

ECONOMIC ANALYSIS OF COST AND RETURN, AND PROFITABILITY OF SUGARCANE PRODUCTION IN CUDDALORE DISTRICT, TAMIL NADU

R.Amala*

Dr.N.Rajagopal**

ABSTRACT

Sugarcane is a long duration crop and it is the source of white sugar and goor. But sugarcane area is decreasing day by day during the period of 2009-10,2010-11 and 2011-12 total sugarcane area were 1.18 lack ha, 1.16 lack ha and 1.08 lack ha respectively (BBS, 2013). 50% of sugarcane area is located in the mill zones, where sugarcane is utilized for sugar production and remaining 50% is situated in the non-mill zone, which is used for *goor* and juice production (Alam et al., 2005). At this moment there is no scope to increase the sugarcane area in plain land. But there is a scope to increase sugarcane cultivation in char lands, saline belt and hilly area. Cultivation of sugarcane on fallow char lands is getting popularity as the farmers are getting financially benefited through its cultivation. The Shares of cost of major inputs for sugarcane production in the mills zones are seed (11.44%), Fertilizer (12.58%), pesticide (3.40%), irrigation (1.90%) and transportation for cane supply to the mills (8.79%) (Kabir & Alam, 2000). Sugarcane cultivation has been creating employment and self-employment opportunities for the unprivileged people living in hardly reachable and remote reverie char areas round the years to improve their life and livelihood. In India, the sugar industry is the second largest industry next to the textile industry in playing a vita lrole in the socio-economic transformation of country

*** Ph.D., Research Scholar, Department of Economics, Annamalai University, Annamalai Nagar, Tamilnadu**

**** Assistant Professor, Department of Economics, Annamalai University, Annamalai Nagar, Tamilnadu**

(Wagh, 2015). The sugar industry being an important agro-based industry provides livelihoods to about 6 million sugarcane farmers and around 7 lakh workers who are employed in the sugar mills. India ranked second in sugarcane production in the world, after Brazil, with an area of 5.31 million hectares and production of 366.8 million tonnes with productivity of 69.1 tonnes/ha during 2014-15 (ISMA, 2015). The area and production of sugarcane in Tamil Nadu during 2014-15 was 2.55 lakh ha and 22.3 Mt, respectively and the Productivity was 104 t/ha in the year 2013-14 (Government of Tamil Nadu, 2015). The main aim of the present study is to measure and examine cost –returns of sugarcane production and examine the socio-economic conditions of sugarcane cultivators and also examine problem facing by sugarcane cultivators in Cuddalore District, Tamil Nadu.

Keywords: Cost, Returns, Sugarcane Production, Sugar and Goor.

INTRODUCTION

Sugarcane occupies a prominent position as a cash and commercial crop. Sugarcane is mainly used for making white sugar, gur, khandsari and it is also used for chewing and making juice. In the early days, sugarcane was used for making gur for the consumption of common people. In India sugarcane is the third largest crop in the country, in terms of value next to rice and wheat. In order to tackle the expected global energy crisis, many countries are spending considerable money and time in finding alternate renewable source of energy. In such efforts, ‘Ethanol; derived from sugarcane has been found to be a good substitute. In terms of potential productivity of alcohol, sugarcane stands first, compared to other crops. Brazil has forged ahead in the commercial exploitation of sugarcane. In Brazil, most of the vehicles including heavy duty trucks run on gasohol derived from sugarcane. The importance of sugarcane as an energy crop has been realized in our country. Sugarcane is cultivated in more than 110 countries and India stands first in sugar production with around 450 established sugar factories and over 35 million farmers and agricultural labourers involved in sugarcane cultivation and harvesting. Whereas sugarcane is one of the best commercial crops in many parts of India and Tamil Nadu. While sugarcane is the second largest agro industrial crop with heavy investment and number of varieties of sugarcane are grown in different areas of the Tamil Nadu State. The price for the sugarcane supplied to the sugar factory is fixed by the local state governments based on the cost

of cultivation and other and the price is linked to the sugar recovery .The Tamil Nadu State Government has (year 2012-2013) fixed a price of Rs.2300 per tonnes of cane with 9.5 per cent sugar recovery. The sugar factories make payment to the registered cane growers through banks. The sugar industry provides direct employment to a large number of persons, apart from providing indirect employment to thousands of persons in the rural areas who are involved in cultivation, harvesting and transportation of cane and other related services. At present, Tamil Nadu has practices.

REVIEW OF LITERATURE

Murali P., Balakrishnan R.(2011) an attempt to work out that labour scarcity coupled with high labour wage rate has greatly affected the irrigation and harvesting of sugarcane crop in time. It has reduced sugarcane area from 3.91 lakhs ha in 2006-07 to 3.14 lakhs ha in 2009-10 in Tamil Nadu. Modern sugarcane machinery and labour- saving devices were introduced on a large scale to reduce dependency on labour, and finish different farm operations in time. The study has found the mechanical operation to be superior to manual operation in sugarcane cultivation. These have reduced cost of production and have enabled efficient utilization of resources with better work output. For example, furrow method of irrigation required about 320 person –hour, whereas drip irrigation required only 30 person- hour. Similarly, natural harvesting required about 1000 person-hour and cost of 55000 to harvest 100 tonne (550/t) against 32500(325/t) with the labour engagement for 12 person – hour/ ha. The study has conducted that it has become inevitable to use modern sugarcane machinery, which is now available in the country. Although its initial cost is very high, the advantages accrued in their use are many. The study has suggested the use of drip irrigation and mechanical harvests to mitigate the acute labour scarcity (farm operation and harvesting) it also proposed to implement custom hiring system on co-operative basis/ or owned and operated by the sugar factories for sugarcane harvesters in the state.

Parmer V.N Patel C.D (2014) This paper attempts to measure the economics of sugarcane production in South Gujarat. The study was conducted during the year 2013-14 with 240 farmers. The decision and choice of crops to be grown on a farm and the area to be allocated under a crop depends to a large extent on the prices of output, productivity level, technology

available and the level and prices of inputs used in their production. The knowledge of input use, cost structure and returns from the cultivation of crops helps in formulating policies at macro and micro levels. Such knowledge is more useful for crops cultivated mainly for the market viz. the cash crops, spice crops, fruits, vegetables and other high value crops. This paper focuses on pattern of input use in cultivation of sugarcane crop and cost structure and returns from sugarcane cultivation. Findings of the study revealed that due to statutory price for sugarcane, this crop is grown not by choice but due to its assured returns. Moreover, due to set package of practices, the cost and returns across the farm categories did not vary much.

OBJECTIVES OF THE STUDY

1. To portray the socio-economic conditions of different farm size of sugarcane cultivators in the study area.
2. To estimate the component of cost and return of different type of sugarcane farm size groups.

Sampling Design

S.No.	Type of Farmers	Blocks		Total
		Annagramam	Keerapalayam	
1	Marginal	75	38	113
2	Small	55	25	80
3	Medium	37	20	57
4	Large	33	17	50
	Total	200	100	300

Table-1

Age –wise Classification of the sample respondents

Category	Age			Total
	Below 40	41-50	Above 50	
Marginal farmers	20 (17.7)	41 (36.3)	52 (46.0)	113 (100.0)

Small farmers	22 (27.5)	16 (20.0)	42 (52.5)	80 (100.0)
Medium farmers	14 (24.6)	27 (47.4)	16 (28.1)	57 (100.0)
Large farmers	6 (12.0)	26 (52.0)	18 (36.0)	50 (100.0)
Overall	62 (20.7)	110 (36.7)	128 (42.7)	300 (100.0)

Source: Computed from primary data

Table 1 reveals that farm wise classification of the sample respondents according to age. Out of 300 farmers 62 respondents (20.7%) are in the age group of below 40 years old, 110 farmers (36.7%) are in the age group of 41-50 years old, and rest of 128 farmers are in the age group of above 50 years old in the study area. It is also clear that majority of the 128 farmers (42.7%) are belongs to in the age group of above 50 years old, and minimum of 62 farmers (20.7%) are in the age group of below 40 years old in the study area.

Table-2

Community-wise Classification of the sample respondents

Category	Community			Total
	SC/ST	MBC	BC	
Marginal farmers	47 (41.6)	36 (31.9)	30 (26.5)	113 (100.0)
Small farmers	38 (47.5)	27 (33.8)	15 (18.8)	80 (100.0)
Medium farmers	36 (63.2)	8 (14.0)	13 (22.8)	57 (100.0)
Large farmers	25 (50.0)	8 (16.0)	17 (34.0)	50 (100.0)
Overall	146 (48.7)	79 (26.3)	75 (25.0)	300 (100.0)

Source: Computed from primary data

Table 2 shows that farm wise classification of the respondent according to community. Out of 300 farmers 146 respondents (48.7%) are belongs to scheduled caste tribe (ST/ST) 79 farmers (26.3%) are belongs to most Backward community (MBC) and 75 farmer (25.0%) are belongs to Backward Community in the study area. It is clear that majority of the 146 farmers (48.7%) are belongs to Scheduled Caste, Secondly Occupied by most Backward Community, and thirdly occupied by the Backward community in the study area.

Table-3

Classification of sample farmers according to their educational qualification

Category	Educational Qualification					Total
	Illiterate	Primary (or)Middle	Secondary	Higher Secondary	Degree	
Marginal farmers	11 (9.7)	39 (34.5)	41 (36.3)	22 (19.5)	-	113 (100.0)
Small farmers	6 (7.5)	31 (38.8)	28 (35.0)	12 (15.0)	3 (3.8)	80 (100.0)
Medium farmers	4 (7.0)	18 (31.6)	13 (22.8)	18 (31.6)	4 (7.0)	57 (100.0)
Large farmers	3 (6.0)	9 (18.0)	28 (56.0)	5 (10.0)	5 (10.0)	50 (100.0)
Overall	24 (8.0)	97 (32.3)	110 (36.7)	57 (19.0)	12 (4.0)	300 (100.0)

Source: Computed from primary data

Table 3 inferred that classification of the sample farmers according to their educational qualification in the study area; out of 300 respondents 97 farmers (32.3%) educational qualification is primary level of education, 110 farmers (36.7%) are secondary level of education, 57 farmers (19.0%) are higher secondary level of education, 12 farmers (4.0%) are Degree level of education and rest of 24 farmers (8.0%) are going to in the list of illiterate. So it is found that majority of 110 farmers (36.7%) educational qualification is secondary level of education in the study area.

Table-4

Family size wise classification of the sample respondents

Category of Farmers	Size of Family			Total
	Small (up to 4)	Medium (up to 5)	Large (above 6)	
Marginal	65 (57.5)	27 (23.9)	21 (18.6)	113 (100.0)
Small	32 (40.0)	27 (33.8)	21 (26.3)	80 (100.0)
Medium	23 (40.4)	22 (38.6)	12 (21.1)	57 (100.0)
Large	20 (40.0)	23 (46.0)	7 (14.0)	50 (100.0)
Total	140 (46.7)	99 (33.0)	61 (20.3)	300 (100.0)

Source: Computed from primary data

Table 4 shows that the family size wise classification of the sample respondent. Out of 300 respondents 140 (46.7%) farmers are living with small size family (upto 4) 99 (33.0%) farmers are living with medium size family (up to 5) and remain 61 (20.3%) are living with large size of family (above 6) in the study area.

So it is found that irrespective of the farm sizes majority of 140 farmers are occupied by the small size of family next to 99 farmers are occupied second place by the medium size of family and 61 farmers are occupied last place by the large size of families in the study area.

Table-5

Farm-Wise Annual Average Cost of Cultivation of Sugarcane (Per acre in Rs)

S.No	Particulars	Type of Farmers			
		Marginal	Small	Medium	Large
1.	Preparatory cost of land	1050	1100	1500	1650
2.	Seeds and Sowing	4200	4500	4900	4900

3.	Fertilizers and manures	950	1100	1450	1750
4.	Pesticides	950	1200	1350	1550
5.	Irrigation	450	800	950	1050
6.	Labour cost				
	i. Preparatory cost for labour	1300	1600	2400	2500
	ii. Seed and Sowing	3000	3200	3450	3550
	iii. Fertilizers and manures	1100	1450	1600	1800
	iv. Irrigation cost for labour	750	900	1100	1200
	v. Weeding	6000	6500	7200	7300
	vi. Other Cultivational work	300	600	2100	2250
7.	Harvesting (cutting charge) or Labour change in Rs by tones	31850	30550	29250	28600
8.	Transportation	4900	4700	4500	4450
9.	Marketing	-	-	-	-
10.	Miscellaneous item	600	1050	2400	2550
11.	Interest on working capital	2296	2370	2566	2604
12.	Total variable cost	59696	61620	66716	67704

Source: Computed from primary data

Cost: Table 5 shows that the total average variable cost of production of sugarcane of different size of farm holdings. The total average variable cost of marginal farmer is Rs 59,696, total variable cost of small farmer is Rs 61,620, total variable cost of marginal farmers is Rs 66,716 and total variable cost of large farmer is Rs 67,704. It reveals that there is a direct relationship between size of farm and cost of production that is if farm size increases the total variable cost will also increase in the study area.

Table-6

Returns of sugarcane production of different type of farm holding (per acre in Rs)

Type of Farmers	yield by tons	Amount in Rs (per tons)	Total Returns from sugarcane	Other crops amount	Total Return
Marginal	49	2300	112700	3500	116200
Small	47	2300	108100	4200	112300
Medium	45	2300	103500	4750	108250
Large	44.5	2300	102350	5300	107650

Source: Computed from primary data**Return:**

Table 6 reveals that the total and net return of sugarcane production of different type of farm holding. The total return of marginal farmer is Rs 116200, small farmer return is Rs 112300 medium farmer return is Rs 108250 and large farmer return is Rs 107650. So the average return of sugarcane production is Rs 111100. Whereas this table also found that the Net return from sugarcane production .The Net return of marginal farmer is Rs 56504, small farmer Net return is Rs 50680,Medium farmer Net return is Rs 41534 and large farmer Net return is Rs 39946, so the average net return from sugarcane production is Rs 47166.

PROBLEMS IN THE SUGARCANE CULTIVATION FACING BY FARMER:**Agricultural factors**

1. Water problem
2. Fertility of the soil
3. Rain and Wind
4. Affects by insects and pest

Among the Agricultural factors majority of the farmers are affecting by the problem of fertility of the soil in the study area.

Economic factors

1. Capital
2. Labour and wage problems

3. Transportation
4. Factory problem

Among the Economic factors majority of the irrespective of the farm size farmers are affected by the problem of labour and wage problem in the study area.

MAJOR FINDINGS AND CONCLUSION

- In the total number of 300 respondents majority of 128 farmers (42.7) are belong to in the age of above 50 years old. While in the age group of 41-50 occupied by second place and below 40 years old occupied by third place in the study area.
- It is found that among the sugarcane cultivators scheduled caste constituted 48.7 percentage and first place in order to representation in the study area, Most backward caste occupied the second and third place by the backward caste.
- It is identified in the total number of 300 sugarcane cultivators majority of 110 (36.7) farmers are having secondary level of education and minimum number of 12 farmers (4.04) are having degree qualification.
- In the case of family size it is estimated out of 300 respondents 140 sugarcane cultivators are having up to 4 members in the family, 99 are having up to 5 members and 61 farmers are having above 6 members in their family.
- It is estimated cost of sugarcane production of different types of farmers. The total average variables cost of marginal farmers is Rs 59, 696, cost of small farmers is Rs 61,620 cost of medium farmer is Rs 66, 716 and cost of large farmer is Rs 67,704 the average cost of cultivation per acre is Rs.63, 934.
- In the income of the respondents returns from sugarcane production the net returns of marginal farmers is Rs 56,504, small farmer net returns is Rs 50,680, Medium farmers net returns is Rs 41, 534 and large farmers net reruns is Rs 39,946 and average net returns from the sugarcane production is Rs 47, 166 in the study area.
- In the case of problem in sugarcane cultivation majority of the farmers are affecting by the problem of fertility of the soil and the problem of labours and wage problem in terms of agricultural factors and economic factors respectively. Any way the total income generated in the sugarcane production and increasing employment generation is considerably satisfaction in Cuddalore district.

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