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AN ANALYSIS OF COST AND RETURNS OF SUGARCANE PRODUCTION IN KRISHNAGIRI DISTRICT OF TAMIL NADU

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Abstract

The aim of this study was to estimate the cost and returns of sugarcane production per acre on different size of farms in Krishnagiri taluk of Krishnagiri District in Tamilnadu. The study was confined to a sample of 175 sugarcane farmer households selected from seven villages of Krishnagiri taluk of Krishnagiri District. A simple percentage analysis was employed to identify the socio-economic characteristics and cost and returns of sugarcane cultivation for the selected sample farmers. The results of the study showed that out of the 175 sample sugarcane farmer selected for the study, the majority of them belonged to nuclear family; their family size had 2-4 members; their age had 40-60 years and had a small family monthly income of Rs.15,000 to Rs.30,000. The educational status of the farmers was secondary level. The study concluded that the majority of the sugarcane farmer's still employ low level of modern technology in sugarcane cultivation. Also, most of the sugarcane farmers are middle-aged, non-literate males; this had greatly contributed to inefficiency in sugarcane production among the sugarcane farmers. To this end, there is a need for continuous research in understanding the differences observed, which in this study concerns the magnitudes rather than conflicts. Further limitation of the study is that the data used as shown in the yield curves tend to fluctuate considerably. This mean that yield of sugarcane was influenced by climate and soil parameters.

Keywords: *Sugarcane, Socio-Economic Characters, Cost and Revenue, Production, Yield*

Introduction

Sugarcane is an important commercial crop of the world and is cultivated in more than 100 countries, the leading countries being Brazil, India, China, Thailand, Pakistan, Mexico and Colombia. The botanical name of sugarcane is *Saccharum officinarum* and for sugar beet, it is Beat *Vulgare*. Sugarcane is produced in tropical and temperate zones. It is the second important commercial crop in India and is grown in about 5 million hectares, production of about 27 million tonnes of sugar, contributing direct and indirect employment to 40 million farmers, besides providing employment to 3-5 lakhs skilled and unskilled workers in the manufacturing of Sugar, Gur and Khandasari. Even though, sugarcane cultivation occupies only 2 percent of the total cultivable area of the country; it contributes 7 percent of the total value of the agricultural crop in the country. Moreover, the area under sugarcane cultivation in the country has gone up from 1.18 million hectares (1930-1931) to 5 million hectares (2010-2011); while cane production has gone from 37

million tonnes to 340 million tones with an average productivity of 628.10 quintals per hectare in the corresponding period.

Tamil Nadu is one of the major sugarcane growing states in India, contributing 6.41 percent of national sugarcane and producing 8.32 percent national sugarcane production in 2011-12. Tamil Nadu is also leading producers of sugar in the country and its contribution is about 7 percent of country's total sugar production. As on 31.5.2011, there are 46 sugar mills in Tamil Nadu of which 16 sugar mills are in cooperative sector, 3 in public sector and 27 in private sector. At present 44 sugar mills are functioning and the remaining 2 mills viz., Madura Sugars and Arunachalam Sugar Mills Ltd., are not functioning. This implies that the economy of the farmers as well as prosperity of the state is highly influenced by the earnings from this crop enterprise. Now-a-days, sugarcane farming is becoming gradually commercialized in Tamil Nadu. The commercial farmer's chief concern is to secure a satisfactory margin between the cost and selling price of his produce. Thus, in order to justify continuance a farm enterprise should generate a net profit over the total cost. It is therefore, crucially important for the farmers to know their production costs. The cost of production and returns from sugarcane varies from region to region and from one category of farmers to another.

Objectives

The specific objectives of the study are;

- To identify the socio-economic characteristics of sugarcane farmers in the study area.
- To analysis of Cost and Returns of Sugarcane Production in Krishnagiri District of Tamil Nadu, and
- To suggest the suitable recommendation and policy measures to improve the sugarcane production in Krishnagiri district of Tamil Nadu.

Materials and Method

For the purpose of the study, three stage stratified random sampling technique was adopted. In the first stage Krishnagiri taluk in Krishnagiri district was purposively selected on account its commendable position in sugarcane cultivation in Krishnagiri District. Krishnagiri taluk has 142 villages, out of which 7 villages were selected at random in the second stage. In the ultimate stage, 175 farmers from seven villages were selected at random, giving equal representation to all sample villages. The primary data on various aspects were collected through personal survey method with the help of structured interview schedule. The data pertained to the agriculture year 2013-14. Post stratification was made to classify the farmers into four farms size groups viz., less than 2.5, 2.5-5.0, 5.0-7.5 and more than 7.5 acres respectively. Thus, the study was confined to a sample of 175 sugarcane farmer households selected from four villages of Krishnagiri taluk of

Krishnagiri district in the state of Tamil Nadu. A simple percentage analysis was employed to identify the socio-economic characteristics and cost and returns of sugarcane cultivation for the selected sample farmers.

Results and Discussion

The results of the study are presented in two main parts viz., (i) socio-economic characteristics of the sample sugarcane farmers and (ii) Estimated Cost and Returns of Sugarcane Cultivation in Krishnagiri taluk of Krishnagiri District.

Part-I: Socio-Economic Characteristics of the Sample Farmer Households

This part is mainly devoted for the study of the socio-economic characteristics of the selected sample sugarcane farmer households in Krishnagiri taluk of Krishnagiri District. The important socio-economic characteristics chosen for analysis in the study are type of the family, family size, age, educational status and monthly income of the family among sample sugarcane farmer households of different farm size groups classified through post stratification method.

Table 1: Socio-Economic Characteristics of the Sample Farmer Households

Sl. No.	Socio-Economic Characteristics	Farm Size Group (in acres)				Total
		Less than 2.5	2.5 - 5.0	5.0-7.5	More than 7.5	
1.	**Type of family**					
	Nuclear	53 (42.40)	36 (28.80)	22 (17.60)	14 (11.20)	125 (100)
	Joint	14 (28.00)	17 (34.00)	10 (20.00)	9 (18.00)	50 (100)
	Total	67 (38.29)	53 (30.29)	32 (18.29)	23 (13.14)	175 (100)
2.	**Family Size Group**					
	Below 2	5 (35.71)	2 (14.29)	3 (21.43)	4 (28.57)	14 (100)
	2 - 4	48 (43.64)	34 (30.91)	19 (17.27)	9 (8.18)	110 (100)
	Above 4	14 (27.45)	17 (33.33)	10 (19.61)	10 (19.61)	51 (100)
	Total	67 (38.29)	53 (30.29)	32 (18.29)	23 (13.14)	175 (100)
3.	**Age group**					
	Below 40	21 (50.00)	12 (28.57)	5 (11.90)	4 (9.52)	42 (100)
	40 - 60	29 (30.53)	32 (33.68)	23 (24.21)	11 (11.58)	95 (100)

	Above 60	17 (44.74)	9 (23.68)	4 (10.53)	8 (21.05)	38 (100)
	Total	67 (38.29)	53 (30.29)	32 (18.29)	23 (13.14)	175 (100)
4.	**Educational status**					
	Illiterate	18 (42.86)	13 (30.95)	6 (14.29)	5 (11.90)	42 (100)
	Primary Level	13 (28.26)	12 (26.09)	12 (26.09)	9 (19.57)	46 (100)
	Secondary Level	29 (43.94)	21 (31.82)	9 (13.64)	7 (10.61)	66 (100)
	Higher Secondary & above level	7 (33.33)	7 (33.33)	5 (23.81)	2 (9.52)	21 (100)
	Total	67 (38.29)	53 (30.29)	32 (18.29)	23 (13.14)	175 (100)
5.	**Family Monthly Income**					
	Below Rs.15000	13 (39.39)	13 (39.39)	5 (15.15)	2 (6.06)	33 (100)
	Rs.15000 – Rs.30000	41 (58.57)	16 (22.86)	9 (12.86)	4 (5.71)	70 (100)
	Above Rs.30000	6 (15.38)	19 (48.72)	11 (28.21)	3 (7.69)	39 (100)
	Total	7 (21.21)	5 (15.15)	7 (21.21)	14 (42.42)	33 (100)

Source: Survey data (Figures in parentheses indicate percentage)

From table-I, it is observed that out of the 175 sample sugarcane farmer households selected for the study, the majority of them belonged to nuclear family; their family size had 2-4 members; their age had 40-60 years and had a small family monthly income of Rs.15,000 to Rs.30,000. The educational status of the farmers was secondary level.

Part-II: Estimated Cost and Returns of Sugarcane Cultivation

The estimated cost and returns of sugarcane cultivation pertaining to the different farms level data collected from the sample farmers of seven villages in Krishnagiri taluk of Krishnagiri District is furnished from table-2.

Table-2: Estimated Cost and Return of Sugarcane Cultivation (Per Acre) In Krishnagiri Taluk of Krishnagiri District

Variables	Farm Size Groups (in acre)				All Farms
	Below 2.5	2.5-5.0	5.0-7.5	Above 7.5	
N	**67**	**53**	**32**	**23**	**175**
Average area under Sugarcane crop in acre	1.69	3.86	6.41	9.43	4.23
Cost on Seed	6183.08 (15.13)	6194.87 (16.09)	6193.29 (15.89)	6186.98 (16.39)	6190.32 (15.96)
Imputed Cost on Family Labour	7924.29 (19.40)	6241.70 (16.21)	5064.13 (12.99)	2980.66 (7.89)	5215.79 (13.45)
Cost on Hired Labour	14995.40 (36.70)	14700.68 (38.18)	15989.41 (41.01)	16368.85 (43.35)	15592.18 (40.21)
Cost on Machine hours	5694.91 (13.94)	5650.73 (14.68)	5672.32 (14.55)	5666.82 (15.01)	5668.18 (14.62)
Cost on Chemical Fertilizer	5511.42 (13.49)	5174.95 (13.44)	5571.73 (14.29)	6067.97 (16.07)	5598.26 (14.44)
Cost on Pesticide	547.28 (1.34)	541.81 (1.41)	496.10 (1.27)	488.02 (1.29)	514.20 (1.33)
Total Variable Cost (TVC)	40856.38 (100)	38504.74 (100)	38986.98 (100)	37759.30 (100)	38778.93 (100)
DIRTI-5	2031.73	1172.43	782.00	576.27	1020.62
Total Cost (TC)	42888.10	39677.17	39768.98	38335.57	39799.55
Total Return (TR)	68265.49	86101.10	71826.83	73906.68	75843.80
Net Return (TR-TC)	25377.38	46423.93	32057.85	35571.12	36044.25
Return over Variable Cost (TR-TVC)	27409.11	47596.36	32839.85	36147.38	37064.87

Source: Survey Data

Figures in parentheses indicate percentages

From the table-2 showed that the cost and return particulars of the selected sample sugarcane cultivating farmers of Krishnagiri taluk in Krishnagiri District. The mean size farms for <2.5 acres, 2.5-5.0 acres, 5.0-7.5 acres and >7.5 acres of land group was worked out to 1.69 acres, 3.86 acres, 6.41 acres and 9.43 acres respectively. Taking into account all size groups of farms, the average size was worked out to 4.23 acres. The area under sugarcane, cost of seed, imputed cost of family labour, cost of hired labour, cost of

machine hours used, cost of chemical fertilizer and cost of pesticide were the important constituents determining the economics of sugarcane production in the area. Of which, the average sugarcane cultivating farmer in the area ought to spent an average of about more than 40 percent of the total cost towards cost of hired labour followed by Cost on seed (15.96 percent), 14.62 percent of the total cost on machine hours used, 14.44 percent of the total cost on chemical fertilizer, 13.45 percent (appropriate cost) on family labour and about 2 percent on pesticide, realised a total return of Rs.75843.80 per acre. In other words, sugarcane cultivation being a labour intensive occupation depend much on hired labour. Higher proportion of hired labour might be due to their moderate dependency in farm activities in the region. The cost on machine hours used for cultivation have showed an average of about 15 percent of the total cost, indicating the use of modern agricultural implements in crop production. Chemical fertilizer and cost of pesticide are the other important factor inputs which have direct effect on crop production. In other words, an average farmer in the category of less than 2.5 acres of sugarcane cultivation spent 13.49 percent of his total cost on chemical fertilizer, while 16.07 percent was recorded for the farms of more than 7.5 acres, indicating the fact that due to the poor economic background, the small farmers were constrained to spend more on fertilizer, this is not so for the bigger sized farms. From the point of view of pesticide use, higher proportion of cost was accounted for farms of the below 5 acres; while it was on the reverse for farms of above 5 acres. In other words, the proportion of fertilizer cost tended to increase with farm size, while the proportion of pesticide cost tended to diminish with farm size. The net return worked out for different size group of farms cultivating sugarcane in the area tended to increase with farm size upto 7.5 acres; showed a marginal decline for farms of above 7.5 acres. However, from the point of view of the return over variable cost, all farms group were witnessed with positive odds. Thus to conclude, an average sugarcane cultivating farmer in the area spent 15.96 percent, 13.45 percent, 40.21 percent, 14.62 percent, 14.44 percent and 1.33 percent respectively on cost of seed, family labour, hired labour, machine hours used, chemical fertilizer and pest management; and received a net revenue of Rs.36,044.25/- per acre.

Conclusion and Recommendations

Above discussed results indicate that the majority of the sugarcane farmers still employ low level of modern technology in sugarcane cultivation. Also, most of the sugarcane farmers are middle-aged, non-literate males; this had greatly contributed to inefficiency in sugarcane production among the sugarcane farmers. To this end, there is a need for continuous research in understanding the differences observed, which in this study concerns the magnitudes rather than conflicts. Further limitation of the study is that the data used as shown in the yield curves tend to fluctuate considerably. This mean that yield of sugarcane was influenced by climate and soil parameters. Given the caution in

interpreting the results, the following policy recommendations are suggested from the findings:

1. The government of Tamil Nadu should invest more in functional agricultural extension services to enhance efficient use of available productivity increasing inputs.
2. Farmer should be provided with minimum support price for their produce to make them survival assured.
3. Steps may be taken to conserve the soil health. Soil health cards will enable farmers to participate actively in the soil fertility enhancement movement.
4. Timely availability of credit at an affordable rate of interest will help farmers to reduce distress.
5. Steps may be taken to build on the skills of farmers as agricultural entrepreneurs through links with technology, markets, society and the government.
6. A water literacy movement may be launched and regulated for sustainable use of ground water as well as for preventing pollution.
7. Steps may be taken to cover all the farmers under crop insurance.
8. Efforts may be taken for assured remunerative marketing for agriculture produce.
9. The agricultural department officials may give training and suggestion to the farmers regarding the use of recommended dose of fertilizer and pesticide.
10. To reduce the harvesting cost of paddy and sugarcane, machinery with high technology may be used with increased numbers.
11. Fertilizer and pesticide should be supplied to the farmers with subsidies.
12. Government should take stringent action against the polluter of water and air.

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