Comparative Analysis of Organic and Inorganic Sugarcane Farming

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Introduction:

This research article focuses on the comparative analysis of organic and inorganic sugarcane farming. The researcher has been selected organic and inorganic sugarcane product for the analysis. Solapur is one of the significant and largest agriculture and industrial district in Maharashtra. Agriculture business is the most important source of income of the people in the district. There are 65 percent people engaged in the agriculture sector. Organic farming method economically profitable compares to the inorganic framing. India is the most important country in the view of agriculture. The Indian farmer has been shift organic to chemical farming after green revolution. The organic farming area is less than in India other countries. Today, need for organic farming for the Indian economy. The Indian agriculture product does not purchase other countries in the international trade because large hazard factor is available in the chemical farming product. Organic farming provides better health of soil, animals and human beings. Organic agriculture is also helpful for meeting the challenges to farming due to changing the climate and socio-economic environment at the global, national and regional level.

Objectives

1. To study comparative analysis of organic and inorganic sugarcane farming.
2. To study cost of production per acre under organic and inorganic sugarcane farming.
3. To study input-wise expenditure per acre of organic and inorganic sugarcane farming.

Hypothesis:

1. The production cost of organic farming is less than inorganic farming.
2. Market prices of the organic products are higher than inorganic product.

The researcher has been selected *sugarcane* crops for comparative analysis of organic and inorganic farming. The researcher has been collecting information by organic farmers through Questionnaire. The organic farmers were of opinion that organic farming cost of production was less than inorganic farming. The researcher has been analyzed benefit-cost ratio both organic and inorganic *Soyabean* farming.

Benefit-Cost Ratio (BCR)

The researcher has been selecting various parameters for the analysis of benefit-cost ratio (BCR). The fixed costs and variable costs are included in the total cost.

$$\textbf{BCR} = \frac{\text{Net Profit (Total Cost – Total Income)}}{\text{Total Cost}}$$

Parameters-

C^1 = Seeds and sowing
C^2 = Manures and Fertilizers
C^3 = Pesticides
C^4 = Irrigation
C^5 = Land Improvement
C^6 = Labors Charges
C^7 = Rent of Machines
C^8 = Marketing/Transport
C^9 = Publicity
TC = Total Cost ($C^1 + C^2 + C^3 + C^4 + C^5 + C^6 + C^7 + C^8 + C^9$)
TP = Total Production
MP = Market Price
TI = Total Income
NP = Net Profit

The analysis of BCR is a very important to the assess economics of organic farming.

Sugarcane

The following table no. 1 depicts the Cost of Production per Acre under Organic and Inorganic Farming- Sugarcane and table no.2 shows the input wise expenditure of Sugarcane per acre of organic and inorganic farming.

Cost:

The total production cost of Sugarcane was Rs. 34345/acre in organic farming and Rs. 44500/acre in inorganic farming. The organic and inorganic farmers were not using publicity source for Sugarcane production, the cost of publicity; seeds and sowing have been not included in the total production cost. The total cost of Sugarcane was 29.57 percent more in inorganic farming than organic farming.

Table No.1

Cost of Production per Acre under Organic and Inorganic Farming- Sugarcane

Sr. No.	Parameters	Organic Farming	Standard Deviation	Inorganic farming	Standard Deviation
1	C^1	-	-	-	-
2	C^2	8225 (23.95)	3076.47	12000(26.97)	3678.93
3	C^3	-	-	2200 (4.94)	1115.20
4	C^4	5450 (15.87)	2121.20	7600 (17.08)	2397.75
5	C^5	6750 (19.65)	2327.15	6735 (15.13)	2471.26
6	C^6	4500 (13.10)	1916.55	5225 (11.74)	1682.09
7	C^7	2270 (6.61)	533.62	2500 (5.62)	523.99
8	C^8	7150 (20.82)	2183.49	8240 (18.52)	2580.97
9	C^9	-	-	-	-
10	Total Cost (Rs.)	34345(100.00)	--	44500(100.00)	--
11	Total Production (Tone/Acre)	42.3	--	37.7	--
12	Market Price (Rs.)	2700	--	2700	--
13	Total Income(Rs.)	114210	--	101790	--
14	Net Profit (Rs.)	79865	--	57290	--
15	BCR	2.33		1.29	

Source: Field Survey-2017

(Foot note: Figures in the parentheses indicate percentages to column totals)

Table No.2

Input-wise Expenditure per Acre of Organic and Inorganic Farming-Sugarcane

Sr. No.	Particulars	Organic farming	Standard Deviation	Inorganic farming	Standard Deviation
1	Seeds	-	-	-	-
2	Manures	8225 (23.95)	3076.47	-	-
3	Fertilizers	-	-	12000 (26.97)	3678.93
4	Pesticides	-	-	2200 (4.94)	
5	Labor	4500 (13.10)	1916.55	5225 (11.74)	1682.09
6	Other	21620 (62.95)	7165.46	25075 (56.35)	7973.97
	Total	34345 (100.00)	--	44500 (100.00)	--

Source: Field Survey-2017

(Foot note: Figures in the parentheses indicate percentages to column totals)

Return:

The total production of Sugarcane was 42.3 TN/acre in organic farming and 37.7 TN/acre in inorganic farming. The organic and inorganic Sugarcane was selling in the same market and same market price. The market price of Sugarcane was Rs.2700 per/TN. Total income of Sugarcane in organic farming was Rs. 114210. Likewise; total income of Sugarcane in inorganic farming was Rs. 101790. The organic farmers get more income in organic farming than inorganic farming by Sugarcane crops.

Benefit – Cost Ratio:

Whereas the income from organic farming was more, there was the difference in the benefit-cost ratios between organic farming and inorganic farming. This was because of the increase in the Expenditure and low production of Sugarcane. The benefit-cost ratios of Sugarcane were 2.33 and 1.29 for organic farming and inorganic farming respectively.

Hypothesis Testing:

The production cost of organic farming is less than inorganic farming.

μ_1 = Per acre production cost of organic sugarcane.

μ_2 = Per acre production cost of inorganic sugarcane.

Sample values are:

$\bar{X_1}$ = Sample mean of organic Sugarcane

$\bar{X_2}$ = Sample mean of inorganic Sugarcane

$\bar{X_1}$ = 34345

$\bar{X_2}$ = 44500

S_1 = Sample S.D. for per acre production cost of organic Sugarcane

S_2 = Sample S.D. for per acre production cost of inorganic Sugarcane

S_1 = 12158.48

S_2 = 14450.19

H_0: $\mu_1 = \mu_2$

H_A: $\mu_1 > \mu_2$

Under H_0, values of test statistics are:

$$Z_0 = \frac{X_1 - X_2}{\sqrt{\left(\left(\frac{S_1^2}{n1}\right) + \left(\frac{S_2^2}{n2}\right)\right)}} \sim N(0,1)$$

$$Z_0 = \frac{34345 - 44500}{\sqrt{((475333.23) + (671408.33))}}$$

Z_0 = -9.483

At 5% level of significance, the critical value is

$Z_{0.05}$ = -1.64

$Z_0 < -1.64$

∴ *Reject Ho*, per acre production cost of organic farming is less than inorganic farming.

Conclusion

The research paper concluded that the comparatively per acre total production cost of organic sugarcane farming is less than inorganic sugarcane farming. Thus input-wise expenditure per acre expenditure of organic sugarcane is less than and inorganic sugarcane farming. The organic farming method has a positive impact on soil conservation, human body, and environment and water resources. Hence, the organic farming method better is for sustainable development. Today need of new formulated policy for promotion for organic farming.

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