.00 Hectares									
All	276	115	42	663	280	42	968	487	50
Land Under Temporary Crops	276	115	42	496	210	42	725	358	49
Land Under Permanent Crops	190	87	46	68	35	51	440	255	58
Grazing Land	131	66	51	34	20	58	149	72	49
Fallow Land	188	95	51	34	21	61	229	121	53
Woodland	18	18	99	2	2	99	18	18	99
All Other Land	276	115	42	29	24	83	297	123	42
Holdings Of 5.01-10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-

Annex Table 4.2.2 Urban Holdings

Land Use By Size Of Holding	Number of Holders			Holding Area in Hectare			Number Of Parcels		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes									
All	628	108	17	190	36	19	766	130	17
Land Under Temporary Crops	588	105	18	151	32	21	611	109	18
Land Under Permanent Crops	186	43	23	40	10	26	206	47	23
Holdings Under 0.10 Hectares									
All	115	24	21	5	1	26	116	24	21
Land Under Temporary Crops	102	24	23	4	1	29	102	24	23
Land Under Permanent Crops	23	8	33	1	-	42	23	8	33
Holdings Of 0.10-0.50 Hectares									
All	436	80	18	115	21	19	515	95	18
Land Under Temporary Crops	415	77	19	98	19	19	419	78	19
Land Under Permanent Crops	124	34	28	18	5	29	133	36	27
Holdings Of 0.51-1.00 Hectares									
All	53	16	30	37	11	30	87	26	29
Land Under Temporary Crops	47	15	32	24	9	36	57	18	32
Land Under Permanent Crops	30	10	32	13	5	40	37	13	35
Holdings Of 1.01-2.00 Hectares									
All	24	9	40	32	13	40	47	19	40
Land Under Temporary Crops	24	9	40	25	11	44	34	14	42
Land Under Permanent Crops	10	6	58	8	5	66	14	9	64
Holdings Of 2.01-5.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Holdings Of 5.01-10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares									
All	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-

Annex Table 4.3: Estimates of Agricultural holders by Type of Land tenure systems and Land use and their Standard errors and Coefficients of Variation

Both Rural and Urban holdings

Land Use By Size Of Holding	All Number			Number of Holders By Tenure Systems								
	Estimate	S.E	C.V In %	Land Owned			Land Rented			Other Tenure		
				Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes												
All	15902	634	4	15646	688	4	415	125	30	1146	388	34
Land Under Temporary Crops	14638	743	5	14156	762	5	372	110	30	644	238	37
Land Under Permanent Crops	9829	966	10	9680	962	10	138	69	50	219	115	53
Grazing Land	2782	614	22	2634	583	22	20	22	110	128	84	65
Fallow Land	3449	473	14	3346	450	13	21	21	98	82	46	56
Woodland	42	30	72	42	30	72	-	-	-	-	-	-
All Other Land	15203	623	4	14791	716	5	21	21	98	491	314	64
Holdings Under 0.10 Hectares												
All	1945	360	18	1731	281	16	57	32	56	294	243	83
Land Under Temporary Crops	708	161	23	654	151	23	57	32	56	17	12	70
Land Under Permanent Crops	332	117	35	332	117	35	20	22	108	-	-	-
Grazing Land	66	44	67	66	44	67	-	-	-	-	-	-
Fallow Land	78	54	69	78	54	69	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	1808	359	20	1553	273	18	-	-	-	288	243	84
Holdings Of 0.10-0.50 Hectares												
All	6390	599	9	6375	599	9	241	93	39	270	92	34
Land Under Temporary Crops	6369	599	9	6214	608	10	219	89	40	125	48	38
Land Under Permanent Crops	4180	633	15	4095	618	15	63	47	74	45	32	73
Grazing Land	389	128	33	389	128	33	-	-	-	-	-	-
Fallow Land	838	153	18	838	153	18	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	5928	595	10	5818	601	10	21	21	98	121	77	64
Holdings Of 0.51-1.00 Hectares												
All	5009	585	12	5006	585	12	63	45	71	241	103	43
Land Under Temporary Crops	5003	585	12	4866	580	12	42	30	72	182	98	54
Land Under Permanent Crops	3541	491	14	3495	493	14	-	-	-	69	50	72
Grazing Land	1238	325	26	1152	315	27	20	22	110	66	47	71
Fallow Land	1340	249	19	1295	242	19	21	21	98	24	25	105
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	4956	585	12	4933	580	12	-	-	-	59	42	70
Holdings Of 1.01-2.00 Hectares												
All	2282	388	17	2282	388	17	54	49	91	176	92	53
Land Under Temporary Crops	2282	388	17	2192	362	17	54	49	91	154	77	50
Land Under Permanent Crops	1585	334	21	1567	326	21	54	49	91	42	40	95
Grazing Land	958	277	29	913	249	27	-	-	-	44	41	93
Fallow Land	1005	219	22	983	210	21	-	-	-	22	22	99
Woodland	24	25	105	24	25	105	-	-	-	-	-	-
All Other Land	2235	383	17	2235	383	17	-	-	-	-	-	-
Holdings Of 2.01-5.00 Hectares												
All	276	115	42	252	102	40	-	-	-	166	73	44
Land Under Temporary Crops	276	115	42	230	101	44	-	-	-	166	73	44
Land Under Permanent Crops	190	87	46	190	87	46	-	-	-	63	36	58
Grazing Land	131	66	51	113	65	58	-	-	-	18	18	99
Fallow Land	188	95	51	151	79	52	-	-	-	36	34	93
Woodland	18	18	99	18	18	99	-	-	-	-	-	-
All Other Land	276	115	42	252	102	40	-	-	-	24	25	105
Holdings Of 5.01-10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-

Annex Table 4.3.1 Rural holdings

Land Use By Size Of Holding	All Number			Number of Holders By Tenure Systems									
	Estimate	S.E	C.V In %	Land Owned			Land Rented			Other Tenure			
				Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	
Holdings Of All Sizes													
All	15275	624	4	15044	680	5	409	125	31	1126	387	34	
Land Under Temporary Crops	14051	736	5	13594	755	6	366	110	30	624	237	38	
Land Under Permanent Crops	9643	965	10	9493	961	10	138	69	50	219	115	53	
Grazing Land	2782	614	22	2634	583	22	20	22	110	128	84	65	
Fallow Land	3449	473	14	3346	450	13	21	21	98	82	46	56	
Woodland	42	30	72	42	30	72	-	-	-	-	-	-	
All Other Land	15203	623	4	14791	716	5	21	21	98	491	314	64	
Holdings Under 0.10 Hectares													
All	1831	359	20	1624	280	17	55	32	58	288	243	84	
Land Under Temporary Crops	607	159	26	560	149	27	55	32	58	12	11	98	
Land Under Permanent Crops	309	117	38	309	117	38	20	22	108	-	-	-	
Grazing Land	66	44	67	66	44	67	-	-	-	-	-	-	
Fallow Land	78	54	69	78	54	69	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	1808	359	20	1553	273	18	-	-	-	288	243	84	
Holdings Of 0.10-0.50 Hectares													
All	5954	594	10	5954	594	10	237	93	39	259	92	36	
Land Under Temporary Crops	5954	594	10	5814	603	10	215	88	41	114	48	42	
Land Under Permanent Crops	4057	632	16	3971	617	16	63	47	74	45	32	73	
Grazing Land	389	128	33	389	128	33	-	-	-	-	-	-	
Fallow Land	838	153	18	838	153	18	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	5928	595	10	5818	601	10	21	21	98	121	77	64	
Holdings Of 0.51-1.00 Hectares													
All	4956	585	12	4956	585	12	63	45	71	238	103	43	
Land Under Temporary Crops	4956	585	12	4822	580	12	42	30	72	179	98	55	
Land Under Permanent Crops	3511	491	14	3465	493	14	-	-	-	69	50	72	
Grazing Land	1238	325	26	1152	315	27	20	22	110	66	47	71	
Fallow Land	1340	249	19	1295	242	19	21	21	98	24	25	105	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	4956	585	12	4933	580	12	-	-	-	59	42	70	
Holdings Of 1.01-2.00 Hectares													
All	2258	388	17	2258	388	17	54	49	91	176	92	53	
Land Under Temporary Crops	2258	388	17	2168	362	17	54	49	91	154	77	50	
Land Under Permanent Crops	1575	334	21	1557	326	21	54	49	91	42	40	95	
Grazing Land	958	277	29	913	249	27	-	-	-	44	41	93	
Fallow Land	1005	219	22	983	210	21	-	-	-	22	22	99	
Woodland	24	25	105	24	25	105	-	-	-	-	-	-	
All Other Land	2235	383	17	2235	383	17	-	-	-	-	-	-	
Holdings Of 2.01-5.00 Hectares													
All	276	115	42	252	102	40	-	-	-	166	73	44	
Land Under Temporary Crops	276	115	42	230	101	44	-	-	-	166	73	44	
Land Under Permanent Crops	190	87	46	190	87	46	-	-	-	63	36	58	
Grazing Land	131	66	51	113	65	58	-	-	-	18	18	99	
Fallow Land	188	95	51	151	79	52	-	-	-	36	34	93	
Woodland	18	18	99	18	18	99	-	-	-	-	-	-	
All Other Land	276	115	42	252	102	40	-	-	-	24	25	105	
Holdings Of 5.01-10.00 Hectares													
All	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-	
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-	
Holdings Over 10.00 Hectares													
All	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-	
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-	

Annex Table 4.3.2 Urban holdings

Land Use By Size Of Holding	All Number			Number of Holders By Tenure Systems								
				Land Owned			Land Rented			Other Tenure		
	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes												
All	628	108	17	602	106	18	6	4	77	20	9	44
Land Under Temporary Crops	588	105	18	562	102	18	6	4	77	20	9	44
Land Under Permanent Crops	186	43	23	186	43	23	-	-	-	-	-	-
Holdings Under 0.10 Hectares												
All	115	24	21	108	24	22	2	2	89	5	4	69
Land Under Temporary Crops	102	24	23	94	23	24	2	2	89	5	4	69
Land Under Permanent Crops	23	8	33	23	8	33	-	-	-	-	-	-
Holdings Of 0.10-0.50 Hectares												
All	436	80	18	421	78	18	4	4	105	11	7	60
Land Under Temporary Crops	415	77	19	400	75	19	4	4	105	11	7	60
Land Under Permanent Crops	124	34	28	124	34	28	-	-	-	-	-	-
Holdings Of 0.51-1.00 Hectares												
All	53	16	30	50	15	31	-	-	-	3	3	83
Land Under Temporary Crops	47	15	32	44	15	34	-	-	-	3	3	83
Land Under Permanent Crops	30	10	32	30	10	32	-	-	-	-	-	-
Holdings Of 1.01-2.00 Hectares												
All	24	9	40	24	9	40	-	-	-	-	-	-
Land Under Temporary Crops	24	9	40	24	9	40	-	-	-	-	-	-
Land Under Permanent Crops	10	6	58	10	6	58	-	-	-	-	-	-
Holdings Of 2.01-5.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Of 5.01-10.0 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-

Annex Table 4.4 Estimates of Area of holdings by Type of Land tenure systems and Land use and their Standard errors and Coefficients of Variation

Both Rural and Urban holdings

Land Use By Size Of Holding	Area in Hectare			Area of Holding In hectare By Tenure Systems								
	Estimate	S.E	C.V In %	Land Owned			Land Rented			Other Tenure		
				Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes												
All	9192	851	9	8540	736	9	92	35	38	561	237	42
Land Under Temporary Crops	6931	625	9	6389	551	9	69	24	35	473	205	43
Land Under Permanent Crops	997	151	15	947	135	14	16	11	72	33	19	56
Grazing Land	559	161	29	514	141	27	7	7	110	38	26	69
Fallow Land	439	91	21	429	88	21	1	1	98	9	5	63
Woodland	3	2	76	3	2	76	-	-	-	-	-	-
All Other Land	264	34	13	257	35	14	-	-	100	7	5	69
Holdings Under 0.10 Hectares												
All	59	13	21	51	10	20	3	2	59	5	4	77
Land Under Temporary Crops	28	7	25	25	6	25	3	2	64	1	-	57
Land Under Permanent Crops	8	3	38	8	3	37	1	1	109	-	-	-
Grazing Land	1	1	74	1	1	74	-	-	-	-	-	-
Fallow Land	3	2	71	3	2	71	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	19	5	27	14	3	20	-	-	-	5	4	86
Holdings Of 0.10-0.50 Hectares												
All	1923	167	9	1854	168	9	34	14	43	36	14	40
Land Under Temporary Crops	1551	134	9	1488	136	9	30	13	44	32	14	42
Land Under Permanent Crops	221	34	15	216	33	15	3	3	93	2	2	75
Grazing Land	26	9	35	26	9	35	-	-	-	-	-	-
Fallow Land	49	12	25	49	12	25	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	77	9	12	75	9	13	-	-	100	2	1	68
Holdings Of 0.51-1.00 Hectares												
All	3546	419	12	3405	410	12	24	19	77	116	69	59
Land Under Temporary Crops	2729	328	12	2619	322	12	17	13	72	92	55	60
Land Under Permanent Crops	402	65	16	397	65	16	-	-	-	5	4	75
Grazing Land	192	60	31	170	57	34	7	7	110	16	12	77
Fallow Land	145	36	25	142	35	25	1	1	98	3	3	105
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	78	10	13	77	10	13	-	-	-	1	1	77
Holdings Of 1.01-2.00 Hectares												
All	3001	527	18	2827	472	17	31	28	92	143	91	63
Land Under Temporary Crops	2128	368	17	1993	335	17	19	17	92	116	76	66
Land Under Permanent Crops	297	83	28	274	73	27	12	11	92	11	10	96
Grazing Land	306	127	41	291	114	39	-	-	-	16	15	97
Fallow Land	207	56	27	206	56	27	-	-	-	1	1	99
Woodland	1	1	106	1	1	106	-	-	-	-	-	-
All Other Land	62	18	28	62	18	28	-	-	-	-	-	-
Holdings Of 2.01-5.00 Hectares												
All	663	280	42	404	192	48	-	-	-	259	122	47
Land Under Temporary Crops	496	210	42	264	131	50	-	-	-	232	107	46
Land Under Permanent Crops	68	35	51	53	27	52	-	-	-	15	11	70
Grazing Land	34	20	57	27	19	69	-	-	-	7	7	99
Fallow Land	34	21	61	29	18	60	-	-	-	5	5	95
Woodland	2	2	99	2	2	99	-	-	-	-	-	-
All Other Land	29	24	83	29	24	83	-	-	-	-	-	104
Holdings Of 5.01-10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-
Woodland	-	-	-	-	-	-	-	-	-	-	-	-
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-

Annex Table 4.4.1 Rural Holdings

Land Use By Size Of Holding	Area in Hectare			Area of Holding In hectare By Tenure Systems									
	Estimate	S.E	C.V In %	Land Owned			Land Rented			Other Tenure			
				Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	
Holdings Of All Sizes													
All	9002	850	9	8355	735	9	91	35	38	556	237	43	
Land Under Temporary Crops	6780	624	9	6244	551	9	68	24	35	468	205	44	
Land Under Permanent Crops	957	150	16	908	135	15	16	11	72	33	19	56	
Grazing Land	559	161	29	514	141	27	7	7	110	38	26	69	
Fallow Land	439	91	21	429	88	21	1	1	98	9	5	63	
Woodland	3	2	76	3	2	76	-	-	-	-	-	-	
All Other Land	264	34	13	257	35	14	-	-	98	7	5	69	
Holdings Under 0.10 Hectares													
All	54	12	23	46	10	22	3	2	62	5	4	83	
Land Under Temporary Crops	24	7	29	21	6	29	2	2	67	-	-	101	
Land Under Permanent Crops	7	3	44	7	3	42	1	1	108	-	-	-	
Grazing Land	1	1	74	1	1	74	-	-	-	-	-	-	
Fallow Land	3	2	71	3	2	71	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	19	5	27	14	3	20	-	-	-	5	4	86	
Holdings Of 0.10-0.50 Hectares													
All	1808	165	9	1742	167	10	33	14	44	34	14	42	
Land Under Temporary Crops	1454	133	9	1394	135	10	29	13	46	30	13	45	
Land Under Permanent Crops	203	33	16	198	32	16	3	3	93	2	2	75	
Grazing Land	26	9	35	26	9	35	-	-	-	-	-	-	
Fallow Land	49	12	25	49	12	25	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	77	9	12	75	9	13	-	-	98	2	1	68	
Holdings Of 0.51-1.00 Hectares													
All	3508	419	12	3369	410	12	24	19	77	115	69	60	
Land Under Temporary Crops	2704	328	12	2597	322	12	17	13	72	90	55	61	
Land Under Permanent Crops	389	65	17	384	65	17	-	-	-	5	4	75	
Grazing Land	192	60	31	170	57	34	7	7	110	16	12	77	
Fallow Land	145	36	25	142	35	25	1	1	98	3	3	105	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	78	10	13	77	10	13	-	-	-	1	1	77	
Holdings Of 1.01-2.00 Hectares													
All	2969	527	18	2795	472	17	31	28	92	143	91	63	
Land Under Temporary Crops	2103	368	17	1968	334	17	19	17	92	116	76	66	
Land Under Permanent Crops	290	83	29	267	73	27	12	11	92	11	10	96	
Grazing Land	306	127	41	291	114	39	-	-	-	16	15	97	
Fallow Land	207	56	27	206	56	27	-	-	-	1	1	99	
Woodland	1	1	105	1	1	105	-	-	-	-	-	-	
All Other Land	62	18	28	62	18	28	-	-	-	-	-	-	
Holdings Of 2.01-5.00 Hectares													
All	663	280	42	404	192	48	-	-	-	259	122	47	
Land Under Temporary Crops	496	210	42	264	131	50	-	-	-	232	107	46	
Land Under Permanent Crops	68	35	51	53	27	52	-	-	-	15	11	70	
Grazing Land	34	20	58	27	19	69	-	-	-	7	7	99	
Fallow Land	34	21	61	29	18	60	-	-	-	5	5	95	
Woodland	2	2	99	2	2	99	-	-	-	-	-	-	
All Other Land	29	24	83	29	24	83	-	-	-	-	-	105	
Holdings Of 5.01-10.0 Hectares													
All	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-	
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-	
Holdings Over 10.00 Hectares													
All	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-	
Grazing Land	-	-	-	-	-	-	-	-	-	-	-	-	
Fallow Land	-	-	-	-	-	-	-	-	-	-	-	-	
Woodland	-	-	-	-	-	-	-	-	-	-	-	-	
All Other Land	-	-	-	-	-	-	-	-	-	-	-	-	

Annex Table 4.4.2 Urban Holdings

Land Use By Size Of Holding	Area in Hectare			Area of Holding In hectare By Tenure Systems								
	Estimate	S.E	C.V In %	Land Owned			Land Rented			Other Tenure		
				Estimate	S.E	C.V In %	Estimate	S.E	C.V In %	Estimate	S.E	C.V In %
Holdings Of All Sizes												
All	190	36	19	185	35	19	1	1	94	5	2	48
Land Under Temporary Crops	151	32	21	145	31	21	1	1	94	5	2	48
Land Under Permanent Crops	40	10	26	40	10	26	-	-	-	-	-	-
Holdings Under 0.10 Hectares												
All	5	1	26	5	1	28	-	-	89	-	-	69
Land Under Temporary Crops	4	1	29	4	1	31	-	-	89	-	-	69
Land Under Permanent Crops	1	-	42	1	-	42	-	-	-	-	-	-
Holdings Of 0.10-0.50 Hectares												
All	115	21	19	112	21	19	1	1	105	2	2	68
Land Under Temporary Crops	98	19	19	94	18	20	1	1	105	2	2	68
Land Under Permanent Crops	18	5	29	18	5	29	-	-	-	-	-	-
Holdings Of 0.51-1.00 Hectares												
All	37	11	30	36	11	31	-	-	-	2	2	83
Land Under Temporary Crops	24	9	36	22	9	39	-	-	-	2	2	83
Land Under Permanent Crops	13	5	40	13	5	40	-	-	-	-	-	-
Holdings Of 1.01-2.00 Hectares												
All	32	13	40	32	13	40	-	-	-	-	-	-
Land Under Temporary Crops	25	11	44	25	11	44	-	-	-	-	-	-
Land Under Permanent Crops	8	5	66	8	5	66	-	-	-	-	-	-
Holdings Of 2.01-5.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Of 5.01-10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-
Holdings Over 10.00 Hectares												
All	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Temporary Crops	-	-	-	-	-	-	-	-	-	-	-	-
Land Under Permanent Crops	-	-	-	-	-	-	-	-	-	-	-	-

CHAPTER V

AREA AND PRODUCTION OF CROPS AND CROP UTILIZATION

1 INTRODUCTION

Ethiopian farming largely produces only enough food for the peasant holder and his family for consumption, leaving little to sell. This inadequate volume of production is ascribed to the tardy progress in the farming methods and scattered pieces of land holdings. Under this traditional sector, agriculture is practiced on public land and most of the produce is mainly for own consumption. The diverse climate of the country and the multiple utilizations of crops have prompted the vast majority of agricultural holders to grow various temporary and permanent crops. Despite the variation in the volume of production, the relative importance and pattern of growth of these crops are largely similar across many of the regions. This similarity is well observed and demonstrated in the statistical tables presented in this report. In some regions there seems to be a shift in choice of crops grown. Teff, barley and wheat do not figure prominently. Instead, maize, Groundnuts, sorghum & Sweet Potatoes are grown in greater volume than these crops. Dire Dawa Administraive Council, is a case in this regard.

There is a general agreement that the performance of an agricultural system should achieve a steady supply of food to the people of a country. But, unless special attention is focused on agriculture its performance can be impeded by vagaries of nature, population growth and scarcity and fragmentation of land, thus, affecting food supply and posing a challenge to the federal and regional governments. This situation calls for an overhaul of the agricultural system in the country or the regions.

In order to have a flourishing agriculture, which sustains reliable food supply, the federal and regional governments have to formulate and implement farm programs that ensure food security. The preparation, execution, monitoring and assessment of these programs entail statistics on agriculture particularly crop production since it is the prime target that national or regional agricultural policies aim at.

The collection of data on crop production should encompass all crop seasons in the agricultural calendar and farming activities in both rural and urban areas. It should also include the wide range of crops that are grown and embodied in the food security system, which are indispensable for a sustained provision of staple diet and other cash crops like coffee and Chat.

In view of this, crop production data for private peasant holdings for both Meher and Belg seasons in both rural and urban areas were collected in the census to provide the basis for decision making in the process of implementing timely food security measures and to make policy makers aware of the food situation in the country.

Thus, in this chapter the census data on production of temporary crops/annual crops such as cereals, pulses, oilseeds, vegetables and root crops are presented in Section 2. Also production of permanent crops that included fruit crops, stimulant crops and other permanent crops are dealt with in Section 3. Moreover, the utilization of temporary crops as well as permanent crops for various purposes such as household consumption, seed, sale, paying wages in kind ...etc are indicated in Section 4. Furthermore S.E & C.V are provided as an annex to this chapter.

2. PRODUCTION OF TEMPORARY /ANNUAL CROPS

The types of temporary crops on which data were collected during the census are those that food security embraces: that is, the crops that are the staple diets in the country. In the statistical tables, these crops have been categorized into five groups for simplicity of description and comparison purposes. The groups are cereals, pulses, oilseeds, vegetables and root crops. The crops within each group have some similarity, which made the categorization necessary.

2.1 Cereals

These are crops that are produced in greater volume compared to the other crops because these are the principal staple crops every year and export commodities at times of bumper harvest in the country. Between the months of September 2001, and August 2002 it was learned that 242,794 quintals of cereals worth 106,028,521 Birr was exported from Ethiopia to various countries. (CSA, External Trade Statistics).

Cereals are grown in almost all regions of Ethiopia with notable variation in the extent of areas planted and the volume of production obtained. This variation is seemingly caused by a shift in choice of crops by the holders and difference in weather conditions. Summary Tables V-1 and V-2 and figures V-1 and V-2 reinforce this thought further by giving a highlight on the size of area planted to sorghum and maize and volume of production of these crops harvested in Dire Dawa Administrative council when compared to Teff, barley & wheat produced in the same region.

Summary Tables V-1 and V-2 show that 96.63% of the regional grain crop area was devoted to cereals and 97.65% of the grain production was that of cereals. Out of all area under grain, sorghum and maize took up

89.93% and 6.58%, these crops yield was 92.22% and 5.37% of the regional grain production. The area planted to grains in Belg season was 5.27% of the total grain crop area.

As the census result depicts, agricultural households in urban areas of the region contributed 2.11% and 1.34% of the regional grain crop area and grain production, respectively. Out of the total area under cereals and production, 2.19 % and 1.37 % were added by urban agricultural households, in the same order. The pattern of the principal crops is the same for both rural and urban holders.

2.2 Pulses

These crops are essential part of the dietary requirements for most Ethiopians. These crops also form a significant commodity group of export, earning a considerable amount of foreign exchange for the country and cash for peasant farmers. In 2001/02 (1994) E.C, between the months of September and August, 1,229,366 quintals of pulses valued at 351,997,759 Birr was exported from Ethiopia to various countries. (CSA, External Trade Statistics). These are some of the grounds for growing various pulses in all regions of the country with varying quantities. There is no doubt that economic benefits can accrue to the country from the production and export of more pulses if the agriculture in Ethiopia is given due attention in this regard.

A view of Summary Tables V-1 and V-2 enables to detect that only 2.88 % of the regional grain crop area was under pulses and 2.13 % of the grain production consisted of the same crops. Of the regional area under grain crops 2.85 % was planted to haricot beans, & the remaining area was under other pulses. The production obtained from haricot beans, was 2.12 % of the regional grain total.

2.3 Oilseeds

These crops are also of paramount importance as a source of cooking oil used to provide the fat required in the food consumed by the residents in the region. Moreover, oil crops have become a major commodity of export earning a great deal of foreign exchange. Between September 2001 and August 2002, Ethiopia exported 953,088 quintals of oilseeds valued at 351,952,634 Birr signaling that an increase in the production and export of these crops will definitely generate more money. (CSA, External Trade Statistics).

Summary Tables V-1 and V-2 indicate that only 0.49 % of the regional grain crop area was under oilseeds and 0.22 % of the regional grain production was that of the oil seeds. Of the total area under grain crops and grain production in Dire Dada Administrative Council, 0.35 % went for groundnuts.

2.4 Vegetables

These crops like fruits are also a good source of nourishment necessary for the healthy growth of humans. Dieticians often advise people to eat more of vegetables for their nutritional values. Vegetables are relatively cheaper and better available than other farm products in urban centers because these crops are usually grown as garden produces sometimes using irrigation. It may be worth to know that a certain amount of foreign exchange is drawn from vegetable exports. For instance between September 2001 - August 2002 Ethiopia exported 61,070 quintals of vegetables worth 11,543,144 Barr to various countries. Thus, on the grounds that vegetables are nutritionally and economically important, it is worth expanding vegetable farming. When one looks at Summary Tables V-1 – V-2 to have a picture of the vegetable production in Dire dawa Administrative Council one realizes that a lot has to be done in this regard.

Summary Tables V-1 and V-2 show that only 1.15 % of the regional crop area is under vegetables which formed 5.37 % of the total volume of production in the region. Tomatoes took up 1.08 % of the regional area under vegetables.

The same crop made up 5.36 % of the vegetable production of the region. The contribution of vegetables to the regional production by urban holders was 0.03%.

2.5 Root Crops

Some root crops like onion and garlic are indispensable part of the daily meal of the Ethiopian population. These crops are essential to improve the taste and scent of the food. Potato, which is one of nature's precious gifts, is also very common in the dishes of most Ethiopians. This importance necessitated the growth and production of many of the root crops throughout the year often via the use of irrigation. Root crops are also a good source of cash and foreign exchange for the growers and the country, respectively. In 2001/02 (1994 E.C), the country has acquired a sum of 22,423,972 million Birr by exporting 120,497 quintals of root crops. The economic and nutritional importance of root crops has been a factor for practicing the agriculture in all the regions and growing the crops more than one time in a year. (CSA, External Trade Statistics).

Summary Tables V-1 and V-2 indicate the root crop situation in Dire Dawa Administrative Council. As the tables show, root crops covered only 2.2 % of the regional crop area and 11.17 % of the production volume. Onions and sweet potatoes shared 29.93 % and 58.94 % of the regional root crop area. Sweet potatoes added 6.04 % to the regional volume of root crop production.

SUMMARY TABLE V-1 AREA UNDER TEMPORARY CROPS BY CROP TYPE FOR PRIVATE PEASANT HOLDINGS

Dire Dawa Administrative Council

Crop	All		Rural		Urban
	Area (HA)	%	Area (HA)		Area (HA)
			Meher	Belg	Meher
All	7314.98		6778.91	385.33	150.75
Grain Crops	7070.31	100	6663.89	257.07	149.35
Cereals	6832.11	96.63	6425.9	256.85	149.35
Teff	-	-	-	-	-
Barley	*	*	*	-	*
Wheat	*	*	*	-	-
Maize	465.54	6.58	257.46	197.22	10.86
Sorghum	6358.04	89.93	6160.24	59.63	138.17
Finger Millet	*	*	*	-	-
Oats/'Aja'	*	*	*	-	-
Rice	-	-	-	-	-
Pulses	203.85	2.88	203.63	*	-
Horse beans	-	-	-	-	-
Field peas	-	-	-	-	-
Haricot beans	201.42	2.85	201.21	*	-
Chick-peas	-	-	-	-	-
Lentils	-	-	-	-	-
Vetch	-	-	-	-	-
Soya beans	-	-	-	-	-
Fenugreek	*	*	*	-	-
Gibto	-	-	-	-	-
Oilseeds	34.36	0.49	34.36	-	-
Neug	-	-	-	-	-
Linseed	-	-	-	-	-
Groundnuts	24.57	0.35	24.57	-	-
Sunflower	-	-	-	-	-
Sesame	*	*	*	-	-
Rapeseed	-	-	-	-	-
Vegetables	84.04	100	29.57	53.71	*
Lettuce	-	-	-	-	-
Head cabbage	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-
Tomatoes	79.08	94.1	29.32	49	*
Green peppers	*	*	*	*	-
Red peppers	-	-	-	-	-
Swiss chard	-	-	-	-	-
Root crops	160.63	100	85.44	74.55	*
Beetroot	-	-	-	-	-
Carrot	-	-	-	-	-
Onion	48.08	29.93	*	33.81	*
Potatoes	*	*	*	*	-
Garlic	*	*	*	-	-
Taro/'Godere'	-	-	-	-	-
Sweet potatoes	94.67	58.94	64.44	30.23	-

SUMMARY TABLE V-2 PRODUCTION UNDER TEMPORARY CROPS BY CROP TYPE FOR PRIVATE PEASANT HOLDINGS

Dire Dawa Administrative Council

Crop	All		Rural		Urban
	Production(QT)	%	Production(QT)		Production (QT)
			Meher	Belg	Meher
All	120308.4		104890.02	14018.89	1399.29
Grain Crops	100411	100	91460.05	*	1347.06
Cereals	98047.77	97.65	89096.8	*	1347.06
Teff	-	-	-	-	-
Barley	*	*	*	-	*
Wheat	*	*	*	-	-
Maize	5393.36	5.37	3299.87	*	110.81
Sorghum	92062.97	92.22	85749.42	*	1232.32
Finger Millet	-	-	-	-	-
Oats/'Aja'	*	*	*	-	-
Rice	-	-	-	-	-
Pulses	2139.11	2.13	2139.11	-	-
Horse beans	-	-	-	-	-
Field peas	-	-	-	-	-
Haricot beans	2126.76	2.12	2126.76	-	-
Chick-peas	-	-	-	-	-
Lentils	-	-	-	-	-
Vetch	-	-	-	-	-
Soya beans	-	-	-	-	-
Fenugreek	*	*	*	-	-
Gibto	-	-	-	-	-
Oilseeds	224.13	0.22	224.13	-	-
Neug	-	-	-	-	-
Linseed	-	-	-	-	-
Groundnuts	*	*	*	-	-
Sunflower	-	-	-	-	-
Sesame	*	*	*	-	-
Rapeseed	-	-	-	-	-
Vegetables	6459.82	100	4398.22	*	34.14
Lettuce	-	-	-	-	-
Head cabbage	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-
Tomatoes	6454.49	99.92	4398.22	*	34.14
Green peppers	*	*	*	*	-
Red peppers	-	-	*	-	-
Swiss chard	-	-	-	-	-
Root crops	13437.57	100	9031.96	*	*
Beetroot	-	-	-	-	*
Carrot	-	-	-	-	*
Onion	*	*	*	*	*
Potatoes	*	*	*	*	*
Garlic	-	-	-	-	*
Taro/'Godere'	-	-	-	-	-
Sweet potatoes	7269.77	54.1	6443.74	*	*

Figure V-1 Area under Temporary crops for Private Peasant Holdings

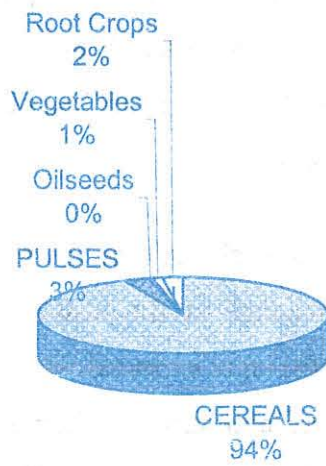
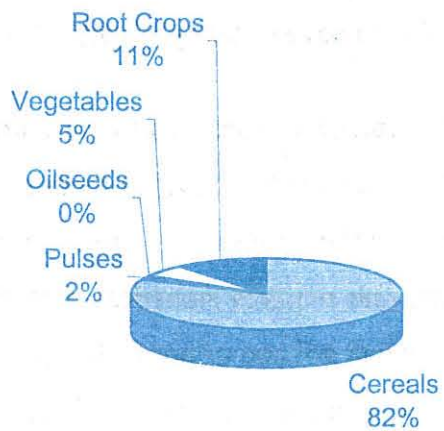


Figure V-2 Production of Temporary Crops for Private Peasant holdings



3. PRODUCTION OF PERMANENT CROPS

Permanent crops are long term crops that occupy the field planted for a long period of time and largely harvested every year and do not have to be replanted for several years after each harvest. These include tree crops such as coffee, Enset, Chat, oranges, mangoes, bananas, papayas, avocados... etc. The trees that yield fruits like oranges; mangoes, papayas, apples and others are also known as fruit trees.

Permanent crops are a good source of cash both for the holders and the country generating handsome income and foreign exchange at the best of times. For instance, between September 2001 and August 2002 Ethiopia exported 53,142 quintals of fruits and nuts and 91,705 quintals of Chat valued at 16.5 and 426.7 million Birr, respectively. (CSA, External Trade Statistics). With these bits of information and the dietary and economic importance of the crops in mind, it is not difficult to project the profits that can be reaped from the permanent crops if the farming in this regard is well developed and managed.

Fruits are not only a source of cash but are also a reliable source of nutrition that is essential for the health and growth of humans. There has even been an oft-repeated advice from health authorities that we should include fruits in our daily meals to make it nutritious. The two points made on the importance of permanent crops underscore the fact that fruit farming should be encouraged and expanded to have a steady supply of the desired products.

It is possible to conjecture that permanent crops in Ethiopia are not as well developed as they are in other countries. But the potential to develop them is great as Ethiopia is blessed with diverse climate conducive to the crops. In order to direct efforts towards the development of permanent crops, one requires statistical data regarding this sector of the agriculture. Adequate data on type and volume of production, area under permanent crops and their distribution have not been available. Hence, to bridge up this gap and alleviate the chagrin to data users the CSA has collected data on permanent crops.

Prior to the census, the CSA surveyed the situation about permanent crops in the country and then decided on the types of permanent crops, range of data items and method of enumeration to be included in the census. Hence, only major permanent crops were covered during the census. Data on the types of crops were collected by holder interview while area and yield data were recorded by objective measurements. The numbers of Enset, Hops (Gesho) and fruit trees with the exception of pineapple were determined by counting the plants excluding seedlings.

In estimating the production of permanent crops, area, yield per unit area, yield per tree and number of fruit bearing trees are essential ingredients. These inputs were determined by physically measuring the area under crops in question, picking fruits, coffee berries and Chat produce from randomly demarcated plots or selected trees. The method involved crop cutting from small plots of rectangular shape of different sizes randomly placed in the selected crop field and a tree of fruit bearing age selected from all fruit bearing trees for each crop type and subsequent husking, drying weighing and recording the weight of the harvest of permanent crops. The crop cutting was performed for a sub sample of 20 households of the 30 households selected in each enumeration area. A 4m X 4m plot was demarcated for coffee and Chat and a 2m X 2m for pineapple and 1m X 1m plot for sugar cane were designated for the crop cutting exercise. The yields harvested from these plots and trees were immediately weighed (green weight) and/or weighed again after two weeks of drying to conform to the normal holder harvesting and drying practices. The coffee weight registered was that of clean coffee beans and the hops (Gesho) weight taken was that of the dry one. The green and dry weights were recorded on the appropriate forms.

For simplicity of description of the statistical tables and comparison purposes permanent crops have been grouped into three categories. Each category has a semblance of similarity, which necessitated the categorization. The categories are fruit crops, stimulant crops and other permanent crops. These categories include only permanent crops on which yield data have been collected.

3.1. Fruit Crops

Various kinds of fruit crops grow in different regions of the country yielding varying quantities of fruits within the private peasant holdings in the traditional way. There are also a few fruit farms that are run by enterprises in the modern way. The volume of fruit production obtained from the peasant farms is small signalling the absence of development in fruit farming. A look at the tables helps to crystallize this point.

In Dire Dawa Administrative Council fruit crops constituted 10.4% of the permanent crop area yielding about 7.8 thousand quintals of fruits. Papayas, oranges, and mangoes shared 47.12%, 17.81 % and 16.27 % of the fruit crop area. Urban agricultural holders added 2.64 % to the regional permanent crop area. The same holders, contributed about 3.61 % of the regional fruit crop production. Oranges grown by urban holders accounted for 60.48 % of the urban area under fruit crops and 54.50 % of the urban fruit production in the region. For details, refer to Summary Table V-3 and figures V-3 and V-4.

3.2. Stimulant Crops:

This category embraces cash crops like coffee and Chat, which are extensively grown in many parts of the country. It is needless work to verify by quoting statistical evidences that coffee is a major foreign exchange earner. It may not be even surprising to hear that Chat farming is becoming a rapidly expanding phenomenon in Ethiopia because of its economic importance. As the census covered a wide range of crops, the statistics on Chat would perhaps be more tantalizing than the others. Summary Table V-3 shows the situation in which coffee, Chat, are found in Dire Dawa Administrative Council.

The data in the table demonstrates, more than three fourth ie, 89.6 % of the regional permanent crop area is under stimulant crops. Of the total area under stimulant crops in the region, 92.43 % is that of chat resulting in 98.2 % of the volume of stimulant crop production. About 92.46 % of the regional rural stimulant crop area and 98.21 % of the production were that of Chat.

SUMMARY TABLE V-3 AREA AND PRODUCTION OF PERMANENT CROPS BY CROP TYPE FOR PRIVATE
PEASANT HOLDINGS

Dire Dawa Administrative council

Crop type	All				Rural		Urban	
	Are in Crop (HA)	%	Production (QT)	%	Are in Crop (HA)	Production (QT)	Are in Crop (HA)	Production (QT)
All	909.29				885.3		23.99	
Fruit Crops	94.57	100	7818.59	100	71.95	7536.54	22.62	282.05
Avocados	-	-	-	-	-	-	-	-
Bananas	6.41	6.78	*	*	6.41	*	-	-
Guavas	*	*	-	-	*	-	-	-
Lemons	2.01	2.13	*	*	*	*	*	-
Mangoes	15.39	16.27	*	*	9.11	-	6.28	*
Oranges	16.84	17.81	370.75	4.74	*	*	13.68	153.71
Papayas	44.56	47.12	*	*	42.55	*	*	*
Pineapples	-	-	-	-	-	-	-	-
Stimulant Crops	814.72	100	13258.96	100	813.35	13258.33	*	*
Chat	753.06	92.43	13020.44	98.2	752.02	*	*	*
Coffee	61.68	7.57	238.52	1.8	61.34	237.89	*	*
Hops	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-	-

Fig V-3 Area under Permanent crops

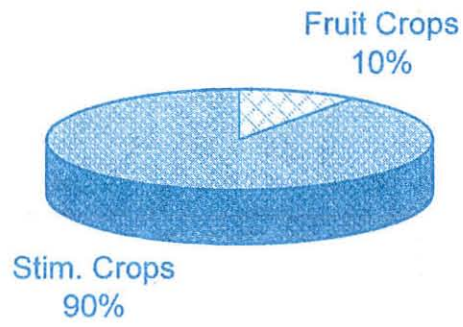
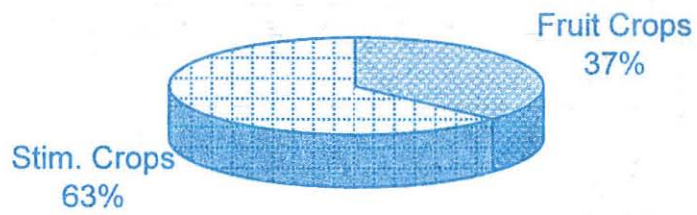


Fig V-4 Production Of Permanent Crops

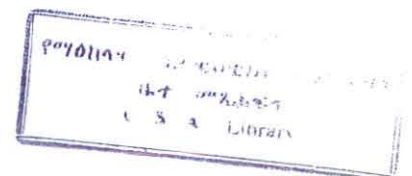


4. CROP UTILIZATION

Agriculture is the livelihood of the overwhelming majority of the Ethiopians. It is the source of food and cash for those who are engaged in the sector and others. Most agricultural holders acquire the food they consume and the cash they need to cover other expenses only from farming activities. Since farming in Ethiopia is often precarious and usually at the mercy of nature, it is invariably an arduous struggle for the holders to make ends meet. This, it often transpires, is true to the frequent shortfalls in the volume of production that occur in the country.

It is often said that what most Ethiopian agricultural holders produce is only enough to live, hand to mouth. This would be better said if it was statistically substantiated. There is plenty of information on the volume of crops produced within the private peasant holdings. But there is hardly any information on how the peasants utilize the crops they produce which will be indicative of the fact whether the holders have enough or little to sell in order to meet other expenses for living. Hence, data on crop utilization was collected in the 2001/02 Ethiopian Agricultural Sample Enumeration. Thus in the census taking, crop utilization was defined as the amount of agricultural produce used for own consumption, sale, seed, and wages in kind, animal feed and other purposes.

In light of this information gap, the CSA has collected some data on how holders use their agricultural produce in the agricultural year to provide some information on the subject. Interviewing the holders collected the data. They were asked to quantify their yearly crop utilization experience in percent based on common practice. Summary Table V-4 convey this information to shed some light on how holders utilize their crop produce. Information was sought for each crop type produced during the census year. The resulting data may help users to have some idea about crop usages by agricultural holders. In order to detect the differences in utilization of the various crops, it is better to look into the data by group of crops as categorized in the summary tables for simplicity and analogy.



Needless to say, as Summary Table V-4 points out, most of the cereal crops produced were used for household consumption. In Dire Dawa Administrative council about 85 % of the cereals produced were used for household consumption. About 9 % and 2 % were used for seed and sale, respectively. The remaining 4 % of the cereals produced was used for other purposes like wages, animal feed, etc. When the utilization is considered by crop type, it is easy to realize that between 84 % and 100 % of the crops in the cereals group were used for own consumption and between 9 % and 11 % of these crops were used for seed. Moreover, 1 % of the same crops in the same group were used for sale.

The pattern of utilization of pulses isn't much different either. As shown in Summary Table V-4 about 92 % of pulses were used for household consumption, 5 % for seed. The remaining 3 % of pulses were used for wages, animal feed and others. Considering utilization by crop type within the pulses group, between 92 % and 100 % of the crops were utilized for household consumption and 5 % of the same crops in the same group were used for seed in 2001/02 (1994 E.C.).

The picture of oilseeds utilization is distinctly different from that of cereals and pulses as portrayed in Summary Table V-4. About 49 %, 44 % and 2 % were used for sale, household consumption and seed, respectively. Taking utilization by crop type into account, between 27 % and 85 % of each crop type in the oilseeds category were used for household consumption, between 3-68 % for sale and 2-3 % for seed. It may reasonably be summed up that more of the oilseeds produced are used for sale or as cash crops.

The percentage of vegetables sold is more than that of cereals and pulses. About 80 % and 16 % of the vegetables produced were sold and used for household consumption respectively. The remaining percent were used for seed, wages, animal feed and others. The percent used by crop type within the vegetables group were 80 % for sale, 16% for household consumption and 1 % for seed. For details, refer to Summary Table V-4.

The utilization of root crop production is the same as that of vegetables as indicated in the regional Summary Table V-4 About 95 % of the root crops were sold, 5% used for

household consumption. The ranges of percent utilized by crop type within the root crops category fall between 20 %-60 % for consumption, 13 %-33 % for sale and 22-38 % for seed.

The permanent crop utilization is not different from that of cereals, pulses, vegetables and root crops. Thus, about 39 % of the crop was used for consumption at home and about 53 % for sale. The utilization by crop type within the permanent crop group ranges between 5 % and 50 % for household consumption and between 39 % and 93 % for sale. Permanent crops are also used as cash crops like oilseeds. It is rational to conclude by looking at Summary Table V-4 that the peasant farmers sell more of what they produce leaving less to consumption.

SUMMARY TABLE V-4- CROP PRODUCTION AND PERCENT OF UTILIZATION
ALL HOLDINGS

DIREDAWA REGION

Type of Crop	Total Production (Quintal)	Percent Utilized For					
		Household Consumption	Seed	Sale	Wages In kind	Animal Feed	Others
Total							
Grain Crops	100411	84.64	9.06	2.35	*	1.16	2.79
Cereals	98047.77	84.74	9.6	0.83	0.83	0.97	3.02
Teff	-	-	-	-	-	-	-
Barley	*	88.65	11.35	-	-	-	-
Wheat	*	100	-	-	-	-	-
Maize	5393.36	86.08	9.18	1.11	-	2.83	0.79
Sorghum	92602.97	84.36	9.7	0.79	1.01	0.6	3.53
Finger millet	-	-	-	-	-	-	-
Oats "Aja"	*	100	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses	2139.11	92.11	4.65	-	-	2.99	0.25
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	2126.76	91.88	4.78	-	-	3.08	0.26
Chick - peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-
Fenugreek	*	100	-	-	-	-	-
Gibto	-	-	-	-	-	-	-
Oilseeds	224.13	43.81	2.46	49.05	-	2	2.68
Neug	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-
Groundnuts	*	26.73	2.3	68.14	-	2.83	-
Safflower	-	-	-	-	-	-	-
Sesame	*	84.96	2.84	3.07	-	-	9.13
Rapeseed	-	-	-	-	-	-	-
Vegetables	6459.82	16.11	1.38	80.44	0.25	-	1.82
Lettuce	-	-	-	-	-	-	-
Head cabbage	-	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-	-
Tomatoes	6454.49	16.11	1.38	80.44	0.25	-	1.82
Green peppers	*	-	-	-	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-
Root Crops	13437.57	5	-	95	-	-	-
Beetroot	-	-	-	-	-	-	-
Carrot	-	31.6	33.6	33.19	-	-	1.61
Onion	*	19.75	38.18	41.87	-	-	0.2
Potatoes	*	60.25	21.83	12.88	-	-	5.04
Garlic	-	-	-	-	-	-	-
Taro / Godere	-	-	-	-	-	-	-
Sweet potatoes	7269.77	92.93	-	2.6	-	0.08	4.39
Permanent crops	21300.64	38.83	0.73	52.55	0.54	0.02	7.32
Avocados	-	-	-	-	-	-	-
Bananas	*	22.39	-	77.06	-	-	0.54
Guavas	-	-	-	-	-	-	-
Lemons	*	7.38	-	92.62	-	-	-
Mangoes	*	5	-	92	-	-	3
Oranges	370.75	13.27	-	85.36	-	-	1.37
Papayas	*	22.42	1.47	73.11	-	-	3.01
Pineapple	-	-	-	-	-	-	-
Chat	13020.44	49.53	0.76	39.38	0.81	0.03	9.49
Coffee	461.61	9.76	-	87.03	-	-	3.21
Hops	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-

Fig V-5 Percent Of Grain Crops Utilized

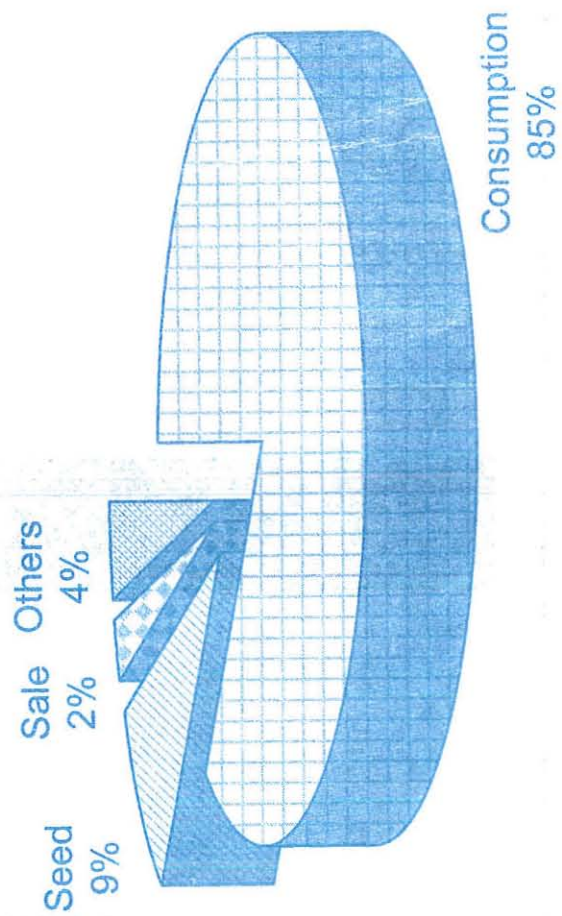
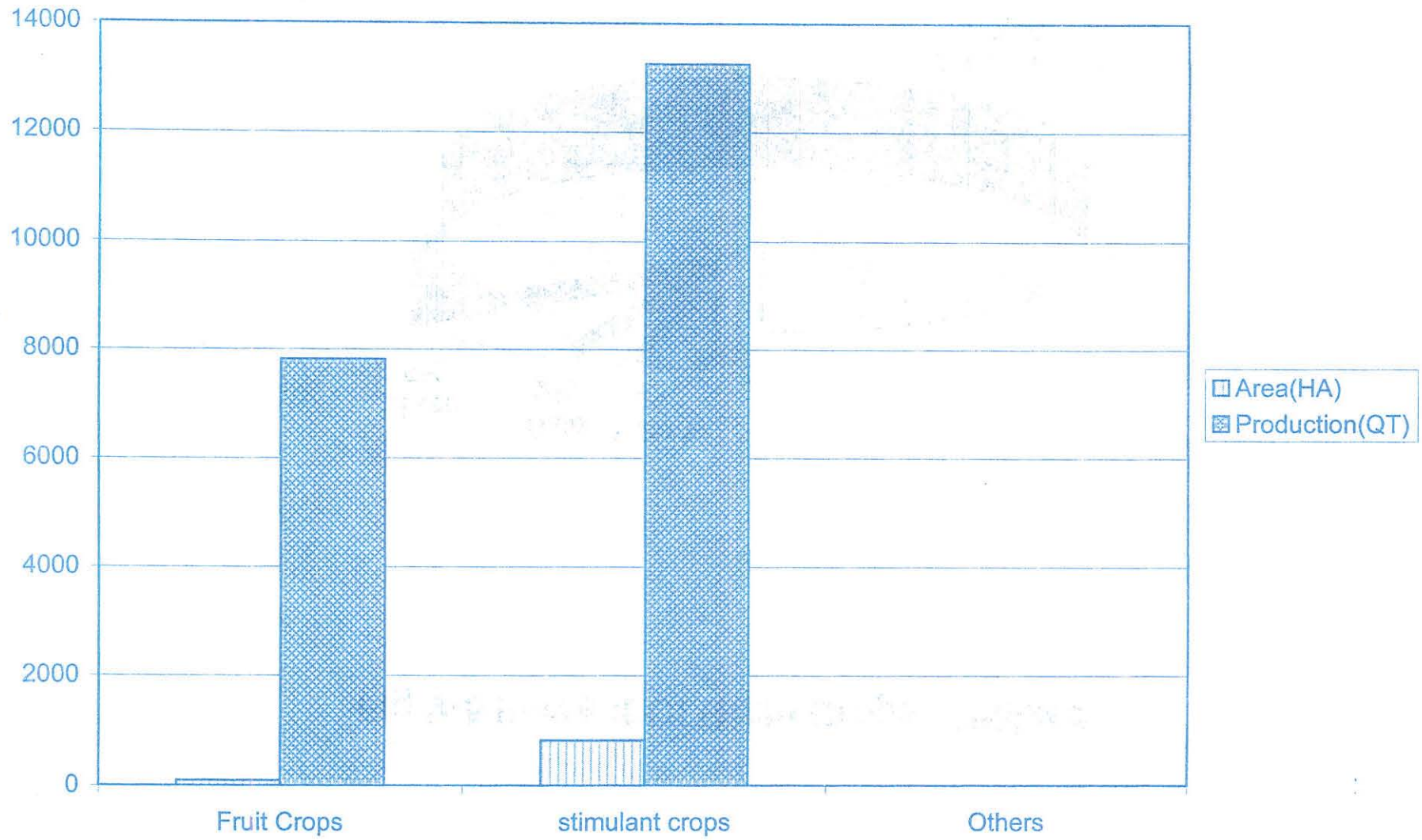


Fig.6 Area & Production Of Permanent crops



**STATISTICAL TABLES PRESENTING
RESULTS AT
ADMINISTRATIVE COUNCIL LEVEL**

Tables 5.1 – 5.10

TABLE 5.1- ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF TEMPORARY CROPS FOR PRIVATE PEASANT HOLDINGS FOR MEHER SEASON

RURAL HOLDINGS

Dire Dawa Administrative Council

Crop	Number of Holders	Area		Production		Yield
		Hectares	%	Quintals	%	QT / HA
TOTAL	14051	6778.91	100	104890.2	100	
Grain Crops	14032	6663.89	98.3	91460.05	87.2	
Cereals	14032	6425.9	94.79	89096.8	84.94	
Teff	-	-	-	-	-	-
Barley	*	*	*	*	*	*
Wheat	*	*	*	*	*	*
Maize	4690	257.46	3.8	3299.87	3.15	12.82
Sorghum	13750	6160.24	90.87	85749.42	81.75	13.92
Finger Millet	*	*	*	-	-	-
Oats / "Aja"	*	*	*	*	*	*
Rice	-	-	-	-	-	-
Pulses	3143	203.63	3	2139.11	2.04	
Horse beans	-	-	-	-	-	-
Field peas	-	-	-	-	-	-
Haricot beans	3101	201.21	2.97	2126.76	2.03	10.57
Chick - peas	-	-	-	-	-	-
Lentils	-	-	-	-	-	-
Vetch	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-
Fenugreek	*	*	*	*	*	*
Gibto.	-	-	-	-	-	-
Oilseeds	439	34.36	0.51	224.13	0.21	
Neug.	-	-	-	-	-	-
Linseed	-	-	-	-	-	-
Groundnuts	308	24.57	0.36	*	*	*
Safflower	-	-	-	-	-	-
Sesame	*	*	*	*	*	*
Rapeseed	-	-	-	-	-	-
Vegetables	1228	29.57	0.44	4398.22	4.19	
Lettuce	-	-	-	-	-	-
Head cabbage	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-
Tomatoes	1200	29.32	0.43	4398.22	4.19	150.01
Green peppers	*	*	*	-	-	-
Red peppers	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-
Root Crops	2669	85.44	1.26	9031.96	8.61	
Beetroot	-	-	-	-	-	-
Carrot	-	-	-	-	-	-
Onion	*	*	*	*	*	*
Potatoes	*	*	*	*	*	*
Garlic	*	*	*	-	-	-
Taro / "Godere"	-	-	-	-	-	-
Sweet potatoes	2208	64.44	0.95	6443.74	6.14	100

TABLE 5.2 ESTIMATES OF HOLDERS, AREA PRODUCTION AND YIELD OF
TEMPORARY CROP FOR PRIVATE PEASANT HOLDERS FOR
BELG SEASON 2001/02 (1994 E.C.)

Dire Dawa Administrative Council

Crop	Holders	Area		Quintals	%	Production Yield QT/HA
		Hectares	%			
TOTAL	4737	385.33		14018.89		
Grain Crop	3521	257.07	100	*	*	
Cereals	3521	256.85	99.91	*	*	
Teff	-	-	-	-	*	-
Barley	-	-	-	-	*	-
Wheat	-	-	-	-	*	-
Maize	3133	197.22	76.72	*	*	*
Sorghum	787	59.63	23.2	*	*	*
Finger Millet	-	-	-	-	*	-
Oats/Aja'	-	-	-	-	*	-
Rice	-	-	-	-	*	-
Pulses	*	*	*	-	*	-
Horse beans	-	-	-	-	*	-
Field peas	-	-	-	-	*	-
Haricot beans	*	*	*	-	*	-
Chick-peas	-	-	-	-	*	-
Lentils	-	-	-	-	*	-
Vetch	-	-	-	-	*	-
Soya bean	-	-	-	-	*	*
Fenugreek	-	-	-	-	*	-
Gibto	-	-	-	-	*	-
Oilseeds	-	-	-	-	*	-
Neug	-	-	-	-	*	-
Linseed	-	-	-	-	*	-
Groundnut	-	-	-	-	*	*
Sunflower	-	-	-	-	*	-
Sesame	-	-	-	-	*	-
Rapeseed	-	-	-	-	*	-
Vegetables	1487	53.71	100	*	*	
Lettuce	-	-	-	-	*	-
Head Cabbage	-	-	-	-	*	-
Ethiopian	-	-	-	-	*	-
Tomatoes	1438	49	91.23	*	*	*
Green pepper	*	*	*	*	*	*
Red pepper	-	-	-	-	*	-
Swiss chard	-	-	-	-	*	-
Root crops	1936	74.55	100	*	*	
Beetroot	-	-	-	-	*	-
Carrot	-	-	-	-	*	-
Onion	896	33.81	45.35	*	*	*
Potatoes	*	*	*	*	*	*
Garlic	-	-	-	-	*	-
Taro/Godere	-	-	-	-	*	*
Sweet potatoes	984	30.23	40.55	*	*	*

TABLE 5.3- ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF
TEMPORARY CROPS FOR PRIVATE PEASANT HOLDINGS FOR MEHER SEASON

URBAN HOLDINGS

Dire Dawa Administrative Council

Crop	Number of Holders	Area		Production		Yield
		Hectares	%	Quintals	%	QT / HA
TOTAL	588	150.75		1399.29		
Grain Crops	579	149.35	100	1347.06	100	
Cereals	579	149.35	100	1347.06	100	
Teff	-	-	-	-	-	-
Barley	*	*	*	*	*	*
Wheat	-	-	-	-	-	-
Maize	50	10.86	7.27	110.81	8.23	10.2
Sorghum	552	138.17	92.51	1232.32	91.48	8.92
Finger Millet	-	-	-	-	-	-
Oats / 'Aja'	-	-	-	-	-	-
Rice	-	-	-	-	-	-
Pulses	-	-	-	-	-	-
Horse beans	-	-	-	-	-	-
Field peas	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-
Chick - peas	-	-	-	-	-	-
Lentils	-	-	-	-	-	-
Vetch	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-
Gibto	-	-	-	-	-	-
Oilseeds	-	-	-	-	-	-
Neug	-	-	-	-	-	-
Linseed	-	-	-	-	-	-
Groundnuts	-	-	-	-	-	-
Safflower	-	-	-	-	-	-
Sesame	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-
Vegetables	11	*	*	34.14	100	
Lettuce	-	-	*	-	-	-
Head cabbage	*	-	*	-	-	-
Ethiopian cabbage	-	-	*	-	-	-
Tomatoes	10	*	*	34.14	100	*
Green peppers	*	-	*	-	-	-
Red peppers	-	-	*	-	-	-
Swiss chard	-	-	*	-	-	-
Root Crops	*	*	*	*	*	*
Beetroot	-	-	*	-	*	-
Carrot	-	-	*	-	*	-
Onion	*	*	*	*	*	*
Potatoes	-	-	*	-	*	-
Garlic	-	-	*	-	*	-
Taro / 'Godere'	-	-	*	-	*	-
Sweet potatoes	-	-	*	-	*	-

TABLE 5.4 - ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF TEMPORARY CROPS FOR PRIVATE PEASANT HOLDINGS FOR BOTH SEASONS

ALL HOLDINGS

Dire Dawa Administrative Council

Crop	Number of Holders	Area		Production		Yield
		Hectares	%	Quintals	%	QT / HA
TOTAL	14716	7314.98		120308.4		
Grain Crops	14689	7070.31	100	100411	100	
Cereals	14689	6832.11	96.63	98047.77	97.65	
Teff	-	-	-	-	-	-
Barley	*	*	*	*	*	*
Wheat	*	*	*	*	*	*
Maize	5889	465.54	6.58	5393.36	5.37	11.59
Sorghum	14351	6358.04	89.93	92602.97	92.22	14.56
Finger Millet	*	*	*	-	-	-
Oats / "Aja"	*	*	*	*	*	*
Rice	-	-	-	-	-	-
Pulses	3165	203.85	2.88	2139.11	2.13	
Horse beans	-	-	-	-	-	-
Field peas	-	-	-	-	-	-
Haricot beans	3123	201.42	2.85	2126.76	2.12	10.56
Chick – peas	-	-	-	-	-	-
Lentils	-	-	-	-	-	-
Vetch	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-
Fenugreek	*	*	*	*	*	*
Gibto.	-	-	-	-	-	-
Oilseeds	439	34.36	0.49	224.13	0.22	
Neug.	-	-	-	-	-	-
Linseed	-	-	-	-	-	-
Groundnuts	308	24.57	0.35	*	*	*
Safflower	-	-	-	-	-	-
Sesame	*	*	*	*	*	*
Rapeseed	-	-	-	-	-	-
Vegetables	2070	84.04	100	6459.82	100	
Lettuce	-	-	-	-	-	-
Head cabbage	*	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-
Tomatoes	2041	79.08	94.1	6454.49	99.92	81.62
Green peppers	*	*	*	*	*	*
Red peppers	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-
Root Crops	3765	160.63	100	13437.57	100	
Beetroot	-	-	-	-	-	-
Carrot	-	-	-	-	-	-
Onion	1193	48.08	29.93	*	*	*
Potatoes	*	*	*	*	*	*
Garlic	*	*	*	-	-	-
Taro / "Godere"	-	-	-	-	-	-
Sweet potatoes	2849	94.67	58.94	7269.77	54.1	76.79

TABLE 5.5 - ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF PERMANENT CROPS FOR PRIVATE PEASANT HOLDINGS
RURAL HOLDINGS

Dire Dawa Administrative Council

PERMANENT CROPS	NUMBER OF HOLDERS REPORTING	AREA IN CROP (HA)	%	TOTAL NUMBER OF TREES	NUMBER OF TREES PER HECTARE	NUMBER OF TREES BEARING	PRODUCTION (QT)	%	YIELD (QT / HA)
ALL	9461	885.3							
Fruit Crops	3214	71.95	100	77214	1073	53849	7536.54	100	
Avocados	-	-	-	-	-	-	-	-	-
Bananas	537	6.41	8.91	*	*	*	*	*	*
Guavas	762	*	*	2425	*	-	-	-	-
Lemons	142	*	*	*	*	*	*	*	*
Mangoes	465	9.11	12.66	879	96	-	-	-	-
Oranges	189	*	*	*	*	*	*	*	*
Papayas	2066	42.55	59.14	51781	1217	41858	*	*	*
Pineapples	-	-	-	-	-	-	-	-	-
Stimulant Crops	8653	813.35	100	13848	17	13672	13258.33	100	
Chat	7802	752.02	92.46				*	98.21	*
Coffee	2436	61.34	7.54				237.89	1.79	3.88
Hops (Gesho)	-	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-	-

TABLE 5.6 - ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF PERMANENT CROPS FOR PRIVATE PEASANT HOLDINGS
URBAN HOLDINGS

Dire Dawa Administrative Council

PERMANENT CROPS	NUMBER OF HOLDERS REPORTING	AREA IN CROP (HA)	%	TOTAL NUMBER OF TREES	NUMBER OF TREES PER HECTARE	NUMBER OF TREES BEARING	PRODUCTION (QT)	%	YIELD (QT / HA)
ALL	158	23.99							
Fruit Crops	148	22.62	100	13314	589	10273	282.05	100	
Avocados	-	-	-	-	-	-	-	-	-
Bananas	*	-	-	-	-	-	-	-	-
Guavas	-	-	-	-	-	-	-	-	-
Lemons	*	*	*	*	*	*	-	-	-
Mangoes	50	6.28	27.76	1052	168	766	*	*	*
Oranges	99	13.68	60.48	9840	719	7903	153.71	54.50	11.24
Papayas	22	*	*	*	*	*	*	*	*
Pineapples	-	-	-	-	-	-	-	-	-
Stimulant Crops	*	*	*	-	-	-	*	*	
Chat	*	*	*	-	-	-	-	-	-
Coffee	*	*	*	-	-	-	*	*	*
Hops (Gesho)	-	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-	-

TABLE 5.7 - ESTIMATE OF HOLDERS, AREA, PRODUCTION AND YIELD OF PERMANENT CROPS FOR PRIVATE PEASANT HOLDINGS
ALL HOLDINGS

Dire Dawa Administrative Council

PERMANENT CROPS	NUMBER OF HOLDERS REPORTING	AREA IN CROP (HA)	%	TOTAL NUMBER OF TREES	NUMBER OF TREES PER HECTARE	NUMBER OF TREES BEARING	PRODUCTION (QT)	%	YIELD (QT / HA)
ALL	9619	909.29							
Fruit Crops	3362	94.57	100	90528	957	64122	7818.59	100	
Avocados	-	-	-	-	-	-	-	-	-
Bananas	538	6.41	6.78	*	*	*	*	*	*
Guavas	762	*	*	2425	*	-	-	-	-
Lemons	147	2.01	2.13	*	*	*	*	*	*
Mangoes	515	15.39	16.27	1931	125	766	*	*	*
Oranges	287	16.84	17.81	11279	670	8915	370.75	4.74	22.02
Papayas	2088	44.56	47.12	53603	1203	43456	*	*	*
Pineapples	-	-	-	-	-	-	-	-	-
Stimulant Crops	8667	814.72	100	13848	17	13672	13258.96	100	
Chat	7813	753.06	92.43				*	98.2	*
Coffee	2444	61.68	7.57				238.52	1.8	3.87
Hops (Gesho)	-	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-	-

TABLE 5.8 - CROP PRODUCTION AND PERCENT OF UTILIZATION
RURAL HOLDINGS

Dire Dawa Administrative Council

Type of Crop	Total Production (Quintal)	Percent Utilized For					
		Household Consumption	Seed	Sale	Wages In kind	Animal Feed	Others
Total							
Grain Crops	99063.95	84.51	9.19	2.36	-	1.17	2.76
Cereals	96700.71	84.6	9.77	0.8	0.85	0.97	3.01
Teff	-	-	-	-	-	-	-
Barley	*	88.65	11.35	-	-	-	-
Wheat	*	100	-	-	-	-	-
Maize	5282.55	86.37	9.23	0.92	-	2.74	0.74
Sorghum	91370.65	84.12	9.89	0.79	1.05	0.62	3.54
Finger millet	-	-	-	-	-	-	-
Oats "Aja"	*	100	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses	2139.11	92.11	4.65	-	-	2.99	0.25
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	2126.76	91.88	4.78	-	-	3.08	0.26
Chick - peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-
Fenugreek	*	100	-	-	-	-	-
Gibto	-	-	-	-	-	-	-
Oilseeds	224.13	43.81	2.46	49.05	-	2	2.68
Neug	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-
Groundnuts	*	26.73	2.3	68.14	-	2.83	-
Safflower	-	-	-	-	-	-	-
Sesame	*	84.96	2.84	3.07	-	-	9.13
Rapeseed	-	-	-	-	-	-	-
Vegetables	6425.68	16.12	1.37	80.46	0.22	-	1.83
Lettuce	-	-	-	-	-	-	-
Head cabbage	-	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-	-
Tomatoes	6420.35	16.12	1.37	80.46	0.22	-	1.83
Green peppers	*	-	-	-	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-
Root Crops	13419.48	31.6	33.6	33.19	-	-	1.61
Beetroot	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-
Onion	*	19.85	38.43	41.52	-	-	0.2
Potatoes	*	60.25	21.83	12.88	-	-	5.04
Garlic	-	-	-	-	-	-	-
Taro / Godere	-	-	-	-	-	-	-
Sweet potatoes	7269.77	92.93	-	2.6	-	0.08	4.39
Permanent crops	21017.96	38.98	0.74	52.35	0.55	0.02	7.36
Avocados	-	-	-	-	-	-	-
Bananas	*	22.39	-	77.06	-	-	0.54
Guavas	-	-	-	-	-	-	-
Lemons	*	7.38	-	92.62	-	-	-
Mangoes	-	-	-	-	-	-	-
Oranges	*	17.58	-	80	-	-	2.42
Papayas	*	22.34	1.48	73.16	-	-	3.02
Pineapple	-	-	-	-	-	-	-
Chat	13020.44	49.53	0.76	39.38	0.81	0.03	9.49
Coffee	460.98	9.79	-	86.99	-	-	3.22
Hops	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-

TABLE 5.9 - CROP PRODUCTION AND PERCENT OF UTILIZATION
URBAN HOLDINGS

Dire Dawa Administrative Council

Type of Crop	Total Production (Quintal)	Percent Utilized For					
		Household Consumption	Seed	Sale	Wages In kind	Animal Feed	Others
Total							
Grain Crops	1347.06	88.85	4.97	1.74	0.14	0.83	3.47
Cereals	1347.06	88.85	4.97	1.74	0.14	0.83	3.47
Teff	-	-	-	-	-	-	-
Barley	*	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-
Maize	110.81	65.41	5.81	15.03	-	9.71	4.04
Sorghum	1232.32	90.59	4.91	0.76	0.15	0.17	3.43
Finger millet	-	-	-	-	-	-	-
Oats "Aja"	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses	-	-	-	-	-	-	-
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-
Chick - peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-
Oilseeds	-	-	-	-	-	-	-
Neug	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-
Groundnuts	-	-	-	-	-	-	-
Safflower	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-
Vegetables	34.14	15	2.5	77.5	5	-	-
Lettuce	-	-	-	-	-	-	-
Head cabbage	-	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-	-
Tomatoes	34.14	15	2.5	77.5	5	-	-
Green peppers	-	-	-	-	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-
Root Crops	*	5	-	95	-	-	-
Beetroot	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-
Onion	*	5	-	95	-	-	-
Potatoes	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-
Taro / Godere	-	-	-	-	-	-	-
Sweet potatoes	-	-	-	-	-	-	-
Permanent crops	282.68	12.4	-	87.18	-	-	0.42
Avocados	-	-	-	-	-	-	-
Bananas	-	-	-	-	-	-	-
Guavas	-	-	-	-	-	-	-
Lemons	-	-	-	-	-	-	-
Mangoes	*	5	-	92	-	-	3
Oranges	153.71	7.61	-	92.39	-	-	-
Papayas	*	31.38	-	67.38	-	-	1.23
Pineapple	-	-	-	-	-	-	-
Chat	-	-	-	-	-	-	-
Coffee	*	-	-	100	-	-	-
Hops	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-

TABLE 5.10 - CROP PRODUCTION AND PERCENT OF UTILIZATION
ALL HOLDINGS

Dire Dawa Administrative Council

Type of Crop	Total Production (Quintal)	Percent Utilized For					
		Household Consumption	Seed	Sale	Wages In kind	Animal Feed	Others
Total							
Grain Crops	100411	84.64	9.06	2.35	*	1.16	2.79
Cereals	98047.77	84.74	9.6	0.83	0.83	0.97	3.02
Teff	-	-	-	-	-	-	-
Barley	*	88.65	11.35	-	-	-	-
Wheat	*	100	-	-	-	-	-
Maize	5393.36	86.08	9.18	1.11	-	2.83	0.79
Sorghum	92602.97	84.36	9.7	0.79	1.01	0.6	3.53
Finger millet	-	-	-	-	-	-	-
Oats "Aja"	*	100	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses	2139.11	92.11	4.65	-	-	2.99	0.25
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	2126.76	91.88	4.78	-	-	3.08	0.26
Chick - peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-
Soya beans	-	-	-	-	-	-	-
Fenugreek	*	100	-	-	-	-	-
Gibto	-	-	-	-	-	-	-
Oilseeds	224.13	43.81	2.46	49.05	-	2	2.68
Neug	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-
Groundnuts	*	26.73	2.3	68.14	-	2.83	-
Safflower	-	-	-	-	-	-	-
Sesame	*	84.96	2.84	3.07	-	-	9.13
Rapeseed	-	-	-	-	-	-	-
Vegetables	6459.82	16.11	1.38	80.44	0.25	-	1.82
Lettuce	-	-	-	-	-	-	-
Head cabbage	-	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-	-
Tomatoes	6454.49	16.11	1.38	80.44	0.25	-	1.82
Green peppers	*	-	-	-	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-
Root Crops	13437.57	5	-	95	-	-	-
Beetroot	-	-	-	-	-	-	-
Carrot	-	31.6	33.6	33.19	-	-	1.61
Onion	*	19.75	38.18	41.87	-	-	0.2
Potatoes	*	60.25	21.83	12.88	-	-	5.04
Garlic	-	-	-	-	-	-	-
Taro / Godere	-	-	-	-	-	-	-
Sweet potatoes	7269.77	92.93	-	2.6	-	0.08	4.39
Permanent crops	21300.64	38.83	0.73	52.55	0.54	0.02	7.32
Avocados	-	-	-	-	-	-	-
Bananas	*	22.39	-	77.06	-	-	0.54
Guavas	-	-	-	-	-	-	-
Lemons	*	7.38	-	92.62	-	-	-
Mangoes	*	5	-	92	-	-	3
Oranges	370.75	13.27	-	85.36	-	-	1.37
Papayas	*	22.42	1.47	73.11	-	-	3.01
Pineapple	-	-	-	-	-	-	-
Chat	13020.44	49.53	0.76	39.38	0.81	0.03	9.49
Coffee	461.61	9.76	-	87.03	-	-	3.21
Hops	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-

**ANNEX TABLES PRESENTING ESTIMATES,
STANDARD ERRORS AND COEFFICIENTS OF VARIATION
FOR SELECTED AREA AND PRODUCTION VARIABLES**

Annex Tables 5.1 - 5.2

Annex 5.1

Estimate of Area, Production and their Standard Errors and Coefficients of Variation for Temporary Crops

All Holdings

Dire Dawa Administrative Council

Crop	Holders	S.E.	C.V.	Area	S.E.	C.V.	Production	S.E.	C.V.
Total	14716	745	5	7314.98	638	9	120308.4	9446	8
Grain Crops	14689	746	5	7070.31	636	9	100411	8426	8
Cereals	14689	746	5	6832.11	609	9	98047.77	8258	8
Teff	-	-	-	-	-	-	-	-	-
Barley	194	134	69	3.65	3	71	37.21	26	69
Wheat	106	64	61	2.8	2	63	13.1	8	61
Maize	5889	783	13	465.54	82	18	5393.36	1461	27
Sorghum	14351	772	5	6358.04	609	10	92602.97	8165	9
Finger millet	21	23	108	1.88	2	108	-	-	-
Oats / 'Aja'	21	21	98	0.19	0	100	1.14	1	97
Rice	-	-	-	-	-	-	-	-	-
Pulses	3165	737	23	203.85	60	29	2139.11	691	32
Horse beans	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-
Haricot beans	3123	740	24	201.42	60	30	2126.76	693	33
Chick-peas	-	-	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-	-	-
Soya beans	.....	-	-	-	-	-	-	-	-
Fenugreek	43	39	93	2.42	2	93	12.35	11	93
Gibto	-	-	-	-	-	-	-	-	-
Oilseeds	439	144	33	34.36	14	40	224.13	100	45
Neug	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-
Groundnuts	.....	308	134	44	24.	12	47	196.7	99
Safflower	-	-	-	-	-	-	-	-	-
Sesame	131	72	55	9.79	9	87	27.4	24	87
Rapeseed	-	-	-	-	-	-	-	-	-
Vegetables	2070	595	29	84.04	31	37	6459.82	2257	35
Lettuce	-	-	-	-	-	-	-	-	-
Head cabbage	2	1	84	-	-	-	-	-	-
Ethiopian cabbage	-	-	-	-	-	-	-	-	-
Tomatoes	2041	592	29	79.08	29	36	6454.49	2256	35
Green peppers	258	158	61	4.96	3	68	5.33	6	107
Red peppers	-	-	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-	-	-
Root crops	3765	774	21	160.63	40	25	13437.57	4336	32
Beet root	-	-	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-	-	-
Onion	1193	405	34	48.08	19	40	5305.86	3545	67
Potatoes	491	284	58	17.64	13	72	861.93	655	76
Garlic	21	22	107	0.25	0	108	-	-	-
Taro / 'Godere'	.....	-	-	-	-	-	-	-	-
Sweet potatoes	2849	633	22	94.67	23	24	7269.77	1882	26

Annex 5.2

Estimates of Holders, Area, Production and their Standard Errors and Coefficients of Variations for Permanent crops

All Holdings

Dire Dawa Administrative Council

Crop	Holders	S.E.	C.V.	Area	S.E.	C.V.	Production	S.E.	C.V.
Avocados	-	-	-	-	-	-	-	-	-
Bananas	538	227	42	6	3	41	1296.33	964	74
Guavas	762	295	39	9	5	54	-	-	-
Lemons	147	69	47	2	1	47	4.89	3	56
Mangoes	515	170	33	15	5	33	7.14	4	58
Oranges	287	90	31	17	4	27	370.75	127	34
Papayas	2088	630	30	45	17	37	6139.49	3076	50
Pineapples	-	-	-	-	-	-	-	-	-
Chat	8667	887	10	815	137	17	13258.96	3583	27
Coffee	7813	831	11	753	136	18	13020.44	3588	28
Hops	2444	668	27	62	18	29	238.52	86	36
Enset	-	-	-	-	-	-	-	-	-
Sugar cane	-	-	-	-	-	-	-	-	-

CHAPTER VI

FARM MANAGEMENT PRACTICES

1 INTRODUCTION

Ethiopia is endowed with abundant resource suitable for agriculture. As result of which the agricultural activity in Ethiopia is quite varied being conditioned by such factors as climate, soils topography and...etc which had favored not only the employment of the majority of the countries population but also served as the main source of input (raw material) for the countries large and medium Scale industries as well as the main generator of the country's foreign currency earnings.

Though agriculture is the backbone of Ethiopian economy it is characterized by low level of productivity and subsistence farming system, which resulted to hand to mouth production. Nowadays the problem mentioned has become more acute as a result of two factors. First the number of people is increasing at a rate that point to a doubling of the present population of the country at the end of this century. Secondly this is occurring at a time when the area of new land suitable for cultivation is rapidly diminishing.

Even though traditional practice such as use of animal dung and crop residue crop rotation and expanding cultivable cropland had helped a lot to increase productivity, the problem mentioned above has become more acute and beyond the limits of the traditional practices which of course had already been exhausted. Hence, the scale severity and duration of the country's food problem will be so great that a massive short and long-range innovative efforts will be required to solve it.

As a result, increasing productivity on various field crops is the only realistic option to raise the living standards of the rural population, and to ensure food security and poverty alleviation. There are many modern techniques and technologies of achieving enhanced crop productivity. Accordingly, the major factors behind achieving high level of crop productivity increases are greater and more efficient use of fertilizers, wide spread uses of improved variety seeds, pesticides, expanded use of irrigation and effective extension

services. Thus, during the 2001/02 Agricultural Sample Enumeration, basic data on agricultural inputs and practices were collected, processed and the results are presented in this chapter.

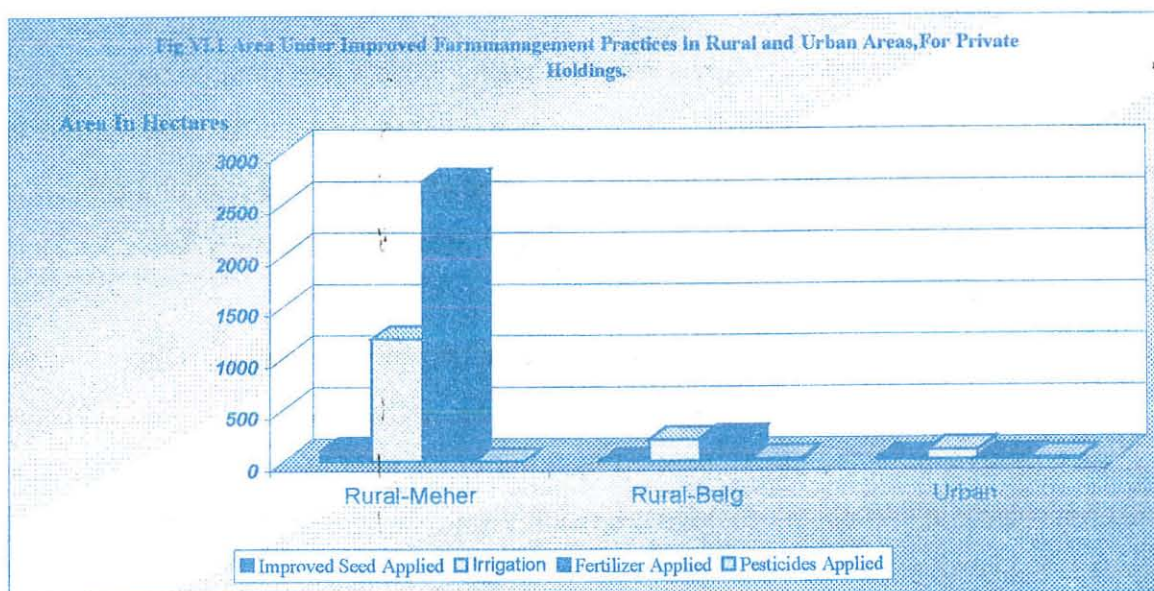
This chapter is therefore, deals with the agricultural census data that indicates the type of inputs applied, quantity of inputs applied, the irrigated cropland area, estimates of cropland area damage, number of holders who applied different agricultural inputs and farm management practices, and number of holders covered by extension package programs in Dire Dawa Administrative Council. Data are presented for private holdings in rural areas for both Meher and Belg seasons, and urban areas of holdings for Meher season. For urban areas, data are collected and presented only to the inputs applied and the irrigated cropland area and number of holders who applied farm inputs. Moreover, estimates, standard errors (S.E) and coefficient of variation (C.V) are given in Annex Tables 6.1 and 6.2.

2 CROPLAND AREA UNDER AGRICULTURAL INPUTS AND FARM MANAGEMENT PRACTICES

This section deals with the agricultural inputs applied and the irrigated cropland area for both rural and urban areas of Dire Dawa Administrative Council. Agricultural holders in the sampled households were asked whether they have applied agricultural inputs on their fields or not and the area of all plots operated by the holders were actually measured objectively for private holdings in rural areas. While in urban areas all types of data on farm practices were obtained by interview methods. This helped to estimate area under total crop, irrigated land, fertilizers, pesticides and improved seeds used during the agricultural year. Following data on area under agricultural farm inputs for Dire Dawa Administrative Council are briefly discussed.

The census data show that Dire Dawa Administrative Council predominantly produces grain crops and the major crops either in terms of the magnitude of area and volume of production includes sorghum and maize that accounted for about 85.06% of the area cultivated under all crops (Summary Table VI.2). On the other hand, vegetables, root crops and permanent crops

are not widely grown as grains in the region in terms of both area coverage and production obtained. As a result, the agricultural inputs were applied to a great extent on the area under grain crops in order to increase the volume of production. Among different types of agricultural inputs that were applied, it is found that fertilizers application had relatively high coverage of area under crops. Moreover, the census data indicate that vast majority of agricultural holders have used agricultural inputs on small size of holdings. In general, the holders in the region as a whole have practiced modern agricultural techniques and technologies but in a much smaller extent.



2.1 Fertilized Cropland Areas

The effects of fertilizers on improving the efficiency of crop production are well known and can scarcely be over emphasized. Moreover, the fertilizing materials and mixture are not restricted to inorganic Chemicals but include organic substances such as crop residue animal dung and .. etc. Therefore, Fertilizers refer to anything added to the soil with the intention of increasing the amount of plant nutrients available for crop growth. In the census, data on application, type and quantity of natural and chemical fertilizers were collected. The natural fertilizers consisted of animal dung and compost while chemical fertilizers consisted of DAP (Di-Ammonium phosphate) and UREA (Ammonium Nitrate).

Although fertilizer is one of the very important agricultural inputs to increase the level of production, in Dire Dawa Administrative Council, fertilizers were applied on 2975 hectares (35.79% of the total cultivated cropland area). Of this total area fertilized cropland, the share of rural and urban areas was found to be 99.06% and 0.94%, respectively. Moreover, the proportion of total fertilized cropland areas in rural areas for Meher season was 2719 hectares (91.39%) as compared to only 227 hectares (7.63) for Belg season. Regarding private holdings in urban areas, data are collected and presented only for Meher season. For details, refer to Summary Table VI.1.

Furthermore, out of the total fertilized cropland areas, 73.55% were under cereals, 3.33% under pulses, 0.57% under oil seeds, 2.32% under vegetables and 2.69% under root crops, 3.56% under fruits and 13.95% under stimulants. Most of the fertilized cropland areas in the region were allotted to cereals in both rural and urban areas (See Summary Table VI.1)

With regard to a specific crop, sorghum is the most important fertilized crop that comprised an area of 66.54% of the total cropland area under fertilizers. The second important fertilized crop is Chat covering 12.84% of the total cropland area under fertilizers. Maize ranks third taking up 6.96% of the total cropland area under fertilizers. For details, refer to Summary Table VI.2.

2.2 Cropland Areas Treated with Pesticides

Pesticides are chemicals that are used for the control of mitigation or elimination of pests that are detrimental to crops. Examples of pesticides are insecticides, herbicides and fungicides. Summary Table VI.1 reveals that the total cropland area treated with pesticides was estimated to be 75 hectares. Of the total cropland areas treated with pesticides, the share of rural areas was found to be 76% while the share urban areas was found to be 24%. Thus, private holdings in rural areas had the highest share, while the contribution of the urban areas to the total pesticide applied cropland area was very limited in scale.

Furthermore, most of the pesticide applied land areas in the region was under cereals (about 62.67%), whereas about 8% of the fields under vegetables and 14.67% under fruits were treated with pesticides. Out of all cropland areas on which pesticides are applied, sorghum accounts for about 37 hectares followed by maize, accounting for about 10 hectares, while the contribution of the remaining crops is insignificant. For Details, see Summary Tables VI.1 and VI.2.

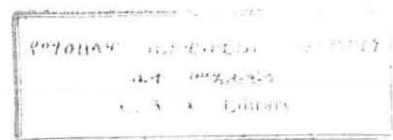
2.3 Cropland Areas on which Improved Seeds are Used

Improved seeds are defined as crop varieties that give significantly higher yield and better quality compared to locally produced varieties of seeds. As illustrated in Summary Table VI.1, the total cultivated cropland area was estimated at 8313 hectares. Of this total, only 153 hectares (1.84%) was sown with improved variety of seeds. The share of rural and urban areas was found to be 85.62 percent and 14.38 percent of the total cropland areas on which improved seeds are used, respectively. Like other inputs, the private holdings in the rural areas during Meher season had the highest share; while the contribution of the private holdings in urban areas to the total improved seeds applied cropland area in the region was limited in scale. The share of Belg season to the total improved seed applied cropland area is also negligible.

Summary Table VI.1 also presents the total cropland area with application of improved agricultural practices and inputs by crop category for private holdings in rural and urban areas. The data in this table indicate that the highest area under improved seed was reported for cereal that account for about 82.35% while the remaining 18% was reported to be under pulses, oil seeds vegetables, root crops and permanent crops altogether.

2.4 Cropland Areas Under Irrigation

The necessary increase in crop production, to keep pace with the increased population demand, can be achieved among others by the efficient utilization of Irrigation practices. Moreover irrigation practices make possible the full utilization of advanced technology in



farming: these include the proper application of fertilizers, the adoption of good crop rotation practices and the use of best the best seed varieties.

Irrigated cropland areas, therefore, refer to the practice where an area of land is purposely and actually provided with water, other than the precipitation obtained from rain to improve the production of crops. The uncontrolled flooding of land by the overflow of rivers or streams is not considered to be as practice of irrigation.

The census data show that the cropland areas that are actually irrigated was only 1487 hectares and this accounted for about 17.89 percent of the total cropland areas. Of the total irrigated cropland areas, the share of the rural and urban areas was found to be 93.68% and 6.39%, respectively. Thus, there is large difference in the size of the total irrigated cropland area between rural and urban area. Moreover, of the total irrigated cropland areas in rural areas, the Meher season constituted 79.89 percent compared to 13.79 percent for Belg season.

As indicated in Summary Table VI.1, out of the total irrigated cropland areas in the region 63.62% were under cereals and 17.35% under stimulants while fruits, root crops and vegetables covered 8.27%, 5.38% and 4.91% of the total irrigated area respectively (See summary Tables VI.1 and VI.2).

3 HOLDERS APPLYING FERTILIZERS, AREA, AND QUANTITY OF FERTILIZERS APPLIED

In 2001/02 Agricultural Sample Enumeration, the total number of holders applying fertilizers in Dire Dawa Administrative Council is estimated to be about 8,317. Of these total private holders, about 8,176 holders (98.42%) were in rural and about 1.58% in urban areas. The application of fertilizers in Meher and Belg seasons for private holdings in rural areas shows a great variation, that is, 86.68% of the holders applied fertilizers in Meher season while only 38.09 percent applied in Belg season (See Summary Tables VI.3 and VI.4).

SUMMARY TABLE VI.1: Total Area Under Improved Farm Management Practices
by Crop Categories in Rural and Urban Areas, Both Seasons, for Private Holdings.

ITEM	Area in Hectares									
	Total	Grains				Vegetables	Root Crops	Permanent Crops		
		Cereals	Pulses	Oilseeds	Others			Fruits	Stimulant	Other
Total Area										
Rural and Urban .	8313	6832	204	34	*	84	161	182	815	*
Rural	8123	6683	204	34	*	84	160	144	813	*
Meher.....	7737	6426	204	34	*	30	86	144	813	*
Belg	385	257	*	*	*	54	75	*	*	*
Urban (Meher)....	191	149	*	*	*	*	*	38	*	*
Improved Seeds										
Rural and Urban .	153	126	*	*	*	*	*	*	*	*
Percent..	100	82.35	*	*	*	*	*	*	*	*
Rural	131	108	*	*	*	*	*	*	*	*
Percent..	85.62	82.44	*	*	*	*	*	*	*	*
Meher.....	106	93	*	*	*	*	*	*	*	*
Percent..	69.28	87.74	*	*	*	*	*	*	*	*
Belg	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
Urban (Meher)....	22	*	*	*	*	*	*	*	*	*
Percent..	14.38	*	*	*	*	*	*	*	*	*
Irrigation										
Rural and Urban .	1487	946	*	*	*	73	80	123	258	*
Percent..	100	63.62	*	*	*	4.91	5.38	8.27	17.35	*
Rural	1393	884	*	*	*	72	79	92	258	*
Percent..	93.68	63.46	*	*	*	5.17	5.67	6.60	18.52	*
Meher.....	1188	775	*	*	*	27	28	92	258	*
Percent..	79.89	65.24	*	*	*	2.27	2.36	7.74	21.72	*
Belg	205	109	*	*	*	45	51	*	*	*
Percent..	13.79	53.17	*	*	*	21.95	24.88	*	*	*
Urban (Meher)....	95	62	*	*	*	*	*	31	*	*
Percent..	6.39	65.26	*	*	*	*	*	32.63	*	*
Fertilizer										
Rural and Urban .	2975	2188	99	17	*	69	80	106	415	*
Percent..	100	73.55	3.33	0.57	*	2.32	2.69	3.56	13.95	*
Rural	2947	2173	99	17	*	69	79	94	415	*
Percent..	99.06	73.74	3.36	0.58	*	2.34	2.68	3.19	14.08	*
Meher.....	2719	2037	99	17	*	19	38	94	415	*
Percent..	91.39	74.92	3.64	0.63	*	0.70	1.40	3.46	15.26	*
Belg	227	136	*	*	*	50	41	*	*	*
Percent..	7.63	59.91	*	*	*	22.03	18.06	*	*	*
Urban (Meher)....	28	15	*	*	*	1	*	11	*	*
Percent..	0.94	53.57	*	*	*	3.57	*	39.29	*	*
Pesticides										
Rural and Urban .	75	47	*	*	*	6	*	11	*	*
Percent..	100	62.67	*	*	*	8.00	*	14.67	*	*
Rural	57	40	*	*	*	6	*	*	*	*
Percent..	76	70.18	*	*	*	10.53	*	*	*	*
Meher.....	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
Belg	20	13	*	*	*	*	*	*	*	*
Percent..	26.67	65.00	*	*	*	*	*	*	*	*
Urban (Meher)....	18	8	*	*	*	*	*	*	*	*
Percent..	24	44.44	*	*	*	*	*	*	*	*

SUMMARY TABLE VI.2: Total Area Under Improved Seed, Irrigation, Fertilizer, and Pesticide
by Type of Crops in Rural and Urban Areas, for Private Holdings

TYPE OF CROP	Total Crop		Improved Seed		Irrigation		Fertilizer		Pesticide	
	Hectares	Hectares	%	Hectares	%	Hectares	%	Hectares	%	
TOTAL	8313	153	1.84	1487	17.89	2974	35.78	75	0.9	
Grain Crops.....	7071	134	1.9	953	13.48	2305	32.6	49	0.69	
Cereals.....	6832	126	1.84	946	13.85	2188	32.03	47	0.69	
Teff.....	*	-	-	*	*	*	*	-	-	
Barley.....	*	-	-	*	*	*	*	-	-	
Wheat.....	*	-	-	*	*	*	*	-	-	
Maize.....	466	*	*	195	41.85	207	44.42	10	2.15	
Sorghum.....	6358	101	1.59	750	11.8	1979	31.13	37	0.58	
Finger millet.....	*	-	-	-	-	-	-	-	-	
Oats ('Aja').....	*	-	-	-	-	-	-	-	-	
Rice.....	*	-	-	-	-	-	-	-	-	
Pulses.....	204	*	*	*	*	99	48.53	*	*	
Horse beans.....	-	-	-	-	-	-	-	-	-	
Field peas.....	-	-	-	-	-	-	-	-	-	
Haricot beans.....	201	*	*	*	*	97	48.26	*	*	
Chick peas.....	-	-	-	-	-	-	-	-	-	
Lentils.....	-	-	-	-	-	-	-	-	-	
Vetch.....	-	-	-	-	-	-	-	-	-	
Soya.....	-	-	-	-	-	-	-	-	-	
Fenugreek.....	*	-	-	-	-	*	*	-	-	
Gibto.....	-	-	-	-	-	-	-	-	-	
Oil Seeds.....	34	-	-	*	*	17	50	-	-	
Neug.....	-	-	-	-	-	-	-	-	-	
Linseed.....	-	-	-	-	-	-	-	-	-	
Ground nuts.....	25	-	-	-	-	14	56	-	-	
Sufflower.....	-	-	-	-	-	-	-	-	-	
Sesame.....	*	-	-	*	*	*	*	-	-	
Rapeseed.....	-	-	-	-	-	-	-	-	-	
Other Grains.....	*	-	-	*	*	*	*	-	-	
Vegetables.....	84	*	*	73	86.9	69	82.14	6	7.14	
Lettuce.....	-	-	-	-	-	-	-	-	-	
Head cabbage.....	-	-	-	-	-	-	-	-	-	
Kale.....	-	-	-	-	-	-	-	-	-	
Tomatoes.....	79	*	*	69	87.34	66	83.54	*	*	
Green peppers.....	*	-	-	*	*	*	*	*	*	
Red peppers.....	-	-	-	-	-	-	-	-	-	
Swiss chard.....	-	-	-	-	-	-	-	-	-	
Others.....	*	-	-	-	-	-	-	-	-	
Root Crops.....	161	*	*	80	49.69	80	49.69	*	*	
Beet root.....	-	-	-	-	-	-	-	-	-	
Carrot.....	-	-	-	-	-	-	-	-	-	
Onions.....	48	*	*	27	56.25	28	58.33	-	-	
Potatoes.....	*	-	-	*	*	*	*	*	*	
Garlic.....	*	-	-	*	*	*	*	*	*	
Taro.....	-	-	-	-	-	-	-	-	-	
Sweet potatoes.....	95	-	-	41	43.16	40	42.11	*	*	
Others.....	-	-	-	-	-	-	-	-	-	
Permanent Crops.....	997	*	*	381	38.21	521	52.26	19	1.91	
Fruit Crops.....	182	*	*	123	67.58	105	57.69	11	6.04	
Avocado.....	-	-	-	-	-	-	-	-	-	
Bananas.....	6	-	-	5	83.33	3	50	-	-	
Guava.....	*	-	-	*	*	*	*	-	-	
Lemons.....	2	*	*	*	*	*	*	-	-	
Mangoes.....	15	-	-	10	66.67	*	*	*	*	
Oranges.....	17	*	*	13	76.47	6	35.29	*	*	
Papayas.....	45	*	*	34	75.56	37	82.22	*	*	
Pineapples.....	-	-	-	-	-	-	-	-	-	
Others.....	87	*	*	*	*	*	*	*	*	
Stimulant Crops.....	815	*	*	258	31.66	415	50.92	*	*	
Chat.....	753	-	-	210	27.89	382	50.73	*	*	
Coffee.....	62	*	*	48	77.42	33	53.23	*	*	
Hops.....	-	-	-	-	-	-	-	-	-	
Others.....	-	-	-	-	-	-	-	-	-	
Other Permanent.....	-	-	-	-	-	-	-	-	-	
Enset.....	-	-	-	-	-	-	-	-	-	
Sugar Cane.....	-	-	-	-	-	-	-	-	-	
Others.....	-	-	-	-	-	-	-	-	-	

With regard to the type of fertilizers applied, the great majority of holder's applied natural fertilizers (8048). When we come to the utilization of commercial fertilizers a total of 914 holders have applied chemical fertilizers on their farm, out of which about 674 holders applied Urea followed by DAP i.e. 179 holders and then a mixture of DAP and UREA. In urban areas for private holdings, a total of 131 holders applied natural and chemical fertilizers.

Among the types of fertilizers used, natural fertilizers was applied in a larger cultivated area of cropland, which is about 2659 hectares (that is, 89.41% of fertilized cropland area). Next to natural fertilizers, chemical fertilizer covered considerable amount of cropland area. Furthermore, considerable quantity of chemical fertilizers was also applied by holders in the rural areas of Dire Dawa Administrative Council (See Summary Table VI.3)

3.1 Application of Natural Fertilizers in the Rural and Urban Areas

According to the census findings, about 7933 holders in rural areas and 115 holders in urban areas applied natural fertilizers on 2659 hectares of cropland (comprising 89.41% of the total fertilized land area). Of the total cropland area on which natural fertilizers are applied, the share of Meher and Belg seasons in rural areas was 81.24 and 7.33 percent, respectively. Moreover, of the total land area on which natural fertilizers are applied 72.58% was under cereals, 3.46% under pulses, and 0.53% under oilseeds, 2.48% under vegetables, 2.75% under root crops 3.23% under fruits and 14.59% under stimulants. For details, refer to Summary Tables VI.3 and VI.4.

3.2 Application of DAP in the Rural Areas

As illustrated in Summary Table VI.3, about 179 holders in rural areas have applied DAP and covered considerable crop land area. The applications of DAP varied markedly from one group of crops to another, i.e from cereals to permanent crops. However, the estimated DAP applied cropland area were not shown due to high coefficient of variation (For details, refer to Summary Tables VI.3 and VI.4).

3.3 Application of UREA in the Rural Areas

Although chemical fertilizers have been widely promoted, only 674 holders in rural areas have applied UREA, and the cropland areas applied occupy 176 hectares, which is 5.94% of the total fertilizers. Out of the total area on which UREA was applied, it is reported that 80.68 % was under cereals, but the area coverage was insignificant for the remaining crop categories. Moreover, the data in the table show that the total quantity of UREA applied was about 66 quintals from which the highest amount was applied for cereals i.e 52 quintals (See Summary Table VI.3 and VI.4)

3.4 Application of a Mixture of DAP and UREA in the Rural Areas

The census findings depicts the fact that considerable number of holders have applied a mixture of DAP and UREA on their crop fields. However, the estimated DAP and UREA applied crop land area were not shown due to high coefficient of variation. For details, refer to Summary Tables VI.3 and VI.4.

4 HOLDERS UTILIZING IMPROVED SEEDS AND QUANTITY OF IMPROVED SEEDS USED

In the 2001/02 Agricultural Sample Enumeration, data on number of holders that have used improved seeds and quantity of seeds used was collected. Hence, the number of holders that have used improved variety seeds and quantity of improved cereal, pulse and oil seeds are presented in Summary Table VI.5.

4.1 Number of Holders using Improved Seeds.

As portrayed in Summary Table VI.5 the use of improved seeds is limited to only 1054 in rural and 83 holders in urban areas of the region. Of the total holders using improved seeds,

40.61% utilized improved sorghum seed, 16.51% improved maize seed, 18.60% improved variety of haricot beans.

4.2 Quantity of Improved Seeds Used

Information on quantity of improved varieties of seeds is limited to grain crops only. As can be seen from Summary Table VI.5, the total quantity of improved seeds was estimated to be 17 quintals. The total quantity of improved seeds used has been low for private holdings in rural areas of the region. As can be seen from the data, the utilization of improved seeds is very low that indicates the holders' continued reliance on low yielding local/traditional seeds.

5 FARM MANAGEMENT PRACTICES AND EDUCATIONAL ATTAINMENT OF HOLDERS

This section of the report presents data on educational attainment of holders in relation to their farm management practices. At the time of enumeration all holders in the sampled households were asked to state their educational attainment. As presented in Summary Table VI.6 data on literacy status and highest grade completed for literate holders were collected.

The census findings indicate that the level of educational attainment of the holders in Dire Dawa Administrative Council is very low and this may have a direct impact on the level of awareness of the holders with respect to improved farming activities and is a typical characteristic of peasant community in developing countries. A large number of holders (80.61% in rural and 73.41 % in urban areas) were found to be illiterate while 9.82% in rural and 13.69% in urban areas have participated in informal education.

Moreover, the data shows that 9.03% of the holders in rural and 6.69% of holders in urban areas have completed grades 1 to 6 and only 0.01% of the holders in rural and 0.16 % in urban areas have completed grades 7-12. These estimates show that holders in urban areas are relatively more literate than those in the rural areas. This could probably be attributed to

SUMMARY TABLE VI.3: Cont.

	Quantity in Quintals									
Rural Meher.....	92	69	*	*	*	*	*	*	*	*
Percent..	100	75	*	*	*	*	*	*	*	*
DAP	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
UREA.....	66	52	*	*	*	*	*	*	*	*
Percent..	71.74	78.79	*	*	*	*	*	*	*	*
DAP+UREA.....	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
Rural Belg.....	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
DAP	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
UREA.....	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*
DAP+UREA.....	*	*	*	*	*	*	*	*	*	*
Percent..	*	*	*	*	*	*	*	*	*	*

To avoid duplication number of holders that applied fertilizers in rural and urban areas for private holdings do not add up to the totals. Hence, the sum of estimates may not be equal to the totals.

better access to school and/or better awareness of the importance of education among the holders in the urban than those in the rural areas.

Moreover, the total number of holders participating in the agricultural extension package programs was 449, which is only about 3.04 percent of the total holders in the region. The distribution of extension package program participants by educational status shows that 71.94% were illiterate, and 0.22% has completed grades 1 to 6 and grades 7 to 12 each.

As a result of insignificant number of holders who have been exposed to extension packages as well as to education the impact of education on the use of improved farm practices was not clearly exhibited by the census data. The data indicates that out of all holders who have used improved seeds, practiced irrigation, and applied fertilizers and pesticides, 74.42, 78.10, 78.32 and, 79.69 percents were illiterate, respectively (For details, refer to Summary Table VI.6).

6 DAMAGED CROPLAND AREAS AND SIZE OF HOLDINGS IN RURAL AREAS

This section of the chapter deals with the estimates of damaged cropland areas by size of holdings in Dire Dawa Administrative Council. Cropland area damage includes any cropland planted or sown with intention to harvest crops, but failed to produce crop partly or fully due to

SUMMARY TABLE VI.4: Number of Holders Applying Fertilizers, Fertilized Area, and Quantity of Fertilizers by Crop Type in Rural and Urban Areas, for Private Holdings

CROP	Application of total Fertilizers		Application of Fertilizers by Type and Quantity				
	Holders	Hectares	Natural		Chemical - DAP		
			Holders	Hectares	Holders	Hectares	Quintals
TOTAL	8317	2974	8048	2659	179	*	*
Grain Crops	7741	2305	7387	2036	154	*	*
Cereals	7741	2188	7387	1930	154	*	*
Teff	-	-	-	-	-	-	-
Barley	*	*	*	*	-	-	-
Wheat	*	*	*	*	-	-	-
Maize	3479	207	3334	193	*	*	*
Sorghum	6309	1979	5851	1735	130	*	*
Finger millet	-	-	-	-	-	-	-
Oats ('Aja')	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses	1498	99	1371	92	*	*	*
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	1477	97	1349	90	*	*	*
Chick peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-
Fenugreek	*	*	*	*	-	-	-
Gibto	-	-	-	-	-	-	-
Oil Seeds	285	17	247	14	-	-	-
Neug	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-
Ground nuts	229	14	209	12	-	-	-
Sunflower	-	-	-	-	-	-	-
Sesame	*	*	*	*	-	-	-
Rapeseed	-	-	-	-	-	-	-
Other Grains	*	*	*	*	-	-	-
Vegetables	1715	69	1630	66	*	*	*
Lettuce	-	-	-	-	-	-	-
Head cabbage	*	-	*	-	-	-	-
Kale	-	-	-	-	-	-	-
Tomatoes	1708	66	1622	62	*	*	*
Green peppers	*	*	*	*	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-
Root Crops	2300	80	2149	73	-	-	-
Beet root	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-
Onions	792	28	683	23	-	-	-
Potatoes	*	*	302	*	-	-	-
Garlic	*	*	*	*	-	-	-
Taro ('Godere')	-	-	-	-	-	-	-
Sweet potatoes	1445	40	1425	40	-	-	-
Others	-	-	-	-	-	-	-
Permanent Crops	5524	521	5266	485	*	*	*
Fruit Crops	2567	105	2364	97	*	*	*
Avocado	-	-	-	-	-	-	-
Bananas	319	3	319	3	-	-	-
Guava (Zeytuna)	358	*	358	*	-	-	-
Lemons	*	*	*	*	-	-	-
Mangoes	210	*	210	*	-	-	-
Oranges	135	6	128	6	-	-	-
Papayas	1585	37	1450	34	*	*	*
Pineapples	-	-	-	-	-	-	-
Others	1004	*	883	42	*	*	*
Stimulant Crops	4500	415	4293	388	*	*	*
Chat	3769	382	3584	359	*	*	*
Coffee	1460	33	1351	28	*	*	*
Hops	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-
Enset	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-

SUMMARY TABLE VI.4 Contd.

CROP	Application of Fertilizers by Type and Quantity								
	Chemical - UREA			Chemical - DAP & UREA			Chemical (Urban)		
	Holdings	Hectares	Quintals	Holdings	Hectares	Quintals	Holdings	Hectares	
TOTAL	674	184	76	*	*	*	21	3	
Grain Crops	592	150	58	*	*	*	21	3	
Cereals	592	144	56	*	*	*	21	3	
Teff									
Barley									
Wheat									
Maize	*	*	*	*	*	*			
Sorghum	494	135	*	*	*	*	21	3	
Finger millet									
Oats ('Aja')									
Rice									
Pulses	*	*	*	*	*	*			
Horse beans									
Field peas									
Haricot beans	*	*	*	*	*	*			
Chick peas									
Lentils									
Vetch									
Soya									
Fenugreek									
Gibto									
Oil Seeds	*	*	*	*	*	*			
Neug									
Linseed									
Ground nuts				*	*	*			
Safflower									
Sesame	*	*	*						
Rapeseed									
Other Grains				*	*	*			
Vegetables	*	*	*						
Lettuce									
Head cabbage									
Kale									
Tomatoes	*	*	*						
Green peppers									
Red peppers									
Swiss chard									
Others									
Root Crops	*	*	*						
Beet root									
Carrot									
Onions	*	*	*						
Potatoes	*	*	*						
Garlic									
Taro									
Sweet potatoes	*	*	*						
Others									
Permanent Crops	254	24	*	*	*	*	*	*	
Fruit Crops	*	*	*	*	*	*	*	*	
Avocado									
Bananas									
Guava									
Lemons									
Mangoes									
Oranges							*	*	
Papayas	*	*	*						
Pineapples									
Others	*	*	*	*	*	*	*	*	
Stimulant Crops	165	*	*	*	*	*	*	*	
Chat	140	*	*	*	*	*	*	*	
Coffee	*	*	*	*	*	*	*	*	
Hops									
Others									
Other Permanent									
Enset									
Sugar Cane									
Others									

SUMMARY TABLE VI.5: Number of Holders Utilizing Improved Seeds and Quantity of

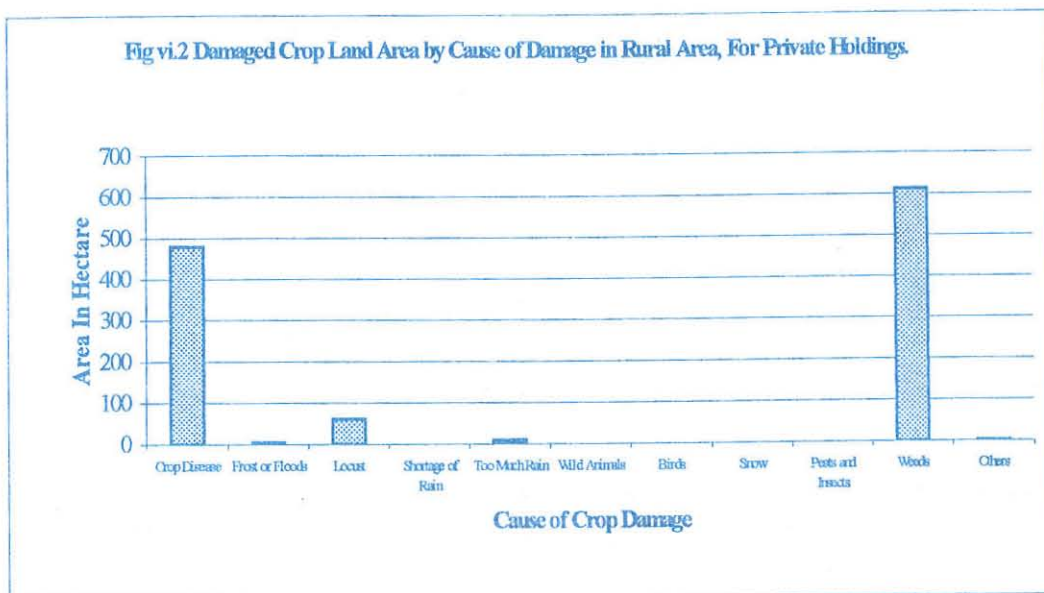
Improved Seeds Applied by Crop Type in Rural and Urban Areas, for Private Holdings

Type of Crop	Holders Applying Improved Seeds					Quantity in Quintals			
	Total	%	Rural		Urban	Rural	%	Meher	Belg
			Meher	Belg	Meher				
Total	1122	100.00	803	*	83	17	100.00	12	*
Grain Crops	718	63.99	586	*	76	17	100.00	12	*
Cereals	603	53.74	470	*	76	17	100.00	12	*
Teff									
Barley									
Wheat					*				
Maize	178	15.86	*	*	71	*	*	*	*
Sorghum	485	43.23	373	*	16	9	52.94	9	*
Finger millet									
Oats ('Aja')									
Rice									
Pulses	196	17.47	196			*	*	*	
Horse beans									
Field peas									
Haricot beans	196	17.47	196			*	*	*	
Chick peas									
Lentils									
Vetch									
Soya									
Fenugreek									
Oil Seeds					8				
Neug									
Linsced									
Ground nuts					8				
Sufflower									
Sesame									
Rapeseed									
Other Grains									
Vegetables	*	*	*	*	*				
Lettuce					*				
Head cabbage					*				
Kale					*				
Tomatoes	*	*	*	*	*				
Green peppers					*				
Red peppers					*				
Swiss chard					*				
Others	*	*	*	*	*				
Root Crops	*	*	*	*	*				
Beet root					*				
Carrot					*				
Onions	*	*	*	*	*				
Potatoes					*				
Garlic					*				
Taro ('Godere')					*				
Sweet potatoes					*				
Others					*				
Permanenet Crops	97	97	*	*	*				*
Fruit Crops					*				*
Avocado					*				*
Bananas					*				*
Guava (Zeytuna)	*	*	*	*	*				*
Lemons	*	*	*	*	*				*
Mangoes	*	*	*	*	*				*
Oranges	*	*	*	*	*				*
Papayas					*				*
Pineapples	*	*	*	*	*				*
Others					*				*
Stimulant Crops	*	*	*	*	*				*
Chat					*				*
Coffee					*				*
Other Permanent Crops					*				*

SUMMARY TABLE VI.6: Holders Applying Agricultural Inputs and Participating in Extension Programs by Level of Education in Rural and Urban Areas, for Private Holdings

Place of Residence/Season	Educational Level of Holder											
	Total		Illiterate		Literate, but no Formal Education		Grade 1 - 6		Grade 7 - 12		Above Grade 12	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
All Crop Holders												
Rural and Urban	14788	100	11868	80.25	1476	9.98	1338	9.05	1	0.01	*	*
Rural	14150	100	11407	80.61	1390	9.82	1278	9.03	1	0.01	*	*
Meher	14073	100	11363	80.74	1368	9.72	1265	8.99	1	0.01	*	*
Belg	4737	100	3720	78.53	487	10.28	151	3.19	1	0.02	*	*
Urban	628	100	461	73.41	86	13.69	42	6.69	1	0.16	*	*
Improved Seeds												
Rural and Urban	1122	7.59	835	74.42	*	*	1	0.09	1	0.09	*	*
Rural	1054	7.45	795	75.43	*	*	1	0.09	1	0.09	*	*
Meher	803	5.71	584	72.73	*	*	1	0.12	1	0.12	*	*
Belg	*	*	*	*	*	*	1	*	1	*	*	*
Urban	68	10.83	40	58.82	*	*	1	1.47	1	1.47	*	*
Irrigation												
Rural and Urban	6368	43.06	4979	78.19	664	10.43	331	5.20	1	0.02	*	*
Rural	6051	42.76	4750	78.50	624	10.31	303	5.01	1	0.02	*	*
Meher	5630	40.01	4445	78.95	546	9.70	95	1.69	1	0.02	*	*
Belg	2763	58.33	2326	84.18	208	7.53	1	0.04	1	0.04	*	*
Urban	318	50.64	228	71.70	40	12.58	29	9.12	1	0.31	*	*
Fertilizer												
Rural and Urban	8317	56.28	6514	78.32	918	11.04	796	9.57	*	*	*	*
Rural	8186	57.85	6412	78.33	907	11.08	790	9.65	*	*	*	*
Meher	7209	51.23	5577	77.36	801	11.11	755	10.47	*	*	*	*
Belg	3168	66.88	2569	81.09	360	11.36	217	6.85	*	*	*	*
Urban	132	21.02	102	77.27	*	*	7	5.30	*	*	*	*
Pesticides												
Rural and Urban	655	4.43	522	79.69	*	*	1	0.15	1	0.15	*	*
Rural	592	4.18	489	82.60	*	*	1	0.17	1	0.17	*	*
Meher	203	1.44	163	80.30	*	*	1	0.49	1	0.49	*	*
Belg	389	8.21	326	83.80	*	*	*	*	1	0.26	*	*
Urban	63	10.03	33	52.38	*	*	1	1.59	1	1.59	*	*
Extension Program												
Rural	449	3.04	323	71.94	*	*	1	0.22	1	0.22	*	*
Meher	*	*	*	*	*	*	1	*	1	*	*	*
Belg	*	*	*	*	*	*	*	*	1	*	*	*

various reasons. Out of the total cultivated cropland area 14.60% in Meher and 0.66 percent in Belg seasons were affected by crop damage. The cropland area damage that accounted for 41.77% fall under holders in rural areas who had holding size that ranges from 0.51 and 1 hectares. On the other hand, holders in rural areas who had holding size of between 1.01 and 2 hectare accounted for 27.34 % of the cropland area damage.



With regard to the causes of crop damage, it is reported that 48.23% was damaged due to weeds, 37.83% was caused by crop disease, 4.73% was due to Locust, 0.39% due to Frost or Floods (For details see Summary Table VI.9 and Fig VI.2)

7 FARM MANAGEMENT PRACTICES OF HOLDERS IN RURAL AREAS

In order to obtain more detailed information concerning the various types of farm practices of holders in rural areas, data were collected subjectively by interviewing sampled agricultural holders on the sources of water for irrigation schemes, method to improve soil fertility, method of plowing and soil conservation, participation in extension package programs, and use of credit or advisory services. Hence, the total number of holders reporting different farm management practices and their percentage distribution by type of farm management practices is presented in Summary Table VI.8. Following are discussions of the major findings with respect to these data.

7.1 Sources of Water for Irrigation Schemes

In a country like Ethiopia, where the amount, timing and distribution of rainfall is irregular, use of irrigation would significantly improve and raise the level of production. However, irrigation is not extensive in Dire Dawa Administrative Council. As presented earlier, chat, sorghum and maize are relatively sizable crops that are grown by irrigation in this region. The census data reveals that of the total holder in the rural areas only 43.31% reported to have used irrigation practices. Among these holders who practice different sources of water 61.22%, 22.28% and 7.26 percent of the holders were rivers, other sources and lake, respectively. Utilization of ponds as sources of water for irrigation is limited in the region. It should be noted that data on the number of holders who practice irrigation schemes and the number of holders reporting the sources of water for irrigation were collected in different period of time during the 2001/02 agricultural activities. In an enumeration area a total of 30 households were systematically sampled that mainly resulted about 30 holders. Thus, the data on number of holders practicing irrigation was collected in September (for ten households) and December (for twenty households). However, data on the holders reporting the sources of water for irrigation was collected only in March. Hence, some discrepancy is observed in the total numbers of holders who have reported the use of irrigation practices presented in Summary Table VI.7 and VI.9. During the 2001/02 EASE, an attempt has also been made to assess the extent of irrigation practice in urban areas. Thus, sources of water for irrigation under permanent crops in urban areas for Meher season have been assessed and the data are presented in Summary Table VI.9.

The data in the table shows that only 50.64 percent of the total holders reported as practicing irrigation during the Meher season and of these holders the sources of water for irrigation was 24.84, 21.34, 3.98 and 2.55 percent were from rivers, other sources, well and lakes, tap Water and other sources, respectively.

SUMMARY TABLE VI.7: Causes of Damage of Cropland Area by Size of Holdings and Seasons in Rural Areas, for Private Holdings

Cause of Damage	Size of Holding (Hectares)							
	Total	Under 0.1	0.1 - 0.5	0.51 - 1.0	1.01 - 2.0	2.01 - 5.00	5.01 - 10.0	Over 10
Both Seasons								
Total	1269	8	316	530	347	*	-	-
Percent.,	100	0.63	24.90	41.77	27.34	*	-	-
Crop Disease.....	480	*	86	213	147	*	-	-
Percent.,	37.83	*	17.92	44.38	30.63	*	-	-
Frost or Floods.....	5	*	*	*	*	-	-	-
Percent.,	0.39	*	*	*	*	-	-	-
Locust	60	-	8	17	*	*	-	-
Percent.,	4.73	-	13.33	28.33	*	*	-	-
Shortage of Rain.....	*	-	*	*	*	-	-	-
Percent.,	*	-	*	*	*	-	-	-
Too Much Rain.....	9	*	9	*	*	-	-	-
Percent.,	*	*	100	*	*	-	-	-
Wild Animals.....	*	-	*	*	*	-	-	-
Percent.,	*	-	*	*	*	-	-	-
Birds	-	-	-	-	-	-	-	-
Percent.,	-	-	-	-	-	-	-	-
Hailstone	*	-	*	*	*	-	-	-
Percent.,	*	-	*	*	*	-	-	-
Pests and Insects.....	-	-	-	-	-	-	-	-
Percent.,	-	-	-	-	-	-	-	-
Weeds	612	4	190	255	128	*	-	-
Percent.,	48.23	4	190	255	128	*	-	-
Others	2	-	*	*	*	*	-	-
Percent.,	0.16	-	*	*	*	*	-	-
Meher Season								
Total	1214	8	297	518	341	*	-	-
Crop Disease.....	470	*	83	209	146	*	-	-
Frost or Floods.....	4	*	*	*	*	-	-	-
Locust	59	-	8	17	*	*	-	-
Shortage of Rain.....	*	-	*	*	*	-	-	-
Too Much Rain.....	*	*	*	*	*	-	-	-
Wild Animals.....	*	-	*	*	*	-	-	-
Birds	-	-	-	-	-	-	-	-
Hailstone	*	-	*	*	*	-	-	-
Pests and Insects.....	-	-	-	-	-	-	-	-
Weeds	573	4	176	249	124	*	-	-
Others	-	-	-	-	-	-	-	-
Belg Season								
Total	55	16	30	*	-	-	-	-
Crop Disease.....	*	3	*	-	-	-	-	-
Frost or Floods.....	*	*	-	-	-	-	-	-
Locust	*	*	*	-	-	-	-	-
Shortage of Rain.....	*	*	-	-	-	-	-	-
Too Much Rain.....	*	*	-	-	-	-	-	-
Wild Animals.....	-	-	-	-	-	-	-	-
Birds	-	-	-	-	-	-	-	-
Hailstone	*	*	-	-	-	-	-	-
Pests and Insects.....	-	-	-	-	-	-	-	-
Weeds	39	9	21	*	-	-	-	-
Others	2	*	*	*	-	-	-	-

However, holders that use well are very few i.e. about 0.96%. In the same summary table, out of the total holders, it was observed that only 186 (29.62 percent) holders in urban areas practiced Belg crop production in the past three years prior to 2001/02 (1994 E.C.).

7.2 Methods Used to Improve Soil Fertility

The fertility of the soil in Ethiopia is being depleted slowly as time passes because of continuous cropping. In the census, holders were asked to state their method of improving soil fertility, that is whether they use crop rotation or burning of soil. Hence, the data showed that of the total holders about 18.68% have reported practicing crop rotation, while 14.81% reported practicing burning of soil as their main method for improving soil fertility.

7.3 Application of Chemical Fertilizers and Reasons for not Applying Fertilizers

In order to gauge the attitude of holders who did not use chemical fertilizers, sampled households were asked the reasons for not using chemical fertilizers. The data in Summary Table VI.8, indicate that the majority of the holders did not use chemical fertilizers due to various reasons. A total of about 7844 holders did not use chemical fertilizers due to shortage of money, about 457 holders due to high cost of fertilizers 1663 holders due to lack of knowledge about the advantage, about 275 holders due to insufficient supply of fertilizers in their area, and about 1738 holders mentioned "other reasons" for not using chemical fertilizers.

7.4 Method of Ploughing

One aspect to increase agricultural production is through mechanization. The replacement of hand digging and ox/horse driven ploughing method by tractor is of paramount importance for increasing the volume of agricultural production. In light of this, an attempt has been made to collect some basic information on method of ploughing by the holders at the time of the census enumeration. Thus, the majority of the holders (62.63%) reported to have used

both hand digging and ox/horse driven methods 26.93% reported to have used hand-digging method.

7.5 Methods Used for Soil Conservation

According to the data in Summary Table VI.8, the majority of the holders reported using different methods of soil conservation. Of which, 57.21, 34.91 and 4.36 percent of holders have practiced terracing, water catchments, and plowing along the contour, respectively. Moreover, very few numbers of holders reported that they have other methods for soil conservation.

7.6 Extension Packages, and Use of Agricultural Credit and Advisory Services

Extension packages are outreach programs operating in rural areas for private holdings aiming to transfer modern agricultural technologies to increase crop and livestock productivity. The programs are usually undertaken through close follow-up and advisory services by the agricultural development agents. A holder is said to be a participant of this program if and only if he/she obtains agricultural advices, apply the recommended inputs and other related services such as close follow up by the extension agent, supervision by wereda and zonal agricultural bureaus...etc on a regular basis. The prevalence of different types of extension packages were assessed during the enumeration, these include, rain shortage areas packages, rain abundant areas packages, post harvest technology packages, ...etc. Thus, the data showed that about 1.83% of the agricultural holders were covered by rain shortage areas extension packages. The total agricultural holders covered by all other types of extension packages listed in the table are insignificant. In response to why they have not been covered by these extension packages since the program started, holders reported the reasons as follows 33.88% of the holders reported shortage of money, 19.75% reported no knowledge about the advantage, 28.26% reported program not available, 2.45% each were suspicious of its efficiency and 3.86% due to other reasons, and 7.37% reported not sufficient arable land available.

In the country, there are institutions that provide credit and assist peasants by furnishing short and intermediate term loans for the purchase of chemical fertilizers, improved variety seeds, and pesticides. These institutions not only give great emphasis to provide loans to peasants but also aiding them with advice on farming practices. Then, data are collected by interviewing sampled holders on use of credit and advisory services and are presented in Summary Table VI.8. Thus, the data in this table showed that about 13.20 and 7.86 percent of the holders have obtained advice on agricultural practices and credit services in that order.

7.7 SOURCES AND COST OF CHEMICAL FERTILIZERS.

As illustrated in Summary Table VI.10, it is estimated that a total of 452 holders (3.20%) reported "Government" as their major sources of chemical fertilizers, while about 437 (3.10%) and 117 (0.83%) holders mentioned traders and private organization as their major sources of chemical fertilizers, respectively. Regardless of the source, the average cost was 253.63 Birr/Quintal for DAP and 219.43 Birr/Quintal for UREA.

8 USES OF CROP SPECIFIC EXTENSION PACKAGE PROGRAMS

Extension package is one of the means by which productivity improves and thereby food production increases. Moreover, Agricultural Development Agents (ADA) assist the peasants by operating demonstration plots to provide information to agricultural holders on improved seed varieties, on use of fertilizers and pesticides, and improvements in production practices to increase yields. Further, advisory services are provided to holders to those who are willing to participate in the extension package programs.

8.1 Holders Participating in Crop Specific Extension Package Programs

In rural areas the distributions of holders participating in crop specific extension package programs are presented in Summary Tables VI.11. Accordingly, about 449 holders have been participating in crop specific package.

SUMMARY TABLE VI.8: Number of Holders by Type of Farm Management Practices in Rural Areas, for Private Holdings

Farm Practices	Number of Holders Reporting	Percentage
Total Crop Holders	14116	100
Source of Water for Irrigation		
Holders who Practice Irrigation	6114	43.31
River.....	3743	61.22
Lake.....	444	7.26
Pond.....	*	*
Other.....	1362	22.28
Method to Improve Soil Fertility		
Crop Rotation	2637	18.68
Burning of Soil	2090	14.81
Reason for Not Using Chemical Fertilizer		
Do Not Know Advantages.....	1663	
Too Expensive.....	457	
Shortage of Money.....	7844	
Insufficient Supply.....	275	
No Credit Service	*	
Suspicious of Efficacy.....	*	
Other.....	1738	
Method of Plowing		
Hand Dug.....	3801	26.93
Ox/Horse Driven.....	1338	9.48
Tractor	*	*
Hand Dug and Ox/Horse Driven.....	8841	62.63
Tractor and Ox/Horse Driven	*	*
Method of Soil Conservation		
Terracing	8076	57.21
Water Catchments.....	4928	34.91
Afforestation.....	*	*
Plowing Along the Contour.....	616	4.36
Others.....	*	*
All Holders.....	15367	100
Participation in Extension Package by Type		
Rain Shortage Areas Package.....	281	1.83
Rain Abundant Areas Package.....	-	-
Post Harvest Technology Package.....	-	-
Livestock Development Package.....	*	*
Economically Important Crops Package.....	*	*
Any Two or More Packages.....	*	*
Reason For Not Participating in Extension Packages		
Do Not Know the Advantages	3035	19.75
Shortage of Money.....	5207	33.88
Suspicious of Efficacy.....	376	2.45
Programs Not Available	4343	28.26
Not Sufficient Arable Land	1132	7.37
Others.....	603	3.92
Use of Credit or Advisory Services		
Credit Services	1208	7.86
Advisory Services.....	2028	13.2

Summary Table VI.9 Holders who Practice Irrigation by Sources of Water in Meher Season and Holders who Practice Belg From 1999/2000 to 2001/02 in Urban Areas

Sources of Water	Number of Holders	Percent
Those who Practice Irrigation in Meher Season (2001/02)		
Crop Holders.....	628	100.00
Holders who Practice Irrigation Sources	318	50.64
River.....	134	21.34
Lake.....	6	0.96
Well.....	25	3.98
Tap Water.....	16	2.55
Others.....	156	24.84
Not Stated.....	*	*
Those who practice Belg from 1999/2000 to 2001/02		
Crop Holders.....	628	100
Holders who practice Belg	186	29.62
Male.....	162	25.80
Female.....	24	3.82

Summary Table VI.10: Holders by Sources of Chemical Fertilizers and Cost of Chemical Fertilizers in Rural Areas for Private Holdings.

Sources and Type of Fertilizers	Number of Holders	Percent
Crop Holders.....	14116	100
Sources		
Government.....	452	3.20
Private Organization	117	0.83
Traders.....	437	3.10
Others.....	-	-
Do not Buy.....	12909	91.45
Not Reported.....	-	-
Type of Fertilizers	Cost in Birr/Quintal	
DAP.....	253.63	
UREA.....	219.43	

8.2 Area Under Crop Specific Extension Package Programs

In the 2001/02 EASE, data on cropland area under extension package programs was collected. Thus, Summary Table VI.11 shows that very few hectares were under extension package programs.

Summary Table VI.11: Number of Holders Participating Crop Specific Extension Package Program and Area under Crop Specific Extension Package Program By Season in Rural Areas, for Private Holdings.

Ext. Package by Crop	Area in Hectares							
	Rural				Meher		Belg	
	Holder	%	Area	%	Holder	Area	Holder	Area
Total	449	100	*	*	*	*	*	*
Teff	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	*	*	*	*	*	*	-	-
Maize	*	*	*	*	*	*	*	*
Sorghum	*	*	*	*	*	*	-	-
Rice	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	*	*	*	*	*	*	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Sesame	*	*	*	*	*	*	-	-
Rapeseed	-	-	-	-	-	-	-	-
Other Grains	-	-	-	-	-	-	-	-
Tomatoes	*	*	*	*	-	-	*	*
Red Papper	-	-	-	-	-	-	-	-
Onion	*	*	*	*	-	-	*	*
Potatoes	-	-	-	-	-	-	-	-
Sweet potatoes	*	*	*	*	*	*	-	-
Enset	-	-	-	-	-	-	*	*
Other Permanent	-	-	-	-	-	-	-	-

**STATISTICAL TABLES PRESENTING
RESULTS AT
ADMINISTRATIVE COUNCIL LEVEL**

Tables 6.1 – 6.4

TABLE 6.1: AREA OF CROPLAND UNDER IMPROVED FARM MANAGEMENT PRACTICES BY TYPE OF CROPS IN RURAL AREAS, BOTH SEASONS, FOR PRIVATE HOLDINGS

TYPE OF CROP	Total Crop		Improved Seed		Irrigation		Fertilizer		Pesticide	
	Hectares	Hectares	%	Hectares	%	Hectares	%	Hectares	%	
TOTAL	8122	131	1.61	1393	17.15	2947	36.28	57	0.7	
Grain Crops.....	6922	116	1.68	891	12.87	2289	33.07	41	0.59	
Cereals.....	6683	108	1.62	884	13.23	2173	32.52	39	0.58	
Teff.....	*	*	*	*	*	*	*	*	*	
Barley.....	*	*	*	*	*	*	*	*	*	
Wheat.....	*	*	*	*	*	*	*	*	*	
Maize.....	455	*	*	185	40.66	205	45.05	10	2.2	
Sorghum.....	6220	84	1.35	697	11.21	1966	31.61	30	0.48	
Finger millet.....	*	*	*	*	*	*	*	*	*	
Oats ('Aja').....	*	*	*	*	*	*	*	*	*	
Rice.....	*	*	*	*	*	*	*	*	*	
Pulses.....	204	*	*	*	*	99	48.53	*	*	
Horse beans.....	*	*	*	*	*	*	*	*	*	
Field peas.....	*	*	*	*	*	*	*	*	*	
Haricot beans.....	201	*	*	*	*	97	48.26	*	*	
Chick peas.....	*	*	*	*	*	*	*	*	*	
Lentils.....	*	*	*	*	*	*	*	*	*	
Vetch.....	*	*	*	*	*	*	*	*	*	
Soya.....	*	*	*	*	*	*	*	*	*	
Fenugreek.....	*	*	*	*	*	*	*	*	*	
Gibto.....	*	*	*	*	*	*	*	*	*	
Oil Seeds.....	34	*	*	*	*	17	50	*	*	
Neug.....	*	*	*	*	*	*	*	*	*	
Linseed.....	*	*	*	*	*	*	*	*	*	
Ground nuts.....	25	*	*	*	*	14	56	*	*	
Sufflower.....	*	*	*	*	*	*	*	*	*	
Sesame.....	*	*	*	*	*	*	*	*	*	
Rapeseed.....	*	*	*	*	*	*	*	*	*	
Other Grains.....	*	*	*	*	*	*	*	*	*	
Vegetables.....	83	*	*	72	86.75	69	83.13	6	7.23	
Lettuce.....	*	*	*	*	*	*	*	*	*	
Head cabbage.....	*	*	*	*	*	*	*	*	*	
Kale.....	*	*	*	*	*	*	*	*	*	
Tomatoes.....	78	*	*	68	87.18	65	83.33	*	*	
Green peppers.....	*	*	*	*	*	*	*	*	*	
Red peppers.....	*	*	*	*	*	*	*	*	*	
Swiss chard.....	*	*	*	*	*	*	*	*	*	
Others.....	*	*	*	*	*	*	*	*	*	
Root Crops.....	160	*	*	79	49.38	79	49.38	*	*	
Beet root.....	*	*	*	*	*	*	*	*	*	
Carrot.....	*	*	*	*	*	*	*	*	*	
Onions.....	47	*	*	27	57.45	28	59.57	*	*	
Potatoes.....	*	*	*	*	*	*	*	*	*	
Garlic.....	*	*	*	*	*	*	*	*	*	
Taro ('Godere').....	*	*	*	*	*	*	*	*	*	
Sweet potatoes.....	95	*	*	41	43.16	40	42.11	*	*	
Others.....	*	*	*	*	*	*	*	*	*	
Permanent Crops.....	957	3	0.31	350	36.57	509	53.19	*	*	
Fruit Crops.....	144	*	*	92	63.89	94	65.28	*	*	
Avocado.....	*	*	*	*	*	*	*	*	*	
Bananas.....	6	*	*	5	83.33	3	50	*	*	
Guava (Zeytuna).....	*	*	*	*	*	*	*	*	*	
Lemons.....	*	*	*	*	*	*	*	*	*	
Mangoes.....	9	*	*	5	55.56	*	*	*	*	
Oranges.....	*	*	*	*	*	*	*	*	*	
Papayas.....	43	*	*	32	74.42	37	86.05	*	*	
Pineapples.....	*	*	*	*	*	*	*	*	*	
Others.....	72	*	*	*	*	*	*	*	*	
Stimulant Crops.....	813	*	*	258	31.73	415	51.05	*	*	
Chat.....	752	*	*	210	27.93	382	50.8	*	*	
Coffee.....	61	*	*	48	78.69	33	54.1	*	*	
Hops.....	*	*	*	*	*	*	*	*	*	
Others.....	*	*	*	*	*	*	*	*	*	
Other Permanent Crops.....	*	*	*	*	*	*	*	*	*	
Enset.....	*	*	*	*	*	*	*	*	*	
Sugar Cane.....	*	*	*	*	*	*	*	*	*	
Others.....	*	*	*	*	*	*	*	*	*	

TABLE 6.1.1: RURAL MEHER

TYPE OF CROP	Total Crop		Improved Seed		Irrigation		Fertilizer		Pesticide	
	Hectares	Hectares	%	Hectares	%	Hectares	%	Hectares	%	
TOTAL.....	7737	106	1.37	1188	15.35	2719	35.14	*	*	
Grain Crops.....	6665	101	1.52	783	11.75	2153	32.3	*	*	
Cereals.....	6426	93	1.45	775	12.06	2037	31.7	*	*	
Teff.....	*	-	-	*	*	*	*	-	-	
Barley.....	*	-	-	*	*	*	*	-	-	
Wheat.....	*	-	-	*	*	*	*	-	-	
Maize.....	257	*	*	108	42.02	82	31.91	-	-	
Sorghum.....	6160	79	1.28	666	10.81	1952	31.69	*	*	
Finger millet.....	*	-	-	-	-	-	-	-	-	
Oats ('Aja').....	*	-	-	-	-	-	-	-	-	
Rice.....	-	-	-	-	-	-	-	-	-	
Pulses.....	204	*	*	*	*	99	48.53	*	*	
Horse beans.....	-	-	-	-	-	-	-	-	-	
Field peas.....	-	-	-	-	-	-	-	-	-	
Haricot beans.....	201	*	*	*	*	97	48.26	*	*	
Chick peas.....	-	-	-	-	-	-	-	-	-	
Lentils.....	-	-	-	-	-	-	-	-	-	
Vetch.....	-	-	-	-	-	-	-	-	-	
Soya.....	-	-	-	-	-	-	-	-	-	
Fenugreek.....	*	-	-	-	-	*	*	-	-	
Gibto.....	-	-	-	-	-	-	-	-	-	
Oil Seeds.....	34	-	-	*	*	17	50	-	-	
Neug.....	-	-	-	-	-	-	-	-	-	
Linseed.....	-	-	-	-	-	-	-	-	-	
Ground nuts.....	25	-	-	-	-	14	56	-	-	
Sufflower.....	-	-	-	-	-	-	-	-	-	
Sesame.....	*	-	-	*	*	*	*	-	-	
Rapeseed.....	-	-	-	-	-	-	-	-	-	
Other Grains.....	*	-	-	*	*	*	*	-	-	
Vegetables.....	30	*	*	27	90	19	63.33	*	*	
Lettuce.....	-	-	-	-	-	-	-	-	-	
Head cabbage.....	-	-	-	-	-	-	-	-	-	
Kale.....	-	-	-	-	-	-	-	-	-	
Tomatoes.....	29	*	*	27	93.1	19	65.52	*	*	
Green peppers.....	*	-	-	*	*	*	*	-	-	
Red peppers.....	-	-	-	-	-	-	-	-	-	
Swiss chard.....	-	-	-	-	-	-	-	-	-	
Others.....	*	-	-	-	-	-	-	-	-	
Root Crops.....	85	-	-	28	32.94	38	44.71	-	-	
Beet root.....	-	-	-	-	-	-	-	-	-	
Carrot.....	-	-	-	-	-	-	-	-	-	
Onions.....	*	-	-	2	*	*	*	-	-	
Potatoes.....	*	-	-	*	*	*	*	-	-	
Garlic.....	*	-	-	*	*	*	*	-	-	
Taro ('Godere').....	-	-	-	-	-	-	-	-	-	
Sweet potatoes.....	64	-	-	24	37.5	25	39.06	-	-	
Others.....	-	-	-	-	-	-	-	-	-	
Permanent Crops.....	957	3	0.31	350	36.57	509	53.19	*	*	
Fruit Crops.....	144	*	*	92	63.89	94	65.28	*	*	
Avocado.....	-	-	-	-	-	-	-	-	-	
Bananas.....	6	-	-	5	83.33	3	50	-	-	
Guava (Zeytuna).....	*	-	-	*	*	*	*	-	-	
Lemons.....	*	-	-	*	*	*	*	-	-	
Mangoes.....	9	-	-	5	55.56	*	*	-	-	
Oranges.....	*	-	-	*	*	*	*	-	-	
Papayas.....	43	*	*	32	74.42	37	86.05	*	*	
Pineapples.....	-	-	-	-	-	-	-	-	-	
Others.....	72	*	*	*	*	*	*	-	-	
Stimulant Crops.....	813	*	*	258	31.73	415	51.05	*	*	
Chat.....	752	-	-	210	27.93	382	50.8	*	*	
Coffee.....	61	*	*	48	78.69	33	54.1	*	*	
Hops.....	-	-	-	-	-	-	-	-	-	
Others.....	-	-	-	-	-	-	-	-	-	
Other Permanent Crops.....	-	-	-	-	-	-	-	-	-	
Enset.....	-	-	-	-	-	-	-	-	-	
Sugar Cane.....	-	-	-	-	-	-	-	-	-	
Others.....	-	-	-	-	-	-	-	-	-	

TABLE 6.1.2: RURAL BELG

TYPE OF CROP	Total Crop		Improved Seed		Irrigation		Fertilizer		Pesticide	
	Hectares	Hectares	%	Hectares	%	Hectares	%	Hectares	%	
TOTAL	385	*	*	205	53.25	227	58.96	20	5.19	
Grain Crops.....	257	*	*	109	42.41	136	52.92	13	5.06	
Cereals	257	*	*	108	42.02	136	52.92	13	5.06	
Teff	-	-	-	-	-	-	-	-	-	
Barley.....	-	-	-	-	-	-	-	-	-	
Wheat.....	-	-	-	-	-	-	-	-	-	
Maize.....	197	*	*	77	39.09	122	61.93	10	5.08	
Sorghum.....	60	*	*	*	*	14	23.33	*	*	
Finger millet.....	-	-	-	-	-	-	-	-	-	
Oats ('Aja')	-	-	-	-	-	-	-	-	-	
Rice.....	-	-	-	-	-	-	-	-	-	
Pulses	*	-	-	*	*	-	-	-	-	
Horse beans	-	-	-	-	-	-	-	-	-	
Field peas	-	-	-	-	-	-	-	-	-	
Haricot beans.....	*	-	-	*	*	-	-	-	-	
Chick peas.....	-	-	-	-	-	-	-	-	-	
Lentils	-	-	-	-	-	-	-	-	-	
Vetch.....	-	-	-	-	-	-	-	-	-	
Soya	-	-	-	-	-	-	-	-	-	
Fenugreek.....	-	-	-	-	-	-	-	-	-	
Gibto	-	-	-	-	-	-	-	-	-	
Oil Seeds	-	-	-	-	-	-	-	-	-	
Neug.....	-	-	-	-	-	-	-	-	-	
Linseed.....	-	-	-	-	-	-	-	-	-	
Ground nuts	-	-	-	-	-	-	-	-	-	
Sufflower.....	-	-	-	-	-	-	-	-	-	
Sesame	-	-	-	-	-	-	-	-	-	
Rapeseed	-	-	-	-	-	-	-	-	-	
Other Grains	-	-	-	-	-	-	-	-	-	
Vegetables	54	*	*	45	83.33	50	92.59	*	*	
Lettuce	-	-	-	-	-	-	-	-	-	
Head cabbage.....	-	-	-	-	-	-	-	-	-	
Kale.....	-	-	-	-	-	-	-	-	-	
Tomatoes.....	49	*	*	41	83.67	46	93.88	*	*	
Green peppers.....	*	-	-	*	*	*	*	*	*	
Red peppers	-	-	-	-	-	-	-	-	-	
Swiss chard.....	-	-	-	-	-	-	-	-	-	
Others.....	-	-	-	-	-	-	-	-	-	
Root Crops	75	*	*	51	68	41	54.67	*	*	
Beet root.....	-	-	-	-	-	-	-	-	-	
Carrot	-	-	-	-	-	-	-	-	-	
Onions.....	34	*	*	24	70.59	19	55.88	-	-	
Potatoes.....	*	-	-	*	*	*	*	*	*	
Garlic	-	-	-	-	-	-	-	-	-	
Taro ('Godere')..	-	-	-	-	-	-	-	-	-	
Sweet potatoes...	30	-	-	16	53.33	15	50	*	*	
Others.....	-	-	-	-	-	-	-	-	-	

TABLE 6.2: AREA OF CROPLAND UNDER IMPROVED FARM MANAGEMENT PRACTICES BY TYPE OF CROPS IN URBAN AREAS, MEHER SEASON

TYPE OF CROP	Total Crop		Improved Seed		Irrigation		Fertilizer		Pesticide	
	Hectares	Hectares	%	Hectares	%	Hectares	%	Hectares	%	
TOTAL	190	22	11.58	95	50	28	14.74	18	9.47	
Grain Crops	149	*	*	62	41.61	15	10.07	8	5.37	
Cereals	149	*	*	62	41.61	15	10.07	8	5.37	
Teff										
Barley	*									
Wheat										
Maize	11	*	*	9	81.82	*	*	*	*	
Sorghum	138	*	*	52	37.68	13	9.42	7	5.07	
Finger millet										
Oats ('Aja')										
Rice										
Pulses										
Horse beans										
Field peas										
Haricot beans										
Chick peas										
Lentils										
Vetch										
Soya										
Fenugreek										
Gibto										
Oil Seeds										
Neug										
Linseed										
Ground nuts										
Sufflower										
Sesame										
Rapeseed										
Other Grains										
Vegetables	*	*	*	*	*	1	*			
Lettuce										
Head cabbage										
Kale										
Tomatoes	*	*	*	*	*	1	*			
Green peppers										
Red peppers										
Swiss chard										
Others										
Root Crops	*			*	*	*	*			
Beet root										
Carrot										
Onions	*			*	*	*	*			
Potatoes										
Garlic										
Taro ('Godere')										
Sweet potatoes										
Others										
Permanent Crops	40	*	*	31	77.5	11	27.5	*	*	
Fruit Crops	38	*	*	31	81.58	11	28.95	*	*	
Avocado										
Bananas										
Guava (Zeytuna)										
Lemons	*			*	*					
Mangoes	6			5	83.33	1	16.67	*	*	
Oranges	14	*	*	11	78.57	4	28.57	*	*	
Papayas	*			*	*			*	*	
Pineapples										
Others	16	*	*	12	75	*	*	*	*	
Stimulant Crops	*			*	*			*	*	
Chat	*			*	*			*	*	
Coffee	*			*	*			*	*	
Hops										
Others										
Other Permanent Crops										
Enset										
Sugar Cane										
Others										

TABLE 6.3: NUMBER OF HOLDERS APPLYING FERTILIZERS, FERTILIZED AREA, AND QUANTITY OF FERTILIZERS BY CROP TYPE IN RURAL AREAS FOR BOTH SEASON

CROP	Application of total Fertilizers		Application of Fertilizers by Type and Quantity				
	Holders	Hectares	Natural		Chemical – DAP		
			Holders	Hectares	Holders	Hectares	Quintals
TOTAL	8186	2947	7933	2634	179		*
Grain Crops	7641	2289	7307	2023	154		*
Cereals	7641	2173	7307	1917	154		*
Teff	*	*	*	*			*
Barley	*	*	*	*			*
Wheat	*	*	*	*			*
Maize	3459	205	3314	191	*		*
Sorghum	6219	1966	5782	1724	130		*
Finger millet							*
Oats ('Aja')							*
Rice							*
Pulses	1498	99	1371	92	*		*
Horse beans							*
Field peas							*
Haricot beans	1477	97	1349	90	*		*
Chick peas							*
Lentils							*
Vetch							*
Soya							*
Fenugreek	*	*	*	*			*
Gibto							*
Oil Seeds	285	17	247	14			*
Neug							*
Linseed							*
Ground nuts	229	14	209	12			*
Sunflower							*
Sesame	*	*	*	*			*
Rapeseed							*
Other Grains	*	*	*	*			*
Vegetables	1707	69	1621	65	*		*
Lettuce							*
Head cabbage							*
Kale							*
Tomatoes	1701	65	1616	62	*		*
Green peppers	*	*	*	*			*
Red peppers							*
Swiss chard							*
Others							*
Root Crops	2297	79	2146	72	*		*
Beet root							*
Carrot							*
Onions	789	28	680	22	*		*
Potatoes	*	*	302	*			*
Garlic	*	*	*	*			*
Taro ('Godere')							*
Sweet potatoes	1445	40	1425	40	*		*
Others							*
Permanent Crops	5443	509	5191	473	*		*
Fruit Crops	2486	94	2290	86	*		*
Avocado							*
Bananas	318	3	318	3	*		*
Guava (Zeytuna)	358	*	358	*	*		*
Lemons	*	*	*	*	*		*
Mangoes	196	*	196	*	*		*
Oranges	*	*	*	*	*		*
Papayas	1582	37	1446	34	*		*
Pineapples							*
Others	935	*	814	*	*		*
Stimulant Crops	4500	415	4293	388	*		*
Chat	3769	382	3584	359	*		*
Coffee	1460	33	1351	28	*		*
Hops							*
Others							*
Other Permanent Crops							*
Enset							*
Sugar Cane							*
Others							*

TABLE 6.3 CONTD.

CROP	Application of Fertilizers by Type and Quantity					
	Chemical - UREA			Chemical - DAP & UREA		
	Holders	Hectares	Quintals	Holders	Hectares	Quintals
TOTAL	674	184	76	*	*	*
Grain Crops	592	150	58	*	*	*
Cereals	592	144	56	*	*	*
Teff						
Barley						
Wheat						
Maize	*	*	*	*	*	*
Sorghum	494	135	*	*	*	*
Finger millet						
Oats ('Aja')						
Rice						
Pulses	*	*	*	*	*	*
Horse beans						
Field peas						
Haricot beans	*	*	*	*	*	*
Chick peas						
Lentils						
Vetch						
Soya						
Fenugreek						
Gibto						
Oil Seeds	*	*	*	*	*	*
Neug						
Linseed						
Ground nuts				*	*	*
Sufflower						
Sesame	*	*	*			
Rapeseed						
Other Grains				*	*	*
Vegetables	*	*	*			
Lettuce						
Head cabbage						
Kale						
Tomatoes	*	*	*			
Green peppers						
Red peppers						
Swiss chard						
Others						
Root Crops	*	*	*			
Beet root						
Carrot						
Onions	*	*	*			
Potatoes	*	*	*			
Garlic						
Taro ('Godere')						
Sweet potatoes	*	*	*			
Others						
Permanent Crops	254	24	*	*	*	*
Fruit Crops	*	*	*	*	*	*
Avocado						
Bananas						
Guava (Zeytuna)						
Lemons						
Mangoes						
Oranges						
Papayas	*	*	*			
Pineapples	*	*	*			
Others	*	*	*	*	*	*
Stimulant Crops	165	*	*	*	*	*
Chat	140	*	*	*	*	*
Coffee		*	*	*	*	*
Hops						
Others						
Other Permanent Crops						
Enset						
Sugar Cane						
Others						

TABLE 6.3.1 RURAL MEHER

CROP	Application of total Fertilizers		Application of Fertilizers by Type and Quantity				
	Holders	Hectares	Natural		Chemical - DAP		
			Holders	Hectares	Holders	Hectares	Quintals
TOTAL	7209	2719	6909	2416	130	*	*
Grain Crops	6853	2153	6476	1890	130	*	*
Cereals	6853	2037	6476	1784	130	*	*
Teff	-	-	-	-	-	-	-
Barley.....	*	*	*	*	-	-	-
Wheat.....	*	*	*	*	-	-	-
Maize.....	2459	82	2289	71	-	-	-
Sorghum	6093	1952	5656	1710	130	*	*
Finger millet.....	-	-	-	-	-	-	-
Oats ('Aja').....	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-
Pulses.....	1498	99	1371	92	*	*	*
Horse beans.....	-	-	-	-	-	-	-
Field peas.....	-	-	-	-	-	-	-
Haricot beans	1477	97	1349	90	*	*	*
Chick peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch.....	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-
Fenugreek	*	*	*	*	-	-	-
Gibto	-	-	-	-	-	-	-
Oil Seeds.....	285	17	247	14	-	-	-
Neug.....	-	-	-	-	-	-	-
Linseed.....	-	-	-	-	-	-	-
Ground nuts	229	14	209	12	-	-	-
Sufflower.....	-	-	-	-	-	-	-
Sesame	*	*	*	*	-	-	-
Rapeseed.....	-	-	-	-	-	-	-
Other Grains	*	*	*	*	-	-	-
Vegetables	777	19	730	18	-	-	-
Lettuce.....	-	-	-	-	-	-	-
Head cabbage.....	-	-	-	-	-	-	-
Kale.....	-	-	-	-	-	-	-
Tomatoes	771	19	725	18	-	-	-
Green peppers	*	*	*	*	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard.....	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-
Root Crops	1329	38	1221	35	-	-	-
Beet root.....	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-
Onions	336	*	247	*	-	-	-
Potatoes	*	*	*	*	-	-	-
Garlic.....	*	*	*	*	-	-	-
Taro ('Godere').....	-	-	-	-	-	-	-
Sweet potatoes	971	25	951	25	-	-	-
Others	-	-	-	-	-	-	-
Permanent Crops	5443	509	5191	473	*	*	*
Fruit Crops	2486	94	2290	86	*	*	*
Avocado	-	-	-	-	-	-	-
Bananas	318	3	318	3	-	-	-
Guava (Zeytuna).....	358	*	358	*	-	-	-
Lemons.....	*	*	*	*	-	-	-
Mangoes	196	*	196	*	-	-	-
Oranges	*	*	*	*	-	-	-
Papayas.....	1582	37	1446	34	*	*	*
Pineapples.....	-	-	-	-	-	-	-
Others	935	*	814	*	*	*	*
Stimulant Crops.....	4500	415	4293	388	*	*	*
Chat.....	3769	382	3584	359	*	*	*
Coffee.....	1460	33	1351	28	*	*	*
Hops	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-
Other Permanent Crops	-	-	-	-	-	-	-
Enset.....	-	-	-	-	-	-	-
Sugar Cane.....	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-

TABLE 6.3.1 CONTD.

CROP	Application of Fertilizers by Type and Quantity					
	Chemical - UREA			Chemical - DAP & UREA		
	Holdings	Hectares	Quintals	Holdings	Hectares	Quintals
TOTAL	543	176	66	*	*	*
Grain Crops.....	543	148	54	*	*	*
Cereals	543	142	52	*	*	*
Teff						
Barley.....						
Wheat.....						
Maize.....						
Sorghum.....	494	135	*	*	*	*
Finger millet.....						
Oats ('Aja').....						
Rice.....						
Pulses						
Horse beans						
Field peas.....						
Haricot beans.....						
Chick peas.....						
Lentils.....						
Vetch.....						
Soya.....						
Fenugreek.....						
Gibto.....						
Oil Seeds.....						
Neug.....						
Linseed.....						
Ground nuts.....						
Safflower.....						
Sesame.....						
Rapeseed.....						
Other Grains.....						
Vegetables						
Lettuce.....						
Head cabbage.....						
Kale.....						
Tomatoes.....						
Green peppers.....						
Red peppers.....						
Swiss chard.....						
Others.....						
Root Crops.....						
Beet root.....						
Carrot.....						
Onions.....						
Potatoes.....						
Garlic.....						
Taro ('Godere').....						
Sweet potatoes.....						
Others.....						
Permanent Crops.....	254	24	*	*	*	*
Fruit Crops.....						
Avocado.....						
Bananas.....						
Guava (Zeytuna).....						
Lemons.....						
Mangoes.....						
Oranges.....						
Papayas.....						
Pineapples.....						
Others.....						
Stimulant Crops.....	165		*	*	*	*
Chat.....	140		*	*	*	*
Coffee.....			*	*	*	*
Hops.....						
Others.....						
Other Permanent Crops.....						
Enset.....						
Sugar Cane.....						
Others.....						

TABLE 6.3.2 RURAL BELG

CROP	Application of Total Fertilizer		Application of Fertilizer by Type and Quantity				
	Holders	Hectares	Natural		Chemical – DAP		
			Holders	Hectares	Holders	Hectares	Quintals
TOTAL	2992	218	2992	218	-	-	-
Grain Crops.....	2208	133	2208	133	-	-	-
Cereals	2208	133	2208	133	-	-	-
Teff	-	-	-	-	-	-	-
Barley.....	-	-	-	-	-	-	-
Wheat.....	-	-	-	-	-	-	-
Maize.....	2090	119	2090	119	-	-	-
Sorghum.....	242	14	242	14	-	-	-
Finger millet	-	-	-	-	-	-	-
Oats ('Aja').....	-	-	-	-	-	-	-
Rice.....	-	-	-	-	-	-	-
Pulses	-	-	-	-	-	-	-
Horse beans	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-
Vetch.....	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-
Fenugreek.....	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-
Oil Seeds	-	-	-	-	-	-	-
Neug.....	-	-	-	-	-	-	-
Linseed.....	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-
Safflower.....	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-
Other Grains	-	-	-	-	-	-	-
Vegetables	1275	47	1275	47	-	-	-
Lettuce.....	-	-	-	-	-	-	-
Head cabbage.....	-	-	-	-	-	-	-
Kale.....	-	-	-	-	-	-	-
Tomatoes.....	1226	44	1226	44	-	-	-
Green peppers.....	*	*	*	*	-	-	-
Red peppers	-	-	-	-	-	-	-
Swiss chard.....	-	-	-	-	-	-	-
Others.....	-	-	-	-	-	-	-
Root Crops.....	1116	38	1116	38	-	-	-
Beet root.....	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-
Onions	495	16	495	16	-	-	-
Potatoes.....	*	*	*	*	-	-	-
Garlic	-	-	-	-	-	-	-
Taro ('Godere').....	-	-	-	-	-	-	-
Sweet potatoes.....	582	15	582	15	-	-	-
Others.....	-	-	-	-	-	-	-

TABLE 6.4: NUMBER OF HOLDERS APPLYING FERTILIZERS, FERTILIZED AREA, AND QUANTITY OF FERTILIZERS BY CROP TYPE IN URBAN AREAS FOR MEHER SEASON

CROP	Application of total Fertilizers		Application of Fertilizers by Type and Quantity					
			Natural		Natural & Chemical DAP		Chemical	
	Holders	Hectares	Holders	Hectares	Holders	Hectares	Holders	Hectares
TOTAL	131	28	115	25	*	*	11	*
Grain Crops	101	15	80	13	*	*	11	*
Cereals	101	15	80	13	*	*	11	*
Teff	-	-	-	-	-	-	-	-
Barley	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-
Maize	20	*	20	*	-	-	-	-
Sorghum	90	13	69	11	*	*	11	*
Finger millet	-	-	-	-	-	-	-	-
Oats ('Aja')	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-
Pulses	-	-	-	-	-	-	-	-
Horse beans	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-
Lentils	-	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-
Oil Seeds	-	-	-	-	-	-	-	-
Neug	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-
Sufflower	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-
Rapeseed	-	-	-	-	-	-	-	-
Other Grains	-	-	-	-	-	-	-	-
Vegetables	8	1	8	1	-	-	-	-
Lettuce	-	-	-	-	-	-	-	-
Head cabbage	*	-	*	-	-	-	-	-
Kale	-	-	-	-	-	-	-	-
Tomatoes	7	1	7	1	-	-	-	-
Green peppers	*	-	*	-	-	-	-	-
Red peppers	-	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-
Root Crops	*	*	*	*	-	-	-	-
Beet root	-	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-	-
Onions	*	*	*	*	-	-	-	-
Potatoes	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-
Taro ('Godere')	-	-	-	-	-	-	-	-
Sweet potatoes	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-
Permanent Crops	81	11	*	*	*	*	*	*
Fruit Crops	81	11	*	*	*	*	*	*
Avocado	-	-	-	-	-	-	-	-
Bananas	*	-	*	-	-	-	-	-
Guava (Zeytuna)	-	-	-	-	-	-	-	-
Lemons	-	-	-	-	-	-	-	-
Mangoes	13	1	13	1	-	-	-	-
Oranges	50	4	*	3	*	*	*	*
Papayas	*	-	*	-	-	-	-	-
Pineapples	-	-	-	-	-	-	-	-
Others	*	*	*	*	-	-	-	-
Stimulant Crops	-	-	-	-	-	-	-	-
Chat	-	-	-	-	-	-	-	-
Coffee	-	-	-	-	-	-	-	-
Hops	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-
Other Permanent Crops	-	-	-	-	-	-	-	-
Enset	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-

TABLE 6.5: Holders Applying Agricultural Inputs and Participating in Extension Programs by Level of Education in Rural and Urban Areas, for Private Holdings

EDUCATIONAL ATTAINMENT	Holders Applying Agricultural Inputs										Number and Percentage of Holders Participating in Agriculture Extension Programs	
	All Crop Holders		Improved Seed		Irrigation		Fertilizer		Pesticide			
	Holdes	%	Holdes	%	Holdes	%	Holdes	%	Holdes	%	Holdes	%
ALL	14778	100	1122	7.59	6368	43.09	8317	56.28	655	4.43	449	3.04
Illiterate	11868	100	835	7.04	4979	41.95	6514	54.89	522	4.4	323	2.72
Literate, but no formal Education	1476	100	*	*	664	44.99	918	62.2	*	*	-	-
Completed Grade 1..	188	100	-	-	*	*	*	*	*	*	-	-
Completed Grade 2..	287	100	*	*	*	*	163	56.79	*	*	-	-
Completed Grade 3..	191	100	*	*	*	*	*	*	*	*	*	*
Completed Grade 4..	233	100	*	*	*	*	106	45.49	-	-	*	*
Completed Grade 5..	145	100	*	*	115	79.31	100	68.97	*	*	-	-
Completed Grade 6..	294	100	*	*	216	73.47	227	77.21	*	*	*	*
Completed Grade 7..	*	*	*	*	*	*	*	*	-	-	-	-
Completed Grade 8..	*	*	-	-	*	*	*	*	-	-	-	-
Completed Grade 9..	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 10	*	*	*	*	*	*	*	*	-	-	-	-
Completed Grade 11	*	*	*	*	*	*	*	*	*	*	-	-
Completed Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Above Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Not Reported	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6.5.1: RURAL HOLDINGS

EDUCATIONAL ATTAINMENT	Number of Holders Applying Agricultural Inputs										Number and Percentage of Holders Participating in Agriculture Extension Programs	
	All Crop Holders		Improved Seed		Irrigation		Fertilizer		Pesticide			
	Holdes	%	Holdes	%	Holdes	%	Holdes	%	Holder	%	Holdes	%
ALL	14150	100	1054	7.45	6051	42.76	8186	57.85	592	4.18	449	3.17
Illiterate	11407	100	795	6.97	4750	41.64	6412	56.21	489	4.29	323	2.83
Literate, but no formal Education.....	1390	100	*	*	624	44.89	907	65.25	*	*	-	-
Completed Grade 1.	182	100	-	-	*	*	*	*	-	-	-	-
Completed Grade 2.	278	100	*	*	*	*	163	58.63	*	*	-	-
Completed Grade 3.	187	100	*	*	*	*	*	*	*	*	*	*
Completed Grade 4.	233	100	*	*	*	*	106	45.49	-	-	*	*
Completed Grade 5.	115	100	*	*	95	82.61	*	*	-	-	-	-
Completed Grade 6.	283	100	*	*	208	73.5	227	80.21	*	*	*	*
Completed Grade 7.	*	*	*	*	*	*	*	*	-	-	-	-
Completed Grade 8.	*	*	-	-	*	*	*	*	-	-	-	-
Completed Grade 9.	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 10	*	*	-	-	-	-	*	*	-	-	-	-
Completed Grade 11	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Above Grade 12.....	-	-	-	-	-	-	-	-	-	-	-	-
Not Reported	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6.5.2: RURAL MEHER

EDUCATIONAL ATTAINMENT	Number of Holders Applying Agricultural Inputs										Number and Percentage of Holders Participating in Agriculture Extension Programs	
	All Crop Holders		Improved Seed		Irrigation		Fertilizer		Pesticide		Holders	%
	Holdes	%	Holdes	%	Holdes	%	Holdes	%	Holdes	%		
ALL.....	14073	100	803	5.71	5630	40.01	7209	51.23	203	1.44	*	*
Illiterate.....	11363	100	584	5.14	4445	39.12	5577	49.08	163	1.43	*	*
Literate, but no formal Education.....	1368	100	*	*	546	39.91	801	58.55	-	-	-	-
Completed Grade 1.	182	100	-	-	*	*	*	*	-	-	-	-
Completed Grade 2.	265	100	*	*	*	*	128	48.3	*	*	-	-
Completed Grade 3.	187	100	*	*	*	*	*	*	*	*	*	*
Completed Grade 4.	233	100	*	*	*	*	106	45.49	-	-	*	*
Completed Grade 5.	115	100	*	*	95	82.61	*	*	-	-	-	-
Completed Grade 6.	283	100	*	*	*	*	227	80.21	-	-	*	*
Completed Grade 7.	*	*	*	*	*	*	*	*	-	-	-	-
Completed Grade 8.	*	*	-	-	*	*	*	*	-	-	-	-
Completed Grade 9.	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 10	*	*	-	-	-	-	*	*	-	-	-	-
Completed Grade 11	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Above Grade 12.....	-	-	-	-	-	-	-	-	-	-	-	-
Not Reported.....	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6.5.3: RURAL BELG

EDUCATIONAL ATTAINMENT	Number of Holders Applying Agricultural Inputs										Number and Percentage of Holders Participating in Agriculture Extension Programs	
	All Crop Holders		Improved Seed		Irrigation		Fertilizer		Pesticide		Holders	%
	Holders	%	Holders	%	Holders	%	Holders	%	Holders	%		
ALL.....	4737	100	*	*	2763	58.33	3168	66.88	389	8.21	*	*
Illiterate.....	3720	100	*	*	2326	62.53	2569	69.06	326	8.76	*	*
Literate, but no formal Education.....	487	100	-	-	208	42.71	360	73.92	*	*	-	-
Completed Grade 1..	*	*	-	-	-	-	*	*	-	-	-	-
Completed Grade 2..	151	100	*	*	*	*	*	*	-	-	-	-
Completed Grade 3..	*	*	*	*	*	*	*	*	-	-	*	*
Completed Grade 4..	*	*	-	-	*	*	*	*	-	-	-	-
Completed Grade 5..	*	*	-	-	*	*	-	-	-	-	-	-
Completed Grade 6..	*	*	*	*	*	*	*	*	*	*	-	-
Completed Grade 7..	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 8..	*	*	-	-	*	*	*	*	-	-	-	-
Completed Grade 9..	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 10	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 11	-	-	-	-	-	-	-	-	-	-	-	-
Completed Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Above Grade 12	-	-	-	-	-	-	-	-	-	-	-	-
Not Reported.....	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6.5.4: URBAN HOLDINGS

EDUCATIONAL ATTAINMENT	All Crop Holders		Number & Percentage of Holders in Education Category who Applied:							
			Improved Seed		Irrigation		Fertilizer		Pesticide	
	Holdes	%	Holdes	%	Holdes	%	Holdes	%	Holdes	%
ALL	628	100	68	10.83	318	50.64	131	20.86	63	10.03
Illiterate	461	100	40	8.68	228	49.46	102	22.13	33	7.16
Literate, but no formal Education	86	100	*	*	40	46.51	*	*	*	*
Completed Grade 1	*	*	-	-	-	-	-	-	*	*
Completed Grade 2	*	*	-	-	*	*	-	-	-	-
Completed Grade 3	*	*	*	*	-	-	-	-	-	-
Completed Grade 4	-	-	-	-	-	-	-	-	-	-
Completed Grade 5	30	100	*	*	21	70	6	20	*	*
Completed Grade 6	11	100	*	*	8	72.73	-	-	-	-
Completed Grade 7	*	*	-	-	*	*	*	*	-	-
Completed Grade 8	*	*	-	-	-	-	*	*	-	-
Completed Grade 9	-	-	-	-	-	-	-	-	-	-
Completed Grade 10	*	*	*	*	*	*	-	-	-	-
Completed Grade 11	*	*	*	*	*	*	*	*	*	*
Completed Grade 12	-	-	-	-	-	-	-	-	-	-
Above Grade 12	-	-	-	-	-	-	-	-	-	-
Not Reported	-	-	-	-	-	-	-	-	-	-

ANNEX TABLES PRESENTING
ESTIMATES, STANDARD ERRORS AND COEFFICIENTS
OF VARIATIONS FOR SELECTED FARM MANAGEMENT
PRACTICES VARIABLES

Annex Tables 6.1 and 6.2

Annex - TABLE 6.1: AREA UNDER FARM MANAGEMENT PRACTICES WITH THEIR STANDAD ERRORS AND COEFFICIENT OF VARIATION IN RURAL AREAS FOR MEHER SEASON

Type of crop	Improved Seed Applied			Irrigation			Fertilizer Applied			Pesticide Applied		
	Hectare	S.E	C.V	Hectare	S.E	C.V	Hectare	S.E	C.V	Hectare	S.E	C.V
TOTAL	7737	700	9	106	37	34	1188	298	25	2719	497	18
Grains Crops	6665	627	9	101	37	36	783	239	31	2153	384	18
Cereals	6426	600	9	93	35	38	775	239	31	2037	351	17
Teff	-	-	-	-	-	-	-	-	-	-	-	-
Barley	3	3	77	-	-	-	-	-	71	1	1	76
Wheat	3	2	62	-	-	-	1	1	101	1	1	75
Maize	257	56	22	14	13	93	108	37	35	82	31	37
Sorghum	6160	600	10	79	31	39	666	214	32	1952	349	18
Millet	2	2	108	-	-	-	-	-	-	-	-	-
Oats	-	-	98	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-	-	-	-
Pulse	204	60	30	8	4	55	6	3	51	99	39	39
Horse beans	-	-	-	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-	-	-	-
Haricot beans	201	60	30	8	4	55	6	3	51	97	39	40
Chick peas	-	-	-	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-	-	-	-	-	-
Fenugreek	2	2	93	-	-	-	-	-	-	1	1	98
Gibto	-	-	-	-	-	-	-	-	-	-	-	-
Oil seed	34	14	40	-	-	-	1	-	99	17	6	37
Nuez	-	-	-	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-	-	-	-
Ground nuts	25	12	47	-	-	-	-	-	-	14	6	43
Sunflower	-	-	-	-	-	-	-	-	-	-	-	-
Sesame	10	9	87	-	-	-	1	-	99	3	2	80
Rapeseed.	-	-	-	-	-	-	-	-	-	-	-	-
Other Grain	1	1	63	-	-	-	1	1	102	1	1	60
Vegetables.	30	10	33	3	2	58	27	9	34	19	8	44
Lettuce	-	-	-	-	-	-	-	-	-	-	-	-
Cabbage	-	-	-	-	-	-	-	-	-	-	-	-
Kale	-	-	-	-	-	-	-	-	-	-	-	-
Tomatoes	29	10	34	3	2	58	27	9	34	19	8	44
Green pepper	-	-	92	-	-	-	-	-	101	-	-	108
Red paper	-	-	-	-	-	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	107	-	-	-	-	-	-	-	-	-
Root Crops	85	23	27	-	-	-	28	10	34	38	10	27
Beet root	-	-	-	-	-	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-	-	-	-	-	-
Onion	14	9	67	-	-	-	2	1	47	9	6	65
Potatoes	7	5	77	-	-	-	1	1	62	3	2	69
Garlic	-	-	107	-	-	-	-	-	107	-	-	107
Godere	-	-	-	-	-	-	-	-	-	-	-	-
Sweet potatoes	64	18	27	-	-	-	24	9	36	25	7	28
Others	-	-	-	-	-	-	-	-	-	-	-	-
Permanet crops	957	150	16	3	1	40	350	93	27	509	128	25
Fruit Crops	144	51	35	2	1	53	92	42	46	94	42	45
Avocado	-	-	-	-	-	-	-	-	-	-	-	-
Bannas	6	3	41	-	-	-	5	2	45	3	1	43
Guava(Zeytuna)	9	5	54	-	-	-	9	5	54	5	3	58
Lemons	1	1	52	-	-	103	1	1	75	1	1	89
Mangos	9	4	46	-	-	-	5	2	46	5	3	60
Oranges	3	2	54	-	-	-	2	1	55	2	2	68
Papavas	43	17	39	1	1	77	32	15	48	37	16	44
Pincapples	-	-	-	-	-	-	-	-	-	-	-	-
Others	72	32	45	1	1	83	38	26	67	41	24	60
Stimulant Crop	813	137	17	1	1	65	258	70	27	415	118	28
Chat	752	136	18	-	-	-	210	62	29	382	118	31
Coffee	61	18	30	1	1	65	48	15	31	33	10	31
Gesho.	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-	-	-	-	-
Enset	-	-	-	-	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-

Annex - TABLE 6.2: AREA UNDER FARM MANAGEMENT PRACTICES WITH THEIR STANDAD ERRORS AND COEFFICIENT OF VARIATION IN URBAN AREAS FOR MEHER SEASON

Type of crop	Improved Seed Applied			Irrigation			Fertilizer Applied			Pesticide Applied		
	Hectare	S.E	C.V	Hectare	S.E	C.V	Hectare	S.E	C.V	Hectare	S.E	C.V
TOTAL	190	36	19	22	10	45	95	20	22	28	10	37
Grains Crops	149	32	21	18	9	51	62	18	28	15	5	32
Cereals	149	32	21	18	9	51	62	18	28	15	5	32
Teff	-	-	-	-	-	-	-	-	-	-	-	-
Barlev	-	-	95	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-	-	-	-
Maize	11	4	36	-	-	65	9	4	41	2	1	73
Sorghum	138	30	22	18	9	51	52	16	30	13	5	36
Millet	-	-	-	-	-	-	-	-	-	-	-	-
Oats	-	-	-	-	-	-	-	-	-	-	-	-
Rice	-	-	-	-	-	-	-	-	-	-	-	-
Pulse	-	-	-	-	-	-	-	-	-	-	-	-
Horse beans	-	-	-	-	-	-	-	-	-	-	-	-
Field peas	-	-	-	-	-	-	-	-	-	-	-	-
Haricot beans	-	-	-	-	-	-	-	-	-	-	-	-
Chick peas	-	-	-	-	-	-	-	-	-	-	-	-
Lentiles	-	-	-	-	-	-	-	-	-	-	-	-
Vetch	-	-	-	-	-	-	-	-	-	-	-	-
Soya	-	-	-	-	-	-	-	-	-	-	-	-
Fenugreek	-	-	-	-	-	-	-	-	-	-	-	-
Gibto	-	-	-	-	-	-	-	-	-	-	-	-
Oile seed	-	-	-	-	-	-	-	-	-	-	-	-
Nueg	-	-	-	-	-	-	-	-	-	-	-	-
Linseed	-	-	-	-	-	-	-	-	-	-	-	-
Ground nuts	-	-	-	-	-	-	-	-	-	-	-	-
Sunflower	-	-	-	-	-	-	-	-	-	-	-	-
Sesame	-	-	-	-	-	-	-	-	-	-	-	-
Rapeseed.	-	-	-	-	-	-	-	-	-	-	-	-
Other Grain	-	-	-	-	-	-	-	-	-	-	-	-
Vegetables.	1	-	50	-	-	58	1	-	50	1	-	47
Lettuce	-	-	-	-	-	-	-	-	-	-	-	-
Cabbage	-	-	-	-	-	-	-	-	-	-	-	-
Kale	-	-	-	-	-	-	-	-	-	-	-	-
Tomatoes	1	-	50	-	-	58	1	-	50	1	-	47
Green pepper	-	-	-	-	-	-	-	-	-	-	-	-
Red paper	-	-	-	-	-	-	-	-	-	-	-	-
Swiss chard	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-
Root Crops	1	-	66	-	-	-	1	-	66	-	-	95
Beet root	-	-	-	-	-	-	-	-	-	-	-	-
Carrot	-	-	-	-	-	-	-	-	-	-	-	-
Onion	1	-	66	-	-	-	1	-	66	-	-	95
Potatoes	-	-	-	-	-	-	-	-	-	-	-	-
Garlic	-	-	-	-	-	-	-	-	-	-	-	-
Godere	-	-	-	-	-	-	-	-	-	-	-	-
Sweet potatoes	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-
Permanet crops	40	10	26	4	4	103	31	9	28	11	6	50
Fruit Crops	38	10	27	4	4	103	31	9	28	11	6	50
Avocado	-	-	-	-	-	-	-	-	-	-	-	-
Bannas	-	-	-	-	-	-	-	-	-	-	-	-
Guava(Zeytuna)	-	-	-	-	-	-	-	-	-	-	-	-
Lemons	1	1	95	-	-	-	1	1	95	-	-	-
Mangos	6	3	44	-	-	-	5	2	44	1	-	44
Oranges	14	4	30	2	2	103	11	4	34	4	2	45
Papavas	2	1	54	-	-	-	2	1	60	-	-	-
Pineapples	-	-	-	-	-	-	-	-	-	-	-	-
Others	16	5	35	2	2	103	12	5	37	7	4	56
Stimulant Crop	1	1	55	-	-	-	-	-	73	-	-	-
Chat	1	1	66	-	-	-	-	-	105	-	-	-
Coffee	-	-	84	-	-	-	-	-	84	-	-	-
Gesho.	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-
Other Permanent	-	-	-	-	-	-	-	-	-	-	-	-
Enset	-	-	-	-	-	-	-	-	-	-	-	-
Sugar Cane	-	-	-	-	-	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-	-	-	-	-	-

CHAPTER VII

SIZE, CHARACTERISTICS AND PURPOSE OF LIVESTOCK AND USE OF LIVESTOCK PRODUCTS

1. INTRODUCTION

Ethiopia is one of the most populous countries in Africa, having an estimated population of about 67.2 million in July 2002 with annual growth rate of 2.9%. This growing population demands much better economic performance than in the past, at least to ensure food security and other basic needs. The dominant economic feature of the country is the agriculture sector of which livestock is a very important and essential component. The highlanders raise livestock together with crop cultivation for their livelihood whereas the lowlanders or the 'pastoralists' subsistence is based mainly on livestock and livestock products. Consequently, the government should give due attention to this sector in order to take advantage of its contribution to the economic growth and as a result to meet the needs of the expanding population.

The livestock sector has been contributing significant portion to the economy of Ethiopia, but still has great potential to assist the economic development of this country. It is well known that livestock products and byproducts in the form of meat, milk, honey, eggs, cheese, and butter supply the needed animal protein that contribute to the improvement of the nutritional status of the people. Livestock also plays an important role in providing export commodities, such as live animals, hides and skins to earn foreign exchanges to the country. On the other hand, draught animals provide power for the cultivation of the small holdings and for crop threshing virtually all over the country and are also essential modes of transport to take holders and their families long-distances, to convey their agricultural products to the market places and bring back their domestic necessities. Livestock as well confer a certain degree of security in times of crop failure, as they are a

“near-cash” capital stock. Furthermore, livestock provides farmyard manure that is commonly applied to improve soil fertility and also used as a source of energy.

By virtue of the important role that the livestock sector plays in the economy of the country, formulation of development plan regarding the sector is vital. It is therefore imperative that livestock development plans should be formulated on the basis of reliable statistical data, and hence, timely and accurate livestock data are required for the formulation, implementation, monitoring, and evaluation of development plan and program in the sector. These livestock data can be generated more often than not using surveys and censuses. The Central Statistical Authority (CSA) has been generating livestock data through sample surveys since 1981 (1973 E.C.). However, based on the results of these surveys, CSA was not able to satisfy the growing demand of the data users regarding the sector. Realizing this fact, CSA proposed and conducted the first agricultural census in the year 2001/02.

As mentioned earlier in Chapter II, agricultural censuses are classified into two categories: censuses conducted by complete enumeration or conducted by sample enumeration. In agricultural censuses conducted by complete enumeration, data are collected from all holders and the result for each variable is obtained by totaling the values of the respective variable from all holders. On the other hand, agricultural censuses conducted based on sample enumeration are probability sample surveys for which a sample is selected and the method of estimation for each census variable permits establishing its statistical precision. Therefore, conducting complete enumeration is more expensive, time consuming and requires large number of personnel. Likewise, quantity of data to be processed is very large (FAO, 1996). By considering these realities and the economic condition of the country, the sample enumeration was favored.

The livestock census was carried-out as part of the agricultural census. The general objective of the livestock census is to establish benchmark data that could be used for

development planning and policy formulation regarding the sector, and the specific objectives are to purvey quantitative information on the size and characteristics of the livestock in rural and urban areas at wereda level, and to provide estimates on size and characteristics of livestock for pastoral areas and commercial farms. In order to meet these objectives, data on: livestock number by type, age, sex, purpose and breed; livestock products particularly milk, egg, and honey; livestock diseases and vaccination; livestock product utilization; and animal feed were collected from sampled agricultural households in rural and urban areas as well as from all commercial farms. In addition, these same data will be collected from pastoral areas in the near future.

The expected users of these data are government organizations involved in planning purposes, individuals or firms raising livestock, non-governmental organizations that provide technical and financial assistance, international organizations which are interested in livestock, and research organizations.

In this chapter of the report: estimates of livestock that include cattle, sheep, goats, draught animals (horses, mules, asses and camels), poultry and bees were made based on the information obtained from the holders within the selected agricultural households both in rural and urban areas as to the reference date (February 8,2002) and reference period (February 9,2001 to February 8, 2002). Thus, the results obtained from the livestock census for the rural and urban areas of the region as well as brief discussions made on the results are presented in this chapter. Also the census results at Administration level are provided in Statistical Tables 7.1- 7.36. Moreover, the estimates, Standard errors and coefficients of variation are given in Annex Tables 7.1 – 7.10 for some relevant variables.

2. LIVESTOCK NUMBER BY BREED, AGE, SEX AND PURPOSE

The livestock census is the first of its kind in the nation to supply data on the size and characteristics of livestock for rural and urban areas and commercial farms at wereda level, and also for pastoral areas though the census not yet conducted. The livestock census that was carried-out in Dire Dawa administration was part of the national census and covered both rural and urban areas of the region on sample basis. Commercial farms that are found in the region were also covered on complete enumeration basis though the results are not presented here.

The total number of each type of livestock as well as the numbers disaggregated by breed, age, sex, and purpose possessed by holders on the reference date (February 8, 2002), irrespective of ownership, were recorded by interviewing each holder in the sampled agricultural households both in rural and urban areas of the region. The numbers also include the livestock belonging to the holding but temporarily away or in transit at the time of the enumeration.

2.1 Cattle

The estimates of cattle for rural and urban areas in Dire Dawa administration are presented in Summary Table VII.1. As shown on the table, the total cattle population for the region is estimated to be 54,155. Out of this total cattle population, the female cattle constitute about 66.9 percent (36,228) and the remaining 33.1 percent (17,927) are male cattle. The majority (93.64 percent) of the cattle population is found in rural areas, while small proportion is accounted for urban areas (6.36 percent).

Regarding age groups, the majority of the cattle population (that is about 52.56 percent) is in the 3 years and under 10 years age category, with about 13.08 percent male and about 39.48 percent female. Moreover, about 44.6 percent are under three years and small

SUMMARY TABLE VII.1: Estimated Number of Cattle by Sex, Age, Breed, and Purpose for Rural and Urban Holdings

Age, Breed, and Purpose	Cattle on Both Rural and Urban Holdings						Cattle on Rural Holdings						Cattle on Urban Holdings					
	Total		Male		Female		Total		Male		Female		Total		Male		Female	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Total.....	54,155	100	17,927	33.10	36,228	66.90	50,712	93.64	17,031	31.45	33,681	62.19	3,443	6.36	896	1.65	2,547	4.70
Under 6 months	8,785	16.22	4,191	7.74	4,595	8.48	8,143	15.04	3,904	7.21	4,239	7.83	642	1.19	287	0.53	355	0.66
6 months-under 1 year	4,927	9.10	2,364	4.37	2,563	4.73	4,552	8.41	2,214	4.09	2,338	4.32	375	0.69	150	0.28	225	0.42
1 year-under 3 years	10,441	19.28	4,257	7.86	6,185	11.42	9,788	18.07	4,021	7.42	5,767	10.65	653	1.21	235	0.43	418	0.77
3 years-under 10 years	28,464	52.56	7,083	13.08	21,381	39.48	26,802	49.49	6,868	12.68	19,934	36.81	1,662	3.07	215	0.40	1,447	2.67
10 years and older	1,539	2.84	*	*	1,505	2.78	1,428	2.64	*	*	1,403	2.59	111	0.20	*	*	103	0.19
Cattle by Breed																		
Total	54,155	100	17,927	33.10	36,228	66.90	50,712	93.64	17,031	31.45	33,681	62.19	3,443	6.36	896	1.65	2,547	4.70
Indigenous	53,762	99.27	17,873	33.00	35,890	66.27	50,499	93.25	17,015	31.42	33,484	61.83	3,264	6.03	858	1.58	2,406	4.44
Hybrid	240	0.44	*	*	196	0.36	*	*	*	*	*	*	*	*	*	*	*	*
Exotic	153	0.28	*	*	143	0.26	*	*	-	-	*	*	88	0.16	*	*	78	0.14
Aged 3-10 Years by Purpose																		
Total	28,464	100	7,083	24.88	21,381	75.12	26,802	94.16	6,868	24.13	19,934	70.03	1,662	5.84	215	0.76	1,447	5.08
Used for Milk	18,774	65.96			18,774	65.96	17,623	61.91			17,623	61.91	1,150	4.04			1,150	4.04
Used for Draught	6,012	21.12	5,940	20.87	*	*	5,908	20.76	5,843	20.53	*	*	103	0.36	97	0.34	*	*
Used for Beef	671	2.36	655	2.30	*	*	623	2.19	606	2.13	*	*	48	0.17	48	0.17	-	-
Used for Breeding	2,134	7.50	423	1.49	1,711	6.01	1,821	6.40	361	1.27	1,460	5.13	313	1.10	62	0.00	251	0.88
Used for Other	874	3.07	*	*	809	2.84	827	2.91	*	*	770	2.71	*	*	*	*	*	*
Dairy Animals																		
Dairy Cows	18,774	100			18,774	100	17,623	93.87			17,623	93.87	1,150	6.53			1,150	6.53
Milking Cows	14,737	100			14,737	100	13,849	93.97			13,849	93.97	888	6.41			888	6.41

FIGURE VII.1 DISTRIBUTION OF CATTLE BY AGE AND SEX

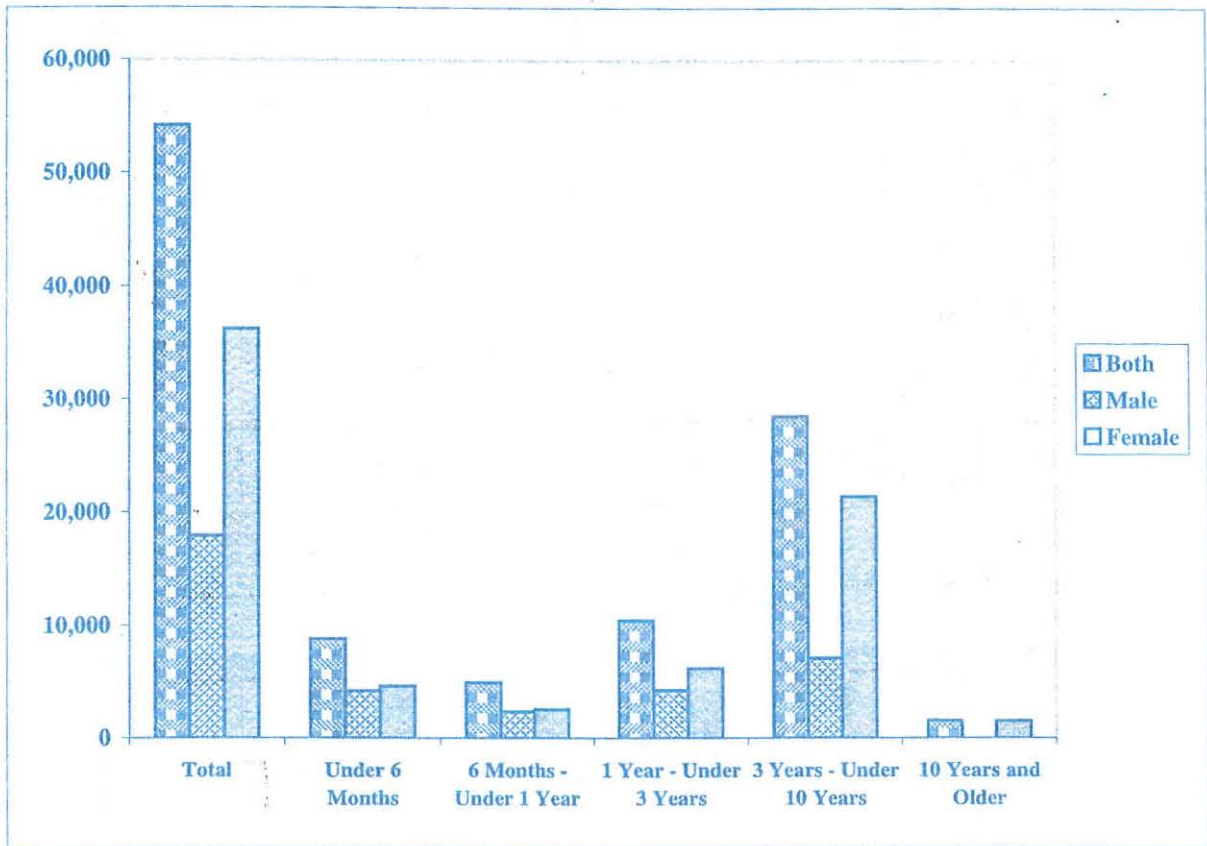
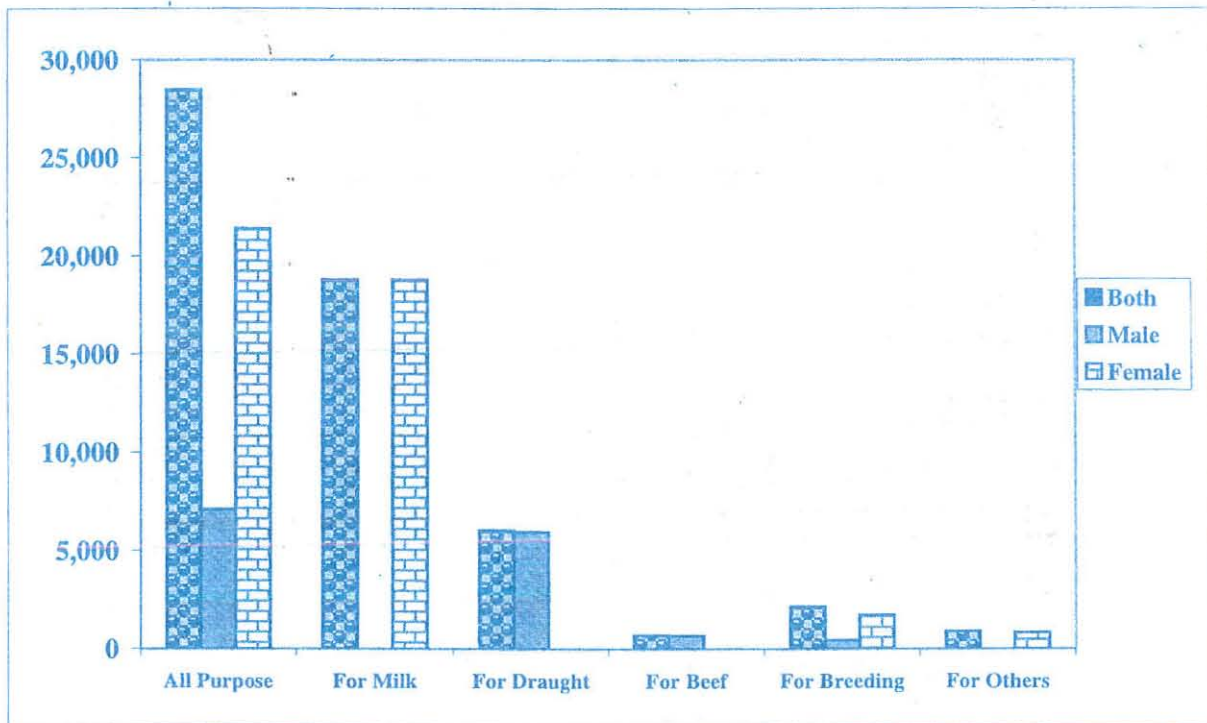


FIGURE VII.2 DISTRIBUTION OF CATTLE AGED 3 AND UNDER 10 YEARS BY PURPOSE AND SEX



portion, which is 2.84 percent, is in 10 years and older category. (see Tab. VII.1). On the other hand, according to the results obtained, a small amount of hybrid breeds, 0.44 percent and exotic breeds 0.28 percent are reported.

The distribution of cattle by purpose is indicated in the same table. Among cattle aged three years and under ten years, those used for draught purposes accounted for 21.12 percent and the percentage share of beef cattle is the lowest that is about 2.36 percent. Beef cattle here refer to all cattle reared exclusively for meat that is used either for home consumption or for sale. Further, the number of dairy-cows¹ is estimated to be about 18,774 and milking-cows² are about 14,737. (See Fig. VII.2).

2.2 Sheep and Goats

The estimated numbers and percentage distributions of sheep and goats for rural and urban areas are given in Summary Table VII.2. As pointed out in this table, about 34,015 sheep are estimated to be found in the region, out of which about 67.51 percent are females, and about 32.49 percent are males. Moreover, according to the census result, large number of goats is reported in the region, and it is estimated to be about 91,007. Out of these total goats, 73.16 percent are females and 26.84 percent are males. (See Tab. VII.2).

Among these totals reported in the region, 85.11 percent of the sheep and 92.87 percent of the goats are found in the rural areas. Urban areas accounted for only 14.89 percent and 7.13 percent of the sheep and goats, respectively.

¹ A Dairy Cow refers to any type of cow that primarily kept for milk and has milked previously and/or milking at the time of enumeration or has never been milked before but expected to be milked in the future or pregnant at the time of enumeration.

² A Milking Cow refers to any type of cow that actually milked during the reference period (February 9, 2001 to February 8, 2002).

SUMMARY TABLE VII.2: Estimated Number of Sheep and Goats by Sex, Age, Breed, and Purpose for Rural and Urban Holdings

Age, Breed, and Purpose	Both Rural and Urban Holdings						Rural Holdings						Urban Holdings					
	Total		Male		Female		Total		Male		Female		Total		Male		Female	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Total Sheep.....	34,015	100	11,052	32.49	22,963	67.51	28,950	85.11	9,289	27.31	19,661	57.80	5,065	14.89	1,763	5.18	3,302	9.71
Under 6 months	9,524	28.00	5,003	14.71	4,521	13.29	8,069	23.72	4,186	12.31	3,882	11.41	1,456	4.28	817	2.40	639	1.88
6 months-under 1 year	3,621	10.65	1,846	5.43	1,775	5.22	2,846	8.37	1,502	4.42	1,344	3.95	775	2.28	343	1.01	431	1.27
1 year-under 2 years	5,049	14.84	1,998	5.87	3,051	8.97	4,336	12.75	1,745	5.13	2,591	7.62	713	2.10	253	0.74	460	1.35
2 years and older	15,820	46.51	2,204	6.48	13,616	40.03	13,699	40.27	1,855	5.45	11,844	34.82	2,121	6.24	349	1.03	1,772	5.21
Sheep by Breed																		
Total	34,015	100	11,052	32.49	22,963	67.51	28,950	85.11	9,289	27.31	19,661	57.80	5,065	14.89	1,763	5.18	3,302	9.71
Indigenous	33,879	99.60	10,970	32.25	22,909	67.35	28,828	84.75	9,216	27.09	19,612	57.66	5,052	14.85	1,755	5.16	3,297	9.69
Hybrid	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Exotic	*	*	*	*	-	-	-	-	-	-	-	-	*	*	*	*	-	-
Sheep Aged 2 Years and Older by Purpose																		
Total	15,820	100	2,204	13.93	13,616	86.07	13,699	86.59	1,855	11.73	11,844	74.87	2,121	13.41	349	2.21	1,772	11.20
Used for Mutton	1,288	8.14	1,220	7.71	*	*	1,047	6.62	985	6.23	*	*	241	1.52	235	1.49	*	*
Used for Wool	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Used for Breeding	14,410	91.09	940	5.94	13,470	85.15	12,566	79.43	833	5.27	11,734	74.17	1,844	11.66	107	0.68	1,737	10.98
Used for Other	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total Goats	91,007	100.00	24,425	26.84	66,582	73.16	84,517	92.87	22,544	24.77	61,973	68.10	6,490	7.13	1,881	2.07	4,609	5.06
Under 6 months	27,575	30.30	13,494	14.83	14,081	15.47	25,551	28.08	12,427	13.65	13,124	14.42	2,024	2.22	1,067	1.17	957	1.05
6 months-under 1 year	10,317	11.34	4,145	4.55	6,172	6.78	9,463	10.40	3,792	4.17	5,671	6.23	854	0.94	353	0.39	501	0.55
1 year-under 2 years ...	12,161	13.36	3,420	3.76	8,741	9.60	11,229	12.34	3,175	3.49	8,054	8.85	932	1.02	245	0.27	687	0.75
2 years and older	40,954	45.00	3,367	3.70	37,588	41.30	38,273	42.06	3,150	3.46	35,123	38.59	2,681	2.95	216	0.24	2,465	2.71
Goats by Breed																		
Total	91,007	100	24,425	26.84	66,582	73.16	84,517	92.89	22,544	24.78	61,973	68.11	6,490	7.13	1,881	2.07	4,609	5.07
Indigenous	90,986	99.98	24,418	26.84	66,567	73.16	84,517	92.89	22,544	24.78	61,973	68.11	6,469	7.11	1,874	2.06	4,595	5.05
Hybrid	*	*	*	*	*	*	-	-	-	-	-	-	*	*	*	*	*	*
Exotic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goats Aged 2 Years and Older by Purpose																		
Total	40,954	100	3,367	8.22	37,588	91.78	38,273	93.45	3,150	7.69	35,123	85.76	2,681	6.55	216	0.53	2,465	6.02
Used for Milk	1,694	4.14			1,694	4.14	1,413	3.45			1,413	3.45	281	0.69			281	0.69
Used for Meat	1,646	4.02	1,494	3.65	152	0.37	1,483	3.62	1,386	3.38	*	*	163	0.40	108	0.26	*	*
Used for Breeding	37,552	91.69	1,871	4.57	35,682	87.13	35,317	86.24	1,764	4.31	33,553	81.93	2,235	5.46	107	0.26	2,129	5.20
Used for Other	*	*	*	*	*	*	*	*	-	-	*	*	*	*	*	*	-	-

FIGURE VII.3 DISTRIBUTION OF SHEEP AND GOATS BY AGE AND SEX

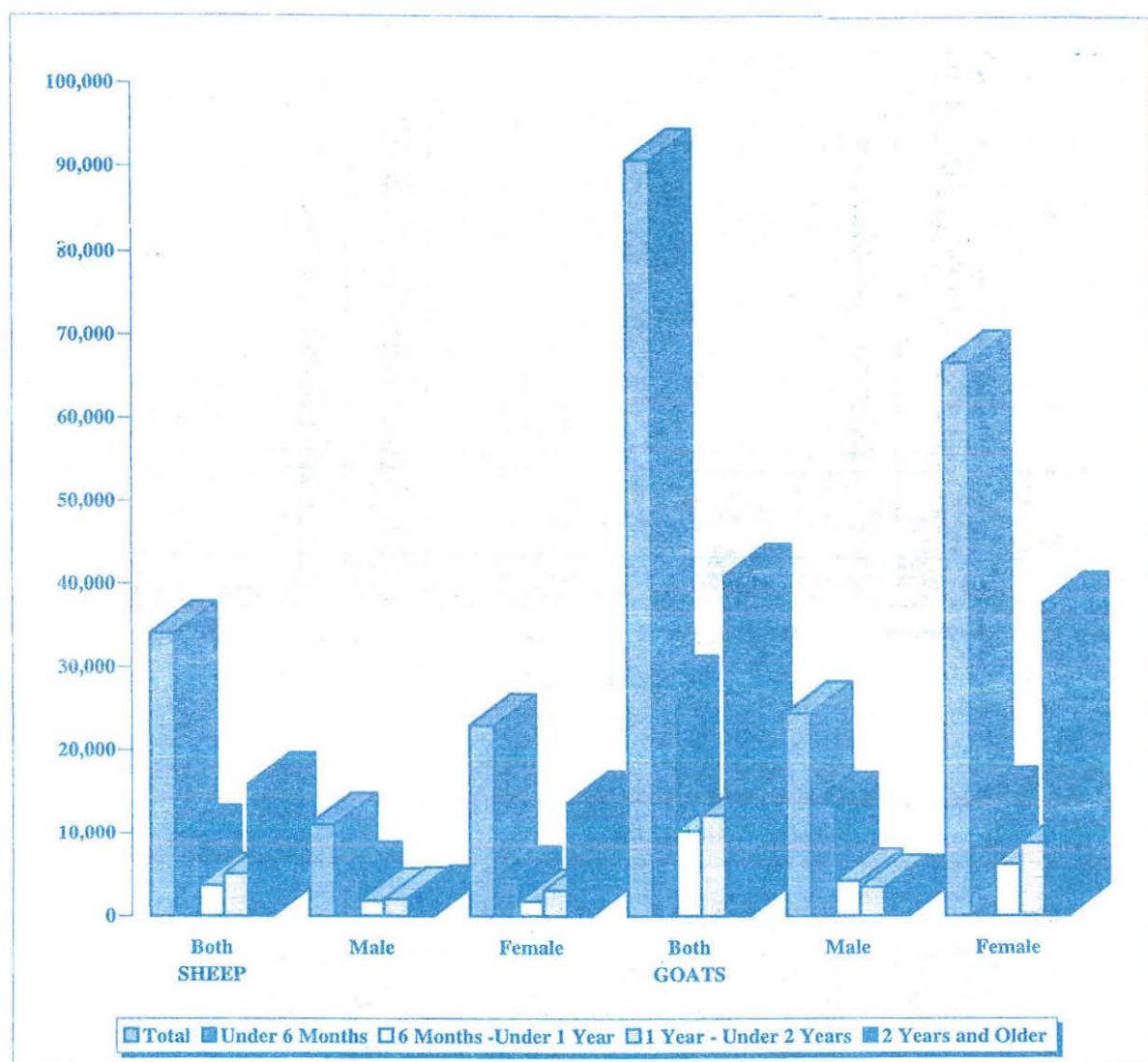


FIGURE VII.4 DISTRIBUTION OF SHEEP BY PURPOSE AND SEX AGED 2 AND OLDER

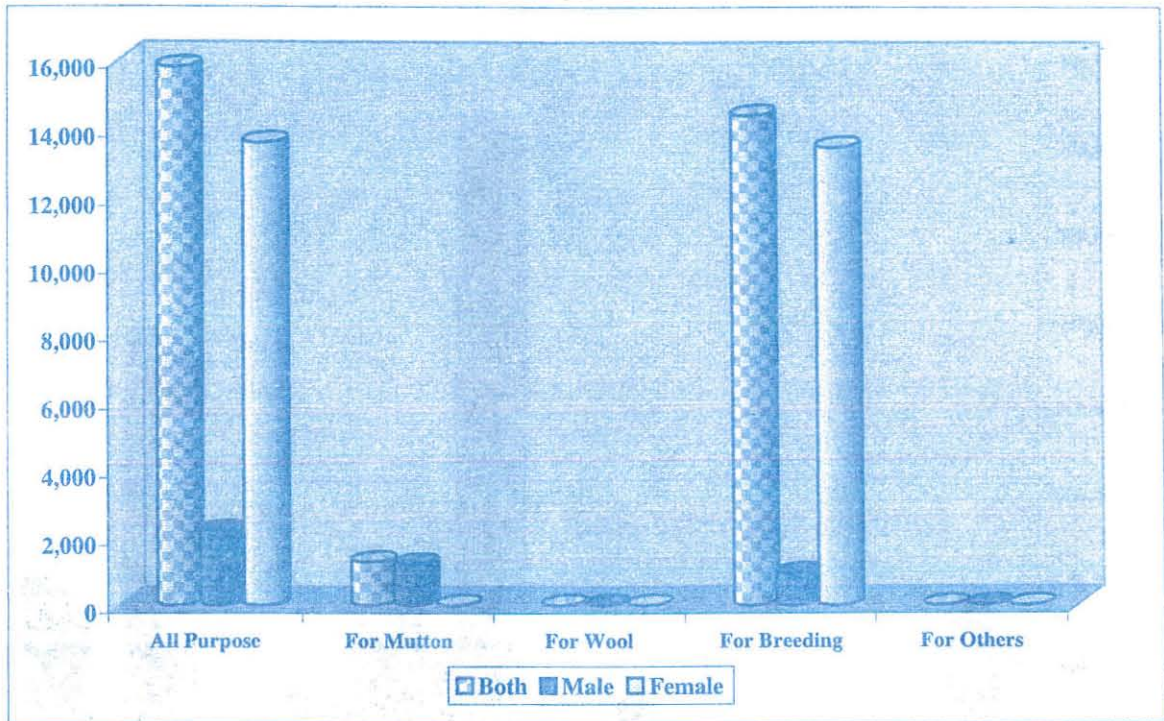
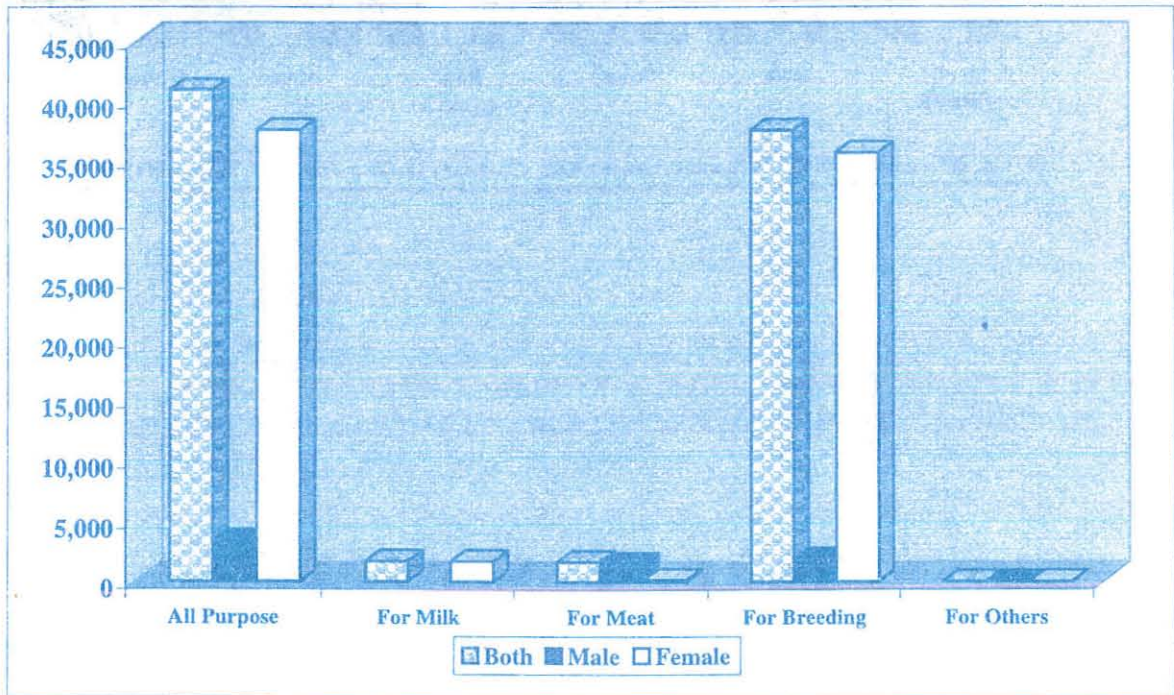


FIGURE VII.5 DISTRIBUTION OF GOATS BY PURPOSE AND SEX AGED 2 AND OLDER



Pertaining to the age distribution of both the sheep and the goats, the largest portions are in the age group of two years and older (46.51 percent and 45 percent, in that order), followed by the young stock under six months for both sheep and goats, that is 28 percent and 30.30 percent, respectively. (See Figure VII.3)

With respect to breed, almost all the sheep and the goats are indigenous (99.6 percent and 99.98 percent in that order). The number of hybrid and exotic sheep and goats reported are insignificant.

Summary Table VII.2 also discloses the numbers and percentages of sheep and goats raised for different purposes in the region. The percentages of both sheep and goats kept for mutton and meat are higher for males. Moreover, the data reveals that female sheep and female goats are primarily kept for breeding purposes. Among the sheep flock two years and older, 14,410 (91.09 percent) are kept for breeding; about 8.14 percent for mutton and an insignificant number of sheep were kept for wool production. Likewise, amid the goats population aged two years and older, goats kept for breeding accounts for about 91.69 percent (37,552) while goats kept for meat accounts for about 4.02 percent only (See Figure VII.4 and VII.5).

2.3 Horses, Asses, Mules and Camels

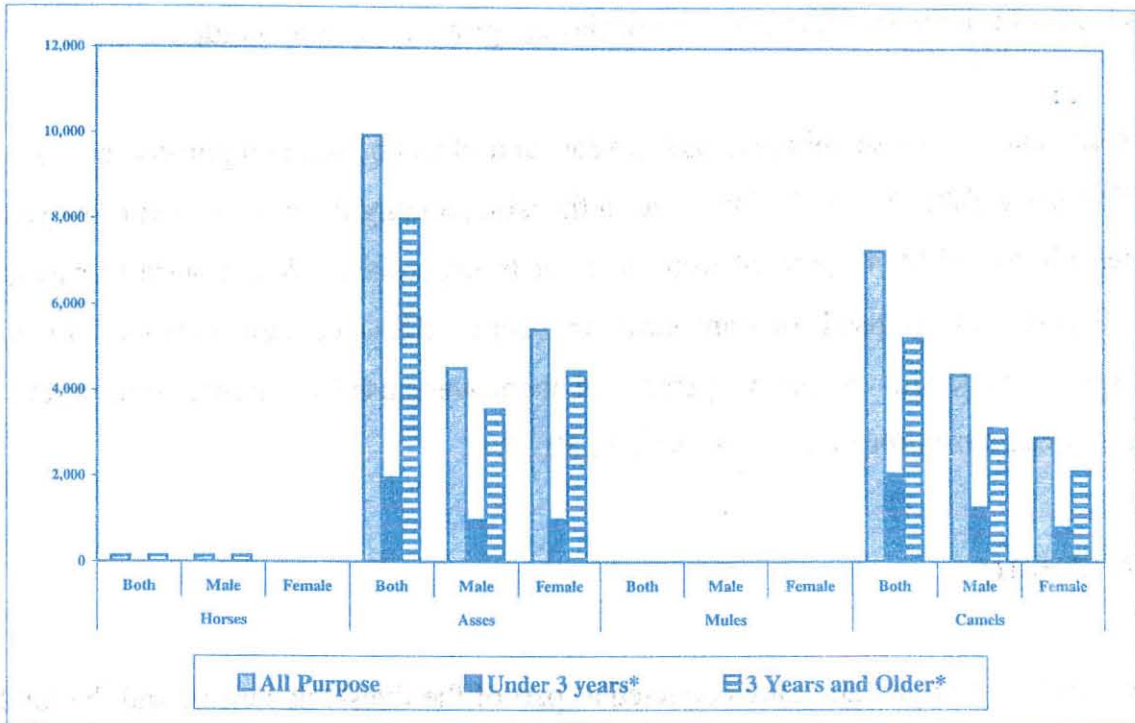
Summary Table VII.3 shows the estimates of horses, asses, mules and camels for the rural and urban areas of the region for private holdings. According to the census result, there are 127 horses, 9,934 asses, and 7,260 camels in Dire Dawa administration. The table as well shows that high proportions of asses and camels are found in the rural areas..

As indicated in the same table, asses are the overwhelming majority in the region compared to the other draught animals. Out of the total asses population in the region,

SUMMARY TABLE VII.3: Estimated Number of Horses, Asses, Mules and Camels by Sex, Age, Breed, and Purpose for Rural and Urban Holdings

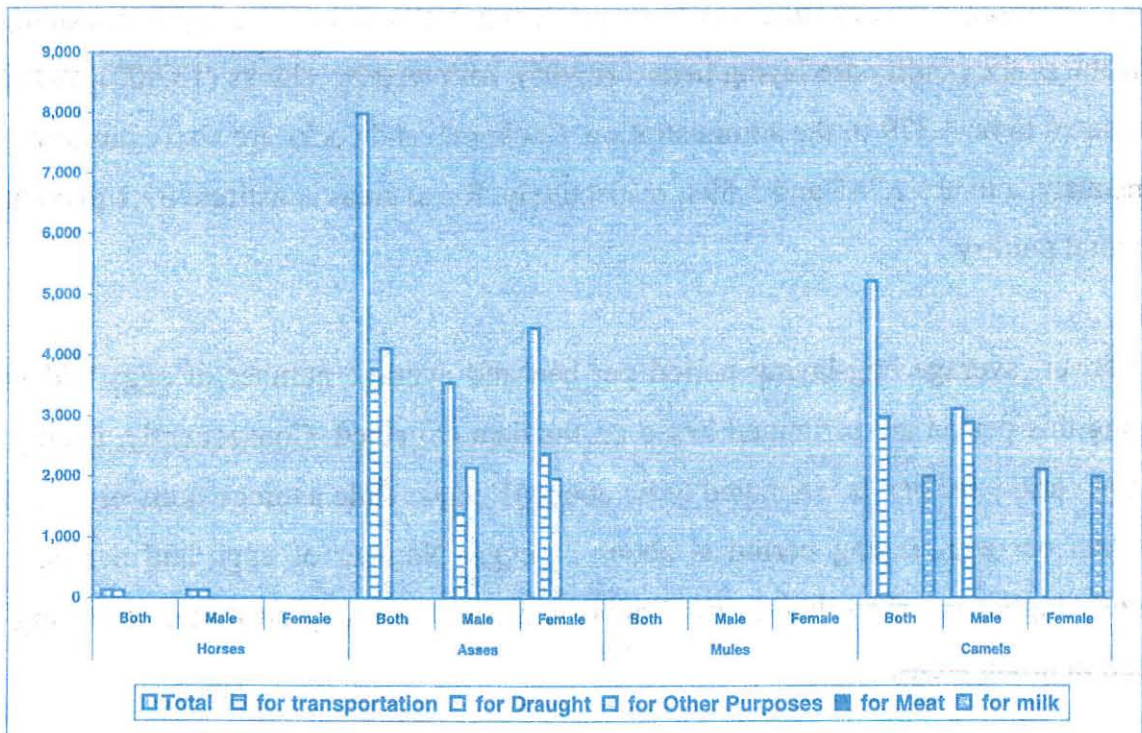
Age, Breed, and Purpose	Both Rural and Urban Holdings						Rural Holdings						Urban Holdings					
	Total		Male		Female		Total		Male		Female		Total		Male		Female	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Total Horses	127	100	127	100	-	-	-	-	-	-	-	-	127	100	127	100	-	-
Under 3 Years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 years and older	127	100	127	100	-	-	-	-	-	-	-	-	127	100	127	100	-	-
Horses Aged 3 years and ... Older by Purpose																		
All Uses	127	100	127	100	-	-	-	-	-	-	-	-	127	100	127	100	-	-
Transportation	125	98.43	125	98.43	-	-	-	-	-	-	-	-	125	98.43	125	98.43	-	-
Draught	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Uses	*	*	*	*	-	-	-	-	-	-	-	-	*	*	*	*	-	-
Total Asses	9,934	100	4,513	45.43	5,422	54.58	9,600	96.64	4,303	43.32	5,297	53.32	335	3.37	210	2.11	125	1.26
Under 3 Years	1941	19.54	969	9.75	972	9.78	1880	18.92	933	9.39	946	9.52	61	0.61	36	*	25	0.25
3 years and older	7,994	80.47	3,544	35.68	4,450	44.80	7,720	77.71	3,369	33.91	4,350	43.79	274	2.76	174	1.75	99	1.00
Asses Aged 3 Years and older by Purpose																		
All Uses	7,994	100	3,544	44.33	4,450	55.67	7,720	96.57	3,369	42.14	4,350	54.42	274	3.43	174	2.18	99	1.24
Transportation	3,774	47.21	1,393	17.43	2,381	29.78	2,572	32.17	1,265	15.82	2,307	28.86	202	2.53	128	1.60	74	0.93
Draught	4,110	51.41	2,147	26.86	1,963	24.56	4,048	50.64	2,105	26.33	1,944	24.32	62	0.78	42	0.53	*	*
Other Uses	*	*	*	*	*	*	*	*	-	-	*	*	*	*	*	*	-	-
Transportation	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-
Draught	*	*	-	-	*	*	*	*	-	-	*	*	-	-	-	-	-	-
Other Uses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Mules	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-
Under 3 Years	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-
3 Years and older	*	*	*	*	*	*	*	*	-	-	*	*	*	*	*	*	-	-
Mules Aged 3 Years and Older by Purpose																		
All Uses	*	*	*	*	*	*	*	*	-	-	*	*	*	*	*	*	-	-
Transportation	*	*	*	*	-	-	-	-	-	-	-	-	*	*	*	*	-	-
Draught	*	*	-	-	*	*	*	*	-	-	*	*	-	-	-	-	-	-
Other Uses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Camels	7260	100	4360	60.06	2900	39.94	7192	99.06	4310	59.37	2881	39.68	69	0.95	50	0.69	*	*
Under 4 Years	2041	28.11	1252	17.25	789	10.87	2034	28.02	1248	17.19	786	10.83	*	*	*	*	*	*
4 years and older	5219	71.89	3109	42.82	2111	29.08	5157	71.03	3062	42.18	2095	28.86	62	0.85	*	*	*	*
Camels Aged 4 Years and Older by Purpose																		
All Uses	5219	100	3109	59.57	2111	40.45	5157	98.81	3062	58.67	2095	40.14	62	1.19	*	*	*	*
Transportation	2975	57.00	2894	55.45	*	*	2929	56.12	2848	54.57	*	*	*	*	*	*	-	-
Draught	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	-	-
Meat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Milk	2001	38.34	-	-	2001	38.34	1991	38.15	-	-	1991	38.15	*	*	-	-	*	*
Other Uses	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

FIGURE VII.6 DISTRIBUTION OF HORSES, ASSES, MULES AND CAMELS BY AGE AND SEX



* Note that for camels the age categories are under 4 years and 4 years and older.

FIGURE VII.7 DISTRIBUTION OF HORSES, ASSES, MULES AND CAMELS BY SEX AND PURPOSE



45.43 are males and the remaining are females. With respect to age distribution, the majorities of the horses and asses are of the age group 3 years and older.

The estimates of these animals (aged 3 years and older) by sex and purpose are also given in Summary Table VII.3. As indicated in the table, among the horses aged three years and older, almost all 98.43 percent were used for transportation. With regard to asses, about 47.21 percent were used for transportation whereas 51.41 percent were used for draught purposes. As to the camels 57 percent of them were used for transportation and 38.34 percent were used for milk. (See also Fig. VII.7)

2.4 Poultry

Data on poultry population are collected as part of the livestock census, and the total poultry population in Dire Dawa administration is estimated to be about 47,273. In this report, poultry includes cocks, cockerels, pullets, laying hens, non-laying hens and chicks. Consequently, as shown in Summary Table VII.4 and Figure VII.8, about 40 percent of the poultry are laying hens (18,905), followed by chicks (13,000). Pullets are estimated to be 4,779 in the administration. Cockerels and cocks are also estimated separately, and are 2,745 and 5,594, respectively. Rural areas constitute 87.1 percent of the total poultry .

Moreover, average egg-laying period per hen and average number of eggs laid per hen during this period are estimated based on the data collected. Consequently, average egg-laying period per hen is estimated to be about 19 days while average number of eggs laid per hen per egg- laying period is about 11 eggs. Number of eggs laid per period are slightly higher in urban than in rural areas and could possibly attributed to raising better breed in urban areas.

2.5 Beehives

Information on beehives was also collected during the livestock census. A beehive is enumerated if and only if it produced honey at least once in the reference period (February 9, 2001 to February 8, 2002). As stated by the Ministry of Agriculture, there are three types of beehives, and these are traditional, intermediate and modern.

Traditional [Fixed comb] Hive is a hollow structure made of cheap materials like clay, straw, bamboo, false banana leaves, barks of tree, logs and animal dung. The bees fill all the available space with honeycombs from the top to down wards. The honeycombs cannot be removed since they are attached to the top and the sides of the hive. The honey can be removed only by removing one wall of the hive and breaking or cutting out the honeycomb (Reihard Fichtl and Admasu, 1994; Gezahegn Taddesse, 1993 E.C.).

Intermediate [Transitional] Hive is a long trough-shaped box with sloping sidewalls covered with bars of a fixed width. The hive consists of a bottom board, two sidewalls and front and back walls. One opening is made in the front wall to serve as flight entrance. The cover of the hive can be made from any material, which gives adequate protection against light, sun, and rain (Gezahegn Taddesse, 1993 E.C.; P.Seegeren et al, 1996).

Modern Hive [Hive with Frames] is a brood (offspring) chamber (box) with a fixed bottom board and flight board. In the bottom board there is a ventilation hole of size (15cmx30cm), which can be covered with fine wire mesh or other suitable material. The brood chamber holds ten frames, which are kept separately at the right distance by means of side bar, or nails. Queen excluder (not necessary) placed horizontally on top of the brood chamber (Gezahegn Taddesse, 1993 E.C.; P.Seegeren et al, 1996).

Any type of these beehives that produced honey at least once during the reference period (February 9, 2001 to February 8, 2002) was enumerated. Accordingly, the result of the census revealed that a total of 2,034 hives is estimated to be found in rural and urban areas of Dire Dawa Administration in which 61 percent is traditional beehive.

As indicated in Summary Table VII.5 , about 60.7 percent of the beehives are reported in rural areas.

3. LIVESTOCK PRODUCTS

This section summarizes results on livestock products. The various animal products include milk and milk products, eggs, wool, meat, hides and skins. Although data on such livestock products are not easily obtainable in the Ethiopian traditional agricultural sector, an endeavor was made to collect data on milk and honey productions. The data were collected subjectively from the holders in the sampled households and the results obtained are briefly discussed below.

3.1 Milk Production

Estimation of milk production entails three components, namely number of milking cows, number of months milking cows actually milked within the reference period and average milk production per cow per day. Hence, data on these components have been collected and the total milk production in the region is estimated by multiplying these three components. However, two basic concepts about milk production should be mentioned here. "Gross production", which includes whole fresh milk actually milked and milk sucked by young animals and also milk fed to other animals. "Net production" consists of whole milk actually milked and milk fed to other animals but excludes milk sucked by young animals. Therefore, in our case, milk production is estimated based on the concept "net production", and as indicated in Summary Table VII.6, the estimate of

SUMMARY TABLE VII.4: Estimated number of Poultry by Type for Rural and Urban Holdings

Type of Poultry	Rural and Urban Holdings		Rural Holdings		Urban Holdings	
	Number	%	Number	%	Number	%
All Poultry	47,273	100	41,172	87.09	6,101	12.91
Cocks	5,594	11.83	4,851	10.26	743	1.57
Cockerels	2,745	5.81	2,489	5.27	255	0.54
Pullets	4,779	10.11	4,226	8.94	553	1.17
Non-Laying Hens	2,250	4.76	2,017	4.27	233	0.49
Chicks	13,000	27.50	10,889	23.03	2,111	4.47
Laying Hens	18,905	39.99	16,699	35.32	2,206	4.67
Average Number Days/Clutch	19		19		19	
Average Eggs/Hen/Clutch.....	11		11		12	

SUMMARY TABLE VII.5: Estimated number of Beehives by Type for Rural and Urban Holdings

Type of Beehive	Rural and Urban Holdings		Rural Holdings		Urban Holdings	
	Number	%	Number	%	Number	%
All Beehives	2,034	100	1234	60.67	*	*
Traditional Beehives	1,240	61	1234	60.67	*	*
Intermediate Beehives	*	*	-	-	*	*
Modern Beehives	-	-	-	-	-	-

SUMMARY TABLE VII.6 : Milk and Honey Production for Rural and Urban Holdings

Item	Quantity Produced and Frequency		
	Rural and Urban Holding	Rural Holdings	Urban Holdings
Cow Milk			
Average Daily Milk Producton(Liters/Cow)	1.77	1.702	2.978
Average Lactation Period (Months)	7	8	7
Total Milk Production(Liters)	4,561,678	4,144,203	417,474
Camel Milk			
Average Daily Milk Production(Liters/Camel)	2.565	2.558	3.83
Average Lactation Period (Months)	12	12	13
Total Milk Production(Liters)	917274	915301	*
Honey Production			
All Types of Beehives			
Production (Kilograms).....	8655	8619	*
Average Frequency (Harvest/Year)		2	2
Traditional Beehives			
Production (Kilograms).....	8655	8619	*
Average Frequency(Harvest./Year)...		2	2
Intermediate Beehives			
Production (Kilograms).....	-	-	-
Average Frequency(Harvest/Year)...		-	-
Modern Beehives			
Production (Kilograms).....	-	-	-
Average Frequency(Harvest/Year)...		-	-

FIGURE VII. 8 DISTRIBUTION OF POULTRY BY TYPE

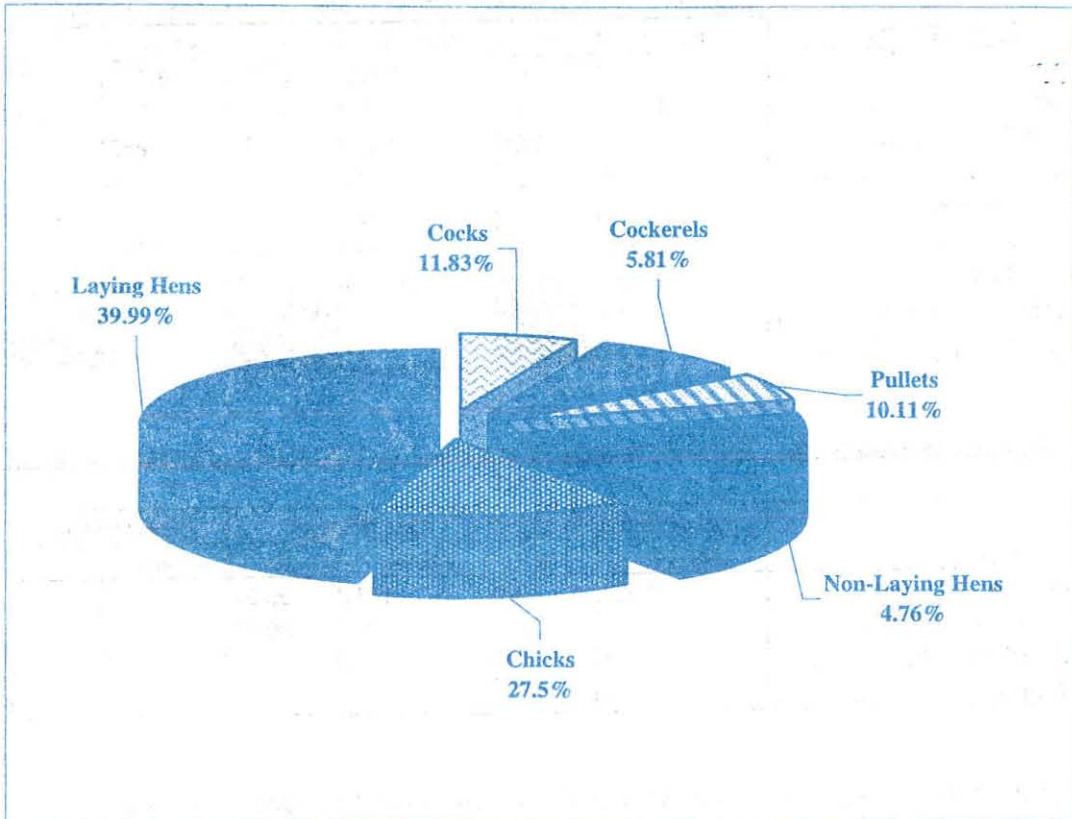
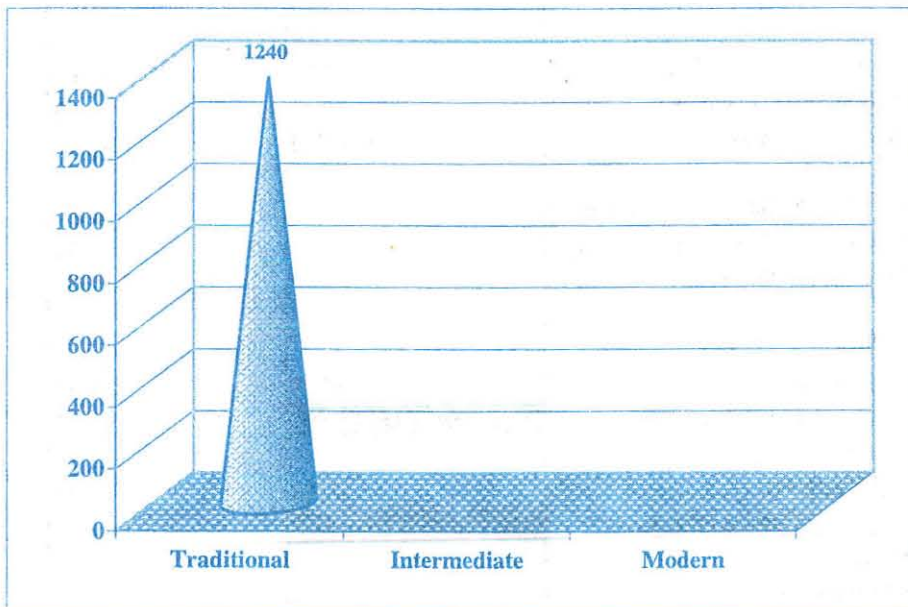


FIGURE VII. 9 DISTRIBUTION OF BEEHIVES BY TYPE



total milk production for rural and urban areas in Dire Dawa Administration during the reference period, is about 4.56 million liters of which 4.14 million liters (90.8 percent) is attributed to rural areas. A total of about 417 thousands liters of milk was as well estimated for urban areas.

Data on lactation period and average milk yield per cow per day were also collected. As a result, the average lactation period per cow in the administration is estimated to be about seven months, and average milk yield per cow per day is about 1.8 liters.

3.2 Honey Production

To estimate honey production, number of hives, frequency of honey production and honey production per harvest are required. Therefore, these data were collected from the holders within sampled households both in rural and urban areas. As a result, the estimate of total honey production is about 8,655 kilograms of which the greater portion (96.6 percent) is harvested from rural areas. (See Summary Table VII.6).

As can be seen from the census data, honey was harvested twice in a year from traditional hives in rural and urban areas.

4 UTILIZATION OF LIVESTOCK PRODUCTS

Data on the utilization of animal products were also collected during the census to assess product usage experience of holders. The products for which utilization data intended to be collected were milk, egg, honey, meat, hides and skins, wool and byproducts such as butter, cheese, and wax. It is commonly accepted that these products are often used for household consumption and/or sold to finance the purchase of basic household commodities such as coffee, salt, cooking oil, sugar, etc. The products are sometimes used as payments and gifts to others. The census data on the utilization of animal products in the rural and urban areas are presented in Summary Table VII.7. The census

SUMMARY TABLE VII.7: Livestock Product Utilization - Percentage of Uses for Rural and Urban Holdings

Type of Product	Rural and Urban Holdings					Rural Holdings					Urban Holdings				
	Total %	Percent of Product Utilized for:				Total %	Percent of Product Utilized for:				Total %	Percent of Product Utilized for:			
		Household Consumption	Sale	Wages in Kind	Other		Household Consumption	Sale	Wages in Kind	Other		Household Consumption	Sale	Wages in Kind	Other
Milk	100	53.22	42.71	0.02	4.06	100	51.88	43.97	0.02	4.13	100	73.66	23.4	-	2.94
Butter	100	83.72	13.42	-	2.85	100	83.31	13.77	-	2.92	100	94.34	4.54	-	1.12
Cheese	100	100	-	-	-	100	100	-	-	-	100	100	-	-	-
Beef	100	32.73	23.36	-	43.91	100	39.98	-	-	60.02	100	21.98	57.85	-	20.17
Mutton/Goat Meat	100	79.11	14.95	-	5.94	100	78.92	14.41	-	6.66	100	80.26	18.29	-	1.45
Eggs	100	17.86	65.84	0.03	16.27	100	12.92	70.4	-	16.68	100	71.61	16.23	0.31	11.85
Honey	100	43.01	53.86	-	3.13	100	41.73	55.1	-	3.17	100	70.9	26.99	-	2.11
Bees Wax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wool	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hide	100	73.09	26.91	-	-	100	87.55	12.45	-	-	100	10.53	89.47	-	-
Skin	100	89.49	8.68	-	1.83	100	95.65	2.47	-	1.89	100	14.42	84.45	-	1.13

result reveals that of the total annual milk production, 53.22 percent was used for household consumption, 42.71 percent was sold, 0.02 percent was used for wages and the rest 4.06 percent was used for other purposes. With respect to the utilization of butter, 83.72 percent was used for household consumption and 13.42 percent was sold. All the total cheese produced was used for household consumption.

Of the total honey produced, about 53.86 percent was sold, about 43.01 percent was used for household consumption, and 3.13 percent was used for other purposes.

Concerning utilization of the eggs produced, 65.84 percent was used for sale while only 17.86 percent of the total egg produced was used for household consumption. Moreover, 16.27 percent was used for other purposes and that could be for hatching. Holders' utilization practices on hides, and skins were also assessed and the results showed that 73.09 and 89.49 percent are used for household consumption, respectively.

5. LIVESTOCK VACCINATION, DISEASE, TREATMENT AND DEATH

Diseases have numerous negative impacts on productivity of herds i.e. death of animals, loss of weights, slow down growth, poor fertility performance, decrease in physical power and the likes. There have been many ways of fighting against diseases and among these, vaccinations (preventive measures) and treatments (curative measures) are the major ones. However, no efficient fight against disease or disease prevention is possible if descriptive data on prevalence of diseases, deaths, vaccinations, and treatments are not available. The availability of these data is also very important to set-up strategies that can assist in preventing and controlling diseases, by and large in improving veterinary services of the country. Hence, it was considered desirable to collect information on vaccinations, treatments, diseases, and deaths of animals during the census.

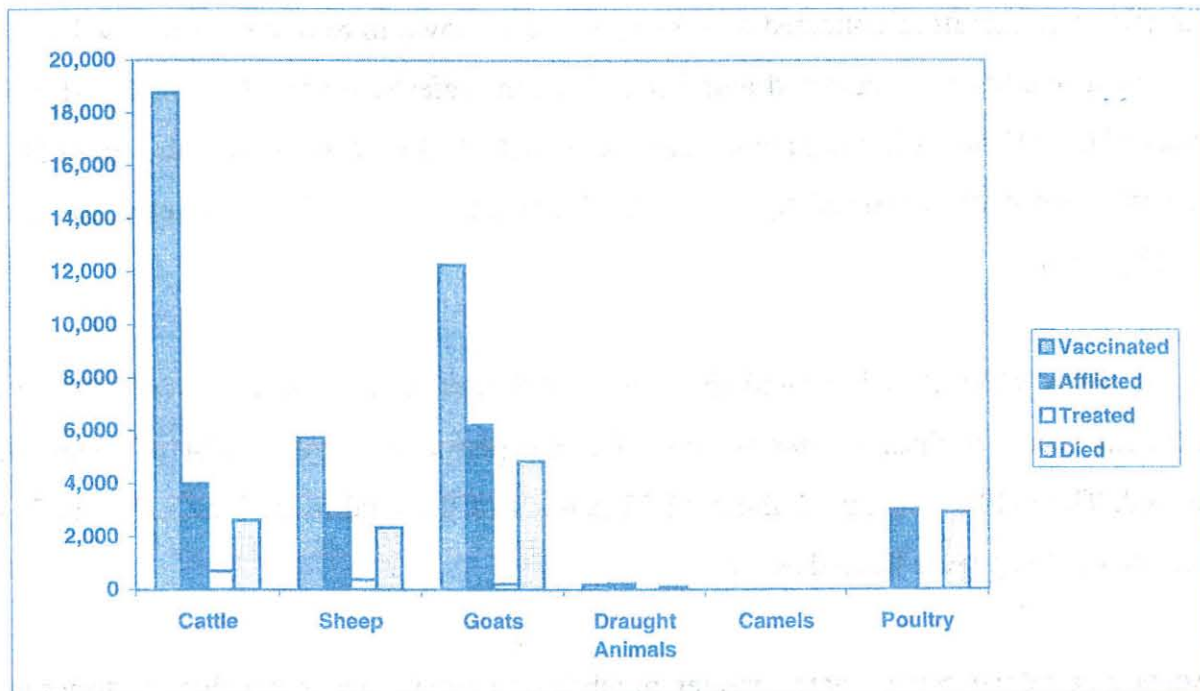
SUMMARY TABLE VII.8: Estimated number of Livestock Vaccinated, Afflicted, Treated, and Died for Rural and Urban Holdings

Item	Rural and Urban Holdings		Rural Holdings		Urban Holdings	
	Number	%	Number	%	Number	%
Total Vaccinated	37,429	100	34087	91.07	3342	8.93
Cattle	18,760	50.12	17488	46.72	1272	3.40
Sheep	5723	15.29	4816	12.87	907	2.42
Goats	12257	32.75	11206	29.94	1051	2.81
Horses, Asses, and Mules	176	0.47	*	*	68	0.18
Camels	*	*	*	*	*	*
Poultry	*	*	*	*	*	*
Total Afflicted	16,826	100	14,049	83.50	2,777	16.50
Cattle	3,988	23.70	3,597	21.38	391	2.32
Sheep	2896	17.21	2400	14.26	496	2.95
Goats	6207	36.89	5764	34.26	443	2.63
Horses, Asses, and Mules	203	1.21	153	0.91	*	*
Camels	*	*	*	*	-	-
Poultry	2,999	17.82	1,601	9.52	1,398	8.31
Total Treated	1,524	100	920	60.37	603	39.57
Cattle	706	46.33	553	36.29	153	10.04
Sheep	372	24.41	*	*	231	15.16
Goats	210	13.78	*	*	140	9.19
Horses, Asses, and Mules	*	*	*	*	*	*
Camels	*	*	*	*	-	-
Poultry	*	*	-	-	*	*
Total Died	12,987	100	10,653	82.03	2,334	17.97
Cattle	2,608	20.08	2,333	17.96	275	2.12
Sheep	2338	18.00	2000	15.40	338	2.60
Goats	4840	37.27	4489	34.57	352	2.71
Horses, Asses, and Mules	96	0.74	*	*	*	*
Camels	*	*	*	*	-	-
Poultry	2,896	22.30	1,561	12.02	1,335	10.28

SUMMARY Table VII.9: Animal Feed Practices for Rural and Urban Holdings

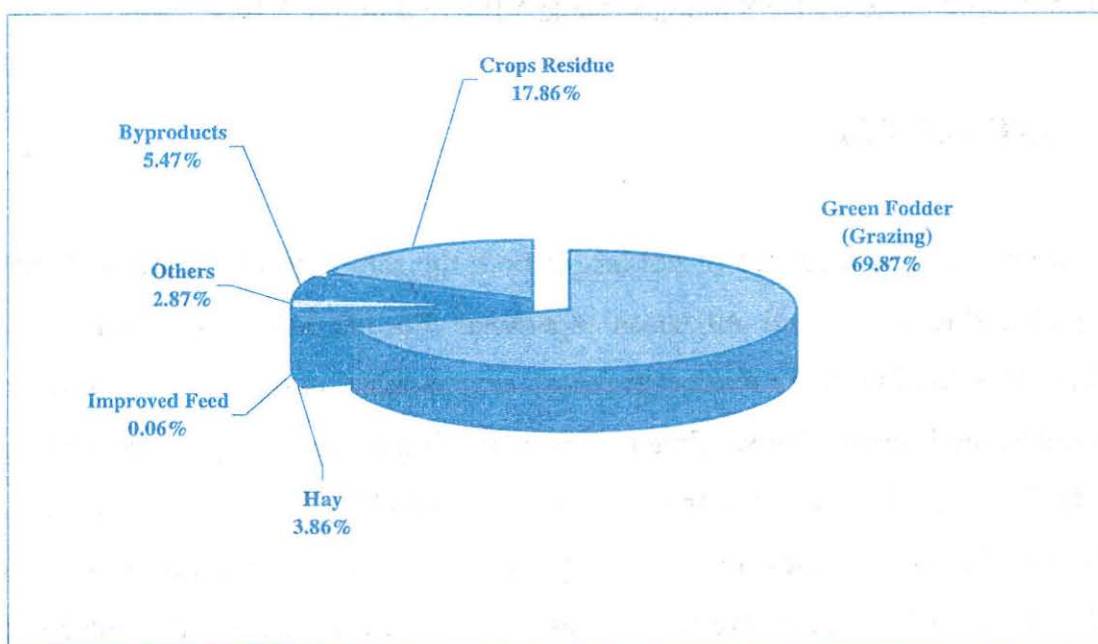
Item	Rural and Urban Holdings		Rural Holdings		Urban Holdings	
	Number Reporting	Percentage That Use:	Number Reporting	Percentage That Use:	Number Reporting	Percentage That Use:
Total		100		100		100
Green Fodder/Grazing	17,001	69.87	14,761	72.11	2241	56.63
Crops Residue	11,822	17.86	11,521	20.38	301	2.99
Improved Feed	*	*	*	*	*	*
Hay	3,046	3.86	2,133	3.19	912	7.82
By-products	4,679	5.47	3,271	2.88	1409	20.79
Others	2,669	2.87	1,475	1.39	1193	11.59

FIGURE VII.10 DISTRIBUTION OF ANIMALS VACCINATED, AFFLICTED, TREATED AND DIED



Note :- Draught Animals refer to horses , asses and mules.

FIGURE VII.11 ANIMAL FEED PRACTICES OF HOLDERS



Data on these parameters specifically on number of vaccinated, afflicted, treated and dead animals were therefore collected and the results are shown in Summary Table VII.8. The estimated number of vaccinated animals within the reference period in rural and urban areas of Dire Dawa Administration were about 37,429. Out of these animals, about 50.12 percent were cattle followed by goats, 32.75 percent. Sheep also accounted for about 15.29 percent.

In the same table, it is indicated that about 16,826 animals were diseased/afflicted by different types of diseases during the reference period and only 1,524 of them were treated. The cattle constituted about 46.33 percent of the total treated animals and 24.41 percent of sheep were treated as well.

According to the census data, greater number of animals was dead due to diseases of which 37.27 percent was goats. In addition, the estimated numbers of dead poultry and cattle are about 2,896 and 2,608, respectively. The number of sheep estimated dead is also about 2,338 heads. (See Summary Table VII.8 and Figure VII.10).

6. ANIMAL FEED

Data on animal feed practices of holders in both the rural and urban areas of the region were gathered to assess feed utilization experience. For the purpose of this report, animal feeds are classified as green fodder (grazing), crop residue, improved feed, hay, industrial byproducts, and other feeds. *Green fodder* is simply pasture grasses; *crop residue* includes harvested byproducts (straw and chaff of cereals and pulses, etc.); *improved feed* is like alfalfa; *hay* includes any type of grass, clover etc. cut and dried as fodder; and finally *industrial byproducts* are like oil cake (rapeseed cake, nuge cake, sunflower cake, etc.), bran, and brewery residue.

According to the information collected on feed usage experience of holders in rural and urban areas of the administration, green fodder or grazing is the major type of feed (about 69.87 percent) followed crops residue, (17.86 percent). Moreover, as shown in Summary Table VII.9 and Figure VII.11 5.47 percent of by product, 3.86 percent of hay and 2.87 percent of other type of feed was used.

Summary Table VII.9 also highlights the number of holders reported each type of feed. According to the data, about 17,001 holders have used green fodder or grazing to feed their animals. Significant number of holders (11,822) both in rural and urban areas also reported that they used to feed crop residues for their animals. Moreover, as shown in Summary Table VII.9 and Figure VII.11 about 4,679 and 3,046 holders have reported that they have used byproducts and hay, respectively. Quite a number of holders have also reported other types of feeds.

**STATISTICAL TABLES PRESENTING
RESULTS AT
ADMINISTRATIVE COUNCIL LEVEL**

Tables 7.1 – 7.36

TABLE 7-1: NUMBER OF LIVESTOCK BY TYPE OF ANIMAL AND PLACE OF RESIDENCE

Place of Residence	ALL LIVESTOCK								
	CATTLE	SHEEP	GOATS	HORSES	ASSES	MULES	CAMELS	POULTRY	BEEHIVES
Rural + Urban	54,155	34,015	91,007	127	9,934	*	7,260	47,273	2,034
Rural	50,712	28,950	84,517	-	9,600	*	7,192	41,172	1,234
Urban	3,443	5,065	6,490	127	335	*	69	6,101	*

TABLE 7-2: NUMBER OF CATTLE BY AGE AND SEX AND PLACE OF RESIDENCE

Place of Residence	CATTLE										
	ALL CATTLE	MALE					FEMALE				
		< 6 Months	6 Mo < 1yr	1 - <3 yrs	3 - <10 yrs	10 yrs &Over	< 6 Months	6 Mo < 1yr	1 - <3 yrs	3 - <10 yrs	10 yrs &Over
Rural + Urban	54,155	4,191	2,364	4,257	7,083	*	4,595	2,563	6,185	21,381	1,505
Rural	50,712	3,904	2,214	4,021	6,868	*	4,239	2,338	5,767	19,934	1,403
Urban	3,443	287	150	235	215	*	355	225	418	1,447	103

TABLE 7-3: NUMBER OF SHEEP BY AGE AND SEX AND PLACE OF RESIDENCE

Place of Residence	SHEEP									
	ALL SHEEP	MALE				FEMALE				
		< 6 Months	6 Mo < 1yr	1 - <2 yrs	2 yrs &Over	< 6 Months	6 Mo < 1yr	1 - <2 yrs	2 yrs &over	
Rural + Urban	34,015	5,003	1,846	1,998	2,204	4,521	1,775	3,051	13,616	
Rural	28,950	4,186	1,502	1,745	1,855	3,882	1,344	2,591	11,844	
Urban	5,065	817	343	253	349	639	431	460	1,772	

TABLE 7-4: NUMBER OF GOATS BY AGE AND SEX AND PLACE OF RESIDENCE

Place of Residence	GOATS									
	ALL GOATS	MALE				FEMALE				
		< 6 Months	6 Mo < 1yr	1 - <2 yrs	2 yrs &Over	< 6 Months	6 Mo < 1yr	1 - <2 yrs	2 yrs &Over	
Rural + Urban	91,007	13,494	4,145	3,420	3,367	14,081	6,172	8,741	37,588	
Rural	84,517	12,427	3,792	3,175	3,150	13,124	5,671	8,054	35,123	
Urban	6,490	1,067	353	245	216	957	501	687	2,465	

TABLE 7-5: NUMBER OF HORSES AND ASSES BY AGE AND SEX AND PLACE OF RESIDENCE

Place of Residence	HORSES AND ASSES									
	ALL HORSES	HORSES				ALL ASSES	ASSES			
		MALE		FEMALE			MALE		FEMALE	
		< 3 Years	3 Yrs & more	< 3 Years	3 Yrs & more		< 3 Years	3 Yrs & more	< 3 Years	3 Yrs & more
Rural + Urban	127	-	127	-	-	9,934	969	3,544	972	4,450
Rural	-	-	-	-	-	9,600	933	3,369	946	4,350
Urban	127	-	127	-	-	335	36	174	25	99

TABLE 7-6: NUMBER OF MULES AND CAMELS BY AGE AND SEX AND PLACE OF RESIDENCE

Place of Residence	MULES					CAMELS				
	All Mules	MALE		FEMALE		All Camels	MALE		FEMALE	
		< 3 Years	3 Years and Older	< 3 Years	3 Years and Older		< 4 Years	4 Years and Older	< 4 Years	4 Years and Older
Rural + Urban	*	*	*	*	*	7,260	1,252	3,109	789	2,111
Rural	*	*	-	*	*	7,192	1,248	3,062	786	2,095
Urban	*	*	*	-	-	69	*	*	*	*

TABLE 7-7: CATTLE AGED 3 – 10 YEARS BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	CATTLE AGED 3 – 10 YEARS									
	Total	MALE				FEMALE				
		Draught	Beef	Breeding	Other	Milk	Draught	Beef	Breeding	Other
Rural + Urban	28,464	5,940	655	423	*	18,774	*	*	1,711	809
Rural	26,802	5,843	606	361	*	17,623	*	*	1,460	770
Urban	1,662	97	48	62	*	1,150	*	-	251	*

TABLE 7-8: SHEEP AGED 2 AND OLDER BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	SHEEP AGED 2 AND OLDER								
	Total	MALE				FEMALE			
		Mutton/Meat	Wool	Breeding	Other	Mutton/Meat	Wool	Breeding	Other
Rural + Urban	15,820	1,220	*	940	*	*	*	13,470	*
Rural	13,699	985	*	833	-	*	*	11,734	-
Urban	2,121	235	*	107	*	*	*	1,737	*

TABLE 7-9: GOATS AGED 2 AND OLDER BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	GOATS AGED 2 AND OLDER							
	Total	MALES			FEMALES			
		Meat	Breeding	Other	Meat	Milk	Breeding	Other
Rural + Urban	40,954	1,494	1,871	*	152	1,694	35,682	*
Rural	38,273	1,386	1,764	-	*	1,413	33,553	*
Urban	2,681	108	107	*	*	281	2,129	-

TABLE 7-10: HORSES BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	HORSES AGED 3 AND OLDER						
	Total	MALES			FEMALES		
		Transportation	Draught	Other	Transportation	Draught	Other
Rural + Urban	127	125	-	*	-	-	-
Rural	-	-	-	-	-	-	-
Urban	127	125	-	*	-	-	-

TABLE 7-11: ASSES AGED 3 YEARS AND OVER BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	ASSES AGED 3 YEARS AND OLDER						
	TOTAL	MALES			FEMALES		
		Transportation	Draught	Other	Transportation	Draught	Other
Rural + Urban	7,994	1,393	2,147	*	2,381	1,963	*
Rural	7,720	1,265	2,105	-	2,307	1,944	*
Urban	274	128	42	*	74	*	*

TABLE 7-12: MULES AGED 3 YEARS AND ABOVE BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	MULES AGED 3 YEARS AND OLDER						
	TOTAL	MALES			FEMALES		
		Transportation	Draught	Other	Transportation	Draught	Other
Rural + Urban	*	*	-	-	-	*	-
Rural	*	-	-	-	-	*	-
Urban	*	*	-	-	-	-	-

TABLE 7-13: CAMELS BY SEX AND PURPOSE AND PLACE OF RESIDENCE

Place of Residence	CAMELS AGED 4 YEARS AND OLDER									
	TOTAL	MALES				FEMALES				
		Meat	Draught	Transportation	Other	Meat	Draught	Milk	Transportation	Other
Rural + Urban	5,219	-	*	2,894	*	-	*	2,001	*	*
Rural	5,157	-	*	2,848	*	-	-	1,991	*	*
Urban	62	-	-	*	-	-	*	*	-	*

TABLE 7-14: POULTRY INVENTORY AND PLACE OF RESIDENCE

Place of Residence	Total Poultry	Cocks	Cockerels	Pullets	Non-Laying Hens	Chicks	Laying Hens	Avg. Number of Clutches	Avg. Egg Production/Hen/Clutch
Rural + Urban	47,273	5,594	2,745	4,779	2,250	13,000	18,905	19	11
Rural	41,172	4,851	2,489	4,226	2,017	10,889	16,699	19	11
Urban	6,101	743	255	553	233	2,111	2,206	19	12

TABLE 7-15: BEEHIVE INVENTORY AND PRODUCTION OF HONEY AND PLACE OF RESIDENCE

Place of Residence	All Beehives		Traditional Beehives			Intermediate Beehives			Modern Beehives		
	Number of hives	Total annual honey production	Number of hives	Avg. frequency of production	Total annual honey production	Number of hives	Avg. frequency of production	Total annual honey production	Number of hives	Avg. frequency of production	Total annual honey production
Rural + Urban	2,034	8,655	1,240	2	8,655	*	-	-	-	-	-
Rural	1,234	8,619	1,234	2	8,619	-	-	-	-	-	-
Urban	*	*	*	2	*	*	-	-	-	-	-

TABLE 7-16: NUMBER OF DAIRY ANIMALS, MILK PRODUCTION AND LACTATION PERIOD AND PLACE OF RESIDENCE

Place of Residence	Number Of Dairy Cows	Number Of Milking Cows	Average Daily Milk Prod.	Average Lactation Period (Mn)	Total Milk Production (Lt)	Number Of Dairy Camels	Number Of Milking Camels	Average Daily Milk Prod.	Average Lactation Period (Mn)	Total Milk Production (Lt)
Rural + Urban	18,774	14,737	1.77		74,561,678	2,001	1,440	2.565	12	917,274
Rural	17,623	13,849	1.702		84,144,203	1,991	1,352	2.558	12	915,301
Urban	1,150	888	2.978	7	417,474	*	*	3.83	13	*

TABLE 7-17: NUMBER OF CATTLE BY SEX AND BREED AND PLACE OF RESIDENCE

Place of Residence	Total	MALE			FEMALE		
		Indigenous	Hybrid	Exotic	Indigenous	Hybrid	Exotic
Rural + Urban	54,155	17,873	*	*	35,890	196	143
Rural	50,712	17,015	*	-	33,484	*	*
Urban	3,443	858	*	*	2,406	*	78

TABLE 7-18: NUMBER OF SHEEP BY SEX AND BREED AND PLACE OF RESIDENCE

Place of Residence	Total	MALE			FEMALE		
		Indigenous	Hybrid	Exotic	Indigenous	Hybrid	Exotic
Rural + Urban	34,015	10,970	*	*	22,909	*	-
Rural	28,950	9,216	*	-	19,612	*	-
Urban	5,065	1,755	-	*	3,297	*	-

TABLE 7-19: NUMBER OF GOATS BY SEX AND BREED AND PLACE OF RESIDENCE

Place of Residence	Total	MALE			FEMALE		
		Indigenous	Hybrid	Exotic	Indigenous	Hybrid	Exotic
Rural + Urban	91,007	24,418	*	-	66,567	*	-
Rural	84,517	22,544	-	-	61,973	-	-
Urban	6,490	1,874	*	-	4,595	*	-

TABLE 7-20: ESTIMATED NUMBER OF LIVESTOCK VACCINATED BY TYPE OF ANIMAL AND PLACE OF RESIDENCE

Place of Residence	Cattle	Sheep	Goats	Draught Animals	Cameis	Poultry
Rural + Urban	18,760	5,723	12,257	176	*	*
Rural	17,488	4,816	11,206	*	*	*
Urban	1,272	907	1,051	68	*	*

TABLE 7-21: ESTIMATED NUMBER OF LIVESTOCK AFFLICTED/DISEASED BY TYPE OF ANIMAL AND PLACE OF RESIDENCE

Place of Residence	Cattle	Sheep	Goats	Draught Animals	Camels	Poultry
Rural + Urban	3,988	2,896	6,207	203	*	2,999
Rural	3,597	2,400	5,764	153	*	1,601
Urban	391	496	443	*	-	1,398

TABLE 7-22: ESTIMATED NUMBER OF LIVESTOCK TREATED BY TYPE OF ANIMAL AND PLACE OF RESIDENCE

Place of Residence	Cattle	Sheep	Goats	Draught Animals	Camels	Poultry
Rural + Urban	706	372	210	*	*	*
Rural	553	*	*	*	*	-
Urban	153	231	140	*	-	*

TABLE 7-23: ESTIMATED NUMBER OF LIVESTOCK DIED BY TYPE OF ANIMAL AND PLACE OF RESIDENCE

Place of Residence	Cattle	Sheep	Goats	Draught Animals	Camels	Poultry
Rural + Urban	2,608	2,338	4,840	96	*	2,896
Rural	2,333	2,000	4,489	*	*	1,561
Urban	275	338	352	*	-	1,335

TABLE 7-24: ANIMAL FEED PRACTICES OF PEASNT HOLDERS – PERCENTAGE USED BY TYPE OF FEED AND PLACE OF RESIDENCE

Place of Residence	Total (%)	Green Fodder	Crop Residue	Improved Feed	Hay	By-Product	Others
Rural + Urban	100	69.87	17.86	*	3.86	5.47	2.87
Rural	100	72.11	20.38	*	3.19	2.88	1.39
Urban	100	56.63	2.99	*	7.82	20.79	11.59

TABLE 7-25: ANIMAL FEED PRACTICES OF PEASNT HOLDERS – NUMBER OF HOLDERS REPORTING BY TYPE OF FEED AND PLACE OF RESIDENCE

Place of Residence	Green Fodder	Crop Residue	Improved Feed	Hay	By-Product	Others
Rural + Urban	17,001	11,822	*	3,046	4,679	2,669
Rural	14,761	11,521	*	2,133	3,271	1,475
Urban	2,241	301	*	912	1,409	1,193

TABLE 7-26: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF MILK UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	53.22	42.71	0.02	4.06
Rural	100	51.88	43.97	0.02	4.13
Urban	100	73.66	23.4	-	2.94

TABLE 7-27: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF BUTTER UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	83.72	13.42	-	2.85
Rural	100	83.31	13.77	-	2.92
Urban	100	94.34	4.54	-	1.12

TABLE 7-28: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF CHEESE UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	100	-	-	-
Rural	100	100	-	-	-
Urban	100	100	-	-	-

TABLE 7-29: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF BEEF UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	32.73	23.36	-	43.91
Rural	100	39.98	-	-	60.02
Urban	100	21.98	57.85	-	20.17

TABLE 7-30: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF GOAT MEAT/MUTTON UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	79.11	14.95	-	5.94
Rural	100	78.92	14.41	-	6.66
Urban	100	80.26	18.29	-	1.45

TABLE 7-31: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF EGGS UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	17.86	65.84	0.03	16.27
Rural	100	12.92	70.4	-	16.68
Urban	100	71.61	16.23	0.31	11.85

TABLE 7-32: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF HONEY UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	43.01	53.86	-	3.13
Rural	100	41.73	55.1	-	3.17
Urban	100	70.9	26.99	-	2.11

TABLE 7-33: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF WAX UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	-	-	-	-	-
Rural	-	-	-	-	-
Urban	-	-	-	-	-

TABLE 7-34: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF WOOL UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	-	-	-	-	-
Rural	-	-	-	-	-
Urban	-	-	-	-	-

TABLE 7-35: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF HIDES UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	73.09	26.91	-	-
Rural	100	87.55	12.45	-	-
Urban	100	10.53	89.47	-	-

TABLE 7-36: LIVESTOCK PRODUCT UTILIZATION - PERCENTAGE OF USES AND PLACE OF RESIDENCE

Place of Residence	Total (%)	PERCENT OF SKIN UTILIZED FOR:			
		Household Consumption	Sale	Wages in Kind	Other
Rural + Urban	100	89.49	8.68	-	1.83
Rural	100	95.65	2.47	-	1.89
Urban	100	14.42	84.45	-	1.13

**ANNEX TABLES PRESENTING ESTIMATES,
STANDARD ERRORS AND COEFFICIENTS OF VARIATION
FOR SELECTED LIVESTOCK VARIABLES**

Annex Tables 7.1 and 7.10

Annex Table 7.1- Estimates of Livestock, Standard Error and Coefficient of Variation by Type of Animal

PLACE OF RESIDENCE	CATTLE			SHEEP			GOATS		
	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	54,155	4,526		834,015	4,213	12	91,007	9,398	10

cont'd

PLACE OF RESIDENCE	HORSES			ASSES			MULES			CAMELS		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	127	38	30	9,934	858	9	229	135	59	7,260	1,140	16

Annex Table 7.2- Estimates of Cattle, Standard Error and Coefficient of Variation by Age group

Male Cattle

PLACE OF RESIDENCE	<6MONTHS			6MONTHS -<1YEAR			1-<3YEARS			3-<10YAERS			10YAERS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	4,191	380	9	2,364	264	11	4,257	468	11	7,083	743	11	33	34	102

Female Cattle

PLACE OF RESIDENCE	<6MONTHS			6MONTHS -<1YEAR			1-<3YEARS			3-<10YAERS			10YAERS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	4,595	573	12	2,563	365	14	6,185	691	11	21,381	1,885	9	1,505	356	24

Annex Table 7.3- Estimates of Sheep, Standard Error and Coefficient of Variation by Age group

Male Sheep

PLACE OF RESIDENCE	<6MONTHS			6MONTHS-<1YEAR			1-<2YEARS			2 YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	5,003	750	15	1,846	270	15	1,998	399	20	2,204	459	21

Female Sheep

PLACE OF RESIDENCE	<6MONTHS			6MONTHS-<1YEAR			1-<2YEARS			2 YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	4,521	730	16	1,775	319	18	3,051	478	16	13,616	1,744	13

Annex Table 7.4- Estimates of Goats, Standard Error and Coefficient of Variation by Age group

Male Goats

PLACE OF RESIDENCE	<6MONTHS			6MONTHS - <1YEAR			1-<2YEARS			2 YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	13,494	1,327	10	4,145	591	14	3,420	423	12	3,367	570	17

Female Goats

PLACE OF RESIDENCE	<6MONTHS			6MONTHS - <1YEAR			1-<2YEARS			2 YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	14,081	1,730	12	6,172	993	16	8,741	1,374	16	37,588	3,805	10

Annex Table 7.5- Estimates of Horses, Standard Error and Coefficient of Variation by Age group

PLACE OF RESIDENCE	MALE						FEMALE					
	<3YEARS			3YEARS & OLDER			<3YEARS			3YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	-	-	-	127	38	30	-	-	-	-	-	-

Annex Table 7.6- Estimates of Asses, Standard Error and Coefficient of Variation by Age group

PLACE OF RESIDENCE	MALE						FEMALE					
	<3YEARS			3YEARS & OLDER			<3YEARS			3YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	969	148	15	3,544	467	13	972	163	17	4,450	598	13

Annex Table 7.7- Estimates of Mules, Standard Error and Coefficient of Variation by Age group

PLACE OF RESIDENCE	MALE						FEMALE					
	<3YEARS			3YEARS & OLDER			<3YEARS			3YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	78	46	59	6	6	94	73	45	63	73	45	63

Annex Table 7.8- Estimates of Camels, Standard Error and Coefficient of Variation by Age group

PLACE OF RESIDENCE	MALE						FEMALE					
	<4YEARS			4YEARS & OLDER			<4YEARS			4YEARS & OLDER		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	1,252	235	19	3,109	746	24	789	161	20	2,111	395	19

Annex Table 7.9- Estimates of Poultry, Standard Error and Coefficient of Variation By Type

PLACE OF RESIDENCE	Total Poultry			Cocks			Cockerels			Pullets			Non Laying Hens			Chicks			Laying Hens		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	47,273	3,661	8	5,594	643	12	2,745	471	17	4,779	654	14	2,250	444	20	13,000	1,318	10	18,905	1,526	8

Annex Table 7.10- Estimates of Beehives, Standard Error and Coefficient of variation by Type

PLACE OF RESIDENCE	ALL BEEHIVES			TRADITIONAL			INTERMEDIATE			MODERN		
	Number	SE	CV	Number	SE	CV	Number	SE	CV	Number	SE	CV
Dire Dawa Admini.	2,034	493	24	1,240	287	23	794	401	51	-	-	-

CHAPTER VIII

FARM IMPLEMENTS, DRAUGHT ANIMALS AND STORAGE FACILITIES

1. INTRODUCTION

Agriculture is the single largest sector in the Ethiopian economy. The position of the agricultural sector for the past few decades does not only concern the peasants, but on account of the extent of its inputs, outputs and its function as a largest employer of labour has a profound impact on the entire economy. It is worth to point-out that Ethiopia has large resources in terms of land, agricultural labour, draught animals...etc.

Despite all these facts, the average yield of the main food crops and livestock products attained by private peasant holders is very low and it is not adequate to feed the ever-growing population. Because of such prevailing conditions in the agricultural sector, the economy remained at subsistence level. Among the factors that hampered the country not to prosper is the use of primitive farm implements and tools by the peasants to operate their land and to raise livestock.

The role of improved agricultural implements and tools in raising the standard of farming efficiency and increasing average yield of production has been recognized for many years. Land preparation requires modern power source that results in considerable farm efficiency and expansion of production. Seeding and fertilization are among the few agricultural operations where animal and tractor drawn machines appear to be capable of greater efficiency than only hand method. Power-driven line sowing and fertilization are more efficient than hand spreading and this is usually expected to result in higher yield for the same amount of fertilizers and seeds.

The traditional unimproved farm implements used by the peasants and the poor conditions of the draught animals are considered to be among the main factors that retarded the agricultural productivity in the country. On the other hand, the development of farm implements and machineries can also be crippled by small land

size holdings, abundant labour in rural area and non-availability of adequate access to modern farm implements and machineries, which the private peasant holders can afford to rent or buy. In general, effective development of farm implements and machineries takes place when land is abundant and labour is being rapidly absorbed by non-agricultural sector, (WB, 1984)

Since development programmes are in progress in Ethiopia, data generated from censuses and sample surveys on different types of agricultural outputs and inputs are necessary for assessments, evaluation and formulation of programmes and policies in the sector. One of the objectives of this census was to provide benchmark data that can help to assess the growth, quantity, quality and value of farm implements and other farm equipment used by the private peasant holders so as to easily identify the implements that are abundant and those that are in short supply. The structural characteristics of these farm implements and other farm equipment do not change much from year to year and such data are usually obtained from a census of agriculture, which is conducted every 5 or 10 years. Data on farm implements and other farm equipment were not collected in Ethiopia and much is not known about the status and growth of these implements. Thus, in the Ethiopian agricultural census conducted in 2001/2002, data was collected on farm implements and other farm equipment. These farm implements include, implements used for clearing land, cultivation, harvesting, threshing and others. In this census draught animals comprises animals engaged specifically in ploughing, threshing and farm transport facilities. Replacement value was one of the variables covered by this census. Replacement value is the amount it would cost to replace farm implements, equipment, draught animals and storage facilities with those that are similar in terms of origin, age, quality or condition.

In this chapter the classification of farm implements, farm equipment, draught animals and storage facilities are presented in Section 2. Brief discussions of data on Summary Tables VIII.1 to VIII.4 are also provided in Section 3. Finally, the estimates, Standard Errors (S.E.) and Coefficients of Variation (C.V.) on number of holders reporting, number of farm implements reported and total value are presented in the Annex Tables

CHAPTER VIII

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1. INTRODUCTION

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2.8 Storage facilities

- a) 'Debignet' (Local storage),
- b) 'Gottera' (Local storage),
- c) 'Gudguad' (Local storage), and
- d) Modern storage.

Definitions of storage facilities

'Debignet': - Is a round vessel of earthenware storage attached with the wall of a house. The shape of 'Debignet' is similar to the shape of a barrel. Debignet is usually around 1 metre high and 0.5-metres wide.

'Gottera': - Is storage made of bamboo plant. The bamboo is split and then crisscrossed and woven like a giant basket. Finally, it is laminated with a mixture of animal dung and dry grass. 'Gottera' is usually about 1-3 metres high and about 1 metre wide

'Gudguad': - Is an underground storage, which is formed by digging the ground with certain depth and radius. The wall of 'Gudguad' is usually laminated with animal dung.

Modern storage: - Is a storage that has a better quality in protecting grains from humidity and pests than the above mentioned storages.

3. ESTIMATES OF FARM IMPLEMENTS, DRAUGHT ANIMALS AND STORAGE FACILITIES

The type, quality and quantity of tools and implements in use usually indicate the level of farming practice and agricultural development of a country. Hence, the results of this census can give us some highlights to evaluate the farming system in the region. In this report farm implements are grouped in terms of their operation and this can help to make appropriate comparisons.

3.1 Farm Implements and Tools

The data in Summary Table VIII.1 indicates that the number of holders reporting axe was the highest followed by 'Gejera'(Chopper) while shovel was the lowest. In Dre-Dawa Administrative Council it is estimated that there were about 14,116 crop holders in rural areas of which about 12,925 (91.56%) reported to own shovels, about 85.36% reporting axe, and 4.03% reporting 'Gejeras' (choppers). Among the farm implements used for clearing land the number of observation for axe was highest and the total value for axe was also the highest followed by shovel and 'Gejera'. The expected duration of service of an axe and 'Gejeras' was estimated to be 9 years each, while for shovel it was 3 years. The data in Summary Table VIII.4 revealed that the percentage distribution of the number of crop holders that owned one, two, three and, four hoes was 58.98%, 8.99%, 1.71% and 0.29% respectively. On the other hand it is also shown that 30.02%, 93.41% and 95.32% of the crop holders did not own hoe, 'Meakeshesha' and pick-axe respectively.

One of the labour and power intensive farm activities is cultivation. It comprises digging, ploughing, sowing and weeding. In order to accomplish such operations, the Ethiopian peasants use hoe, 'Meakeshesha', pick-axe, and traditional plough. Among these farm implements and tools hoe was the highest in terms of number of holders reporting, total number of implements reported and total value. The second highest in terms of number of holders reporting and quantity reported was 'Meakeshesha'. It is also shown that sickle is reported as the only harvesting tool. For details, see Summary Table VIII.1.

3.2 Draught Animals

Peasants in Ethiopia use domestic animals for draught purposes. In several parts of the country where holdings are far from residence as a result asses, horses, mules and camels are used to transport various types of goods and agricultural products from holding to residence and vice-versa. As it is indicated in Summary Table VIII.2 among the domestic animals that are used for ploughing, ox was the highest in terms of number of holders reporting, number of oxen reported and total value which amounted to 4.2 million Birr. About 4,783 holders (33.88% of the total crop holders in the region) reported 6,751 cattle (working age cattle) used for threshing and these cattle had a value

of over 3.9 million Birr and the average replacement value of a working age cattle was about 410.17 Birr. It was also indicated that asses and camels were used by the holders for threshing and transportation.

The estimated number and percentage distribution of crop holders in rural areas that owned implements, equipment and draught animals are shown in Summary Table VIII.4. In Dre Dawa Administrative Council the census result shows that there were about 14,116 crop holders in rural areas. Among these 26.71%, 9.41%, 1.31% and 0.22% holders owned one, two, and three and four oxen respectively. On the other hand about 62.35% of the holders did not own ox. For details, see Summary Table VIII.4.

3.3 Storage Facilities

One of the methods that minimize post harvest production losses is the usage of modern storage facilities. During the census data was collected on modern storage facilities and the unimproved local storage facilities such as 'Debignit', 'Gottera' and 'Gudguad'. In this census, buildings or any structure used as storage facilities and other containers that have better storage quality to protect agricultural products from humidity and pests are considered as modern storage facilities.

The data in Summary Table VIII.3 shows the number of holders reporting storage facilities and number of such facilities. Thus, the data in the table reveals that 'Gudguad' was reported by the highest number of holders. On the other hand, 'Gottera' and modern storage facility was reported by insignificant number of holders. The percentage distribution of the number of crop holders that owned 'Gudguad' and 'Debignit' is also presented in Summary Table VIII.4.

SUMMARY TABLE VIII.1: -Number and Percentage of Holders Reporting implements and Other Farm Equipment by Type, Quantity Reported, Replacement Value, and Duration of Implement, for Private holdings

Implements and Equipment	Number of Holders Reporting	Percent of Total Holders	Number of Implements and Equipment		Total Value (Birr)	Average Replacement Value Per Imp. & Eq. (Birr)	Average Duration of Service of Imp. & Eq. (Years)
			Total Reported	#Average Per Holder			
Used for Clearing Land							
Axes	12,049	85.36	18,818	1.33	236,312	7.68	9
'Gejeras' (Choppers)	569	4.03	607	0.04	6,602	10.10	9
Shovels	12,925	91.56	16,050	1.14	135,090	6.66	3
Used for Cultivation							
Hoes	9,878	69.98	11,755	0.83	239,543	17.03	5
'Mekeskeshas'	930	6.59	1,204	0.09	*	*	3
Pick-Axes	661	4.68	661	0.05	8,167	12.36	9
Tractors	-	-	-	-	-	-	-
Parts for traditional Plough							
'Degers'	4,994	35.38	6,824	0.48	31,649	3.39	2
'Erfes'	4,885	34.61	5,361	0.38	16,435	2.79	1
Plough-Beams	5,389	38.18	5,604	0.40	112,429	19.46	5
Plough- Tips	5,747	40.71	6,264	0.44	91,761	13.63	4
'Wegel' -Tips	5,179	36.69	5,456	0.39	33,172	5.62	3
Yokes	5,388	38.17	5,880	0.42	86,301	14.07	5
Used for Harvesting							
Sickles	3,373	23.89	3,682	0.26	29,858	7.42	5
Used for Threshing							
Hay-Forks (metal)	222	1.57	222	0.02	2,786	12.55	7
Hay-Forks (wood)	3,494	24.75	3,642	0.26	18,659	5.02	4
Threshing Sticks	6,700	47.46	10,421	0.74	29,080	1.88	2
Winnowers (metal)	103	0.73	103	0.01	1,173	11.39	6
Winnowers (wood)	4,031	28.56	4,370	0.31	46,231	9.88	7
Other farm Equipment							
Carts	-	-	-	-	-	-	-
Sprayers (Hand operated)	-	-	-	-	-	-	-
Sprayers (Power operated)	-	-	-	-	-	-	-
Tying Tools	-	-	-	-	-	-	-
Wheelbarrows	*	-	*	*	*	*	*

Average per holder is the ratio of total number of each implement reported to total number of crop holders in rural areas in the region.

- Total number of crop holders comprises, holders participated in crop production only and both crop production and livestock rearing.

SUMMARY TABLE VIII.2: -Number and Percentage of Holders Reporting Draught Animals, Quantity Reported, Replacement Value, and Duration of Implement, for Private Holdings

Animals	Number of Holders Reporting	Percent of Total Holders	Number of Animals		Total Value of Animals (Birr)	Average Replacement Value Per Animal (Birr)	Average Age of Animal (Years)
			Total Reported	#Average Per Holder			
Used for Ploughing							
Asses.....	*	-	*	*	*	*	*
Camels.....	-	-	-	-	-	-	-
Horses.....	-	-	-	-	-	-	-
Mules.....	-	-	-	-	-	-	-
Oxen.....	5,314	37.65	7,106	0.50	4,260,074	440.94	5
Used for Threshing or Transportation							
Asses.....	6,261	44.35	6,728	0.48	1,637,754	226.88	10
Camels.....	2,244	15.90	2,986	0.21	2,495,409	621.01	10
Cattle.....	4,783	33.88	6,751	0.48	3,944,079	410.17	5
Horses.....	-	-	-	-	-	-	-
Mules.....	*	-	*	*	*	*	*

Average per holder is the ratio of total number of each draught animal reported to total number of crop holders in rural areas in the region.
 - Total number of crop holders comprises, holders participated in crop production only and both crop production and livestock rearing.

SUMMARY TABLE VIII.3: - Number and Percentage of Holders Reporting Storage facilities, Quantity Reported, Replacement Value, and Storage Capacity, for Private Holdings.

Storage Structure	Number of Holders Reporting	Percent of Total Storage Holders	Number of Storages		Total Value of Storages (Birr)	Average Replacement Value Per Storage (Birr)	Average Storage Capacity Per Storage (Quintal)
			Total Reported	#Average Per Holder			
'Debignits'.....	1,471	10.42	1,924	0.14	22,759	9.71	2
'Gotteras'.....	*	-	*	*	*	*	*
'Gudguads'.....	11,567	81.94	11,847	0.84	596,271	49.45	9
Modern Storage Structures.....	*	-	*	*	*	*	*

Average per holder is the ratio of total number of each storage structure reported to total number of crop holders in rural areas in the region.
 - Total number of crop holders comprises, holders participated in crop production only and both crop production and livestock rearing.

SUMMARY TABLE VIII.4: -Number of Crop Holders that Owned Farm Implements, Equipment and Draught Animals.

Name of Implement, Equipment, and Draught Animal	Number of Crop holders that owned											
	No Implement, Equipment, or Draught Animal		One Implement, Equipment, and Draught Animal		Two Implements, Equipment, and Draught Animals		Three Implements, Equipment, and Draught Animals		Four Implements, Equipment, and Draught Animals		Five and above Implements, Equipment, and Draught Animals	
	Holders	%	Holders	%	Holders	%	Holders	%	Holders	%	Holders	%
Used for Clearing Land												
Axes	2,068	14.65	6,895	48.85	4,005	28.37	831	5.89	268	1.90	49	0.35
'Gejera'.....	13,547	95.97	531	3.76	38	0.27	-	-	-	-	-	-
Shovel.....	1,191	8.44	10,294	72.92	2,290	16.22	222	1.57	85	0.60	34	0.24
Used for Cultivation												
Hoes	4,238	30.02	8,326	58.98	1,269	8.99	242	1.71	41	0.29	-	-
'Mekeskeshas'.....	13,186	93.41	690	4.89	206	1.46	34	0.24	-	-	-	-
Pick Axes	13,455	95.32	661	4.68	-	-	-	-	-	-	-	-
Tractors	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Parts for traditional Plough												
'Degers'.....	9,122	64.62	3,383	23.97	1,501	10.63	-	-	110	0.78	-	-
'Erfes' (Handle)	9,231	65.39	4,578	32.43	204	1.45	37	0.26	66	0.47	-	-
Plough-Beam	8,726	61.82	5,175	36.66	215	1.52	-	-	-	-	-	-
Plough -Tips	8,369	59.29	5,261	37.27	453	3.21	33	0.23	-	-	-	-
'Wegel' -Tips.....	8,937	63.31	4,991	35.36	116	0.82	53	0.38	19	0.13	-	-
Yokes	8,728	61.83	5,166	36.60	188	1.33	-	-	-	-	34	0.24
Used for Harvesting												
Sickles	10,743	76.11	3,117	22.08	227	1.61	16	0.11	-	-	13	0.09
Used for Threshing												
Hay-Forks (Metal)	13,894	98.43	222	1.57	-	-	-	-	-	-	-	-
Hay-Forks (Wood)	10,622	75.25	3,383	23.97	92	0.65	-	-	19	0.13	-	-
Threshing Sticks.....	7,417	52.54	4,700	33.30	1,267	8.98	269	1.91	261	1.85	202	1.43
Winnowers (Metal)	14,013	99.27	103	0.73	-	-	-	-	-	-	-	-
Winnowers (Wood)	10,085	71.44	3,692	26.15	339	2.40	-	-	-	-	-	-
Other Farm Equipment												
Carts	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Sprayers (Hand Operated)	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Sprayers (Power Operated)	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Tying Tools.....	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Wheelbarrows.....	13,799	97.75	293	2.08	24	0.17	-	-	-	-	-	-
Animals Used for Ploughing												
Asses	14,076	99.72	40	0.28	-	-	-	-	-	-	-	-
Camels.....	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Horses.....	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Mules.....	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Oxen.....	8,802	62.35	3,770	26.71	1,328	9.41	185	1.31	31	0.22	-	-
Animals Used for Threshing or Transportation												
Asses	7,856	55.65	5,868	41.57	318	2.25	74	0.52	-	-	-	-
Camels.....	11,871	84.10	1,791	12.69	367	2.60	-	-	33	0.23	54	0.38
Cattle.....	9,333	66.12	3,188	22.58	1,315	9.32	185	1.31	95	0.67	-	-
Horses.....	14,116	100.00	-	-	-	-	-	-	-	-	-	-
Mules.....	14,058	99.59	58	0.41	-	-	-	-	-	-	-	-
Storage Structure												
'Debignits'.....	12,645	89.58	1,037	7.35	414	2.93	20	0.14	-	-	-	-
'Gotteras'.....	13,957	98.87	139	0.98	20	0.14	-	-	-	-	-	-
'Gudguads'.....	2,549	18.06	11,464	81.21	81	0.57	-	-	-	-	22	0.16
Modern Storages.....	14,095	99.85	21	0.15	-	-	-	-	-	-	-	-

ANNEX TABLES PRESENTING
ESTIMATES, STANDARD ERRORS AND
COEFFICIENT OF VARIATION
FOR SELECTED FARM IMPLEMENT VARIABLES

Annex Tables 8.1

ANNEX TABLE 8.1: - Standard Errors and Coefficient of Variations For the Number of Holders Reporting, Quantity Reported and Total Value, for Private Holdings, Dre Dawa Administrative Council.

Implements, Equipment, Farm animals and Storage facilities	Number of Holders			Number of Implements, Equipment, Farm animals and Storages			Total Value		
	Reporting	S.E	C.V	Reported	S.E	C.V	(Birr)	S.E	C.V
	Used for Clearing Land								
Axes	12,049	717.27	5.95	18,818	1,287.77	6.84	236,312	3,027,639.81	12.81
'Gejeras'	569	265.57	46.64	607	281.51	46.34	6,602	255,334.93	38.68
Shovels	12,925	708.94	5.48	16,050	997.51	6.21	135,090	1,534,500.61	11.36
Used for Cultivation									
Hoes	9,878	774.35	7.84	11,755	1,041.54	8.86	239,543	3,985,088.26	16.64
'Meakeshas'	930	398.44	42.84	1,204	529.99	44.01	*	*	*
Pick-Axes	661	157.25	23.79	661	157.25	23.79	8,167	195,437.33	23.93
Tractors	-	-	-	-	-	-	-	-	-
Parts for traditional Plough									
'Degers'	4,994	585.85	11.73	6,824	838.90	12.29	31,649	525,239.93	16.60
'Erfes' (Handle)	4,885	599.36	12.27	5,361	647.67	12.08	16,435	255,801.67	15.56
Plough-Beams	5,389	600.19	11.14	5,604	609.29	10.87	112,429	1,852,774.84	16.48
Plough -Tips (Metal)	5,747	678.17	11.80	6,264	739.84	11.81	91,761	1,419,138.81	15.47
'Wegel' -Tips	5,179	605.49	11.69	5,456	646.56	11.85	33,172	582,551.59	17.56
Yokes	5,388	611.57	11.35	5,880	747.27	12.71	86,301	1,513,217.53	17.53
Used for Harvesting									
Sickles	3,373	460.99	13.67	3,682	513.58	13.95	29,858	480,302.55	16.09
Used for Threshing									
Hay-Forks (Metal)	222	73.88	33.35	222	73.88	33.35	2,786	103,140.65	37.02
Hay-Forks (Wood)	3,494	431.52	12.35	3,642	451.46	12.40	18,659	349,996.18	18.76
Threshing Sticks	6,700	843.64	12.59	10,421	1,321.53	12.68	29,080	439,884.77	15.13
Winnowers (Metal)	103	44.34	43.06	103	44.34	43.06	1,173	57,653.00	49.14
Winnowers (Wood)	4,031	419.75	10.41	4,370	451.80	10.34	46,231	759,408.34	16.43
Other Farm Equipment									
Carts (Hauling)	-	-	-	-	-	-	-	-	-
Sprayers (Hand Operated) ..	-	-	-	-	-	-	-	-	-
Sprayers (Power Operated) ..	-	-	-	-	-	-	-	-	-
Tying Tools	-	-	-	-	-	-	-	-	-
Wheelbarrows	*	*	*	*	*	*	*	*	*
Animals Used for Ploughing									
Asses	*	*	*	*	*	*	*	*	*
Camels	-	-	-	-	-	-	-	-	-
Horses	-	-	-	-	-	-	-	-	-
Mules	-	-	-	-	-	-	-	-	-
Oxen	5,314	597.48	11.24	7,106	836.87	11.78	4,260,074	52,642,014.93	12.36
Animals Used for Threshing or Transportation									
Asses	6,261	613.38	9.80	6,728	661.25	9.83	1,637,754	17,991,621.68	10.99
Camels	2,244	483.15	21.53	2,986	678.09	22.71	2,495,409	63,808,878.17	25.57
Cattle	4,783	731.10	15.29	6,751	1,074.45	15.91	3,944,079	62,437,108.09	-
Horses	-	-	-	-	-	-	-	-	*
Mules	*	*	*	*	*	*	*	*	15.83
Storage Structure									
'Debignits'	1,471	424.34	28.85	1,924	573.39	29.80	22,759	636,730.52	27.98
'Gotteras'	*	*	*	*	*	*	*	*	*
'Gudguads'	11,567	856.79	7.41	11,847	912.09	7.70	596,271	8,102,510.35	13.59
Modern Storages	*	*	*	*	*	*	*	*	*

APPENDIXES

APPENDIX I - Estimation Procedures of Totals , Ratios and
Sampling Errors

APPENDIX II - Census Questionnaires

APPENDIX I:

Estimation Procedures of Totals, Ratios and Sampling Errors

The following formulas were used to estimate total land under specific crop, production and yield of specific crop, and totals (for other variables) in a stratum (Wereda).

1. Estimation of Total Area of Land under Specific Crop:

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

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 h^{th} stratum.

M_h is the measure of size of the h^{th} stratum as obtained from the sampling frame.

m_{hi} is the measure of size of the i^{th} sample EA in the h^{th} stratum obtained from the sampling frame.

H_{hi} is the total number of agricultural households of the i^{th} sample EA in the h^{th} stratum.

h_{hi} is number of sample agricultural households successfully covered in the i^{th} sample EA in the h^{th} stratum.

a_{hi} is the sample total of values of area in the i^{th} EA in the h^{th} stratum under a specific crop.

\hat{A}_h is estimate of total area under specific crop in the h^{th} stratum.

2. Estimation of Total Production:

$$\hat{P}_h = \sum_{i=1}^{n_h} W_{hi} P_{hi}$$

in which, $P_{hi} = a_{hi} * \bar{Y}_{hi}$

Where, \bar{Y}_{hi} is average yield per square meter of a specific crop in the i^{th} EA in the h^{th} stratum as defined in the table below for different crops.

Crop	Formula for \bar{Y}_{hi}
Cereals, pulses, oilseeds, chat and coffee	$\bar{Y}_{hi} = \frac{Y_{hi}}{16C_{hi}}$
Pineapple	$\bar{Y}_{hi} = \frac{Y_{hi}}{4C_{hi}}$
Root-crops and vegetables (broadcast type), and sugar cane	$\bar{Y}_{hi} = \frac{Y_{hi}}{C_{hi}}$
Root-crops and vegetables (row type)	$\bar{Y}_{hi} = \frac{Y_{hi}}{d_{hi} * C_{hi}}$
Other permanent crops	$\bar{Y}_{hi} = \frac{Y_{hi}}{b_{hi} * C_{hi}}$

Where, d_{hi} is average sample area of root crop or vegetable (row type) used for crop-cutting in the

$$i^{\text{th}} \text{ EA in the } h^{\text{th}} \text{ stratum, or } d_{hi} = \frac{r}{n-1}$$

r is distance measured from Row 1 to Row n in meter.

n is number of rows ($2 \leq n \leq 5$).

b_{hi} is average area of a fruit bearing tree in the i^{th} EA in the h^{th} stratum.

Y_{hi} is sampled total of production of a specific crop from defined area of land for crop cutting of crop in the i^{th} EA in the h^{th} stratum.

C_{hi} is number of crop cutting of a specific crop in the i^{th} EA in the h^{th} stratum.

\bar{Y}_{hi} is average yield per square meter of a specific crop in the i^{th} EA in the h^{th} stratum.

P_{hi} is estimate of total production of a specific crop in the i^{th} EA in the h^{th} stratum.

\hat{P}_h is estimate of total production quantity of a specific crop in the h^{th} stratum.

3. Estimate of Yield of a Specific Crop in Stratum h is given by:

$$\hat{Y}_h = \frac{\hat{P}_h}{\hat{A}_h}$$

4. Estimation of Totals (Livestock, Agricultural practices, etc.)

$$\hat{y}_h = \sum_{i=1}^{m_h} \frac{M_h H_{hi}}{m_h h_{hi}} \hat{y}_{hi}$$

5. Sampling Variance of Estimates:

Sampling variance of estimate of stratum total of area, production and yield for a specific crop, and totals for other variables are estimated by the following formulas, respectively.

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

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

$$Var(\hat{Y}_h) = \frac{1}{\hat{A}_h^2} [Var(\hat{P}_h) + \hat{Y}_h^2 Var(\hat{A}_h) - 2\hat{Y}_h Cov(\hat{P}_h, \hat{A}_h)]$$

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

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

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

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

Since all strata are independent, the total variance at zonal and regional is computed by aggregating the result obtained at wereda level, i.e.

$$Var(\hat{Y}) = \sum_h^L Var(\hat{Y}_h), Var(\hat{P}) = \sum_h^L Var(\hat{P}_h) \text{ and } Var(\hat{A}) = \sum_h^L Var(\hat{A}_h)$$

Where, L is the number of strata (Weredas).

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, production and yield for a specific crop (other totals) are given respectively by:

$$CV(\hat{A}_h) = \frac{\sqrt{\text{Var}(\hat{A}_h)}}{\hat{A}_h} * 100$$

$$CV(\hat{P}_h) = \frac{\sqrt{\text{Var}(\hat{P}_h)}}{\hat{P}_h} * 100$$

$$CV(\hat{Y}_h) = \frac{\sqrt{\text{Var}(\hat{Y}_h)}}{\hat{Y}_h} * 100$$

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

$$\hat{Y}_h \pm 1.96 * S.E(\hat{Y}_h)$$

Where, $S.E(\hat{Y}_h) = \sqrt{\text{Var}(\hat{Y}_h)}$

APPENDIX II

Ethiopian Agricultural Sample Enumeration- Socio Economic characteristics of Population in Agricultural Households - 2001 /2002 (1994 E.C.)

PART I- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7
Region	Zone	Wereda		Farmers' Association	Enumeration Area	Household ID Number

PART II - DEMOGRAPHIC CHARACTERISTICS OF EACH MEMBER OF THE AGRICULTURAL

HOUSEHOLD (STARTING WITH THE HEAD OF THE HOUSEHOLD)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
SR. NO.	FULL NAME	IS MEMEBER OF THE HOUSEHOLD A HOLDER Yes =1 No =2	If Column 3, Code 1		SEX MALE = 1 FEMALE = 2	RELATION TO THE HEAD OF HOUSEHOLD	AGE (IN COMP-LETED YEARS)	EDUCATIONAL ATTAINMENT (Highest Grade Completed)	MARITAL STATUS NEVER MARRIED = 1 CURRENTLY MARRIED= 2 DIVORCED = 3 WIDOWED = 4	WERE YOU ENGAGED IN ECONOMIC ACTIVITY DURING THE LAST 12 MONTHS? Yes =1 No =2	IF NOT ENGAGED (IN COL. 11 CODE) ECONOMIC ACTIVITY WHAT WAS THE MAIN REASON? STUDENT =1 HOME MAKERS =2 HANDICAP =3 OLD AGE/PENSION =4 OTHERS =5	IF ENGAGED IN ECONOMIC ACTIVITY WHAT WAS THE MAJOR ACTIVITY? FULLY AGRICULTURE = 1 PARTLY AGRICULTURE = 2 Fully in others =3	IF IN COLUMN 13, CODE 1 OR 2, EMPLOYMENT STATUS EMPLOYER = 1 OWN-ACCOUNT WORKER = 2 EMPLOYEE = 3 UNPAID FAMILY WORKER = 4 OTHERS =5
			HOLDER ID	TYPE OF HOLDING CROP =1 LIVESTOCK =2 BOTH =3									
0	1												
0	2												
0	3												
0	4												
0	5												
0	6												
0	7												
0	8												
0	9												
1	0												

- Head = 1
- Spouse = 2
- Son/Daughter of head & spouse = 3
- Son/Daughter of head = 4
- Son/Daughter of spouse = 5
- Mother/Father of head/spouse = 6
- Sister/Brother of head/spouse = 7
- Other relatives = 8
- Non relatives = 9

- Illiterate = 1
- Informal Education = 2
- Grade 1 Completed = 3
- Grade 2 Completed = 4
- Grade 3 Completed = 5
- Grade 4 Completed = 6
- Grade 5 Completed = 7
- Grade 6 Completed = 8
- Grade 7 Completed = 9
- Grade 8 Completed = 10
- Grade 9 Completed = 11
- Grade 10 Completed = 12
- Grade 11 Completed = 13
- Grade 12 Completed = 14
- Grade 12+ = 15

RURAL

Ethiopian Agricultural Sample Enumeration
List of Fields Under Temporary Crops (Including Vegetables and Root Crops) and Agricultural Practices
(Mehere Season) - 2001/02 (1994 E.C.)

Part 1- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7	8	9	10	11
Region	zone	Wereda	Farmers Association	Enumeratio	Household		Holder			Type of Holding
				Areas	Number		Name	Age	Sex male → 1 Female → 2	Crop → 1 Livestack → 2 Both → 3

Part II - Area Under Temporary Crops and Agricultural Practice

1	2	3	4	5	6
Sr. No.	Questions	Parcel No. Field No. crop name	Parcel No. filed NO. crop name	Parcel No. filed NO. crop name	Parcel No. filed NO. crop name
		No. No. code	No. NO. code	No. NO. code	No. NO. code
0	1 Type of Holding Private → 1 Others → 3 Rnted /contract → 2				
0	2 Crop Area in local unit	Name code Area	Name code Area	Name code Area	Name code Area
0	3 Have the field been included in the extention Package program Yes → 1 No → 2				
0	4 Was the field Irrigated? Yes → 1 No → 2				
0	5 Variety of seeds used Improved → 1 Indignores → 2				
0	6 If indiginous seed was used, (For Cereals,Pulses and Oil seeds only) What was the total quantity	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram
0	7 If Improved seed was used, (For Cereals,Pulses and Oil seeds only) what was the total quantity	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram
0	8 If Improved seed was used what was the cost /price (For Cereals,Pulses and Oil seeds only)	Birr cent	Birr cent	Birr cent	Birr cent
0	9 Was the crop Damaged Yes → 1 No → 2				
1	0 If yes, what was the major cause of damage	Reason code	Reason code	Reason code	Reason code
1	1 Percentage of damage				
1	2 Any control/protection measure taken for crop damage? Yes → 1 No → 2				
1	3 If yes, what Type of measure? Chemical → 1 Both → 3 Non chemical → 2				
1	4 If chemical Insecticide → 1 1&3 → 5 Herbicide → 2 2&3 → 6 Fungicide → 3 All → 7 1&2 → 4				
1	5 Was the field fertilized? Yes → 1 No → 2				
1	6 If fertilized what type ? Natural → 1 Botlic → 3 Chemical → 2				
1	7 One main reason for not using chemical fertilizer	Reason Code	Reason Code	Reason Code	Reason Code
1	8 If chemical fertilizer used 18.1 Type Urea → 1 Both → 3 Dap → 2 18.2 Quantity in K.g	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram
1	9 If natural fertilizer used mainly What type? Manure → 1 Both → 3 compost → 2 Others → 4 / If others specify/ →				

Ethiopian Agricultural Sample Enumeration List of Fields Under Mixed Crops and their Agricultural Practices (Mehere Season) - 2001/02 (1994 E.C.)

Part I- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7	8	9	10	11	
Region	Zone	Wereda	Farmers' Association	Enumeration Areas	Household Number	Holder Number	Holders' Name		Age	Sex male → 1 Female → 2	Type of Holding Crop → 1 Livestock → 2 Bothe → 3

Part II - Area Under Mixed Crops and Agricultural Practice

1	2	3			4		
		Parcel No.	Field No.		Parcel No.	Field No.	
	Questions	Crop Name	Corp Name	Crop Name	Corp Name	Corp Name	Corp Name
		code	code	code	code	code	code
0	1 Type of Holding Private → 1 Others → 3 Rented/contract → 2						
0	2 Total mixed corp area in local unit	Name of Local Unit	code	Area	Name of Local Unit	code	Area
0	3 Was the field been included in the extention pakage program Yes → 1 No → 2						
0	4 Area in percentag share for Each crop						
0	5 Number of trees for permanent crop (Excluding Coffee, Chat, Pinapple, Sugar-cane)	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
0	6 Number of trees of fruit of permanent crop (Excluding Coffee, Chat, Pinapple, Sugar-cane)	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
0	7 was the field Irrigated yes → 1 No → 2						
0	8 Variety of seeds used Improved → 1 Indiginous → 2						
0	9 If indiginous seed was used what was the quantity (for Cereals, Pulses & Oilseeds only)	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram
1	0 If Improved seed was used, what was the quantity (for Cereals, Pulses & Oilseeds only)	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram	Kg. Gram
1	1 If Improved seed was used what was the cost/price (for Cereals, Pulses & Oilseeds only)	Birr sent	Birr sent	Birr sent	Birr sent	Birr sent	Birr sent
1	2 was the crop Damaged Yes → 1 No → 2						
1	3 If, yes, what was the major cause of Damage	Reason Code	Reason Code	Reason Code	Reason Code	Reason Code	Reason Code
1	4 percentage of Damage						
1	5 Any control/ preventive measure Taken for crop damage → 1 → 2						
1	6 If yes, what type of measure Chemical → 1 Both → 3 Non-chemical → 2						
1	7 If chemical Insecticide Insecticide → 1 1&3 → 5 Herbicide → 2 2&3 → 6 Fungicide → 3 All → 7 1&2 → 4						
1	8 Was the field fertilized yes → 1 No → 2						
1	9 If fertilized what type? Natural → 1 Both → 3 Chemical → 2						
2	0 One main Reson for not using Chemical fertilizer	Reason	Code	Reason	Code	Reason	Code
2	1 If chemical fertilizer used 21.1 Type Urea → 1 Both → 3 Dap → 2 21.2 Quantity in kg.			Kg. Gram			Kg. Gram
2	2 If natural fertilizer used mainly what type Manure → 1 Both → 3 Compost → 2 Others → 4 / If others specify/						

Rural

Ethiopian Agricultural Sample Enumeration
Area under Crop Fields and Other Land Uses
(1994 E.C)

Part 1: Identification Particular

1	2	3	4	5	6	7	8
Kilil	Zone	Wereda	FA	EA	Household ID NO	Holder ID.No.	Name of Holder

9	10	11	12	13	14	15	16	
Parcel No.	Field No.	The Field or other land used Field Under Temp/Veg/Root Crops → 1 Permanent → 2 Mixed → 3 Other land use → 4 cod	SR. No.	Name of Crop or Type of Land use	If in col.11 code 1,2 or 3			Area in Percentage share for each Crop (If in Col. 11 Code 3)
					Quantity of prod. In Local unit			
				Identification particulars				
				code	Name	Code	Quantity	
				1				
				2				
				3				

Part II. Area Measurement Result

1	2	3	4	5
The field or other land use	Area in Sq.m.	Area in Local Units		Reason if area Measurement not conducted
Date of measurement		Name of Local Area Unit	Area	
Date	Month	code		Code

Part III. Bearing and Distances of the Measured Area

Side ID	A-B	B-C	C-	D-	E-	F-	G-
Bearing							
Distane of							
Side ID	H-	I-	J-	K-	L-	M-	N-
Bearing							
Distances of							
Side ID	O-	P-	Q-	R-	S-	T-	U-
Bearing							
Distance of							

**Ethiopian Agricultural Sample Enumeration
Livestock and Honey Production-2001/2002 (1994 E.C)**

PART I - Identification Particulars

1	2	3	4	5	6	7	8	9	10	11
REGION	ZONE	WEREDA	FARMERS' ASSOCIATION	ENUMERATION AREA	HOUSEHOLD ID. No	HOLDER ID. No	HOLDER'S NAME	Age	Sex Male=1 Female=2	TYPE OF HOLDING CROP = 1 LIVESTOCK = 2 BOTH = 3

PART II-LIVESTOCK, BEEHIVES AND LIVESTOCK PRODUCTS

Question No I- Did you have livestock, And/or beehives on February 8, 2002?

Yes → 1 Complete questions below	<input type="checkbox"/>
No → 2 Complet question No II	

Number of Cattle in Age & Purpose on February 8/2002

1. Cattle of all ages on February 8,2002

- a. Cattle < 6 months
- b. Cattle 6 months & <1 years old
- c. Cattle 1 year to <3 years old
- d. Cattle 3 years to < 10 years
 - (1) Beef Cattle (for meat production purpose)
 - (2) For breeding purpose
 - (3) Dairy cows
 - (4) Cows gave milk for the last 12 months
 - (5) Draft Cattle (for work purpose)
 - (6) Cattle for other purposes
- e. Cattle 10 years and older
- f. Grand Total
 - 1. Total Local breed
 - 2. Total Exotic
 - 3. Total Hybrid

	None	Total	Male	Femal
		1	2	3
		4	5	6
		7	8	9
		10	11	12
		13	14	15
		16	17	18
		19	20	21
		22	23	24
		25	26	27
		28	29	30
		31	32	33
		34	35	36
		37	38	39
		40	41	42
		43	44	45
		46	47	48

Number of Sheep in Age & Purpose on February 8/2002

	None	Total	Male	Female
2. SHEEP of all ages on February 8, 2002		47	48	49
a. Sheep < 6 months		50	51	52
b. Sheep 6 months & < 1 years old		53	54	55
c. Sheep 1 year to < 2 years old		56	57	58
d. Sheep 2 years and older		59	60	61
(1) Sheep for meat (slaughter purpose)		62	63	64
(2) Sheep for wool only		65	66	67
(3) Sheep for breeding purpose only		68	69	70
(4) Sheep for other purposes		71	72	73
e. Grand Total		74	75	76
1. Total Local breed		77	78	79
2. Total Exotic		80	81	82
3. Total Hybrid		83	84	85

Number of Goats in Age & Purpose on February 8/2002

	None	Total	Male	Female
3. GOATS of all ages on February 8, 2002		86	87	88
a. Goats < 6 months		89	90	91
b. Goats 6 months & < 1 year old		92	93	94
c. Goats 1 year to < 2 years old		95	96	97
d. Goats 2 years and older		98	99	100
(1) Goats for meat (slaughter purpose)		101	102	103
(2) Dairy Goats		104		105
(3) Goats for breeding purpose only		106	107	108
(4) Goats for other purposes		109	110	111
e. Grand Total		112	113	114
1. Total Local breed		115	116	117
2. Total Exotic		118	119	120
3. Total Hybrid		121	122	123

Number of Pigs by age & purpose on February 8, 2002

	None	Total	Male	Female
4. Total Pigs		124	125	126
a. below 6 months		127	128	129
b. 6 months & above		130	131	132
b.1. For meat Purpose		133	134	135
b.2. Pigs for other purpose		136	137	138

Number of Horses, Asses, Mules & Camels in Age and Purpose (Feb. 9, 2001-Feb. 8, 2002)

	None	Total	Male	Female
5. HORSES of all ages		139	140	141
a. Horses <3 years old		142	143	144
b. Horses 3 Years and older		145	146	147
b1) Horses used primarily for draft purpose		148	149	150
b2) Horses for Transportation		151	152	153
b3) Horses for other purpose		154	155	156
6. MULES of all ages		157	158	159
a. Mules <3 years old		160	161	162
b. Mules 3 years older		163	164	165
b1) Mules used primarily for draft purpose		166	167	168
b2) Mules for Transportation purposes		169	170	171
b3) Mules for Other Purpose		172	173	174
7. ASSES of all ages		175	176	177
a. Asses <3 years old		178	179	180
b. Asses 3 years and older		181	182	183
b1) Asses used for draft purpose		184	185	186
b2) Asses for Transportation purposes.		187	188	189
b3) Asses for Other Purpose		190	191	192
8. CAMELS of all ages		193	194	195
a. Camels <4 years old		196	197	198
b. Camels 4 years and older		199	200	201
b1) Camels for slaughter		202	203	204
b2) Camels used for draft purpose		205	206	207
b3) Camels for milk purpose		208		209
b4) Camels for Transportation purposes		210	211	212
b5) Camels for other purposes		213	214	215

CHICKENS

9. CHICKENS Total on February 8, 2002

- a. Laying hens (over 20 weeks old)
- b. Non-laying hens (over 20 weeks old)
- c. Cocks - males (over 20 weeks old)
- d. Cockerels (8 weeks to 20 weeks old)
- e. Pullets (8 weeks to 20 weeks old)
- f. Chicks (below 8 weeks old)

None

216	
217	
218	
219	
220	
221	
222	

Question No II: Did you have livestock, chickens, and/or beehives for the last 12 months (Feb. 9, 2001-Feb.8,2002)?

Yes → 1 Complet question below	<input type="checkbox"/>
No → 2 Complet question No. 11 'c' and 'g' only	<input type="checkbox"/>

10. HONEY BEE COLONIES on February 8, 2002

- a. Traditinal beehives
- b. Intermediate beehives
- c. Modern beehives

None

223	
224	
225	
226	

MILK, EGG AND HONEY PRODUCTION FOR THE LAST 12 MONTHS (Feb. 9, 2001-Feb. 8, 2002)

11. Dairy cows & camels

- a. Dairy cows gave milk
- b. Lactation period of cows (in months)
- c. Average milking month in a caw (traditional)
- d. Milk production - per day per dairy cow in litres
- e. Dairy camels gave milk
- f. Lactation period of camels (in months)
- g. Average milking month in a camel (traditional)
- h. Milk production - per day per camel in litres

None

227	
228	
229	
230	
231	
232	
233	
234	

None

12. Egg production - per hen per clutch

'In nearest hole number of eggs

235	
236	

13. Average number of clutches (in days)

14. Honey production per beehive per year (Feb. 9, 2001 - Feb. 8, 2002) in Kg.

None

a. Average honey production from traditional beehive per season per beehive _____

Frequency of production per year per beehive. _____

b. Average honey production from intermediate beehive per season per beehive _____

Frequency of production per year per beehive. _____

c. Average honey production from modern beehive per season per beehive _____

Frequency of production per year per beehive. _____

		237	
		238	
		239	
		240	
		241	
		242	

15. Livestock diseases & treatment Feb. 9, 2001-Feb. 8,2002)

1 Sr. No.	2 Type of Livestock	3 Total Vaccinated	4 Total Affected	5 Total Treated	6 Total Died	7 Major cause of death		8 Remark
						Code		
						271	272	
1	Cattle							
2	Sheep							
3	Goats							
4	Equines							
5	Camels							
6	Pigs							
7	Chickens							

16. Source of Livestock feed

1 Sr. No.	2 TYPE OF FEED	3 USE YES = 1 NO = 2	4 IF YES, PERCENT	
			Code	Code
1	Natural grazing			
2	Crop Residue			
3	Improved pasture			
4	Hay			
6	Oil seed(noug cake)			
7	Other			

Rural

Ethiopian Agricultural Sample Enumeration Use of Crop, Livestock and Products - 2000/01 (1994 E.C.) (Peasant Holding)

Job ID				Part I - Identification Particulars							
1	2	3	4	5	6	7	8	9	10	11	
Region	Zone	Wereda	Farmers' Association	Enumeration Area	Household ID. No.	Holder ID No.	Name of Holder	Age	Sex Male =1 Female =2	Type of Holding Crop =1 Livestock =2 Both =3	

Part II - Crop Usage Proportions (Percentages)

1	2		3	4	5	6	7	8	9
Sr. No.	Name of Crop		Household Consumption	Seed	Sale*	Wages in Kind	Animal Feed	Other (Gifts ...)	Total
	Code								
0	1								
0	2								
0	3								
0	4								
0	5								
0	6								
0	7								
0	8								
0	9								
1	0								
1	1								
1	2								
1	3								
1	4								
1	5								

Part III - Livestock Product Usage Proportions (Percentages)

1	2		3	4	5	6	7
SR. No.	Name of Livestock & Livestock Products		Household Consumption	Sale*	Wages in Kind	Others (Gifts ...)	Total
	Code						
0	1						
0	2						
0	3						
0	4						
0	5						
0	6						
0	7						
0	8						
0	9						
1	0						
1	1						
1	2						
1	3						
1	4						
1	5						

*For sale includes the part of products that the holder sold for purchase of agricultural inputs, family clothings, ... etc.

Ethiopian Agricultural Sample Enumeration Miscellaneous Questions - 2001/02 (1994 E.C.)

PART I- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7	8	9	10	11
Region	Zone	Wereda	Farmers' Association	Enumeration Area	Household ID No.	Holder ID No.	Name of Holder	Age	Sex Male =1 Female =2	Type of Holding Crop =1 Livestock =2 Both =3

PART II- MISCELLANEOUS QUESTIONS

Q. No	Code
1.	Do you practice crop rotation on your holding? Yes = 1 No = 2
2.	Do you practice burning of soil to increase fertility of the soil on your holding? Yes = 1 No = 2
3.	If practice irrigation, what is the source of irrigation water? River = 1 Lake = 2 Pond = 3 Others = 4 Not Used = 5
4.	Have you used hired labour on you holding during this agricultural year? (last 12 months) Yes = 1 No = 2
5.	How many persons were engaged on the holding other than the holder? (Last 12 /mths)
	Number
	Male Female Total
5.1	permanent paid workers (full time)
5.2	Temporary (seasonal paid workers)
5.3	Unpaid family workers
5.4	partners (share holders paid/unpaid)
5.5	Total persons engaged at any time of the year
6.	Which ploughing practice do you use on your holding?
6.1	Hand dug = 1
6.2	Oxen /horse driven /pulling = 2
6.3	Mechanized /Tractor = 3
6.4	Both hand dug & oxen/ Horse driven = 4
6.5	Both Oxen/Horse driven & Mechanized = 5
7.	What method do you practice to, preserve soil against degradation or erosion?
	Terracing = 1
	Water catchment = 2
	Afforestation = 3
	Ploughing along the contour = 4
	Others /Specify/ = 5
	Do not practice = 6
8.	Have you ever been included in the extension package program? Yes = 1 No = 2 ERR
9.	If yes in 8, which extension package? Rain abundant areas extension package = 1 Rain shortage areas extension package = 2 Post harvest technology " " = 3 Economically important crops " " = 4 Livestock development " " = 5 Any two of the above = 6

Q. No	Code
10.	If the answer is 6 in 9, specify
11.	If Yes in 8, when? Specify
12.	What percentage of your holding is under the extension package/ (excluding livestock)
13.	For which crop are you using the extension package? specify
14.	If No in 8, why? specify
15.	Are you beneficiary of Credit facilities for agricultural activities Yes =1 No = 2
16.	Advisory services Yes = 1 No = 2
17.	Where do you get chemical fertilizer? Government Enterprise =1 Private Enterprise =2 Private Seller =3 Others (Specify) =4 Not Purchased =5
18.	How much do you buy 50 kg Urea? Birr Cent
19.	How much do you buy 50 kg Dap? Birr Cent
20.	How far do you go to Purchase Fertilizer? kilo meter
21.	How much time do man & women spend in the household on each of the following agricultural activities? use the codes given below the table*.
	Male Female
	21.1 Tilling
	21.2 Sowing
	21.3 Weeding
	21.4 Harvesting
	21.5 Feeding /Treating
	21.6 Milking
	21.7 Marketing of agricultural products
	* Not Participated = 1 One fourth of the time (1/4) = 2 One half of the time (1/2) = 3 Three fourth of the time (3/4) = 4 Full time = 5 Not applicable = 6

2.2 Work Animals (including those used for transport)

Line No.	2		3	4		5		6	7		8			
	Name of animal			Number owned	Replacement Value (Cost Per Animal)		Total Value		Average age of animal? (Years)	Do you rent work Animals?				
	Code				Birr	Ct.	Birr			Ct.	Yes=1 No=2	If yes rate per day	Birr	Ct.
2	6	Oxen (all including cows)	42											
2	7	Donkeys	43											
2	8	Horses	44											
2	9	Mules	45											
3	0	Camels	46											
3	1	Other (specify)												
3	2	Other (specify)												
3	3	Other (specify)												
3	4	Other (specify)												

2.3 Work Animals used specifically for plowing

3	5	Oxen for plowing	42									
3	6	Other for plowing										
3	7	Other (specify)										
3	8	Other (specify)										
3	9	Other (specify)										

2.4 Storage Facilities (Buildings)

Line No.	2		3	4		5		6	7		8			
	Storage facilities			Number owned	Replacement Value (cost per building)		Total Value		Average storage capacity of buildings? (in Quintals)	Do you rent storage facilities?				
	Code				Birr	Ct.	Birr			Ct.	Yes =1 No =2	if yes, enter rate per month	Birr	Ct.
4	0	Modern buildings	32											
4	1	" Gottera"	33											
4	2	" Debegnet"	34											
4	3	Under ground	35											
4	4	Other (specify)												
4	5	Other (specify)												
4	6	Other (specify)												
4	7	Other (specify)												

Note:- Sack, 'Silicha', 'Akumada', Plastic sack etc not used as storage facilities

Ethiopian Agricultural Sample Enumeration List of Fields Under Mixed Crops and their Agricultural Practices (Belg Season) - 2001/02 (1994 E.C.)

Part 1- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7	8	9	10	11
Region	Zone	Wereda	Farmers' Association	Enumeration Areas	Household Number	Holder Number	Holders'		Type of Holding	
							Name	Age	Sex	Crop → 1
									male → 1 Female → 2	Livestock → 2 Bothe → 3

Part II - Area Under Mixed Crops and Agricultural Practice

1	2	3						4							
	Questions	Parcel No.		Field No.				Parcel No.		Field No.					
		Crop Name		Corp Name		Crop Name		Corp Name		Corp Name		Corp Name			
		code		code		code		code		code		code			
0	1	Type of Holding Private → 1 Others → 3 Rented/contract → 2													
0	2	Have the field been included in the extension package program Yes → 1 No → 2													
0	3	Name of Local Unit						Name of Local Unit							
0	4	Production in Local Unit													
		Production Unit		Quantity		Production Unit		Quantity		Production Unit		Quantity			
		Local Unit	Code			Local Unit	Code			Local Unit	Code				
0	5	Quantity			Quantity			Quantity			Quantity				
0	6	was the field irrigated yes → 1 No → 2													
0	7	Variety of seeds used Improved → 1 Indiginous → 2													
0	8	Kg.		Gram		Kg.		Gram		Kg.		Gram			
0	9	If Indiginous seed was used what was (for Cereals, Pulses & Oilseeds) the quantity													
0	9	Kg.		Gram		Kg.		Gram		Kg.		Gram			
1	0	If Improved seed was used (for Cereals, Pulses & Oilseeds) what was the quantity													
		Birr		Cent		Birr		Cent		Birr		Cent			
1	1	If Improved seed was used (for Cereals, Pulses & Oilseeds) what was the cost/price													
1	1	was the crop Damaged Yes → 1 No → 2													
1	2	Reason		Code		Reason		Code		Reason		Code			
1	3	If, yes, what was the major cause of Damage													
1	3	percentage of Damage													
1	4	Any control/ preventive measure Taken for crop damage → 1 → 2													
1	5	If yes, what type of measure Chemical → 1 Non-chemical → 2 Both → 3													
1	6	If chemical in 16, Insecticid → 1 1&3 → 5 Herbicide → 2 2&3 → 6 Fungicide → 3 All → 7 1&2 → 4													
1	7	Was the field fertilized yes → 1 No → 2													
1	8	If fertilized what type? Natural → 1 Both → 3 Chemical → 2													
1	9	Reason						Reason							
2	0	One main Reason for not using Chemical fertilizer													
2	0	If chemical fertilizer used													
		20.1 Type		Urea → 1 Both → 3 Dap → 2		20.2 Quantity in Kilo gram		Kg.		Gram		Kg.		Gram	
2	1	If natural fertilizer used mainly what type ? Manure → 1 Both → 3 Compost → 2 Others → 4 / If others specify/ →													

Agricultural Households Demographic Characteristics - 2001 /2002 (1994 E.C.)

PART I- IDENTIFICATION PARTICULARS

1	2	3	4	5	6	7	8
REGION	ZONE	WEREDA	TOWN	HIGHER/WEREDA	KEBELE	ENUMERATIO AREA	HOUSEHOLD ID NO.

PART II- DEMOGRAPHIC CHARACTERISTICS OF EACH MEMBER OF THE AGRICULTURAL

HOUSEHOLD (STARTING WITH THE HEAD OF THE HOUSEHOLD)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	
SR. NO.	FULL NAME	IS MEMEBER OF THE HOUSEHOLD A HOLDER Yes =1 No =2	HOLDER ID	TYPE OF HOLDING CROP =1 LIVESTOCK =2 BOTH =3	SEX MALE = 1 FEMALE =2	RELATION TO THE HEAD OF HOUSEHOLD	AGE (IN COMP- LETED YEARS)	5 YEARS AND ABOVE		10 YEARS AND ABOVE		IF NOT ENGAGED (IN COL 11 COD2) ECONOMIC ACTIVITY WHAT WAS THE MAIN REASON? STUDENT =1 HOME MAKERS =2 HANDICAP =3 OLD AGE/PENSION =4 OTHERS =5	IF ENGAGED IN ECONOMIC ACTIVITY WHAT WAS THE MAJOR ACTIVITY? FULLY AGRICULTURE = 1 PARTLY AGRICULTURE = 2 Fully in others =3	IF IN COLUMN 13, CODE 1 OR 2, EMPLOYMENT STATUS EMPLOYER = 1 OWN-ACCOUNT WORKER = 2 EMPLOYEE = 3 UNPAID FAMILY WORKER = 4 OTHERS =5
								EDUCATIONAL ATTAINMENT (Highest Grade Completed) Code	MARITAL STATUS NEVER MARRIED = 1 CURRENTLY MARRIED= 2 DIVORCED = 3 WIDOWED = 4 Code	WERE YOU ENGAGED IN ECONOMIC ACTIVITY DURING THE LAST 12 MONTHS? Yes =1 No =2 Code	Code			
0	1													
0	2													
0	3													
0	4													
0	5													
0	6													
0	7													
0	8													
0	9													
1	0													

- Head = 1
- Spouse = 2
- Son/Daughter of head & spouse = 3
- Son/Daughter of head = 4
- Son/Daughter of spouse = 5
- Mother/Father of head/spouse = 6
- Sister/Brother of head/spouse = 7
- Other relatives = 8
- Non relatives = 9

- Illiterate = 1
- Informal Education = 2
- Grade 1 Completed = 3
- Grade 2 Completed = 4
- Grade 3 Completed = 5
- Grade 4 Completed = 6
- Grade 5 Completed = 7
- Grade 6 Completed = 8
- Grade 7 Completed = 9
- Grade 8 Completed = 10
- Grade 9 Completed = 11
- Grade 10 Completed = 12
- Grade 11 Completed = 13
- Grade 12 Completed = 14
- Grade 12+ = 15

