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IMPACT OF CREDIT ON PRODUCTION OF GREEN LEAF: A STUDY IN GOLAGHAT DISTRICT OF ASSAM

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ABSTRACT

This paper examines the impact of credit on production of green leaf in Golaghat district of Assam. A sample of 136 growers has been selected through multistage sampling technique. To investigate whether use of credit influences the production of green leaf, a multiple linear regression model has been fitted by considering output of green leaf as the dependent variable and farm size, amount of credit, labour in mandays, fertilizer used and value of machinery as independent variables. Results show that size of the garden, labour used and amount of credit has significant positive impact on production of green leaf. The impact of other variables like fertilizer and value of machinery on production are found to be insignificant.

Keywords: *Credit, production, farm size, mandays, value of machinery*

1. INTRODUCTION

Small tea cultivation has a very recent origin. Since its inception small tea cultivation had gained considerable momentum and is now an integral component of the large scale tea industry of the state of Assam. According to the "Survey Report and Data Bank on Small Tea Growers" published by State Industry Department, Assam has 68,465 small tea gardens. In Assam, Tinsukia, Dibrugarh, Sivsagar, Jorhat, Golaghat, Nagaon and Sonitpur are some of the major districts where tea gardens are prominently found. Among these districts major concentration is in 5 upper Assam districts (64519) which is 94 percent of the total number of STGs in 14 districts of Brahmaputra Valley and Golaghat is a prominent one having 11287 STGs.

Production of green leaf depends on various factors. Since tea is a scientific crop, the cultivators have to follow the cultural operations like manuring, plant protection measures, and irrigation etc. in the proper time. Only then production of green leaf increases and the growers can reap the benefit of investment in tea plantation. In this regard proper financial facility is an important factor which can affect production. Because, to follow the cultural operations in a right way and at the right time, it requires timely availability of fund throughout the year. Though, formerly banking sector was reluctant to provide financial assistance to small tea growers, but in present days banks are coming into this sector for providing credit to the growers. In this paper an attempt has been made to examine the impact of credit on production of green leaf in the study area.

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2. OBJECTIVE

The main objectives of this paper are-

1. To analyze the average annual production of green leaf and average annual yield in terms of rupee in the study area.

2. To examine the impact of credit on production of green leaf in the study area.

3. RESEARCH QUESTION

Present research paper is guided by the following research question-

1. Has credit got any potential impact on production of green leaf?

4. METHODOLOGY

This paper is based on primary data collected through a sample survey. Samples have been drawn by following a multi-stage sampling technique. The required data for the study have been collected by personally interviewing the sample small tea growers at their doorstep with the help of a structured questionnaire designed for the study. The details of the sampling design are mentioned below.

In the first stage Golaghat district was purposefully selected for the study, since it has the largest number of small tea growers registered with Tea Board (as on 18-06-2012). According to Statistical Handbook Assam, 2012, the district has 1387 number of registered small tea growers.

In the second stage, the sample district is further stratified into development blocks. Among the eight development blocks of the Golaghat district two development blocks having the highest number of small tea growers have been selected as the sample block. Thus, Golaghat Central block and Morongi block are taken as sample blocks, having 2089 and 2029 STGs respectively.

In the third stage sample blocks are stratified into Gaon Panchayats. Then from Golaghat Central block, Dakhin Dakhinhangra and Uttar Kamarbandha and from Morongi block Rongbong and Fallangani GPs were selected because of having highest number of STGs.

Finally, 10 percent of the STGs from each of the sample GPs are randomly selected for intensive investigation. Thus, 136 sample small tea growers have been covered by the study. The survey was conducted during the month of September to October 2014.

Apart from the primary data, secondary data are also used for the purpose of the study. For secondary data, information has been collected from various case studies on Indian Tea Industry, Tea Board records, annual reports, periodic reports, websites, as well as various books, journals etc. Number of small tea grower's data has been accessed from Statistical

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Handbook Assam and Directory of Small Tea Growers published by Department of Industry and Commerce, Government of Assam. The collected data processed and tabulated using appropriate software packages. To examine the impact of credit on production of green leaf multiple linear regression model has been fitted.

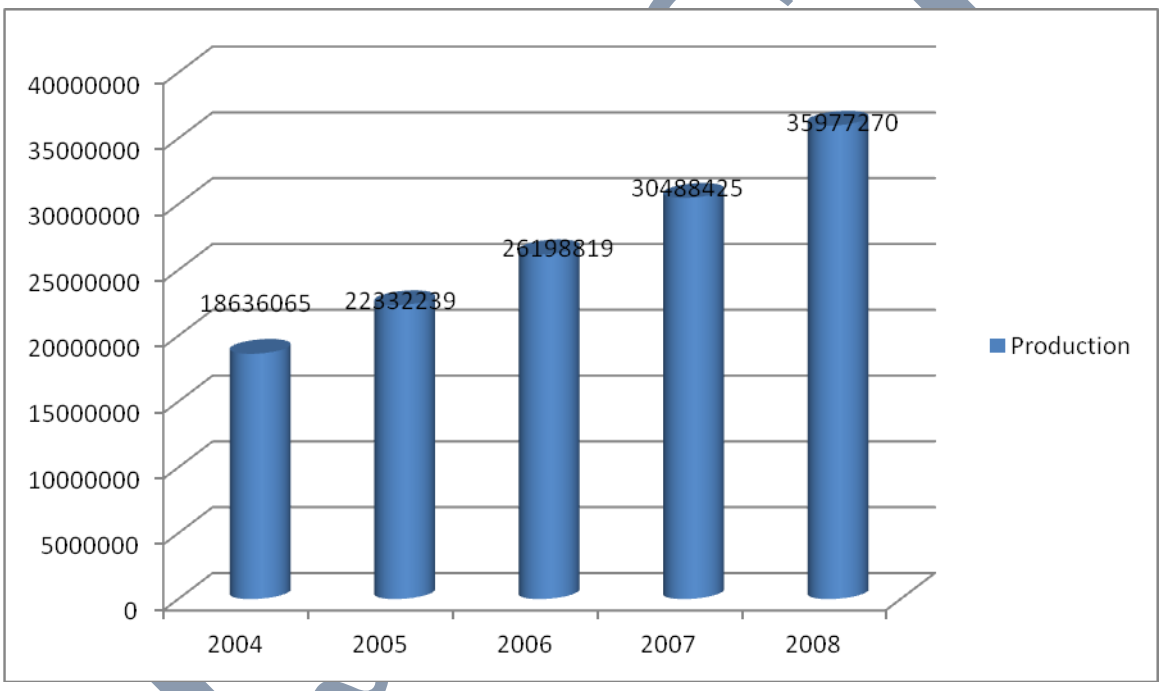
5 RESULTS AND DISCUSSION

5.1 Year Wise Production of Green Leaf in Golaghat District:

According to the Department of Industry & Commerce, the average productivity of Golaghat district is 1949/acres. The figure 1.1 shows the average year wise production of STGs in Golaghat district.

Figure 1.1

Year wise Average Production of Green Leaf



Source: Directory of Small Tea Growers

Figure shows that average production of green leaf has increased during the period 2004 to 2008. If we calculate the compound annual growth rate for this period we find that production has increased at a growth rate of 17.87 percent.

5.2 Average Annual Production of Green Leaf in the Study Area:

An overview of the area wise annual production of green leaf and average annual yield in terms of rupee in the study area are presented in the table 1.1.

Table 1.1

Average Annual Production of Green Leaf by Different Size Group of Small Tea Growers in the Study Area

Area under tea crop	Average Annual Production (in Kg.)	No of Growers	Average Yield (in Rs.)
Below 2 hectare	16662	88	271924
2-4 hectare	38276	28	624664
4-6 hectare	69380	10	1132282
6-8 hectare	107667	6	1757125
Above 8 hectare	145250	4	2370480

Source: Field Survey

A look at the table 1.1 clearly indicates that most of the sample growers have farm size below 2 hectare and their average annual production is 16662 kg. They receive average sales revenue of Rs. 271924 annually. Accordingly, 28 sample growers have farm size 2-4 hectare and produce 38276 kg with sales revenue Rs. 624664. 10 sample growers have garden area between 4 and 6 hectare with average annual production of 69380 kg. Their average annual yield in terms of rupee is found to be Rs. 1132282. There are 6 growers whose garden size lies between 6 and 8 hectare and average annual production is 107667 kg. They receive average yield of Rs. 1757125 in a year. Among the sample growers only 4 growers cultivate tea on land area above 8 hectare and contribute 145250 kg to the production of green leaf annually. Their annual average yield in terms of rupee is found to be Rs. 2370480.

5.3 Impact of Credit on Production of Green Leaf:

To explain whether use of credit influences the production of green leaf, a multiple linear regression model has been fitted. The basic model hypothesized and estimated is-

$Q_t = f(X_1, X_2, X_3, X_4, X_5)$

Where, Q_t= Output of green leaf in kilograms

X_1= Tea farm size measured in hectares, X_2= Amount of credit, X_3= Labour in mandays, X_4= Fertilizer in kilograms, X_5= Value of machinery used

The linear equation estimated as-

$$Q_t = \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+u$$

Where, β_0 constant term, β's are the regression coefficients and u is the stochastic disturbance or the error term.

5.3.1 Explanation of the Variables Included in the Model:

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Farm Size

Farm size is an important variable influencing the production. This is because, the larger the farm size the higher the yield. Fabiyi and Osotimehin (1984) found that among different variables, farm size is significant which influence poutput. Mugera and Langemeier (2011) reported that larger farms are more technically and scale efficient than smaller farms. Khan (1979) found that larger farms are about 9% more productive than small farms in that they have greater output per acre and there are increasing returns to scale.

Amount of Credit

Ekwere *et al.* (2014) shows that access to agricultural credit impacts positively on agricultural production. A unit increase in loan amount results in .486 unit increase in output. Loan allows farmers to purchase large capital items sooner than they would otherwise do. Credit is regarded an effective means of bringing labour, land and management in productive use and intensifying the productivity of those resources already employed (Atieno, 1995).

Considering these, an attempt has been made to ascertain the impact of credit on green leaf production in the study area.

Labour

Labour is an important factor of production. Studies show that as the amount of labour increases, the output also increases. Taru *et al.* (2008) mentioned that the positive relationship between the labour input and output is expected where the available labour is efficiently managed along with other resources to avoid redundancy and diminishing return to labour.

Fertilizer Used

Use of fertilizer also enhances agricultural production. The yield will increase by 0.114 percent by increasing the fertilizer use by 1 percent (Bashir *et al.* 2010). Ekewere *et al.* reported that 1 percent increase in fertilizer use increases production by 26.5 percent. Atieno (1995) mention that farm material alone has the potential to contribute more to output, which include fertilizer. Considering these, fertilizer is included in the model to ascertain its impact on production.

Value of Machinery

To identify the impact of capital used on production, the value of machinery used by the sample growers has been included in the model. Atieno (1995) reported that capital have the highest contribution to output for credit farmers. The study found that for one unit change in the value of capital use in production process, output on average changes by .16 units.

The results of the regression analysis are presented in the table 1.2.

Table 1.2: Results of Regression Analysis

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Variables	B Coefficients	t- statistic
Constant	-1979.427	-.448
Size of garden	7715.177***	4.843
Labour	11.776**	2.390
Amount of credit	0.021***	4.090
Fertilizer	.900	.885
Value of Machinery	.085	1.623
F = 103.206*** R^2= .891 Adjusted R^2= .883		

***Significant at 1% level, ** significant at 5% level

Source: Field Survey

The F value is 103.206 which is found to be significant at 1% level. This means that the independent variables included in the model could properly explain the variation in the dependent variable. The value of R^2 is found to be .891 which implies that about 89% of the variations in production of green leaf are explained by the hypothesized variables. As the explained variation of the output is quite good we can use this model for further analysis.

The results show that all the variables included in the model have positive impact on production of green leaf. But, of all the variables in the analysis, size of garden, labour used and amount of credit have significant positive impact on production. Among these, size of garden and amount of credit are significant at 1% level while labour used is significant at 5% level.

Table 1.2 depicts that one unit increase in garden size increases production on the average by 7715.177 units. Again, the slope coefficient of labour employed indicates that if use of labour changes by a unit, which is mandays, production on the average changes by 11.776 kg. Similar interpretation is applicable for credit amount. A unit change in credit amount, which is 1 thousand rupee, leads on average to a .021 unit change in production.

The coefficient of fertilizer and value of machinery were positive and in accordance with the expected sign meaning that quantity of fertilizer applied and machinery used were directly related to the output while statistical insignificance of the coefficients implies that these variables are not a determinant of output of green leaf production.

6. FINDINGS AND CONCLUSION

From the analysis of this paper it is found that production of green leaf varies with varying in farm sizes. Results of the regression analysis show that credit significantly influences the production of green leaf in the study area. This finding gives the answer to the research question- has credit got any potential impact on production of green leaf?

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Since credit can significantly influence production of green leaf, banks should disburse credit to the growers at the right time so that they can get optimum benefit from it. If the growers donot get proper and timely credit support from banks it may affect the farming operations like plucking and pruning and as a result production may get affected.

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