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To study the cost-benefit analysis of cash crops in Sangamner tehsil of Ahmednagar district (MS)

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Abstract

The present research paper study and analyze the Cost-benefit analysis of cash crops at the macro level in Sangamner tehsil. This study is based on primary and secondary data collected from farmer's revenue records and district gazetteer offices. Cash crop production depended on physical, climate, socio-cultural, economic, technological and organizational factors. The Sangamner Tehsil covers 135780 hectares of land and has a population of 487939 in 171 villages as per the 2011 Census. The primary crops under consideration include Sugarcane, Onion, Vegetables and fruits, each analyzed in terms of various farming operations, labor, and input costs. The cost-benefit analysis for irrigated Onion showed a profit of Rs. 328200 per hectare. For irrigated Sugarcane, the profit was Rs. 285700 per hectare. The cash flow analysis revealed the percentage of cash outflows and inflows for each type of crop, helping to understand the income distribution and costs involved.

Keywords: Cash crops, cash in flow, cash outflow, cost benefit analysis

Introduction

The dominant cropping pattern in the Tehsil is discussed in the research paper. At this juncture, it seems that the Cost-Benefit analysis of the various crops being grown in the Tehsil can provide more insight into the problems faced by the farmers. The cost-benefit analysis was carried out based on the sample survey information. The research paper is mainly devoted to discussing the problems of agriculture and farmers in the Tehsil as understood by the primary survey. The survey provides information on parameters related to agricultural benefits and production costs by the current cropping pattern. This and a similar kind of database are used to understand and analyze the spatial distribution.

In the last few years, in various geographical studies, cost-benefit analysis techniques have been used by various geographers and these techniques are enormously useful for the study of agricultural geography, such as Prest and Turvey (1965) ^[13], Joshi (1985) ^[14], Saptarshi and Bairagi (1998) ^[11] and Saptarshi and Bhagat (2004) ^[15]. The efficient use of available water resources based on technology (Bhagat 2002, and Sonawane 2013) ^[16, 17], current employment status in rural areas (Jagdale, 2002) ^[18], assessment of human resource development (Ugale, 2006) ^[19], a strategy for sustainable development of agriculture, human resource development (Musmade, 2012) ^[20], cost-effective use of water resources (Sonawane, 2013) ^[16] and a strategy for groundwater management for sustainable development of agriculture (Chavan, 2014) ^[21]. The present study aims to find out the availability of water resources for the sustainability of agriculture in the Sangamner Tehsil. Hence, the cost-benefit analysis of major cash crops in the Tehsil has been carried out. For this, the primary data was collected from at least 100 farmers cultivating each selected crop in the Tehsil based on the questionnaire. The sample points have been selected in such a way that they will be well distributed among the villages of the Tehsil in a circle-wise manner. Thus, after analyzing the basic database collected from the primary sources, the average values of the price of each crop are obtained. Comprehensive information regarding expenditure is given in the table Table No. 1 to Table No. 16.

Study Area

Sangamner tehsil is located in the western part of Ahmednagar district in the state of Maharashtra. Sangamner is surrounded by Rahata, Rahuri and Kopargaon to the east.

Sinner tehsil Nashik District to the North. Akole tehsil to the west. Sangamner tehsil to the south-east, Junner tehsil Pune district to the south. The Tehsil ‘Sangamner’ is located middle part of the bank of the Pravara river. This lies between 19°34’ North 19.57° North to 74°13’ East 74.22° East longitude. It has an average elevation of 549 metres (1,801 ft) from mean sea level Sangamner tehsil is located in the western part of Ahmednagar district. The highest peak, as well as the temple of this tehsil, is Baleshwar. Baleshwar is located in Harichandra Range 15 km from Sangamner tehsil headquarters. Physiography, rainfall, soil, temperature, and drainage influence agricultural land use patterns in this tehsil. Rainfall varies between 200 to 225 mms. The underlined basalt on disintegration and decomposition brought various agents that had yielded three kinds of soils viz. Deep black, deep & shallow Alluvial soils in Pravara, Mhalungi and Adhula river basins. These rivers are the main irrigation source of middle tehsil areas. Including five centers of Revenue Circle i.e. Sangamner, Ashwi, Talegaon, Ghargaon and Sakur. The rainfall is mainly due to rain shadow area in terms of the amount of rainfall average receives 416.6 millimeters in the western and middle parts of the tehsil but in the southern part of the tehsil 102 villages are drought-prone areas. Therefore these areas are mostly hilly and unirrigated. The variation in the amount of rainfall & type of soil exerts influence on the cropping pattern of the study region. The major crops namely cereals, cash crops, pulses, oil seeds, fruit crops, vegetables, flower and fodder crops are cultivated in Sangamner tehsil.

Objective

To study the Cost Benefit Analysis for cash crops in Sangamner Tehsil Ahmednagar District of Maharashtra.

Database and Methodology

The study is based on secondary data and field observations. Circle-wise crop data is obtained from village officers’ (Talathi) records, APMC Market and Panchayat Samities records in Sangamner tehsil. Topographical maps and survey of India sheets are used for the physiographical study. Landuse data collected from the socio-economical abstract and Ahmednagar gazetteer and district census handbook in Ahmednagar district referred to collect related information.

Methodology

The 171 villages were divided according to 14 Revenue Circles. Information from more than 100 farmers from selected villages in 14 circles of the Tehsil has been

collected. Well distributed to 14 villages randomly selected according to crop to collect primary information. Expenditure incurred for various operations like tillage, fertilizer, seed, planting, weeding, harvesting, etc. is considered as final charges. A summary of various operations has prepared to understand the cost per hectare for each major crop in the Tehsil.

First of all, the cost of major cash crops in the Tehsil has been taken into consideration. The first step is to identify the major cash crops in the Tehsil. The major cash crops grown are mainly Onion and Sugarcane. Out of the net sown area in the Tehsil, only 25.74% of NSA is under irrigation. The highest irrigated area is 58.32% under Well irrigation, Canal 20.43%, Tube well 3.75%, and River 17.50%.

Cost Structure

To understand the cost of each crop based on a sample survey in randomly selected 8.18% of villages, A structured questionnaire has been developed to find out the cost of various operations ranging from planting to harvesting and selling in the market.

Cash Flow Analysis

The total income of the farmer has been analyzed to understand the cash flow after getting the statistics of expenditure on the cultivation of major crops in the study area. This type of cash flow analysis has been done in research over the last few decades (Saptarshi and Kale 1984, Sonawane 2013 and Chavan 2014) [22, 16, 21]. This technique is very useful to understand the economic system as a whole. In the present study, the following factors have been considered to cover the cost of cash flow.

Cash in Flow

1. Wages are given to women worker
2. Wages are given to the male worker
3. Profit margin earned by cultivators.

Cash-out Flow

1. Cost of seeds, fertilizers, and pesticides
2. Cost of packing material brought from the urban sector
3. Cost of fuel such as electric bill, diesel or hiring tractor, and technology

Thus, the share of income that remains in the Tehsil and the share that goes out of the Tehsil estimated based on expenditure structure. This research has estimated for each village and the Tehsil.

Cost of Onion Crop Cultivations

Table 1: Cost of Onion Cultivation

Sr. No.	Operations	Human Power		Labour Cost			Other Cost Rs.	Total Cost Rs.	Per Cent (%)
		Man Days	Women Days	Male Rs.	Female Rs.	Total Rs.			
1	Ploughing	02	00	800	00	800	3000	3800	02.21
2	Harrowing	04	00	1600	00	1600	4500	6100	03.55
3	Sowing / Seedling	05	40	2000	12000	14000	5000	19000	11.06
4	Cost of Seeds	00	00	00	00	00	12500	12500	07.28
5	Electricity Charges	00	00	00	00	00	3000	3000	01.75
6	Fertilizers/ Pesticides	10	00	4000	00	4000	75000	79000	45.98
7	Weeding	00	30	00	9000	9000	2000	11000	06.40
8	Irrigation	25	00	10000	00	10000	00	10000	05.82
9	Harvesting	10	30	4000	9000	13000	5000	18000	10.48
10	Threshing	00	00	00	00	00	00	00	00.00
11	Packing	06	20	2400	6000	8400	1000	9400	05.47
	Total	62	120	24800	36000	60800	111000	171800	100.00

Source: Field Survey Data (2022-2023).

As discussed in the Onion crop is cultivated in the Tehsil during Rabbi and Kharip Season. In the above Table No.1 indicates, the cost of various operations in the field of Onion cultivation has calculated. The figures in the table show that the average total production cost of Onion cultivation is Rs. 171800/-. The total average cost of labor is Rs. 60800/- while the other total expenditure is Rs. 111000/-. The cost structure of the Onion crop shows that most of the cost in various operations is on fertilizers, pesticides seeds, packing, sowing, and harrowing.

Table 2: Output of Onion Cultivation

Sr. No.	Details	Rupees
1	On-farm Price/Kg. Rs.	Rs.20.00/-
2	Grain Production/Hector Kg.	25000 Kg.
3	Grain Production/Hector Rs.	Rs.500000/-
4	Average on-farm price of fodder/Hector Rs.	Rs.00/-
5	Total Earnings/Hector (Grains + Fodder)	Rs.500000/-
6	Total Cost/Hector	Rs.171800/-
7	Net Profit/Hector (Total Earning - Total Cost)	Rs.328200/-
8	Man Days/Hector	62 Days
9	Women Days/Hector	120 Days
10	Daily wages for male workers	Rs.400/-
11	Daily wages for female workers	Rs.300/-

Source: Field Survey Data (2022-2023).

The Table No. 2 indicates that the cost of Onion cultivation is Rs.171800/- per hect. and the net output from the Onion cultivation is Rs.500000/- per hect. The net benefit from the Onion cultivation is Rs.328200/- per hect. The field observation and statistical data show the requirement of employment per hect. Onion cultivation is 62 males and 120

females. In the Tehsil during 2022-23, the area under Onion cultivation is 10795 hect. The employment power requirement and generated is 669290 male days and 1295400 female days workers in the Tehsil.

Table 3: Cash Flow Analysis of Onion Cultivation

Sr. No.	Cash Flow Analysis	Rupees	Percentage (%)
1	Cash Out-flow	60800	12.16
2	Cash In-flow	111000	22.20
3	Profit	328200	65.64
	Total Income	500000	100.00

Source: Field Survey Data (2021-2022).

It is observed that the profit earned by the farmer due to the cultivation of Onion is about 65.64% (Table No. 3). The cash inflow in the case of Onion is 22.20%. The cash out-flow in Onion cultivation is 12.16%. It shows most of the onion production goes inside the Tehsil. Therefore, the Tehsil benefits high from onion production as compared to other crops.

Cost of Sugarcane Cultivation

In the above Table No. 4 indicates, the cost of various operations in the field of Sugarcane cultivation has calculated. The figures in the table show that the average total production cost of Sugarcane cultivation is Rs. 119300/- per hect. The total average cost of labor is Rs. 36300/- while the other total expenditure is Rs. 83000/-. The cost structure of Sugarcane crops shows that most of the cost in various operations is on pesticides, fertilizers, seeds, irrigation, and sowing.

Table 4: Cost of Sugarcane Cultivation

Sr. No.	Operations	Human Power		Labour Cost			Other Cost Rs.	Total Cost Rs.	Per Cent (%)
		Man Days	Women Days	Male Rs.	Female Rs.	Total Rs.			
1	Ploughing	02	00	800	00	800	5000	5800	04.86
2	Harrowing	02	00	800	00	800	7000	7800	06.54
3	Sowing/Seedling	20	00	8000	00	8000	2000	10000	08.38
4	Cost of Seeds	00	00	0	00	00	20000	20000	16.76
5	Electricity Charges	00	00	0	00	00	9000	9000	07.54
6	Fertilizers/ Pesticides	15	05	6000	1500	7500	30000	37500	31.43
7	Weeding	04	00	1600	00	1600	10000	11600	09.72
8	Irrigation	44	00	17600	00	17600	00	17600	14.75
	Total	87	05	34800	1500	36300	83000	119300	100.00

Source: Field Survey Data (2020-2021).

Table 5: Output of Sugarcane Cultivation

Sr. No.	Details	Rupees
1	On-farm Price/Kg. Rs.	Rs.2.70/-
2	Grain Production/Hector Kg.	150000 Kg.
3	Grain Production/Hector Rs.	Rs.405000/-
4	Average on-farm price of fodder/Hector Rs.	Rs.00/-
5	Total Earnings/Hector (Grains + Fodder)	Rs.405000/-
6	Total Cost/Hector	Rs.119300/-
7	Net Profit/Hector (Total Earning - Total Cost)	Rs.285700/-
8	Man Days/Hector	87 Days
9	Women Days/Hector	5 Days
10	Daily wages for male workers	Rs.400/-
11	Daily wages for female workers	Rs.300/-

Source: Field Survey Data (2022-2023).

The Table No. 5 indicates that the cost of Sugarcane cultivation is Rs.119300/-per hect. and the net output from the Sugarcane cultivation is Rs.405000/- per hect. The net

benefit from the Sugarcane cultivation is Rs.285700/- per hect. The field observation and statistical data show the requirement of employment per hect. Sugarcane cultivation

is 87 males and 05 females. In the Tehsil during 2022-23, the area under Sugarcane cultivation is 13930 hect. The

employment power requirement and generated is 1211910 male days and 69650 female days workers in the Tehsil.

Table 6: Cash Flow Analysis of Sugarcane Cultivation

Sr. No.	Cash Flow Analysis	Rupees	Percentage (%)
1	Cash Out-flow	83000	20.49
2	Cash In-flow	36300	08.96
3	Profit	285700	70.54
	Total Income	405000	100.00

Source: Field Survey Data (2022-2022).

Sugarcane is a good cash crop grown mainly in the southern part of the Tehsil and is highly profitable (70.54%). However, cash flow analysis has caught the attention of current workers as cash-outflows (20.49%) and cash-inflows (08.96%) are almost identical or have very little difference.

Cash Flow Analysis: The cash flow analysis technique is very useful for understanding the crop-wise rupee incoming

and outgoing in Tehsils. The cash flow analysis of cash crops in the study area was revealed in Table No. 7. The cash-out flow is observed higher in the crops is Onion (57.72%) and lower the Sugarcane (57.72%). Also, the cash out flow is higher in the case of crops like Sugarcane (75.36%). The profit is higher in the case of crops like Sugarcane (53.46%).

Table 7: Cash Flow Analysis

Sr. No.	Operations	Cash- Out Flow	%	Cash- In Flow	%	Profit	%	Total Income	%
1	Sugarcane	60800	42.28	111000	75.36	328200	53.46	500000	55.25
2	Onion	83000	57.72	36300	24.64	285700	46.54	405000	44.75
	Total	143800	100.00	147300	100.00	613900	100.00	905000	100.00

Source: Field Survey Data (2022-2023).

Conclusion

The research paper discusses the dominant cropping pattern in Sangamner tehsil, Maharashtra, focusing on cost-benefit analysis and agriculture-related problems. The study aims to understand the sustainability of agriculture by analyzing the cost-benefit of major cash crops in the region. Data was collected from over 100 farmers in a sample survey distributed across the villages in the tehsil. The primary crops under consideration are Sugarcane and Onion, and the study distinguishes between irrigated variants of these crops.

Onion

The total cost of irrigated Onion cultivation is Rs. 171800 per hectare, while the total earnings per hectare are Rs. 500000. This results in a net profit of Rs. 328200 per hectare. Employment requirements include 62 male and 120 female workdays per hectare. The study estimates that in 2022-23, 10795 hectares were cultivated with irrigated Onion, generating employment for 669290 male and 1295400 female workers in the tehsil. The cash flow analysis shows that cash inflow is 22.20%, cash outflow is 12.16%, and the profit is 65.64%.

Sugarcane

The total cost of irrigated Sugarcane cultivation is Rs. 119300 per hectare, while the total earnings per hectare are Rs. 405000. This results in a net profit of Rs. 285700 per hectare. Employment requirements include 87 male and 05 female workdays per hectare. The study estimates that in 2022-23, 13930 hectares were cultivated with irrigated Sugarcane, generating employment for 1211910 male and 69650 female workers in the tehsil. The cash flow analysis shows that cash inflow is 08.96%, cash outflow is 20.49%, and the profit is 70.54%.

In summary, the research paper provides a detailed cost-benefit analysis of various cash crops in Sangamner tehsil,

highlighting the profitability and employment generation associated with different crops and irrigation practices.

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