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**Trends, Challenges and Issues in The Science, Social Science and
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Cost and Return From The Cultivation Of Sugarcane: A Case Study Of Indapur Tahsil (Pune District)

Dr. Phalphe A. K.

Department of Geography,
Arts, Science and Commerce College,
Indapur, Dist. -Pune, Maharashtra

1. Introduction

Sugarcane is one of the important industry based crop in the world. About 195 countries grow sugarcane crop to produce 1324 million tonnes of sugarcane (more than six times the amount of sugar beet produced). Indian sugar industry has been playing a vital role in the socio economic transformation of the country. India is the second largest sugarcane producer and the highest sugar consumer in the world. Apart from sugar, sugarcane is grown for many other uses like fodder, paper and biofuel. In spite of its growing demand, there are a number of problems which affect the sugarcane producing farmers in their production and increasing their profit.

2. Study Area

Indapur tahsil is situated in Pune district. The northern and eastern border is demarcated by Bhima River in Pune and Solapur districts while southern boundary is confined by Nira River in Pune and Satara and Solapur districts. The west boundary is confined by Baramati and north boundary is delimited by Daund tahsil of Pune district. The region extends between $17^{\circ} 53'$ to $18^{\circ} 15'$ north latitudes and $74^{\circ} 35'$ to $75^{\circ} 8'$ east longitudes. The total geographical area of this tahsil is 1552.93 square kilometres having 3, 83,183 population (2011). This tahsil consists of 142 settlements and three urban settlements.

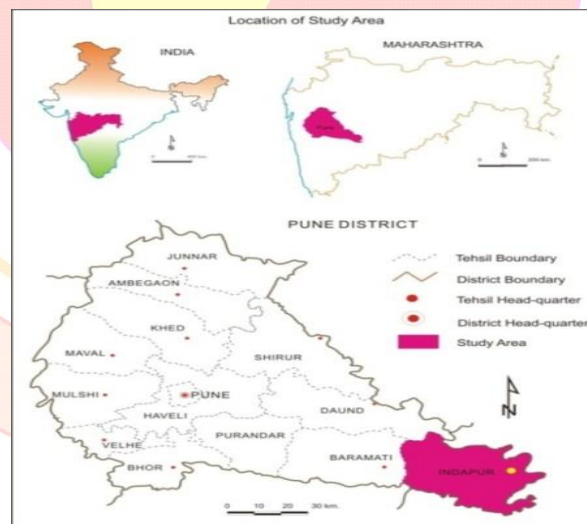


Fig-1: Location of Study Area

Review of Literature

Patil S. R., (2014) Carried out his study on “Cost benefits analysis of sugarcane cultivation of Walva tahsil, dist. - Sangali (MS). The study deals with sugarcane crop as a agricultural model to get money for utilization of natural resources present in the region and also brought outside the region. The study of cost benefit analysis is very important for any crop that can be observed the economic profitability of the farmer.

Singh Gomatee (2013) carried out his study on, ‘An empirical study of economics of sugarcane cultivation and processing based farming in Uttar Pradesh’. The main objective of this study was changes in area,

Production, Productivity, and prices of sugarcane as also changes in production prices of sugar and jiggery, domestically and globally.

Giri A.A (2012) Studied on 'Profitability analysis of sugarcane production in Human local government area Adamawastate, Nigeria. 120 farmers were selected for the study. Sugarcane production in the area is profitable as a net farm income of N17, 666.83 was realized in the study area.

Significance of the Study

The importance of agriculture to economic growth in a country depends upon the level of agricultural incomes which in turn depends on the level of the farm efficiency. The main purpose of the present study is to measure and examine cost-return of sugarcane production and also examine the conditions of sugarcane cultivators in Indapur tahsil.

Objectives

1. To analyze the socio economic conditions of sugarcane cultivators of the study region.
2. To estimate the cost and return structure of sugarcane production.

Methodology

The nature of data used for study is both primary and secondary. Primary data has been collected through personal interview, with the help of preplanned interview schedules. Secondary data like the details collected from various published sources. Indapur tehsil have eight divisions for administrative purpose. Therefore, farmers from eight divisions are randomly selected. Each division has 13 to 22 villages. All physical and social factors are considered for selection of villages. The required primary data is collected from selected farmers through personal interview and group discussion.

Table 1: Age Wise Distribution of the Respondents

| Sr. No. | Division | Age Group | | | | Total |
|-------------------|------------|--------------|--------------|--------------|--------------|------------|
| | | 20 to 30 | 30 to 40 | 40 to 50 | Above 50 | |
| 1 | Bhigwan | 21 | 29 | 17 | 23 | 80 |
| 2 | Indapur | 18 | 28 | 22 | 12 | 80 |
| 3 | Loni | 10 | 32 | 22 | 16 | 80 |
| 4 | Bawada | 12 | 14 | 33 | 21 | 80 |
| 5 | Kati | 16 | 23 | 27 | 14 | 80 |
| 6 | Nimgaon K. | 12 | 25 | 28 | 15 | 80 |
| 7 | Anthurne | 08 | 34 | 21 | 17 | 80 |
| 8 | Sansar | 06 | 13 | 16 | 05 | 40 |
| Total | | 103 | 198 | 186 | 113 | 600 |
| Percentage | | 17.16 | 33.00 | 31.00 | 18.84 | 100 |

Source: Computed by Researcher

Table 2: Educational Status

| Sr. No. | Name of the Division | Non-Educated | Primary | SSC | Graduate | Professional Education | Total |
|---------|----------------------|--------------|-------------|---------------|---------------|------------------------|-------------|
| 1 | Bhigwan | 02 (2.5) | 04 (5) | 41 (51.25) | 23 (28.75) | 10 (12.5) | 80 (100) |
| 2 | Indapur | 01 (1.25) | 06 (7.5) | 32 (40) | 28 (35) | 13 (16.25) | 80 (100) |
| 3 | Loni | 02 | 05 | 46 | 18 | 09 | 80 |

| | | | | | | | |
|---|------------|--------------|---------------|---------------|--------------|--------------|-------------|
| | | (2.5) | (6.25) | (57.5) | (22.5) | (11.25) | (100) |
| 4 | Bawada | 03 (3.25) | 12 (15) | 43 (53.75) | 12 (15) | 10 (12.5) | 80 (100) |
| 5 | Kati | 02 (2.25) | 08 (10) | 38 (47.5) | 22 (27.5) | 10 (12.5) | 80 (100) |
| 6 | Nimgaon K. | 03 (3.75) | 08 (10) | 41 (51.25) | 16 (20) | 12 (15) | 80 (100) |
| 7 | Anthurne | 01 (1.25) | 09 (11.25) | 36 (45) | 22 (27.5) | 12 (15) | 80 (100) |
| 8 | Sansar | 00 (0) | 05 (12.5) | 21 (52.5) | 09 (22.5) | 05 (12.5) | 40 (100) |
| | Total | 14 | 57 | 298 | 150 | 81 | 600 |
| | Percentage | 2.33 | 9.5 | 49.66 | 25 | 13.5 | 100 |

Source: Computed by Researcher

Table 3: Land Holding of the Respondents

| Sr. No. | Division | Below 1 hectare | 1 to 2 hectare | 2 to 3 hectare | Above 3 hectare | Total |
|---------|------------|-----------------|----------------|----------------|-----------------|--------|
| 1 | Bhigwan | 41 (51.25) | 21 (26.25) | 13 (16.25) | 05 (6.25) | 80 |
| 2 | Indapur | 44 (55) | 24 (30) | 09 (11.25) | 03 (3.75) | 80 |
| 3 | Loni | 41 (51.25) | 19 (23.75) | 16 (20) | 04 (5) | 80 |
| 4 | Bawada | 36 (45) | 23 (28.75) | 14 (17.5) | 07 (8.75) | 80 |
| 5 | Kati | 44 (51.25) | 20 (25) | 09 (11.25) | 07 (8.25) | 80 |
| 6 | Nimgaon K. | 45 (56.25) | 17 (21.25) | 10 (12.5) | 08 (10) | 80 |
| 7 | Anthurne | 41 (51.25) | 17 (21.25) | 16 (20) | 06 (7.5) | 80 |
| 8 | Sansar | 21 (52.5) | 08 (20) | 07 (17.5) | 04 (10) | 40 |
| | Total | 313 | 149 | 94 | 44 | 600 |
| | Percentage | 52.16 | 24.83 | 15.66 | 7.33 | 100.00 |

Source: Computed by Researcher

Table 4: Experience of Sugarcane production of the Respondents

| Sr. No. | Division | 02 Years | 05 years | 07years | 09 years | Total |
|---------|------------|----------|----------|---------|----------|-------|
| 1 | Bhigwan | 18 | 35 | 14 | 13 | 80 |
| 2 | Indapur | 26 | 27 | 17 | 10 | 80 |
| 3 | Loni | 16 | 37 | 13 | 14 | 80 |
| 4 | Bawada | 20 | 36 | 15 | 09 | 80 |
| 5 | Kati | 19 | 29 | 20 | 12 | 80 |
| 6 | Nimgaon K. | 26 | 31 | 17 | 06 | 80 |
| 7 | Anthurne | 24 | 35 | 14 | 07 | 80 |
| 8 | Sansar | 12 | 16 | 09 | 03 | 40 |
| | Total | 161 | 246 | 119 | 74 | 600 |
| | Percentage | 26.83 | 41 | 19.83 | 12.34 | 100 |

Source: Computed by Researcher

Table 5: Cost and Return Structure of Sugarcane Production (Per Acre)

| Cost Mechanism | In Rs. | Percentage |
|--|------------------|------------|
| Human Labour Cost | 8762.00 | 11.09 |
| Pre cultivation cost | 5175.00 | 06.55 |
| Plantation Cost | 6725.00 | 08.52 |
| Intercultural Cost | 6600.00 | 08.35 |
| Transportation Cost | 2237.00 | 02.83 |
| Cost on Seeds | 7425.00 | 09.40 |
| Cost on Fertilizers | 14300.00 | 18.10 |
| Cost on Pesticides | 4000.00 | 05.06 |
| Technical Cost | 2162.00 | 02.74 |
| Drip Set Cost | 2150.00 | 02.72 |
| Irrigation Cost | 11600.00 | 14.68 |
| Electricity Cost | 3900.00 | 04.94 |
| Interest Cost | 1347.00 | 01.70 |
| Other Cost | 2625.00 | 03.32 |
| Total Cost (Per Acre) | 79008.00 | 100 |
| Average Yield per acre in tones | 58 | |
| Average Price per ton (in Rs.) | 2300.00 | |
| Total Income/ Per Acre (in Rs.) | 54,392.00 | |

Source: Field Survey by Researcher

Major Findings of the Study

It is identified from the table 1 that 103 (17.16%) of the selected respondents are in the age group of 20 to 30. The 198 (33%) of the respondents are in the age group of 30-40. It is also found that 113 (18.84%) cultivators are more than 50 years old.

It is noticed from the table 2 that 14 (2.33%) of the selected sugarcane growers are non-educated. Among the 600 respondents 355 (59.16%) are having up to primary and secondary education. 150 (25%) sugarcane growers are completed graduation.

It is found from the table 3 that 313 (52.16%) respondents have land less than 1 hectare. 149 (24.83%) respondents have 1 to 2 hectares. 94(15.66%) respondents have 2 to 3 hectares and 44 (7.33%) respondents have more than 3 hectares land.

It is identified from the table 4 that majority of the selected sugarcane growers i.e. 246 (41%) have 5 years' experience of sugarcane production. 161 (26.83%) farmers have 2 years' experience of sugarcane production.

It is found that the average yield of sugarcane per acre is 8 tones. The average price per ton is Rs.23000 and the total income per acre is Rs. 54392.

Suggestions

The Central part of the study area is a plateau. This area is not suitable for sugarcane cultivation. So farmers are suggested to take crops like Jowar, Bajra, Fruits and Dairy farming production.

Over irrigation increases the salinity of the soil and makes the land uncultivable. Farmers are advised to provide organic fertilizers and are suggested to adopt drip irrigation and subsurface irrigation.

Use of fertilizers is not proper; farmers believe that more fertilizers are required for extra production, but in fact more fertilizers affects soil health. So farmers are advised to use fertilizers in proper way. Every farmer should check their soil samples with the help of local sugarcane industries.

Conclusion

It is found from the present study the share of land is the maximum in the sugarcane production. It shows efficiency gain in production in terms of labour under new production technology. The total income

generated in the sugarcane production and employment generation is considerably satisfactory in Indapur Tahsil.

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