

# Economics of sugarcane cultivation under organic and inorganic farming in Bagalkot district of Karnataka

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Received : 13.12.2013; Revised : 21.02.2014; Accepted : 17.03.2014

## ABSTRACT

Indian agro-climatic conditions are favourable for the production of sugarcane. Sugarcane plays a pivotal role in the agro-industrial economy of India. The present study was undertaken with objective of assessing cost and returns involved in organic and inorganic sugarcane cultivation in Bagalkot district of Karnataka. Multistage sampling design was used for drawing samples and tabular analysis was employed to analyse collected data. The results showed that, the per acre cost of sugarcane cultivation on organic farms (Rs. 45,974.50) was less when compared to that on inorganic farms (Rs.54, 331.82). This marginal difference was due to the higher cost incurred on chemical fertilizers, cost on more quantity of setts used as less spacing and more human labour used by inorganic sugarcane farmers. The return structure in sugarcane clearly revealed that the per acre gross returns was higher (Rs. 82,328) on organic farms compared to that of inorganic farms (Rs. 81,360) with a positive net return on both the categories of the farms. The net return on organic farm was Rs. 36,353.90 and was Rs. 27,028.18 on inorganic farms. The B:C ratio was also higher on organic farms (1.79) compared to inorganic farms (1.50). Hence, cultivation of sugarcane in organic is better compared inorganic and it will improve soil health and farmers income.

**KEY WORDS :** Sugarcane cultivation, organic, Inorganic farming, Economics

**How to cite this paper :** Shivanaikar, M., Guledagudda, S.S. and Mokashi, Prakash (2014). Economics of sugarcane cultivation under organic and inorganic farming in Bagalkot district of Karnataka. *Internat. J. Com. & Bus. Manage*, 7(1) : 84-87.

Sugarcane (*Saccharum officinarum*) is native to India and has been cultivated from the historic times over the years and also it is a major commercial crop next to cotton in India. Sugarcane is most important source of sugar. Indian agro-climatic conditions are favourable for the production of sugarcane. Sugarcane plays a pivotal role in the agro-industrial economy of India and in fact on real economy, performance of sugar industry is directly related

to the sugarcane production in India.

The main sugarcane growing states in India are Uttar Pradesh, Maharashtra, Karnataka, Andhra Pradesh, Haryana, Bihar, Gujarat and Punjab. Sugarcane is grown extensively in India. In Karnataka, sugarcane cultivation stands third in India with respect to area coverage next only to Uttar Pradesh and Maharashtra. In the recent past, there has been an increasing trend in both area and production of sugarcane in the state. Some of the important sugarcane growing districts in Karnataka state are Bagalkot, Belgaum, Mandya, Bidar, Bellary and Bijapur.

Organic production systems are based on specific standards precisely formulated for food production and aims at achieving agro-ecosystems, which are socially and ecologically sustainable. It is based on minimizing the use of external inputs through use of on-farm resources efficiently compared to agriculture based on the use of chemical fertilizers and pesticides. Thus, the use of synthetic

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fertilizers and pesticides is avoided. Keeping this in view, an attempt was made to evaluate cost and returns involved under organic and inorganic sugarcane cultivation.

## METHODOLOGY

Multistage random sampling procedure was followed. Bagalkot is the second largest sugarcane producing district in Northern Karnataka. Organic cultivation of sugarcane is practiced largely in the district. Hence, Bagalkot district was purposively selected for the study. And also large number of farmers practice the organic as well as inorganic cultivation of sugarcane in the district. However, Belgaum district was excluded because of inclusion of large number of taluks due to undivided district of North Karnataka. In the next stage, Jamkhandi and Mudhol taluks were selected based on maximum area under sugarcane. Although the crop is cultivated in almost all the taluks, cultivation of the crop is heavily concentrated in Jamkhandi (42.53 %) and Mudhol (35.71 %) taluks. This is mainly because of the fact that these two taluks are served by assured canal irrigation. A total of three villages were selected randomly from each taluk. In each sampled village, the primary data was collected from the sample farmers of both 10 organic and 10 inorganic sugarcane cultivating farmers, thus, making total sample size of 120 sugarcane cultivating farmers.

The data pertaining to area under sugarcane, inputs used and output realized in organic and inorganic sugarcane cultivation along with their market values were collected through personal interview method. The tabular presentation method was followed to analyse the average cost and returns involved in organic and inorganic sugarcane cultivation.

## ANALYSIS AND DISCUSSION

Per acre cost of sugarcane cultivation on organic and inorganic farms is presented in Table 1. Perusal of the table indicated that the per acre total cost of sugarcane cultivation on organic farm was found less than that of inorganic farm. The average cost of sugarcane cultivation on organic farm was Rs. 45,974.50 per acre as against Rs. 54,331.82 per acre on inorganic farm. The cost of chemical fertilizers on inorganic farms was the differing factor in the cost. In the total cost, variable costs accounted for a major share. The proportion of variable cost was Rs. 35,710.82 and Rs. 44,294.38 accounting for 77.68 per cent and 81.53 per cent of the total cost of sugarcane cultivation on organic and inorganic farms, respectively.

In the case of organic farms, the variable costs mainly comprised of cost of human labour, cost of organic manures (FYM, green manuring, vermicompost, biofertilizers and biopesticides), cost of setts and cost of bullock labour which were, Rs. 10151.58, Rs. 9,613.02, Rs. 8,320 and Rs. 2,800

accounting for 22.08 per cent, 20.90 per cent, 18.10 per cent and 6.09 per cent of the total cost of cultivation, respectively. The expenditure on organic manure was found to be an important cost item in total cost of cultivation on organic farms. The other variable cost items such as interest on working capital and cost of machine labour accounted for 5.08 per cent (Rs. 2,336.22) and 4.89 per cent (Rs. 2,250) of the total cost of sugarcane cultivation on organic farms, respectively.

In the cost of sugarcane cultivation on inorganic farms, the variable cost mainly comprised of cost of human labour, cost of setts, cost of FYM and cost of chemical fertilisers which were Rs. 10914.12, Rs. 9,900, Rs. 5,624 and Rs. 5,090 accounting for 20.09 per cent, 18.22 per cent, 10.35 per cent and 9.37 per cent of the total cost of cultivation, respectively. The other variable cost items such as cost of bullock labour and interest on working capital accounted for 5.45 per cent (Rs. 2960) and 4.76 per cent (Rs. 2587.80) of the total cost of sugarcane cultivation on inorganic farms, respectively. The expenditure on chemical fertilizers was found to be an important cost item in the total cost of sugarcane cultivation on inorganic farms.

The percentage share of fixed cost in the total cost of sugarcane cultivation on organic and inorganic farms was 22.32 per cent (Rs. 10,263.68) and 18.47 per cent (Rs. 10,037.44), respectively. Among the items of fixed cost, the rental value of the land had a maximum share in the total cost of sugarcane cultivation on both organic and inorganic farms.

On an average the yield of organic sugarcane farm was 43.56 tonnes per acre whereas it was 45.20 tonnes in case of inorganic farms.

The total returns in case of organic farm was Rs.82,328 per acre whereas it was Rs.81,360 per acre in inorganic farm. The net returns realized from organic sugarcane farm was Rs. 36,353.90 and Rs.27,028.18 from inorganic farm. In sugarcane cultivation, the return per rupee of cost of cultivation was more (1.79) in case of organic farm as compared to inorganic farm (1.50).

The per cent change in the value of organic and inorganic sugarcane farms is represented in last column of Table 1 where, 33.33 percentage decrease in the value of organic sugarcane farms particularly in miscellaneous followed by subtotal of variable cost (24.04 %), setts (18.99 %), total cost of cultivation (18.18%), FYM (14.12 %), interest on working capital (10.77 %), human labour (7.51 %), depreciation (5.92 %) and bullock labour (5.71 %) when compared to inorganic sugarcane farm. Similarly 25.65 per cent increase in the value of organic sugarcane farms particularly in net returns followed by returns per rupee of expenditure (16.20 %), machine labour (4 %), rental value of land (4 %), interest on fixed capital (2.20 %), subtotal of fixed capital (2.20 %) and yield (1.18 %) when compared to

inorganic sugarcane farm.

It is evident from the results presented in Table 1 that, the per acre cost of sugarcane cultivation on organic farms (Rs. 45,974.50) was less when compared to that on inorganic farms (Rs.54, 331.82). This marginal difference was due to the higher cost incurred on chemical fertilizers, cost on more quantity of setts used as less spacing and more human labour used by inorganic sugarcane farmers.

The per acre variable cost in cultivation of sugarcane on organic farms (Rs.35,710.82) was lower as compared to that on inorganic farms (Rs.44,294.38). The cost incurred on organic compounds was lowest in organic farms as compared to cost incurred on chemical fertilizers in inorganic farms because most of the organic compounds were available at cheaper rate at village as compared to chemical fertilizers.

The cost on total human labour was lower on organic farms compared to inorganic farms. This was mainly due to the more number of times of chemical fertilizer application, hand weeding and irrigation in inorganic sugarcane

cultivation.

There were more setts cost involved in inorganic farms than organic farms, which was mainly due to the reason that majority of the organic farmers' followed wider spacing so fewer setts were required in the cultivation of organic sugarcane whereas, in case of inorganic sugarcane cultivation, the farmers followed narrow spacing so they needed slightly more quantity of setts. The cost incurred on biopesticides was relatively low in organic farms because the organic farmers used biopesticides, most of which were homemade and some purchased microbial extracts and there was no such practices followed in inorganic sugarcane farms.

The cost incurred on land revenue was same in both organic and inorganic farms and land rent was slightly higher in organic farms. The depreciation charge was relatively high on inorganic farms and low on organic farms because inorganic farmer's asset position was high. Similar results were observed by Sujatha *et al.* (2006) and Waykar *et al.* (2006).

Per acre average yield of sugarcane was low on organic

Table 1: Cost and returns structure in cultivation of sugarcane on organic and inorganic farms (Rs./Acre)									
Sr. No.	Particulars	Organic farms			Inorganic farms			Difference	
		Quantity	Value	Per cent to total cost	Quantity	Value	Per cent to total cost	Value	Per cent
<b>Variable cost</b>									
1.	Setts(t)	3.2	8320	18.10	3.6	9900	18.22	-1580.00	-18.99
2.	FYM(t)	15.4	4928	10.72	14.8	5624	10.35	-696.00	-14.12
3.	Green manure (kg)	36	648	1.41	-	-			
4.	Vermicompost (qt)	13.2	3564	7.75	-	-			
5.	Biopesticides/biofertilisers (kg)	46.92	473.02	1.03	-	-			
6.	Chemical fertilizers (qt)	-	-		5.36	5090.4	9.37		
8.	Human labour (man days)	71.49	10151.58	22.08	76.86	10914.12	20.09	-762.54	-7.51
9.	Bullock labour (pair days)	7	2800	6.09	7.4	2960	5.45	-160.00	-5.71
10.	Machine labour (hr)	5	2250	4.89	4.8	2160	3.98	90.00	4.00
11.	Miscellaneous	-	240	0.52	-	320	0.59	-80.00	-33.33
12.	Interest on working capital @ 7 %	-	2336.22	5.08	-	2587.80	4.76	-251.58	-10.77
	Subtotal	-	35710.82	77.68	-	44294.38	81.53	-8583.56	-24.04
<b>Fixed cost</b>								0.00	
1.	Land revenue	-	8	0.02	-	8	0.01	0.00	0.00
2.	Rental value of the land	-	7500	16.31	-	7200	13.25	300.00	4.00
3.	Depreciation	-	1656	3.60	-	1754	3.23	-98.00	-5.92
4.	Interest on fixed capital @ 12%	-	1099.68	2.39	-	1075.44	1.98	24.24	2.20
	Sub total	-	10,263.68	22.32	-	10,037.44	18.47	226.24	2.20
	Total cost of cultivation (A+B)	-	45,974.50	100.00	-	54,331.82	100.00	-8357.32	-18.18
<b>Returns</b>								0.00	
1.	Yield(t)	43.56	82,328		45.2	81,360		968.00	1.18
2.	Net returns	-	36,353.90		-	27,028.18		9325.72	25.65
3.	Returns per rupee of expenditure	-	1.79		-	1.50		0.29	16.20

farms (43.56 tonnes) as compared to inorganic farms (45.2 tonnes). This was mainly due the fact that organic farmers practiced the organic farming from last three to four years only, since to build up soil fertility it needs more than five years and hence in initial three to four years there is yield loss in the organic farms compared to inorganic farms.

The return structure in sugarcane clearly revealed that the per acre gross returns was higher (Rs. 82,328) on organic farms compared to that of inorganic farms (Rs. 81,360) with a positive net return on both the categories of the farms. The net return on organic farm was Rs. 36,353.90 and was Rs. 27,028.18 on inorganic farms. The yield levels on organic farms were lower compared to inorganic farms, but the net returns were higher because of the organic sugarcane fetched

more price and lower cost of cultivation. The B:C ratio was also higher on organic farms (1.79) compared to inorganic farms (1.50).

## REFERENCES

- Sujatha, R.V., Eswara Prasad, Y. and Suhasini, K. (2006). Comparative analysis of efficiency of organic farming vs inorganic farming- A case study in Karimnagar district of Andhra Pradesh. *Agric. Econ. Res. Rev.*, **19**(2) : 232.
- Waykar, K.R., Yadav, D.B., Shendage, P.N. and Sale, Y.C. (2006). Economics of grape production under organic and inorganic farming in the Nasik district of Maharashtra state. *Agric. Econ. Res. Rev.*, **19**(2) : 240.

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