# ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

## Department of Agribusiness Management and Marketing,

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## Research Report on

# Opportunities and Constraints in Agricultural Production in Ambo Wereda, Ethiopia


By

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## Abstract

Agriculture is the backbone of Ethiopian economy. In spite of its importance in the national economy, however, it has so far remained only at subsistence level bringing about an insignificant change in living standards and improvement the life-styles of rural Ethiopioa. The present study is undertaken to find out what constraints the farmers of Ambo wereda, (smallest administrative level) in Oromya region, faced in their farming activities. Ambo wereda is one of the surplus crop-producing weredas of West Shewa zone of Ethiopia. The period covered by the study was from the second week of July to the end of August 1999. The major findings of the research include: Population growth rate of the study area (4.4%) was higher than the national average (2.9%), which resulted in population pressure and hence, resulted in land fragmentation at household level and was aggravated by declining soil fertility and increased deforestation; low on-farm income due to low productivity. About 20% of the farmers do not have any ox and 22% of the farmers have only one ox. This fact suggests that farmers face a drought power shortage to perform farming operations. The supply of improved crop seeds and livestock breeds was still at a very low level; The prices of inputs such as fertilizer, herbicides and improved crop seeds and breeds have increased due to removal of subsidies, increased transport costs and devaluation of local currency which resulted in decreased production.



**Keywords**: Modernization, agricultural transformation, population pressure, liberalization

## 1. INRODUCTION

Like many other developing countries, agriculture is the backbone of Ethiopia's economy. Agriculture contributes to about 90 percent of the foreign exchange earnings (NBE 1995/96), 85% of employment, 50% of the GDP (N.A., 1998) and generates raw materials to manufacturing industries proving that the country's economy depends largely on agriculture. It is the main source of food for households' consumption. Moreover the income of majority the rural population is mainly generated from agriculture. Further agriculture is the mainstay of the Ethiopian economy. It is main source of employment opportunities in rural Ethiopia, provides raw materials to the industry, generates foreign currency and supplies food for the fast growing population. In spite of its importance in the national economy, it has remained only at subsistence level over the years, which had adversely yielded to insignificant growth of living standards and the life-styles of rural masses.

## 2. OBJECTIVE OF THE STUDY

The main objective of the study was to the major socio-economic constraints faced by farmers in the study area and suggest suitable intervention options to overcome the problems.

## 3. METHODOLOGY AND DATA

Survey strategy was adopted for the study. In addition to the survey, some participatory appraisal tools and techniques mainly group discussions- were employed to complement the survey statements and multistage sampling procedure was used for selecting the samples.

### 3.1 The Study Area

Ambo Wereda is one of the 23 Weredas in West Shewa zone of Oromia Regional state of the Federal Democratic Republic of Ethiopia. It is located between $8^0$ 47' N - $9^0$ 21' N and $37^0$ 32' E - $38^0$ 3' E. The capital city of West Shewa zone is Ambo town which is located in Ambo Wereda. Ambo town is 125 km. away from Addis Abeba on Addis Abeba - Nekemte road. The Wereda capital is Guder, 12 kilometers away from Ambo town on Ambo- Nekemte road. The Wereda ocuupies a total area of 1491 square kilometers (149094 hectares). Of which 46.5% is farm land, 34.45% is rangeland, 1.08% is forestland, and about 18% of the land is used for other purposes (OPEDWSZ 1998).

The altitude of Ambo Wereda ranges from 1400-3064 meters above sea level. The cool, warm and hot climates cover 23%, 60% and 17% of the Wereda areas respectively. The temperature ranges from $10^0$ to $25^0$ centigrade. There are plateaus, hills, plains and ten mountains whose heights range from 2251 to 3064 m (OPEDWSZ 1998).

The Wereda has 56 Peasant Associations (PA's) and ll Kebele Associations (KA's) in the towns. There were 56 PAs and 23173 farm households in the years 1996 and 1997. There were 27508 and 8937 households in the rural and urban areas respectively. The household size of the Wereda was that it is 5 and 4.4 for rural and urban areas respectively in 1999. The total population residing in the Wereda was 202366 in 1999/2000 and 207788 in 2000/01 of 75.8% was residing in the rural areas and the remaining 24.2% urban areas. The economically active population (15 - 64 years of age) accounted for 51.2% and those under 15 years and over 64 years accouned for 44.4% and 4.4% respectively. The dependency ratio was 95.5% and the population density of the Wereda was 122/ $km^2$ in 1996/97 (OPEDWSZ 1998).

About 75% of the population in Ambo Wereda is employed in agricultural production. There were 23 agricultural service cooperatives with a total capital of Ethiopian Birr (ETB) 508,880 Birr and 74934 Birr (1US Dollar= 8.75 Birr) in 1996 and 1997 respectively (OPED WSZ 1998). While crop and livestock mixed farming system is practiced in the Wereda,. the major crops cultivated include teff (*Eragrostis tef*), wheat, barley, maize, sorghum, horse beans, and noug (*Guzotia Abyssinica*) (Ibid). About 50% and 32% of the farm households were able to get fertilizer in the years 1997 and 1998 respectively**.** Improved seeds of teff, wheat, barley, and maize were distributed to approximately 7% of the farm households in 1995/96. About 15% and 81% of the improved seeds distributed in the Wereda in 1995/96 accounted for teff and wheat respectively. Improved wheat and maize seeds were the only seeds that were distributed to 1% of the farmers in the Wereda in 1996/97 (Ibid). In 1996/97, about 39% of the farmers did not own any ox, 22% owned a pair of oxen and 13% of the farmers owned 3-4 oxen and about 3% owned five or more oxen in the Wereda (Ambo Wereda Agricultural Office, unpublished material).

Farm households in the Wereda own different types of livestock for draught purposes, milk, egg, and meat production. The total livestock population was 219639 in the Wereda in 1996, out of which cattle, sheep and goats accounted for 66%, 21% and 4% respectively. Horses and donkeys each accounted for 4% of the livestock population in

the same period. The chicken population was 46856 in the Wereda in 1998, while the major livestock feed include open grazing, hay and crop residue (OPED WSZ, 1998). There were 427 and 467 beehives in the years 1997 and 1998 respectively, of which 47 were modern beehives in each of the period. The average yield of honey per modern beehive was 35 kg and that of traditional beehive was 7.5 kg and 10 kg in 1996 and 1997, respectively. There was an increase in livestock population in a range of 2% - 19% from 1996 to 1997 except for goat population where there was a drop by 12.5% from 1996 to 1997.

## 3.2 Selection of the Study Units and Respondents

Out of 56 Peasant Associations, four (about 7% of the Peasant Associations) were purposively selected since they are accessible and found convenient to the researcher. Moreover, other factors like accessibility, agro-ecological conditions, and dominant farming systems were considered. The selected sample Peasant Associations were:

1. Senkele - 5 kms from Ambo on Ambo - Nekemte road
2. Kolba - 20 kms from Ambo on Ambo -Nekemte road
3. Altufa - 17 kms from Ambo on Ambo - Wonchi - Woliso road
4. Elamu Jalena - 15 kms from Ambo on Ambo - Addis Abeba road.

Sample households were selected at field level using simple random sampling technique. Ten percent the households were randomly selected from Senkele, Kolba, Altufa and Elamu Jalena Peasant Associations. This makes the total respondents to be 143.

## 3.3 Data Collection and Analysis

The methods of data collection were a mixture of questionnaire survey (with both closed and open ended questions) and some participatory appraisal tools mainly group discussions with representatives of each peasant association (only with three Peasant Associations). The Agricultural Development Agents of the areas organized the group discussions. Discussions were held in the local language and interpreted by another person who was an agronomist and member of the Department of Plant Sciences at Ambo College of Agriculture ( at present Ambo University). The enumerators were given training on the content of the questionnaire, methods of data collection and on how to approach farmers. During the fieldwork, the researcher closely supervised the enumerators.

The secondary source of data included both published and unpublished information about the study area in general and agricultural production in particular. Along with secondary data collection, several discussions with key informants and Wereda agricultural personnel were conducted to get insight about the study area and to assess the previously conducted research and development works. The study was conducted during the second week of July to the end of August 1999. Data from respondents were collected from July 12/1999 to July 20/1999 and group discussions with selected farmers were conducted from July 21/199 to the end of August 1999. The collected data were processed through Statistical Package for Social Sciences (SPSS). Simple percentages and averages were used. The facts revealed by the farmers during the group discussions were also complemented to the survey statements.

## 4. FINDINGS AND DISCUSSIONS

As stated earlier, the major objectives of the study is to identify socio-economic constraints of farmers in the study area and to recommend feasible options that would help in alleviating production problems. In addition to constraints identified through the semi-structured interviews, other constraints were also found during the group meetings of representatives of each Peasant Association. Though there are some variations in the socio-economic constraints among the Peasant Associations, most were common to all of the Peasant Associations. The following section discuss in detail the opportunities and constraints that were identified in the group meetings of the Peasant Associations and from data collected from the questionnaire survey.

### 4.1 Population Pressure

The population of Ambo Wereda was 202366 in 1999/2000 and the population density was 136/km$^2$ (Daniel Negeri, 1999). The estimated population growth rate for the rural areas of Ethiopia was 4.4% per annum (Central Statistical Agency of Ethiopia, 1996). Even though Ambo Wereda is considered to be one of the ten surplus crop-producing Weredas, with growing shortage of land (land fragmentation at household level), declining soil fertility, and increased deforestation, the Wereda may soon cease to be surplus producing area. Efficient promotion and implementation of family planning measures and introduction of labor-intensive technologies along with creation of off-farm employment opportunities are among the recommended intervention options in this regard.

### 4.2 Low Income and Inadequate Credit Services

The main sources of income of the farmers in the study area are sales from crop and livestock enterprises and thus off-farm employment remains the main source of income for resource-poor farmers. For most farmers, cash requirement was usually high after harvest to pay taxes, to settle debts and fulfill family and social obligations. Farmers are therefore forced to sell their agriculture surplus right after harvest when the prices of most agricultural products are at their lowest level. This leads to low income and to low or no saving, which in turn leads to little or investment in in agricultural production specially for resource poor farmers. In some instances, it resulted in shortage of seed and food for the family in the main farming season (in the period July – September). Farmers are indirectly compelled to sell produce immediately after harvest to accommodate the creditor agencies which fear that they may not be paid in time. If arrangements like interim finance or pledge is provided this problem could be alleviated.

**Table1:** Distribution of credit for farmers in the study area, by sources

| Description | Households | Credit sources | | Users of credit services of households % | | |
|---|---|---|---|---|---|---|
| | | Source | % Coverage | Husband | Wife | Both |
| 1. Credit availed | 39 (29 %) | Ministry of Agriculture | 79 | 92 | 5 | 3 |
| | | Private | 7 | | | |
| | | Credit associations | 4 | | | |
| | | From the above two or three sources | 10 | | | |
| 2. Credit not availed | 97 (71%) | - | -- | - | - | - |

Source: Computed from the survey data by author

As Table 1 reveals, only 29% of the farmers get credit which, about 80% of the credit source is from the Ministry of Agriculture and about 92% of the credit is taken by husbands who are the head of the family. The obligation to settle debt right after harvest forces farmers to sell their products at lower prices which as a result discourages the use of the services. As some farmers reflected in the group discussions "Credit service has been useful to purchase inputs which has increased production. We produce and give our benefits to grain traders by selling large amount of products at lower prices, which leaves us with very low benefit".

Low on-farm income due to low productivity, sale of crops right after harvest at low prices to settle debt and meet other needs, insufficient or inadequate off-farm opportunities and poor capital status were found to be the main causes of cash shortage. The intervention options against cash shortage include introduction of credit granting scheme or institutions for farmers with small-holdings and improving on-farm activities for better income, and arrangements of repayment of loan after marketing of products at better prices.

**4.3 Draught Power Shortage**

Information from the sample farmers reveals that 42% have no ox and one ox (19.6% have no ox and 22.4% one ox) for farming operations (table 2). The secondary data obtained from the Office of Planning and Economic Development for West Shewa Zone revealed that in 1997, 38.73% of the farmers in West Shewa zone did not have any ox and 21.92%. It was also revealed that 58% of farmers in Ambo Wereda own two or more

oxen whereas about 40% of the farmers in west Shewa zone (average for all 23 weredas) own two or more oxen. Ox ownership position of farmers in Ambo wereda is higher than the zone average. The intervention options in this regard include undertaking studies and developing appropriate technology to use one ox or horse or cows for carrying out farming activities and establishment of long-term or medium term credit scheme for the purchase of oxen

**Table 2:** Distribution of draught power ownership of farmers in the study area and of farmers in all weredas of West Shewa Zone

| Households | All sample peasant association in 1999 *[1] | West Shewa zone 23 for weredas in 1997 *[2] |
|---|---|---|
| 1. Own no ox | 19.6 | 38.73 |
| 2. Own one ox | 22.4 | 21.92 |
| 3. Own two or more oxen | 58.0 | 39.35 |

*[1] Source: Computed from the survey data by author

*[2] Source: Office of Planning and Economic Development for West Shewa zone 1998

### 4.4 Shortage of Inputs

Farmers in the discussions revealed that there is low supply of improved seed, cattle breed and chicken breed. This was substantiated by the analysis from the secondary data from Wereda Bureau of Agriculture (WBOA) which reveal that, in the years 1997-1999, on an average, 1.7% of the farmers got maize seed, 1% got wheat seed in the entire zone, which was very much insignificant. It was also learned that a very small percentage of production areas was planted with improved seeds. The supply of appropriate improved

varieties of crop and livestock is indispensable to improve agricultural production and productivity (see Table 3 below).

**Table 3:** Distribution of crop production areas with improved seeds and local varieties, 1997 - 1999

| Crop type | Production area in 1997 | | | | Production area in 1998 | | | | Production area in 1999 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | With improved seeds | With local seeds | Total area | % Area with improved seeds * | With improved seeds | With local seeds | Total area | % of total area with improved seeds * | With improved seeds | With local seeds | Total area | % of total area with improved seeds * |
| 1. Teff | 311 | 16546 | 16857 | 1.84 | - | 18100 | 18100 | - | - | 17565 | 17565 | - |
| 2. Wheat | 366 | 12048 | 12414 | 2.94 | 15 | 13385 | 13400 | 0.12 | 176 | 13819 | 13995 | 1.26 |
| 3. Maize | 87 | 5772 | 5859 | 1.48 | 124 | 6376 | 6500 | 1.9 | 317 | 6078 | 6498 | 4.79 |
| 4. Barely | 5 | 15195 | 15200 | 0.03 | - | 12084 | 12084 | - | 13 | 15347 | 15360 | 0.85 |
| 5. All crop s | 769 | 95253 | 96022 | 0.8 | 139 | 71474 | 71613 | 0.19 | 508 | 66223 | 66731 | 0.76 |

Source: - Annual Reports of Ambo Wereda Bureau of Agriculture 1997-1999

* Percentages computed from survey data by Author

### 4.5 High Cost and Untimely Delivery of Inputs

Since the introduction of improved crop and livestock technologies in the study area, farmers have been purchasing mainly fertilizers and limited types and amounts of improved crop seeds, herbicides etc. In the group discussions farmers revealed that the prices of inputs generally increased over time. The causes of high input cost may include discontinuation of subsidies, increased transport costs, devaluation of local currency among others. It was revealed that improved seeds prices were higher in 1998 and 1999 as opposed to that of 1996 and 1997. The prices of fertilizers Di-Ammonium Phosphate (DAP) and Urea were higher in 1997.

Regarding credit services, data collected from the 39 credit users of the sample population revealed that 41% had complaints about untimely delivery of inputs, 26% anxiety fear about not being able to of pay debts, 5% pointed out that repayment period was short and 28% had other different reasons. The complaints raised in the group discussions and the semi-structured individual interviews are not similar. This dissimilarity of constraints and high demand for fertilizer by farmers every year in the agricultural production of major crop enterprises calls for an in-depth research of the problem in general and profitability studies of major crop enterprises in particular. The prices of agricultural produce during the repayment period of debts on inputs to the government were generally low. High input prices, coupled with cash shortage might be a major challenge especially for resource-poor farmers, to participate in extension package programmes. Possible intervention options include identifying the right debt repayment period so that farmers can fetch better prices for their outputs and/or organizing farmers into multipurpose cooperative societies and in turn the

multipurpose cooperatives must organize into cooperative unions whose sole activity is marketing (there is no separate marketing cooperative in Ethiopia) and ample emphasis by researchers to generate low-input technologies that are affordable and adoptable by farmers. Table 4 presents the trends in input prices of seeds and fertilizers.

**Table 4:** Trends in price of improved seeds and fertilizer 1997-1999

| Item | Average price Birr per quintal | | | | |
|---|---|---|---|---|---|
| | 1996 | 1997 | 1998 | 1999 | Four years average |
| Improved seeds | | | | | |
| 1. Teff | 277 | NA | 324 | NA | 308 |
| 2. Wheat | 218 | 211 | 245 | 245 | 230 |
| 3. Maize | 525 | 497 | 547 | 578 | 537 |
| 4. Barely | 160 | 160 | 200 | 200 | 180 |
| Fertilizer | | | | | |
| 1. DAP | 200 | 246 | 228 | 239 | 228 |
| 2. Urea | 190 | 232 | 163 | 150 | 184 |

Source: - Annual Reports of Ambo Wereda Bureau of Agriculture 1997-1999 (four years average computed)

NA = Data not Available

### 4.6 Land Fragmentation

Declining size of farmland at household level results not only in fragmentation of farm land area but also leads to continuous cultivation and this in turn leads to the destruction of forests and shrubs in search of cultivable land and/or charcoal production. The findings show that about that about 32% of the households own a farm size less or equal to 1.5 hectares and about 39% of the households own a farm size ranging from 1.5 to 3.0 hectares. It was also revealed that 73 % of the farmers have their farmland fragmented while 24% have their farmland quite intact (see Table 5 and 6 below). The intervention options to alleviate this problem may include expansion of intensive agriculture through the adoption of appropriate crop and livestock production technologies and improving the fertility status of the soil by adopting appropriate soil and water conservation strategies.

In general the problems in agricultural development of the study area as a whole that were revealed by the farmers raised in the group discussions included:

a) Scarcity of land, declining soil fertility and soil erosion;
b) Shortage of grazing area for animals;
c) Large scale of charcoal production causing the forest area to decline drastically; and
d) Termite infestation on wheat, maize, teff, and eucalyptus enterprises.

**Table 5:** Percentage of farmers holding farm sizes

| Serial number | Farm size range in hectares | % Households in the range |
|---|---|---|
| 1 | 0.25 to 1.5 | 31.8 |
| 2 | >1.5 to ≤ 3 | 38.7 |
| 3 | > 3 to ≤ 4.5 | 18.6 |
| 4 | > 4.5 to ≤ 6 | 7 |
| 5 | > 6 | 3.9 |

Source: Computed from the survey data by author

**Table 6:** Farmland status and number of farm plots managed by farm household

| Detail | % Farmers |
|---|---|
| I. Farm land status | |
| 1. Fragmented | 73 |
| 2. Quite intact | 24 |
| 3. Both fragmented and intact | 3 |
| II. Number of plots managed by farm households | |
| 1. Only one plot | 8 |
| 2. Two plots | 21 |
| 3. Three plots | 31 |
| 4. Four plots | 21 |
| 5. Five plots | 8 |
| 6. Greater than five plots | 11 |

Source: Computed from the survey data by author

### 4.7 Opportunities

Among the major opportunities identified in the study area are the following:

- The farmers' participation in the extension package program has been based on their willingness. There has not been any imposition made on farmers to participate in extension package programmes. However, there has not been any recognized effort by the Ministry of Agriculture to involve farmers in any extension program development.
- Farmers are very well aware of sending their children to school. Hence, majority (73.33%) of the farmers in the study area had their children sent to school. While 26.67% did not. The reasons offered include under school age (16.3%), low income (4.44%) and other reasons (5.93%) (Table 7).
- Farmers are aware of the relationship between income and family size. Over 45.20% of the farmers in the study area do not want to have more children than they already had due to: low income (17.8%), old age (11%) having had enough children (6.2%) other reasons (11%) (table 8). In fact 54.8% of the farmers do want to have more children the reasons included: security during old age (9.63%), help the family in different tasks (10.3%), increase the ethnic population (11%) and for other reasons (23.7%) (Table 8).

**Table 7:** Reasons as to why farm households do not send their children to school in the study area

| Details | Number of respondents of All sample peasant associations | % Respondents |
|---|---|---|
| Do not send children to school | | |
| 1. Pre-school age | 22 | 16.30 |
| 2. Low income | 6 | 4.44 |
| 3. Other reasons | 8 | 5.93 |
| Subtotal | 36 | 26.67 |
| Send children to school | | |
| 1. Send to school | 99 | 73.33 |
| Total | 99 | 100 |

Source: Computed from the survey data by author

**Table 8:** Awareness of farm households about family size

| Ser. No. | Details | Number of respondents of All sample peasant associations | % Respondents |
|---|---|---|---|
| 1 | Households who do not want to have more children than they have at present | 61 | 45.20 |
| | Reasons | | |
| | a) Old age | 15 | 11.00 |
| | b) Low income | 24 | 17.80 |
| | c) Have enough children | 7 | 6.20 |
| | d) For other reasons | 15 | 11.00 |
| 2 | Households who do want to have more children than they have at present | 74 | 54.80 |
| | Reasons | | |
| | a) Security during old age | 13 | 9.63 |
| | b) Help the family in different tasks | 14 | 10.37 |
| | c) Increase the ethnic population | 15 | 11.10 |
| | d) For other reasons | 32 | 23.70 |

Source: Computed from the survey data by author

## 5. CONCLUSIONS AND RECMMENDATIONS

The study revealed that population growth rate of the study area is higher than the national average. As some reports indicate the rate of fertility decline in rural areas is slower than the urban areas due to lack of contraceptives, lack of family planning services and poorer educational background of the rural population. The alternative approaches like education, reproductive health, family planning, etc. introduced for reducing the national population growth rate of Ethiopia need to be evaluated in the rural areas so that effective population control measures may be devised to reduce the growth rate. Moreover, it is recommended to undertake labor intensive technologies and to create off-farm employment opportunities not only in the study area but also at the national level.

The pressing financial needs of the farmers invariably force them sell their produce at a lower price, immediately after the harvest. Such 'distress sale' must be avoided and the intervention of the cooperatives (Multipurpose cooperatives and government) is recommended in the long run. These agencies can provide produce loan or interim finance till the produce is disposed for a high price.

Unavailability of drought cattle was found to be a problem to farmers especially during peak agricultural operations like ploughing. This can be solved by developing appropriate technology to use one ox or cow or horse to perform farm operations. This is a common problem in Ethiopia as a whole and strategies like hiring of tractors by cooperatives to the farmers can be considered. In densely populated agricultural countries such facilities are arranged for farmers.

The study also revealed the serious shortage of appropriate and improved varieties of crop and livestock. Seed production by the government seed enterprise could not fulfill the increasing needs of the farmers. Hence, the government should encourage the private sector to work in this area. The cooperatives in combination with government and NGO's must also take steps to improve the situation.

The farmers that are not organized in multipurpose cooperatives need to be organized and multipurpose cooperatives, in turn, must organize in cooperative union whose sole activity is marketing. The cooperative union will be beneficial in the study areas. Wherever they existed, they were noted doing commendable marketing activities through the multipurpose cooperatives and distributing inputs like fertilizers, seeds etc. at a lower price. Expanding cooperatives and integrating between cooperative unions and multipurpose cooperatives are important areas for research.

Extension activities by government agencies are at low level at present. Extension activity relating to agriculture, farm methods, family planning, HIV AIDS etc. must be activated. Such possibilities could be explored by means of undertaking relevant research studies by interested agencies

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