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Economic analysis of sugarcane cultivation in Sindhudurg district of Maharashtra state

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Abstract

The present study analysed the economics of the production of sugarcane in the Sindhudurg district of Maharashtra. The study was based on primary data. The data were collected by interviewing 90 sugarcane growers. The growers were categorized into small (less than 1.14 ha), medium (1.14 to 2.30 ha) and large (more than 2.30 ha) groups based on the area under sugarcane cultivation. At the overall level, the total cost for producing (Cost-C) suru sugarcane was ₹260,446 per hectare, with returns of ₹303,084 per hectare. In contrast, ratoon sugarcane cultivation cost (Cost-C) was ₹153,145 per hectare, with returns of ₹183,894 per hectare. The cost to produce one quintal of suru sugarcane was ₹275, while for ratoon it was ₹267. Productivity for suru sugarcane was 94.64 MT while in ratoon sugarcane it was 57.33 MT. The benefit-cost ratio was 1.16 for suru and 1.20 for ratoon, indicating that both suru and ratoon sugarcane crops are profitable at all levels of cost in the Sindhudurg district. The higher BC ratio for ratoon sugarcane suggests that it offers better profitability than suru sugarcane, despite its lower yields.

Keywords: Sugarcane, suru, ratoon, profitability, cost and returns, benefit-cost ratio

1. Introduction

Sugarcane (*Saccharum officinarum* L.) is a vital commercial crop that belongs to the *Graminae* family. It has a long cultivation history in the Indian subcontinent, with references dating back to the Atharva Veda (1500-800 BC). Originating from India (*Saccharum barberi*) and New Guinea (*Saccharum officinarum*), sugarcane plays a crucial role in the agricultural economy of India and other tropical and subtropical regions worldwide. Sugarcane is a perennial tall grass known for its efficiency in photosynthesis and biomass production and it is predominantly cultivated in areas with easy access to irrigation. Sugarcane is primarily grown for its juice, which is used to produce jaggery, sugar, molasses and "khandsari." It also provides important byproducts such as bagasse, which serves as a primary energy source in sugar mills, which is essential for alcohol production (Shukla *et al*. 2017) [20]. Additionally, sugarcane leaves and press mud are valuable as mulch, green manure and sources of plant nutrients. The crop has significant implications for the rural economy, providing employment to millions involved in its cultivation, processing and related industries (Solomon 2016) [22].

Brazil is the largest producer of sugarcane, contributing 40 per cent of the world's production, followed by India with nearly 20 per cent (FAOSTAT, 2023) [3]. In India, sugarcane farming is extensive, particularly in Uttar Pradesh, Maharashtra, Karnataka and Tamil Nadu. In Maharashtra, sugarcane is a significant industry, with rapid growth in recent years. Maharashtra holds the second position in India for both the area under sugarcane cultivation and its production, with Kolhapur being the top district in the state for sugarcane production. The Maharashtra sugar industry plays a prominent role in the nation's sugar production, contributing significantly to the state's economy and employment (Supriya *et al*. 2014) [23]. In the last few decades in the Konkan region, Sindhudurg district has been a major producer of sugarcane with an area under crop 3294 hectares (DSA Sindhudurg, 2022) [5]. Therefore, the present study, "Economics of production and disposal of sugarcane in Sindhudurg district (MS)," aims to estimate the cost, returns and profitability of sugarcane production in the Sindhudurg district.

2. Materials and Methods

The survey for specified objective was conducted in Sindhudurg district of Konkan region. The study employed a four-stage sampling design, selecting districts, tahsils, villages and ultimately sugarcane growers as sampling units.

The Sindhudurg district of the Konkan region in Maharashtra, known for its significant sugarcane cultivation, was chosen as the study area. Within this district, three tahsils Vaibhavwadi, Kankavli and Kudal were selected based on their area under sugarcane production. Three villages were randomly chosen from each tahsil, resulting in a total of nine villages. Finally, 10 sugarcane cultivators were randomly selected from each village, yielding a sample size of 90 farmers. The data and information for the present study were relevant to the agricultural year 2022-23.

2.1 Analysis of data

The data were arranged in suitable tables and analysed by using simple statistical tools such as arithmetic mean, average, percentage, ratios, etc. To study the effect of farm size on the productivity and profitability of sugarcane, the selected sample growers were classified according to their plot size under the sugarcane crop. The grouping was done by estimating the mean and standard deviation of the area under sugarcane of the sample growers. The mean of the sample was 1.72 and half of the standard deviation was 0.58. The stratification was carried out as given in Table 1.

Table 1: Distribution of sample of sugarcane growers

Sr. No.	Categories	Stratification	Area under sugarcane cultivation	No. of growers
1	Small (Group -I)	Below (Mean - ½ SD); 1.72-0.58 =1.14	Less than 1.14 ha.	32
2	Medium (Group -II)	Between (mean - ½ SD and mean + ½ SD); 1.72-0.58 = 1.14 & 1.72+0.58 = 2.30	1.14 to 2.30 ha.	29
3	Large (Group -III)	Above (mean + ½ SD); 1.72+0.58 = 2.30	More than 2.30 ha.	29
	Overall			90

2.1.1 Cost concepts used in analysis

The standard cost concept used in farm management studies was used in this investigation.

a. Cost A

It includes actual paid-out costs by the owner cultivator, inclusive of both cash and kind expenditure done on hired human labour (male and female), bullock labour, planting material, fertilizers, manures, irrigation charges, land revenue and other taxes and interest on working capital.

b. Cost B

Cost A plus interest on fixed capital plus the rental value of owned land was included in Cost B.

c. Cost C

It includes Cost B plus the imputed value of family labour. Family labour charges were calculated at the rate of prevailing wage rates for daily paid hired labour in the locality.

2.1.2 Benefit cost ratio (B: C ratio)

To judge the profitability of sugarcane production B:C ratio worked out with the help of the following formula.

$$\text{Benefit-cost ratio} = \frac{\text{Total returns}}{\text{Total cost}}$$

3. Results and Discussion

3.1 Economics of sugarcane cultivation

To analyse the economics of sugarcane, sample growers were categorized based on the type of sugarcane crops they cultivated. In the study area, two types of sugarcane crops, namely suru and ratoon, were grown. Sugarcane cultivated in the spring is called suru in Maharashtra and eksali in Andhra Pradesh and Gujarat. Ratoon sugarcane refers to the crop that grows from the stubble left in the field after the initial harvest of sugarcane.

The classification of sample growers according to the type of sugarcane crops is given in Table 2. It is seen from Table 2 that, among the 32 small-group grower, 13 cultivated suru sugarcane, 13 cultivated ratoon sugarcane and 6 cultivated both, hence total 19 suru and 19 ratoon growers in the small group. In the 29 medium-group growers, 9 cultivated suru, 2 cultivated ratoon and 18 cultivated both, resulting in 27 suru and 20 ratoon growers. Among 29 large-group growers, 14 cultivated suru, 4 cultivated ratoon and 11 cultivated both, giving 25 suru and 15 ratoon growers. Overall, there were 71 suru sugarcane and 54 ratoon sugaecane growers across all groups.

Table 2: Classification of sample growers according to type of sugarcane crops

Sr. No.	Group of growers	Number of growers	Types of sugarcane		Both (S+ R)	Total Suru growers	Total Ratoon growers
			Suru	Ratoon			
1	Small	32	13	13	06	19 (26.76)	19 (35.18)
2	Medium	29	09	02	18	27 (38.03)	20 (37.04)
3	Large	29	14	04	11	25 (35.21)	15 (27.78)
	Total	90	36	19	35	71 (100.00)	54 (100.00)

(Figures in the parentheses are percentage to total)

3.2 Per hectare cost of cultivation of suru sugarcane

The per hectare cost associated with suru sugarcane cultivation for small, medium, large and overall growers was calculated and is presented in Table 3.

It is observed from the Table 3 that, for small growers, the total per-hectare cost of sugarcane cultivation was Rs. 249,801, with Rs. 159,474 (63.84%) attributed to Cost-A and Rs. 207,047 (82.88%) to Cost-B. Hired labour expenses were Rs. 59,538, making up 23.83 per cent of the total cost. Other inputs included bullock labour (3.23%), machine hours (8.35%) and planting material (8.03%). Manures, fertilizers, plant protection chemicals and electricity

contributed 6.16 per cent, 6.57 per cent, 0.73 per cent and 2.21 per cent, respectively, covering an input cost of Rs. 147,688 (59.12%). Family labour accounted for 11.20 per cent of the total cost. Supervision fees comprised 5.91 per cent of the total expenses.

In case of medium size growers, the Cost C was Rs. 257,413 per hectare for sugarcane cultivation. Of this, 219,504 (85.27%) and Rs. 167,871 (65.21%) were accounted to Cost-B and Cost-A, respectively. The cost of hired labour accounted for Rs. 64,983 (25.24%). Additional input expenses included planting material (7.73%), machine hours (7.84%) and bullock labour (2.80%). Manures, fertilizers, plant protection chemicals and energy charges made up 6.79 per cent, 7.06 per cent, 0.83 per cent and 1.99 per cent of the total cost, respectively, constituting total input cost of Rs. 155,186 (60.29%).

The total per hectare cost of production (Cost-C) for large growers was Rs. 272256, with Cost-A accounting for 66.45 per cent (Rs. 180926) and Cost-B accounting for 87.18 per cent (Rs. 237344). About Rs 75865 (27.87%) was spent on hired labour. Other inputs such as planting material, machine hours and bullock labour had respective shares of 7.28 per cent, 7.26 per cent and 2.62 per cent to the total cost. Inputs such as manures, fertilizer, electricity costs and plant protection chemicals accounted for a total of 6.76 per cent, 7.24 per cent, 1.61 per cent and 0.75 per cent of the total cost, constituting total input cost of Rs 167121 (61.38%). Family labour accounted for 6.68 per cent of the total cost.

At the overall level, the cost of labour (human, bullock and machine hours) accounted for the largest portion of the total expenses, at Rs. 89740 (34.46%). The land's rental value came second, at Rs. 50397 (19.35%), followed by planting material at Rs. 19913 (7.65%). The amounts spent on fertilizers (NPK), manures, electricity charges and plant protection chemicals were Rs. 18244 (7.01%) and Rs. 17240 (6.62%), Rs. 4971 (1.91%), Rs. 2022 (0.78%), respectively. contributing an amount of Rs 157350 (60.42%) toward input costs. At the overall level, Cost A was Rs. 170150 and Cost B was Rs. 222301 and total cost of cultivation (Cost C) of suru sugarcane was Rs. 260446

Table 3: Per hectare cost of cultivation of suru sugarcane (Figures in rupees)

Sr. No.	Particulars	Small (N = 19)	Medium (N = 27)	Large (N = 25)	Overall (N = 71)
1	**Hired labour**				
	Male	33602 (13.45)	36968 (14.36)	45232 (16.61)	38960 (14.96)
	Female	25937 (10.38)	28015 (10.88)	30633 (11.25)	28370 (10.89)
	Total	59538 (23.83)	64983 (25.24)	75865 (27.87)	67330 (25.85)
2	Bullock labour	8066 (3.23)	7211 (2.80)	7125 (2.62)	7409 (2.84)
3	Machine hrs.	20868 (8.35)	20191 (7.84)	19763 (7.26)	20221 (7.76)
4	Planting material	20064 (8.03)	19892 (7.73)	19820 (7.28)	19913 (7.65)
5	Manures	15400 (6.16)	17480 (6.79)	18400 (6.76)	17240 (6.62)
6	**Fertilizers**				
	N	2704 (1.08)	3055 (1.19)	3277 (1.20)	3039 (1.17)
	P	8025 (3.21)	8696 (3.38)	9375 (3.44)	8755 (3.36)
	K	5692 (2.28)	6409 (2.49)	7072 (2.60)	6450 (2.48)
7	Electricity charges	5516 (2.21)	5127 (1.99)	4383 (1.61)	4971 (1.91)
8	Plant protection	1814 (0.73)	2142 (0.83)	2041 (0.75)	2022 (0.78)
	Input cost	147688 (59.12)	155186 (60.29)	167121 (61.38)	157350 (60.42)
9	Land revenue and other cesses	110 (0.04)	115 (0.04)	125 (0.05)	117 (0.04)
10	Depreciation on machinery and implements	2815 (1.13)	3259 (1.27)	3653 (1.34)	3242 (1.24)
11	Interest on working capital @ 6 per cent of input cost for 1 year	8861 (3.55)	9311 (3.62)	10027 (3.68)	9441 (3.62)
	Cost A	159474 (63.84)	167871 (65.21)	180926 (66.45)	170150 (65.33)
12	Interest on fixed capital @ 10 per cent	1650 (0.66)	1720 (0.67)	1892 (0.70)	1754 (0.67)
13	Rental value of owned land (1/6th of the gross returns- land revenue)	45923 (18.38)	49913 (19.39)	54526 (20.03)	50397 (19.35)
	Cost B	207047 (82.88)	219504 (85.27)	237344 (87.18)	222301 (85.35)
14	**Family labour**				
	Male	18608 (7.45)	15400 (5.98)	12204 (4.48)	15132 (5.81)
	Female	9378 (3.75)	6990 (2.72)	5995 (2.20)	7278 (2.79)
	Total	27986 (11.20)	22390 (8.70)	18199 (6.68)	22410 (8.60)
15	Supervision charges @ 10 per cent of input cost	14768 (5.91)	15519 (6.03)	16713 (6.14)	15735 (6.04)
	Cost C	249801 100.00)	257413 (100.00)	272256 (100.00)	260446(100.00)

(Figures in the parentheses are percentage to Cost C)

3.3 Per hectare cost of cultivation of ratoon sugarcane

The per hectare cost associated with ratoon sugarcane cultivation for small, medium, large and overall growers was calculated and is presented in Table 4.

It is observed from the Table 4 that, the total per hectare cost of production (Cost-C) for small growers was Rs. 146486. Of this, Cost-A accounted for 63.27 per cent (Rs. 92687) and Cost-B for 83.64 per cent (Rs. 122524). About Rs 47560 (32.47%) was spent on hired labour. The total cost accounted for bullock labour, manures, fertilizer, chemicals for plant protection, electricity charges and other inputs were only 5.62 per cent, 6.85 per cent, 6.85 per cent, 7.53 per cent, 1.58 per cent and 3.77 per cent of the total cost. Therefore, the input cost equals Rs 84682 (57.81%). The

total interest paid on working capital was Rs. 5081 (3.47%). The labour of the family contributed 10.58 per cent to the overall expenses. Supervision fees were for 5.78 per cent of the total cost.

According to Table 4, for medium grower total per hectare cost of production (Cost-C) was Rs. 151624, with Cost-A making up 63.66 per cent (Rs. 96528) and Cost-B making up 84.55 per cent (Rs. 128196). The cost of hiring labour came to approximately Rs 49622 (32.73%). Bullock labour, manure, fertilizer, plant protection chemicals and electrical expenses each accounted for 4.93 per cent, 7.07 per cent, 8.27 per cent, 1.58 per cent and 3.38 per cent of the total cost. Consequently, the cost of the input was Rs 87881 (57.96%). The amount of depreciation on tools and machinery was Rs. 3259 (2.15%). Supervision fees accounted for 5.80 per cent of the total cost, while family labour accounted for 9.66 per cent of the total.

The total per hectare cost of production (Cost-C) for large growers was Rs. 163788, with Cost-A accounting for 64.48 per cent (Rs. 105608) and Cost-B accounting for 86.56 per cent (Rs.141779). The cost of hiring labour came to approximately Rs 57191 (34.92%). The costs of bullock labour, manures, fertilizers, electricity and plant protection chemicals account for 4.50 per cent, 6.62 per cent, 8.40 per cent, 2.68 per cent and 1.54 per cent of the overall cost, respectively. Thus, the cost of the input was Rs 96066 (58.65%). Family labour made up 7.57 per cent of the total expenses. The supervision charges accounted for 5.87 per cent of the total expenses.

At the overall level, the cost of labour was the highest, accounting for Rs. 65320 (42.62%), followed by the rental value of the land at Rs. 30532 (19.94%) and manures at Rs. 12341 (8.09%). The amount spent on fertilizers, electrical costs and chemicals for plant protection came to Rs. 18244 (7.00%), Rs. 4970 (3.25%) and Rs. 2406 (1.57%) respectively. Input cost contributed Rs 88950 (58.08%) to the total Cost C. The Cost A and Cost B were 97646 and 129932, respectively. The total cost of cultivation for ratoon sugarcane was Rs. 153145 at the overall level.

Table 4: Per hectare cost of cultivation of ratoon sugarcane (Figures in rupees)

Sr. No.	Particulars	Small	Medium	Large	Overall
1	**Hired labour**				
	Male	27452 (18.74)	29764 (19.63)	35248 (21.52)	30476 (19.90)
	Female	20108 (13.73)	19858 (13.10)	21943 (13.40)	20525 (13.40)
	Total	47560 (32.47)	49622 (32.73)	57191 (34.92)	51001 (33.30)
2	Bullock labour	8227 (5.62)	7477 (4.93)	7372 (4.50)	7712 (5.04)
3	Manures	10040 (6.85)	10720 (7.07)	10840 (6.62)	10520 (6.87)
4	**Fertilizers**				
	N	2146 (1.47)	2354 (1.55)	2496 (1.52)	2320 (1.52)
	P	4717 (3.22)	5383 (3.55)	5923 (3.62)	5299 (3.46)
	K	4158 (2.84)	4800 (3.17)	5333 (3.26)	4722 (3.08)
7	Electricity charges	5516 (3.77)	5127 (3.38)	4384 (2.68)	4970 (3.25)
8	Plant protection	2318 (1.58)	2398 (1.58)	2527 (1.54)	2406 (1.57)
	Input cost	84682 (57.81)	87881 (57.96)	96066 (58.65)	88950 (58.08)
9	Land revenue and other cesses	110 (0.08)	115 (0.08)	125 (0.08)	117 (0.08)
10	Depreciation on machinery and implements	2814 (1.92)	3259 (2.15)	3653 (2.23)	3242 (2.12)
11	Interest on working capital @ 6 per cent of input cost for 1 year	5081 (3.47)	5273 (3.48)	5764 (3.52)	5337 (3.48)
	Cost A	92687 (63.27)	96528 (63.66)	105608 (64.48)	97646 (63.76)
12	Interest on fixed capital @ 10 per cent	1651 (1.13)	1720 (1.13)	1892 (1.16)	1754 (1.15)
13	Rental value of owned land (1/6 of the gross returns- land revenue)	28186 (19.24)	29948 (19.75)	34279 (20.93)	30532 (19.94)
	Cost B	122524 (83.64)	128196 (84.55)	141779 (86.56)	129932 (84.84)
14	**Family labour**				
	Male	11264 (7.69)	10140 (6.69)	9060 (5.53)	10236 (6.68)
	Female	4230 (2.89)	4500 (2.97)	3343 (2.04)	4083 (2.67)
	Total	15494 (10.58)	14640 (9.66)	12403 (7.57)	14319 (9.35)
15	Supervision charges @ 10 per cent of input cost	8468 (5.78)	8788 (5.80)	9606 (5.87)	8894 (5.81)
	Cost C	146486 (100.00)	151624 (100.00)	163788 (100.00)	153145 (100.00)

(Figures in the parentheses are percentage to Cost C)

3.4 Profitability of sugarcane cultivation

The per hectare profitability of sugarcane in the study area was examined and presented in the Table 5.

Table 5: Per hectare profitability of sugarcane cultivation

Sr. No	Particulars	Suru				Ratoon			
		Small (N =19)	Medium (N =27)	Large (N=25)	Over all (N=71)	Small (N=19)	Medium (N=20)	Large (N=14)	Over all (N=54)
1	**Production**								
i)	Main produce								
	Quantity (MT)	85.89	93.58	102.43	94.64	52.82	56.23	64.50	57.33
	Price received (Rs/MT)	3015.4	3008.7	3005	3010	3015.4	3008.7	3005	3010
	Returns (Rs.)	258997	281569	307804	284859	159276	169180	193824	172551
ii)	**By produce**								
	Quantity (MT)	17.20	18.60	20.10	18.23	10.50	11.20	12.60	11.34
	Price received (Rs/MT)	1000	1000	1000	1000	1000	1000	1000	1000
	Returns (Rs.)	17200	18600	20100	18225	10500	11200	12600	11343
2	Gross returns (i+ii) (Rs.)	276197	300169	327904	303084	169776	180380	206424	183894
3	**Costs (Rs.)**								
	a) Cost A (Rs.)	159474	167871	180926	170150	92687	96528	105608	97646
	b) Cost B (Rs.)	207047	219504	237344	222301	122524	128196	141779	129932
	c) Cost C (Rs.)	249801	257413	272256	260446	146486	151624	163788	153145
4	**Net returns at (Rs.)**								
	a) Cost A (Rs.)	116723	132299	146978	132934	77089	83852	100816	86247
	b) Cost B (Rs.)	69150	80665	90560	80783	47252	52184	64645	53962
	c) Cost C (Rs.)	26396	42756	55649	42639	23290	28755	42636	30748
5	Cost/MT (Rs.)	2908	2751	2658	2752	2773	2697	2539	2671
6	Cost/quintal (Rs)	291	275	266	275	277	270	254	267
7	Benefit-Cost ratio	1.11	1.17	1.20	1.16	1.16	1.19	1.26	1.20

The per hectare average yield of suru sugarcane varied significantly across different farm sizes. Small growers achieved an average yield of 85.89 MT per hectare, while medium-sized growers achieved a yield of 93.58 MT per hectare. Large growers produced the highest yield at 102.43 MT per hectare. The overall yield for suru sugarcane was 94.64 MT per hectare.

The yield of ratoon sugarcane per hectare was noticeably lower than that of suru sugarcane for all grower categories. Small growers produced an average of 52.82 MT per hectare, while medium growers managed a slightly higher yield of 56.23 MT per hectare. Large growers again led in production, with an average yield of 64.50 MT per hectare. The overall average yield for ratoon sugarcane, when considering all farm sizes, was 57.33 MT per hectare.

The financial performance of suru and ratoon sugarcane crops reveals notable differences in profitability and costs at an overall level. For suru sugarcane, gross returns amounted to Rs. 3,03,084 per hectare, with a total cost of Rs. 2,60,446 per hectare. This resulted in profitability of Rs. 1,32,934 at Cost A, Rs. 80,783 at Cost B and Rs. 42,639 at Cost C. In comparison, ratoon sugarcane generated lower gross returns of Rs. 1,83,894 per hectare, with a total cost of Rs. 1,53,145 per hectare. The profitability for ratoon sugarcane was Rs. 86,247 at Cost A, Rs. 53,962 at Cost B and Rs. 30,748 at Cost C.

The per metric ton cost of production for suru sugarcane was Rs. 2,908 for small growers, Rs. 2,751 for medium growers, Rs. 2,658 for large growers and Rs. 2,752 on average across all farm sizes. In comparison, the cost for ratoon sugarcane cultivation was Rs. 2,773 for small growers, Rs. 2,697 for medium growers, Rs. 2,539 for large growers and Rs. 2,671 overall. Additionally, the per quintal cost of production was Rs. 275 for suru sugarcane and Rs. 267 for ratoon sugarcane across all growers.

For suru sugarcane, the BC ratio is 1.11 for small growers, 1.17 for medium growers, 1.20 for large growers and 1.16 overall. In comparison, the BC ratio for ratoon sugarcane is higher across the groups, at 1.16 for small growers, 1.19 for medium growers, 1.26 for large growers and 1.20 overall. The Benefit-Cost (BC) ratio analysis revealed that both suru and ratoon sugarcane crops are profitable in Sindhudurg district, with ratoon sugarcane showing a slightly higher return on investment.

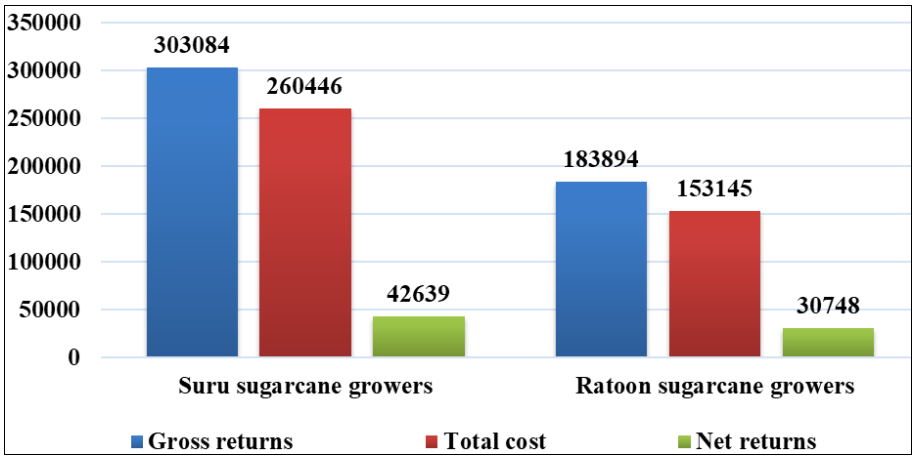

Fig 1: Per hectare gross returns, total cost and net returns of suru and ratoon sugarcane cultivation

4. Conclusion

The overall Cost A, Cost B and Cost C for suru sugarcane were Rs 170150, Rs 222301 and Rs 260446, respectively, while for ratoon sugarcane, the corresponding costs were Rs 97646, Rs 129932 and Rs 153145. The net returns for suru sugarcane were Rs 132934, Rs 80783 and Rs 42639 at Costs A, B and C, respectively, while for ratoon sugarcane, the net returns were Rs 86247, Rs 53962 and Rs 30748 at Costs A, B and C, respectively. The cost of producing one quintal of sugarcane in suru turned out to be Rs. 275, while it was Rs. 267 in ratoon. In suru sugarcane per hectare main produce was 94.64 MT and by produce was 18.23 MT while in ratoon sugarcane main produce was 57.33 MT and by produce was 11.34 MT. For suru sugarcane, the BC ratios were 1.11 for small growers, 1.17 for medium growers, 1.20 for large growers and 1.16 for the overall level. For ratoon sugarcane, the BC ratios were 1.16 for small growers, 1.19 for medium growers, 1.26 for large growers and 1.20 for the overall level.

The analysis of per-hectare profitability indicated that suru and ratoon sugarcane cultivation was profitable at all levels of cost. The higher BC ratio for ratoon sugarcane suggests that it offers better profitability than suru sugarcane, despite its lower yields. This enhanced profitability was due to the lower input costs and reduced operational demands associated with ratoon crops, which require less labour and fewer resources after the initial planting of suru sugarcane.

5. References

1. Ahmad N, Sinha D, Singh KM. Economic analysis of growth, instability and resource use efficiency of sugarcane cultivation in India: an econometric approach. Indian J Econ Dev. 2018;6(4):1-10.
2. Anonymous. Agricultural Statistics at a glance 2022; c2022.
3. Anonymous. FAOSTAT 2023; c2023.
4. Anonymous. Ministry of Agriculture & Farmers Welfare, Govt. of India; c2023.
5. Anonymous. Socio-Economic Review and District Statistical Abstract of Sindhudurg Districts; c2022.
6. Chandra S, Rawat VK, Verma SC. The profitability of sugar cane cultivation on the sample farmers in Basti district in Eastern U. P. The Pharma Innovation J. 2021;10(10S):524-529.
7. Girei AA, Giroh DY. Productivity and resource use efficiency in sugarcane (*Saccharum officinarum*) production in Numan Local Government Area, Adamawa State, Nigeria. J Agric Soc Sci. 2013;9(1/2):1-5.
8. Jangam PS. Economics of production and disposal of coconut in Ratnagiri District. M.Sc. (Agri.) Thesis. Dr. B. K. K. V., Dapoli; c2008.
9. Jawanjal BG, Naik VG, Talathi JM, Malave DB, Wagale SA. Cost, returns and profitability in sugarcane cultivation in Konkan region (MS). Plant Protection (Lt.). 2015;2:2-48.
10. Kant K, Tripathi SP, Meena M. Cost of cultivation of sugarcane crop in Meerut district of Uttar Pradesh. Int J Forestry Crop Improv. 2015;6(1):35-42. DOI: 10.15740/HAS/IJFCI/6.1/41-48.
11. Lal J, Singh K. Economics and adoption constraints of sugarcane production technology. Tech Bull. Indian Institute of Sugarcane Research. 1985;16(1):90-95.
12. Misal KL. Economics of production and processing of sugarcane in Hingoli district. Doctoral dissertation, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani; c2009.
13. Mohanasundari P. Cost and returns from the cultivation of sugarcane. Int J Econ. 2013;1(3).
14. Naeem MK, Bashir MK, Hussain B, Abbas M. Assessment of profitability of sugarcane crop in Faisalabad district. Pak J Life Soc Sci. 2007;5(1-2):30-33.
15. Padmini TS. Problem and prospects of pineapple cultivation in Kerala. Unpublished doctoral dissertation. University of Kerala, Trivandrum; c2002.
16. Pandey A, Bista DR, Bhandari T, Panta HK, Devkota S. Profitability and resource-use efficiency of sugarcane production in Nawalparasi west district, Nepal. Cogent Food Agric. 2020;6(1):1857592.
17. Priyanka U, Alka S. An economic analysis of sugarcane cultivation and its productivity in major sugar producing states of Uttar Pradesh and Maharashtra. Econ Aff. 2017;62(4):711-718.
18. Reza MS, Riazi MH, Khan MMH. Productivity and profitability of sugarcane production in Northern Bangladesh. Indian J Commerce Manage Stud. 2016;7(1):38-46.
19. Sharma GC, Gangwar B. Economic analysis of sugarcane production in Khadar area of Western U.P.

Bhartiya Krishi Anusandhan Patrika. 2000;15(1/2):69-75.
20. Shukla SK, Sharma L, Awasthi SK, Pathak AD. Sugarcane in India. Package of practices for different agro-climatic zones. All Indian Coordinated Research Project on Sugarcane, IISR Lucknow, Uttar Pradesh; c2017. p. 1-64.
21. Singh G. Comparative economic analysis of sugarcane cultivation in Shivalik foothills of Haryana; c2024.
22. Solomon S. Sugarcane production and development of sugar industry in India. Sugar Tech. 2016;18(6):588-602.
23. Supriya BB, Anand TN, Suresha SV, Lakshminarayan MT. Knowledge and extent of deviation of recommended agricultural inputs by farmers in cultivation of ratoon sugarcane crop; c2014.
24. Wali VS, Kadam KL, Wali S, Mohapatra U, Mishra RK. Economics of sugarcane cultivation in Bagalkot district of Karnataka. The Pharma Innovation. 2019;8(2):261-265.