AREA CHANGES TO COST OF CULTIVATION OF SELECTED CROPS IN KERALA

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ABSTRACT

Cost of cultivation has significant role in the efficient allocation of resources and in determining the cropping pattern. Agricultural Policy makers, insurance providers and credit giving intuitions are also using cost of cultivation data of agricultural commodities. In the reform period cost cultivation are reported to be increasing. On this context the paper examines whether cost of cultivation could brings out changes in the areas of cultivation. This study could found that cost of cultivation is not a factor in influencing changes in areas of cultivation. Non cost factors are playing an important role in affecting changes in the areas of cultivation.

KEYWORDS: Area Change, Cost of Cultivation, Farmers, Kerala, Linear Regression, Non Cost Factors

INTRODUCTION

Cost of cultivation is an important aspect that farmers consider while making their production decisions. Information on cost of cultivation is essential for efficient allocation of farmer’s limited resources and in determining their cropping pattern. For understanding Production function (which measures impact of different technology on production) cost of cultivation data are required. It is also useful to understand agriculture sector development across region and over different time periods. Cost of cultivation is significant in determining viability of farming as well as welfare of farmers. In addition, for determining support prices to different agricultural produce, for giving credit to farmers and in determining crop insurance, the cost do have a crucial role. Cost of cultivation also influences consumers’ welfare and functioning of overall economy, when it gets reflected in the selling price of the commodities (Sen and Bhatia 2004).

Because of the significance cost of cultivation is having, the data on the same is computed both at the national and State level. From 1971 onwards Cost of Cultivation data are computed on a regular basis, under the “Comprehensive Scheme (CS) for Studying Cost of Cultivation/Production of Principle Crops in India”. This Scheme is implemented by the directorate of Economics and Statistics of the Union Ministry of Agriculture. This Comprehensive Scheme (CS) had undergone reviewing process in 1980 and again in 1990 to bring improvements in its coverage and its computational aspects. Over the period the coverage under Comprehensive Scheme improved. This cost analysis now covers 20 crops in 14 states. Though these official computations of the Cost data are helpful to policy makers, producers and consumers, there are studies criticizing its computational aspects (George 1988, Sen and Bhatia 2004).

In the Reform period increasing cost of cultivation is a matter of concern for the agriculture sector. This has more adverse impact on small and marginal farmers. Vikas (2014) has identified increasing cost of cultivation
as one of main reasons for economic non-viability of small farmers in Uttar Pradesh. R P Singh (2014) noted small farmers are unable to withstand increasing price of inputs and the farmers in the poor States are more vulnerable. Revathi and Reddy (2013) has said that agriculture sector of the country is in need of productivity enhancing investment. But higher cost of it is a matter of concern. As a result of fiscal reform, Government investment in the sector is decreasing, which adversely affects expansion of irrigation facilities, use of modern inputs and improved seeds, fertilizers and pesticides. The gradual withdrawal of government investment is not compensated by expansion of institutional credit facilities. Jha and Marandi (2008) has reported that pulse production in Bihar are facing problem of high cost of pesticides, labour, credit and affordable of HYV packages.

OBJECTIVE

The paper tries to examine whether cost of cultivation could bring out changes in the areas of cultivation, of selected crops in Kerala. The limited literature review done could not identify this kind of study, which is expected to help both farmers as well as policy formulators.

METHODOLOGY

To understand the extent of change in area of cultivation because of cost of cultivation a linear regression model is used. The model is \( Y_t = a + b C_{t-1} + u \), where \( Y_t \) is the Area in year \( t \), \( C_{t-1} \) is the cost in year \( t-1 \), a and b are parameters and \( U_t \) is the error term. The parameters are estimated here by using ordinary least square method. \( r^2 \) and F2 values are estimated to test the significance of the estimated regression equation. Date on cost and area of four crops paddy, tapioca, ginger and banana are studied for the period of 2000 to 2014. Before going into the finding of regression coefficients, an outline on the pattern of movements (graphical representations) and variations (coefficient of variation) of cost and areas are also made.

DATA AND INTERPRETATION

Graphical Representation

The graphical representation of index values of area and cost are made below (graph: 1). For each year, area is depicted corresponding to cost of cultivation which is of one year lagged value. For all the four crops (banana, ginger, paddy and tapioca) price and cost of cultivation are exhibiting almost a similar pattern of movement. That is when cost of production is increasing area of cultivation is also increasing and vice versa. Exception to this is noted in a few cases only. This is contradictory to the general economic understanding (i.e., when cost of production is increasing then area of cultivation should be reducing).
COEFFICIENT OF VARIATION

The table 1 depicts values of coefficient of variation of cost and areas of the selected crops (banana, ginger, paddy and tapioca). A higher value of variation is noted for costs compared to that of areas. This higher variation in cost of cultivation is noticed for all the four crops. For banana difference between coefficient of variation of cost and area is nearly 9 times. Among the four crops a very high difference in variation in cost is for banana, followed by paddy and the area variation is maximum for ginger and then for paddy.

Table 1: Values of Coefficient of Variation

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>53</td>
<td>6</td>
</tr>
<tr>
<td>Ginger</td>
<td>42</td>
<td>32</td>
</tr>
<tr>
<td>Paddy</td>
<td>46</td>
<td>17</td>
</tr>
<tr>
<td>Tapioca</td>
<td>45</td>
<td>15</td>
</tr>
</tbody>
</table>

REGRESSION RESULTS

The graphical representation and values of coefficient of variations made above gives only the extent of variation and general pattern of movement of cost of cultivation and area over the years. From the graphical representation it can be inferred that except a few years’ areas and the cost are having the same pattern of movement. But it is not possible to confirm that cost of production is not having any impact on the area of cultivation. Therefore to confirm the exact impact of only cost changes on area a study by applying regression is also essential.
The regression result Table 2 shows that for all the four crops regression coefficients are positive. Therefore it can be inferred that cost of production does not have an impact on changes in the area of cultivation of all the four crops. This shows farmers cultivating these crops are not making changes to areas of cultivation according to cost incurred in cultivation of the previous year. For these crops it is the non cost factors that determine changes in area of cultivation. For all the four crops F value is statistically significant at one per cent level.

Table 2: Regression Result

<table>
<thead>
<tr>
<th>Crop</th>
<th>R²</th>
<th>F Statistics,1% Significance Level</th>
<th>Regression Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>46</td>
<td>10</td>
<td>Area=0.014+5330 (Cost)</td>
</tr>
<tr>
<td>Ginger</td>
<td>74</td>
<td>34</td>
<td>Area=-.017+1293 (Cost)</td>
</tr>
<tr>
<td>Paddy</td>
<td>80</td>
<td>47</td>
<td>Area=-1.17+329436(Cost)</td>
</tr>
<tr>
<td>Tapioca</td>
<td>64</td>
<td>21</td>
<td>Area=-0.08+106706(Cost)</td>
</tr>
</tbody>
</table>

The values are computed from the cost and area data obtained from different years of Economic Reviews, Report on Cost of Cultivation of Important Crops in Kerala(by Department of Economics and Statistics, Government of Kerala) and Facts and Figures of Agriculture in Kerala(by Department of Agriculture Government of Kerala)

CONCLUSIONS

The study concludes that changes in area of cultivation are not taking place because of cost of cultivation. It is the non cost factors that are determining changes in the area of cultivation of the selected crops in Kerala. Contrary to the general understanding; it is found that when cost of cultivation (one year lagged value) is increasing areas of cultivation are also increasing. Similarly the values of coefficient of variation show a higher variation in cost over the years for all the crops.

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