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Socio-economic Impact of Export Oriented Agricultural Products on Producers in Illu Abba Bor Zone, Oromia, Ethiopia

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Abstract

This study was undertaken to assess the socio-economic impact of producing export oriented agricultural crops on the livelihoods of the farmers, in western Ethiopia. The major objectives of this study is to assess the socio-economic impact of producing export oriented agricultural products on producers in terms of education, frequency of feeding and ability to finance. A random sample of 307 producers was selected using multistage random sampling from the study area. Multiple regression Models, Logistic regression models, test hypothesis: Z-test, t - test and coefficients of determination methods of data analysis were used in this study. Comparisons were made between producers and non-producers using the Z- test and regression analysis. This study defines producers as those who produce coffee and chat. If the farmer not produces coffee and chat, he/she is considered as non-producer. To assess the impact of producing agricultural exports on the educational status of the family, the ratio of children in schools to the total number of school aged children in the family, expressed as percentage. The ability of the household to feed the family was also seen in terms of the frequency of feeding the children and the adult. The percentage of farmers having corrugated iron sheet roofed houses, the percentage of farmers having separate kitchens other than their living rooms for cooking and the percentage of farmers having separate structure for livestock other than the living room were used to assess the impact of agricultural export products on the housing conditions of the farmers. It was found that producers of export oriented crops are better off than the non producers in terms of sending children to elementary school, housing conditions and ability to finance their families' food requirements. The impact of father's education, number of children and livestock ownership on the improvements in the livelihoods of the farmers and the problems facing the farmers were also emphasized. After all analysis, it can be concluded that production of export oriented agricultural products enables the farmer to send children to school, have improved housing conditions, and food secured than the non-producers. Finally, the results were recommended as creating the awareness about the uses of education, business awareness and advising the producers and non-producers of export oriented agricultural products.

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Multiple regression, Logistic regression, Agriculture, Coffee and Education

Introduction

Background of the study

Agriculture is the mainstay of the Ethiopian economy. Its share accounts for more than 40% of the total GDP, 50% of foreign currency earnings and above 80% of employment creation. Both industry and services are dependent on the performance of agriculture, which provides raw materials, generates foreign currency for the import of essential inputs and food for the fast growing population. In spite of its importance in the

national economy, agriculture is based on subsistence farm households, whose modes of life and operation have remained unchanged for centuries. Agricultural products like coffee, Chat, tea, live animals, fruits, Skin and vegetables constitute the highest components of the Ethiopian export trade (CSA, 2007). Although these come from different parts of the country, the western regions of the country contribute a great amount. Among the agricultural export oriented products produced in the western part of the country, chat and coffee constitute the highest shares.

Illu Abba Bor Zone is one of coffee and chat growing zones in the Oromia Regional State, which has a total area of 1,093,268 hectares of land (I/A/B, 2013). It has vast number of animals, fertile land, forests, coffee, Chat and different types of drainages... etc. However, the immense resource and vegetation of the area utilization and productivity level is still low and degradation of resource is higher. The large number of population in the zone is engaged in primary economic sector activities mainly on agriculture. Agricultural sector production is depending on rainy season; using traditional way of cultivation and it is not gone beyond subsistence level of the people except cash crops exported to the central market (I/A/B, 2013).

Different researchers deliberated on the impacts of Coffee and chat products on the consumers. Some of these researches concluded these as useful for consumers. Nasrula (2004) quoting an official from Somalia, Farah Khayre, stated that chat is a vehicle for conflict resolution and develops understanding between people. Pantelis, Hindeler and Taylor (2004) also listed literature on the positive and negative aspects of coffee on consumers as follows. The principal features of 'Kaht experience' are described as increased levels of alertness, ability to concentrate, confidence, friendliness, contentment and flow of idea (Kenedy, 1987). Khat sessions can provide an arena for communication where serious exchange of ideas and information take place (Weir, 1985; Kennedy, 1987). Kennedy (1983) explained that increased prevalence of respiratory problems in men, resulting from associated with heavy smoking during chat sessions as one of the problems of consuming chat. The other problems associated with chat consumers are diverting income that could be used for family needs to chat chewing (Kalix, 1987), leading to low productivity due to absenteeism and after- effects of its use (Halbach, 1972;, 1979; Elmi, 1983; Giannin et al. 1986; Kalix, 1987).

Statements of the problems

To the best of my knowledge, there has been no study undertaken on the impact of this product on *the producers*. If we agree that export trade contributes to the economy of the country and the income of those involved in export trade and coffee and chat as the most important export oriented agricultural product in Ethiopia, we have to study the impact of producing it on the livelihood of the producers. It is also important to study the problems facing the producers of this product. Scearce and Schermerhorn (2004), discussing the questions concerning export of Agricultural Products, indicate that agricultural export producers fail to understand the implications for the products that they produce. This problem may be more serious in Illu Abba Bora Zone, where most of the farmers are uneducated.

There are limited researches conducted on producers and its correlates with products Ethiopia. The implication is that the producers of export oriented product were not given attention. Beside this, most research papers focuses on the national level economy change of the country than at zone or wereda level. Measuring and analysis of socioeconomic change of the producers, on zone and/or wereda households becomes sound enough to put an agenda on the poor, targeting of policy makers in intervening on that particular study area.

This study focuses on the assessment of socioeconomic impact of producing agricultural exports on producers in terms of education, improvements in housing conditions, and the ability to finance in the family in times of food shortfalls.

Objectives of the study

The major objectives of this study is to assess the socio-economic impact of producing export oriented agricultural products on producers in terms of education, frequency of feeding and ability to finance. Specifically, this study aims:

To assess the socioeconomic impact of producing agricultural exports on producers in terms of education.

To analysis the housing conditions of the producers.

To assess the ability to finance in the family.

To compare the producers and non-producers of agricultural products of the zone.

Materials and Methods

Data collection methods

This study was conducted in Illu Abba Bor zone of the Oromiya National Regional State, Ethiopia. The zone is divided into 24 districts; Mettu the zonal capital town, is located 600 km south west of Addis Ababa, the capital city of Ethiopia and Oromiya. The study applied multistage sampling procedure. The participants of the study were selected using multistage random sampling. First the districts in zone were categorized according to the types of crops they produce. Random samples of districts were then selected at the first stage and the data were then collected from the administration offices of the selected districts. On the second stage, the peasant associations (PAs) were grouped in the same way and sampled for the study. At the third stage, the villages were grouped in the same procedure and sampled randomly. Finally, the households (farmers) were selected using systematic random sampling procedure. The sampling frames were prepared by discussing with peasant associations (PA) leaders. The summary of the sample size taken for the study is given in table 1.

The secondary data was collected from Agricultural Development Offices and publications of the distinct and Zone. On the other hand, Primary data was collected by personal interview of the farmers, using a questionnaire that had been pre- tested on the farmers residing in the villages around Mettu University.

Methods of data analysis

The main objective of this study was to assess the impact of producing agricultural exports. To meet this objective, different comparisons were made between the ***producers*** and ***non- producers***. This study defines producers as those who produce coffee and chat. If the farmer not produces coffee and chat, he/she is considered as non-producer. To assess the impact of producing agricultural exports on the educational status of the family, the researchers were used *the ratio of children in schools and those who have attended regular schools to the total number of school aged children in the family*, expressed as percentage.

The ability of the household to feed the family was also seen in terms of *the frequency of feeding the children and the adult*. The percentage of farmers *having corrugated iron sheet roofed houses, the percentage of farmers having separate kitchens other than their living rooms for cooking and the percentage of farmers having separate structure for livestock other than the living room* were used to assess the impact of agricultural export products on the housing conditions of the farmers. The strategy used by the farmers to *finance the household expenditures in times of food shortfalls and/ or crop failure was also another parameter* to assess the impact on the food security of the farmers. With this respect, the percentage of farmers using food aid as one of the strategies or the only strategy in times of food shortfalls and crop failure was used.

There are different techniques used in assessing an impact. These include the mean test, regression analysis and partial budgeting. The partial budgeting technique is a planning and decision making frame work used to compare the costs and benefits of alternatives faced by a farm business (Roth and Hyde, 2002; Dalsted and Gutierrez, 2004). The nature of the data used for this study, however, does not help us to compute costs and benefits. Thus, we used the mean test and regression analyses which are explained as follows.

The Z- test for the difference between two population means

Suppose that there are two samples drawn independently from two populations with mean μ_1 and μ_2, respectively. Then, the test about the significance of the difference between the two means takes one of the following forms:

$H_0 : \mu_1 - \mu_2 = 0$ Vs $H_1 : \mu_1 - \mu_2 \neq 0$ ---------- (1)

OR

$H_0 : \mu_1 - \mu_2 = 0$ Vs $H_1 : \mu_1 - \mu_2 > 0$ --------- (2)

OR

$H_0 : \mu_1 - \mu_2 = 0$ Vs $H_1 : \mu_1 - \mu_2 < 0$ ---------- (3)

Where, H_0 and H_1 stand for the null and alternative hypotheses, respectively.

The test statistic is then given by:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad \text{---------- (4)}$$

Where, n_1 is sample size from population1, n_2 is sample size from population2, $\bar{X}_1$ is the mean of the sample

taken from population1, $\bar{X}_2$ is the mean of the sample taken from population 2, S_1^2 is the variance of the sample taken from population 1, S_2^2 is the variance of the sample taken from population 2.

For a specified Type I error a , the null hypothesis will be rejected if: $|Z| > Z_{a/2}$, for the first form; $Z > Z_a$ for the second form; and $Z < -Z_a$ for the third form of the hypothesis. Rejecting the null hypothesis means that there is a significant difference between the means of the two groups.

The regression analysis

The method of data analysis to measure the functional relationship between a quantitative dependent variable and one or more independent variables is the regression analysis. A linear regression equation of the a dependent variable Y on k independent variables $X_1, X_2, \ldots, X_k$ is given by

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \ldots + \beta_kX_k + \varepsilon \quad \ldots\ldots\ldots\ldots (5)$$

Where,
$\beta_1, \beta_2, \ldots, \beta_k$ are the slopes (the change in Y for the unit change in the explanatory variable X_i), β_0 is the value of Y when all independent variables assumes zero value ε is the random term. The coefficients of the linear regression model are estimated under the assumption that the random term assumes normal distribution with *zero mean* and *constant variance*.

The values of the random term are also assumed to be independent of the values of the variables in the model and of the values of the error term for other cases.

After fitting a linear regression model by estimating the coefficients (Using *SPSS*), we have to test whether the coefficients are statistically significant. This can be done either by testing the overall significance of the model or by testing the significance of the individual coefficients.

Logistic regression analysis

In logistic regression model, the dependent variable is a binary or dichotomous taking two values 0 and 1 showing the probability of occurrence or otherwise of an event. Logistic regression determines the impact of multiple independent variables presented simultaneously to predict membership of one or other of the two dependent variable categories. This type of regression can be explained as follows:

Suppose we have a dependent variable assuming only two values 1 (for presence of a character of interest and 0 for the absence of the character of interest) and K explanatory variables.

The conditional expectation of Y given X, E(Y=1/X) is given by:

$$\pi(x) = \frac{e^{\beta o + \beta 1x}}{1 + e^{\beta o + \beta 1x}} \quad \text{----------(6)}$$

Where β_0, β_1 are the coefficients.

The basic logistic regression analysis begins with logit transformation of the dependent variable through utilization of maximum likelihood estimation. This is done using what is popularly known as Odds Ratio. The odds ratio for an event is represented as the probability of the event outcome divided by one minus probability of event outcome. The odds ratio is given by:

$$Odds = \left[\frac{\pi(x)}{1-\pi(x)}\right] = \cdot \quad \text{----------(7)}$$

Where *p(X)* is the probability of success if event will occur and *1 - p(x)* is the probability of failure if an event not occurring. Hence equation (7) can be transformed into an alternative form of logistic regression equation by taking the logarithmic transformation of equation (8) also called the logit transformation yields:

$$g(x) = ln\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta_0 + \beta_1 x + \varepsilon \quad \text{----------(8)}$$

For K explanatory variables $x_1, x_2, \ldots, x_K$, g(x) is given by

$$g(x) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \ldots + \beta_Kx_K + \varepsilon \quad \text{----------} (9)$$

The principles that guide an analysis using linear regression analysis was also guide as in logistic regression except that the dependent variable in logistic regression is binary and the error terms have binomial distribution (Hosmer and Lemeshow, 1989).

Results and Discussions

The Impact of Producing Export Oriented Agricultural Crops (Coffee) on the Educational Status of the family

The percentage of children aged 7 years and above was taken to compare the educational statuses of the *producers* and *non-producers*. The result shows that there are 227 producers and 80 non- producers having children in this age group. The mean percentage of children who had completed or were attending elementary schools at the time of the survey was found to be 73.94% and 26.06% for the producers and non-producers, respectively as shown in table 2.

To test the significance of this difference we used the one tailed test given by (2). The calculated Z using equation (4) was found to be Z_c = -1.96, is less than the corresponding tabulated value -1.64, at a = 0.05. Thus we reject the null hypothesis that there is no difference in the proportion of children who ever reached or in elementary schools between the *producers and non- producers*, and conclude that the percentage is higher in the producers group.

Statistical significance of the independent variables

We can test for the statistical significance of each of the independent variables. This tests whether the un standardized (or standardized) coefficients are equal to 0 (zero) in the population. If Sig. < .05, we can conclude that the coefficients are statistically significantly different to 0 (zero). The *t-value* and corresponding *Sig-value* are located in the *"t" and "Sig*." columns, respectively.

The linear regression equation characterizing the effect of Area of farm land allocated to coffee, chat, distance from elementary school, father's education, mother's education, number of cows, father's Age and mother's education on the mean total number of school aged children expressed as percentage of this analysis. we can write the equation of linear regression as follow:

$$E = 38.61 + 2.5X_1 + 5.9X_2 - 2.1X_3 + 4.2X_4 + 2.1X_6 - 1.5X_7 \text{ ---------- (10)}$$

Where, E is the number of children who ever reached elementary school divided by the total number of school aged children expressed as percentage.

Equation (10) shows that as the area allotted to coffee production, area allotted to coffee production, fathers education and mothers educations increases with increasing of percentages of sending children to school, whereas number of cows and fathers age are increases with decreases percentages of sending children to school.

The Impact on Household's Ability to Feed the Family

This impact is seen with respect to the frequency of feeding children and the adult, and the strategies used by the household in times of food shortage. The results show that the producers are better than the non-producers in all these three criteria.

The average frequency of feeding the children (see table 3) is higher for the producers than the non-producers.

As the frequency of feeding the children may depend on other factors in addition to the production of export oriented crops, We have tried to fit a regression model of the frequency of feeding children on the area of farmland allotted to coffee, area of farmland allotted to chat, area of farmland allotted to cereals, father's age, mother's age, father's years of education, mother's years of education, total number of children, household head type (male or female), number of cows, number of sheep and number of goat. The backward stepwise variable selection technique yielded

$$F_c = 3.899 + 2.50X_1 + 1.21X_2 - 0.24X_3 + 4.23X_4 \text{---} (11)$$

Where, F_c = frequency of feeding children, X_1 = area of farmland allotted to chat (in timad), X_2 = area of farmland allotted to cereals (in timad), X_3 = father's age in years, X_4 = area of farmland allotted to coffee (in timad),

As it can be seen from equation (11) the frequency of feeding children increases by 2.50 with the increase in the area allotted for chat production by 1 unit, the increase in the area allotted to cereals by 1 unit, results in the increases in the frequency of feeding children by 1.21, The increase in the age of father by 1 unit was also found to result in the decrease in the frequency of feeding the children by 0.24.

The comparison of the farmers based the strategies used for tackling the problems of food shortage and crop failure is also another important point of comparison between the producers and non-producers. Some

households sell livestock, some sell chat and/or coffee and others go for food aid when they face such problems. This study compared the percentage of farmers using food aid as the sole strategy or one of the strategies when such problems occur. The result shows that, using food aid as a strategy is higher among the non-producers than the producers (see table 5).

To test whether this difference is significant, we used the Z- test for the difference of two populations' percentage. The calculated Z_c is found to be 3.95, greater than the corresponding tabulated 1.64 at a = 0.05, we can reject the null hypothesis that the percentage of farmers using food aid as a strategy is the same for the non-producers and producers; and conclude that the proportion is higher in the non-producers group.

As it was done for other variables, determination of the factors contributing to the probability of taking food aid as one of the strategies or the sole strategy in times of food shortfalls was done using the logistic regression analysis.

Area allotted to chat, area allotted to coffee, area allotted to cereals, father's education, mother's year of education, number of children, household type (male or female), number of oxen, number of cows, number of sheep, number of goat, number of calves, mother's age and father's age were considered as explanatory variables. The backward conditional variable selection method yielded the following result.

The empirical result shows that, except for fathers education all the coefficients are significantly different from zero at 5% level of significance. The variables / predictors area of farmland allotted to chat (X_1), area of farmland allotted to coffee (X_2), Number of children (X_3) and Number of oxen (X_5). have wald value of greater than zero (see Table 6), which confirms their positive relation with the probability of a going for aid.

From table 6, we can write the fitted model as:

$$F_{ad} = -2.1 - 0.7X_1 - 4.23X_2 + 1.25X_3 - 0.52X_5 - \quad (12)$$

As it can be seen from equation (12), the probability of going for food aid decreases by 0.7 with the unit increase in the area allotted to chat, by 4.23 with the unit increase in the area allotted to coffee and by 0.52 with the unit increase in the number of oxen; and increases by 1.25 with the increase the unit in the number of children.

Impact on housing conditions of the household

This study considered the roofing, wall, floor, the presence of separate kitchen, and the presence of separate structure for livestock as characteristics to assess the improvements in the housing conditions of the farmers. The results of the analysis concerning the material used for roofing the houses (Table 7) show that the proportion of the farmers having corrugated iron sheet roofed houses is 25.8% and 48.6% among the non-producers and the producers, respectively. However, the proportion of the farmers having grass roofed houses is 74.2% and 51% among the non- producers and the producers, respectively.

In fact the farmer's having corrugated iron sheet roofed house can be a function of many factors. Attempts were also made to identify these factors, using the method of logistic regression. Area of farmland allotted to chat, area allotted to coffee, area allotted to cereals, education of father, education of mother, number of children, type of household (male or female), number of cows, number of oxen, number of sheep and number of goats were taken as explanatory variables. The backward conditional method of variable selection yielded,

$$R = -0.45 + 0.3X_1 + 2.5X_2 - 0.14X_3 + 0.25X_4 + 0.29X_5 + 0.08X_6 \quad (13)$$

Where, R= Probability of having corrugated iron sheet, X_1 = area of farmland allotted to chat, X_2 = area of farmland allotted to cereals, X_3 = years of education of the father, X_4 = number of cows owned by the farmer, X_5 = number of goats owned by the farmer.

As it can be seen from equation (13), the probability of having corrugated iron sheet increases with increasing of area of farmland allotted to chat, area of farmland allotted to coffee, years fathers education and number of cows and goats and decreases with increases of in area of farmland allotted to cereals when the values of other explanatory variables are held constant.

The analysis of the distribution of farmers by cooking place (Table 8) shows that the percentage of farmers using separate kitchens for cooking other than their living rooms is 21.7% and 40.5% for non-producers and producers group, respectively. However, the proportion of the farmers having using in the living room is 78.3% and 59.5% among the non- producers and the producers, respectively.

To test whether this difference is significant, we used the Z- test for the difference of two populations' percentage. The calculated Z using equation (11) was found to be, Z_c = - 3.8. This value is less than the corresponding tabulated value for a = 0.05, which is -1.64. Thus, we can reject the null hypothesis that the percentage of farmers having separate kitchens for cooking is the same for the *non-producers* and *producers* and conclude that the proportion is higher in the producers group. Its implication may be that producing export oriented crops enable the farmer build separate cooking place to have clean living room. Having kitchen can be a function of many factors in addition to the economic status of the farmers.

To identify these factors logistic regression was used with cooking place as the dependent variable assuming value 1 if the farmer has separate kitchen and 0 if not. The proposed explanatory variables were area allotted to chat, area allotted to coffee, area allotted to cereals, education of the father, education of the mother, number of children, type of household (male or female), number of cows, number of oxen, number of sheep, number of goats, and number of calves. The backward conditional variable selection method results as follow:

$$K = -0.83 + 0.23X_1 + 0.61X_2 - 0.15X_3 + 0.27X_4 + 0.15X_5 + 0.09X_6 \quad (14)$$

Where, K= the probability of having separate kitchen than the living room , X_1 = area of farmland allotted to chat, X_2 = area of farmland allotted to coffee, X_3 = area of farmland allotted to cereals, X_4 = years of education of the father, X_5 = number of children, X_6 = number of goats.

As it can be seen from equation (14), the probability of having separate kitchen than the living room is significantly (P-value 0.00 < 0.05) increase, since the slope of area of farmland allotted to chat is positive, by 0.23 per unit increase in area of farmland allotted to chat, when the values of other explanatory are held constant, the probability of having separate kitchen than the living room is expected to increases with the area of farmland allotted to coffee by 0.61 per one unit increases in area of farmland allotted to coffee, when the values of other explanatory variables are held constant.

To see the improvements brought to the housing conditions of the farmers because of producing export oriented products, we have also considered the presence of separate living structure for livestock. The proportion of having for animals 39.5% and 37% for non-producers and producers respectively. The proportion is higher among the non-producers than the producers (see table 9).

Table.1 Sample size taken for the study

Administrative Zone	Sampled Distinct	sample size
Illu Abba Bor Zone	Bedelle	50
	B/Nopha	40
	Bure	42
	Cora	47
	Hurumu	48
	Dega	40
	Mettu	40
Total	7	**307**

Table.2 Comparison of the average percentage of children whoever completed or reached elementary school

Producers Group	Sample Size	Mean	Stand. deviation	Percentage
Non – Producers	80	30.86	34.94	26.06%
Producers	227	41.2	40.58	73.94%

Table.3 Frequency of feeding adults for non- producers and producers

Producers Group	No. of Household	Mean	Stand. Deviation
Non – Producers	80	4.35	0.76
Producers	227	6.25	0.98
Total	**307**		

Table.4 Frequency of feeding adults for non- producers and producers

Producers Group	Sample Size	Mean	Stand. Deviation
Non – Producers	87	2.26	0.56
Producers	200	2.46	0.56
Total	**287**		

Table.5 Distribution of the farmers by the Strategy do you use in times of food shortage or crop failure

	Food Aid?		
Producers Group	**NO**	**YES**	**Total**
Non – Producers	51 (54.8%)	42 (45.2%)	93 (100%)
Producers	163 (76.9%)	49 (23.1%)	212(100%)
Total	**214(70.2%)**	**91 (29.8%)**	**305 (100%)**

Table.6 The back ward elimination of all variables, assuming Fad as dependent variable

Model	*B*	S.E.	Wald	df	*Sig.*	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
X_1	*-.70***	.016	20.002	1	*0.000*	.932	.904	.961
X_2	*- 4.23***	0.002	0.254	1	*0.001*	0.031	.000	.
X_3	*1.25***	.008	.052	1	*.0.000*	1.000	.985	1.015
X_4	*0.000*	.004	.041	1	*0.2501*	.999	.991	1.008
X_5	*-0.521*	.483	.036	1	*0.0310*	1.097	.425	2.828
(Constant)	*- 2.095*	6.083	.119	1	*0.7312*	8.127		

Log-likelihood = 22.736**, Probability = 0.0000

*Note: ** and * indicates that the coefficients are significant at 5% and 10% Levels of significant*

Where, F_{ad} = probability of going for food aid, X_1= area of farmland allotted to chat, X_2= area of farmland allotted to coffee, X_3= Number of children, X_4 = fathers education, X_5 = Number of oxen.

Table.7 Distribution of Farmers by Type of Materials for Constructing Roofs

	Roofing Material		
Producers Group	**Grass**	**Corrupted iron Sheet**	**Total**
Non – Producers	69 (74.2%)	24 (25.8%)	93 (100%)
Producers	109(51.4%)	103(48.6%)	212(100%)
Total	**178(58.4%)**	**127 (41.6%)**	**305 (100%)**

(Figures in parentheses indicate the percentage within the farmer group)

Table.8 Distribution of Farmers by Cooking Place

	Cooking Place		
Producers Group	**In the living room**	**Separate Kitchen**	**Total**
Non – Producers	72 (78.3%)	20 (21.7%)	92 (100%)
Producers	125 (59.5%)	85 (40.5%)	210(100%)
Total	**197 (58.4%)**	**105 (34.5%)**	**302 (100%)**

Figures in parentheses indicate the percentage within the farmer group

Table.9 Distribution of Farmers by living places for livestock

	Where do your animals live		
Producers Group	**In the living room**	**Separate room or fence**	**Total**
Non – Producers	52 (60.5%)	34 (39.5%)	86 (100%)
Producers	131 (63%)	77 (37%)	208 (100%)
Total	**183 (62.2%)**	**111 (37.7%)**	**294 (100%)**

Figures in parentheses indicate the percentage within the farmer group.

To test whether this difference is significant we used the Z- test for the difference of two populations' percentage. The reference for comparison is the ability to have separate living spaces for livestock. The calculated Z is found to be 0.3146, Z_c = 0.3146. This value is greater than the corresponding tabulated value for a = 0.05, which is -1.64, $Z_{a/2}$ = -1.64. That is, there is no sufficient evidence from the sample to reject the null hypothesis that the percentage of farmers having separate living room for animals is the same for the non-producers and producers and conclude that the proportions is the same for the two groups.

The farmers' using separate structure than living room was found to be affected by a combination of many factors - area of farmland allotted to chat, area of farmland allotted to coffee, father's education, number of oxen and number of goats owned by the farmer, as shown by equation (15) below (Chat is significant at 0.10 level whereas all others are significant at 0.05 level of significance)

$$H_u = -1.08 + 0.122X_1 - 0.571X_2 + 0.169X_3 + 0.297X_4 + 0.10X_5 \quad (15)$$

Where, H_u = probability of having separate living structure for livestock, X_1 = area of farmland allotted to chat, X_2 = area of farmland allotted to coffee, X_3 = father's yeas of education, X_4 = number of oxen and X5 = number of goats.

Equation (15) shows that the probability of having separate living structure for livestock increases by 0.122 with one unit increase of the area allotted to chat, by years of education of the father, number of oxen, and number of goats; and decreases with the increase in the

area allotted to coffee. The implication concerning the area allotted to chat can be taken as the economic contribution of chat; the number of livestock obviously forces the farmer to have extra structure than living room; education of the father can contribute in terms of awareness about the impact of living with animals one family health. Concerning the housing conditions in terms of walls and floors, the survey results shows that all farmers own houses whose walls are constructed of wood and with muddy floors.

Conclusions and Recommendations are as follows:

The main objective of this study was to assess the socio-economic impact of producing agricultural exports on the livelihoods of the farmer with particular emphasis to education, food and housing conditions. Attempts were also made to identify the factors contributing for the changes in the livelihoods and describe the problems facing the farmers in the area.

Multistage random sampling was used to collect data from the farm households. Two mean test and regression analyses were used to analyze the data. The results of the analysis showed that the producers of agricultural exports are better off than the non-producers in their abilities to send children to school (to the level of elementary school), own houses roofed with corrugated iron sheet, having separate kitchens for cooking, frequency of feeding both the children and the adult, and finance the family in times of food shortage, crop failure and or other difficulties.

The number of oxen negatively affected the percentage of children to be sent to school. It may mean that the children are used for herding. However, the same variable contributed positively to the food security of the family. The probability of opting for food aid in times of food shortfalls decreases with the increase in the number of oxen. Increase in father's age resulted in the decrease in the frequency of feeding the children. This may be due to the fact that as one gets older the capacity to produce decreases coupled with many responsibilities. Father's years of education affected positively the frequency of feeding the adult, the ability to own corrugated iron sheet roofed houses, ability to own separate kitchen for cooking other than the living room, and building separate structure for livestock than the rooms in which humans live. This may also be due to the fact that education can contribute to the improvements in the livelihood of a family.

In general, it can be concluded that production of export oriented agricultural products enables the farmer to send children to school, have improved housing conditions, and food secured than the non-producers. The contributions of livestock ownership, education of the parents, numbers of children and other factors to the improvements in the livelihoods of the farmers should also be emphasized.

Recommendations

Based on the results discussed above, the researchers would like to forward the following recommendations:-

1. Creating the means by which those farmers who do not produce agricultural exports can diversify their products to supplement their financial needs.
2. Creating the awareness about the uses of education both among the producers and non- producers and facilitating conditions so that the farmers can get secondary education. This can be done by incorporating the uses of educating children the agricultural extension education and/or using religious institutions to deliver the same on their ceremonies.
3. Inculcating business awareness among the producers. That means, the farmers should be made know the values of their products and produce not only for self and/or local consumption but think globally.
4. Government should devise other mechanisms of helping the farmers other than providing food aid. The government should enable the farmers to develop the sense of independence.
5. Establishing rural banks and encouraging the farmers to save in cash.

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