



## A Study on Farmers' Perceptions and Constraints of Sugarcane Production: Evidence from village level study in Orissa

R.K. Rout<sup>1</sup> and N. Bar<sup>2</sup>

<sup>1</sup>Department of Agricultural Economics, College of Agriculture, OUAT, Bhubaneswar, Odisha, India

<sup>2</sup>KVK, Sambalpur, OUAT, Bhubaneswar, Odisha, India

Corresponding author: barnarayan@gmail.com

Paper No.: 268

Received: 3 January 2015

Accepted: 2 November 2015

### Abstract

Sugarcane is a major cash crop of India, particularly in UP, Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Bihar, Gujarat, and Foot hills of Uttarakhand. Sugarcane crop has a productivity of 70 tonnes/ha and an area of 4.2 mha. It plays a pivotal role in the national economy. Sugarcane is considered as one of the best cash crops in Orissa. It is grown in all the 30 districts of Orissa. The selected district Dhenkanal occupied 4th position in area (1.49 thousand ha) and in production (99.06 thousand MTs) and 5th position in yield (668.50 qtls/ha) in 2005-06. This study was carried out in Dhenkanal district, Orissa. A sample of 160 farmers was randomly selected from two blocks i.e. Dhenkanal and Kankadahad. The climatic constraints for sugarcane cultivation in Orissa will continue to account for disparity in cane productivity and sugar recovery in this area. Farmers perception based on their experience indicates a good rating for quality of soil, but poor rating for water quality. But a gap was found to be existing between potential and realized yield. The constraints regarding the sugarcane cultivation were mainly related to the payment problems, there is no alternative sugar mill other than Shakti sugar mill, the long waiting period for the disposal of cane besides harassment of the farmers by the staff of sugar mill. The long distance between sugarcane growers of the study area and sugar mill has added to difficulties of sugarcane growers, which has led to decline in area under sugarcane.

**Keywords:** Perception, constraints, production, sugarcane

---

Sugarcane is a major cash crop of India, particularly in UP, Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Bihar, Gujarat, and Foot hills of Uttarakhand. Sugarcane crop has a productivity of 70 tonnes/ha and an area of 4.2 mha. It plays a pivotal role in the national economy. However paltering yield level declining factor productivity, increasing production cost and slashing sugar prices in the industrial market in the recent years pose a real concern to crop diversification in sugar based production.

Sugarcane is the main source of sugar in India and holds a prominent position as a cash crop. It contributes approximately 56 per cent of total sugar production in the world. Sugar is one of the oldest commodities in the world and traces its origin in 4th century AD in India

and China. India is the largest consumer (18 million tones) and the second largest producer of sugar after Brazil. The Indian sugar Industry is one of the largest producers of white crystal sugar with massive enterprise of sugar factories located throughout the country with an annual turn over of ₹ 150 billion. The sugar factories located in various parts of the country work as nucleus for development of rural areas by mobilizing rural resources and generating employment, transport and communication facilities. Over 45 million farmers are dependants and a large mass of agricultural labour are involved in sugarcane cultivation, harvesting and ancillary activities. The industry employs over 0.5 million skilled and un-skilled workmen, mostly from the rural areas.

Sugarcane is considered as one of the best cash crops in Orissa. It is grown in all the 30 districts of Orissa. Among these districts, Cuttack (1.31 thousand ha), Koraput (3.62 thousand ha), Nayagarh (2.52 thousand ha), Nawarangpur (1.16 thousand ha), Ganjam (1.92 thousand ha), Dhankanal (1.49 thousand ha) are leading districts in sugarcane cultivated areas in the year 2005-06. The production of sugarcane in 2005-06 was to the extent of 306.96 thousand MTs in Koraput followed by 151.10 thousand MTs in Ganjam, 150.43 thousand MTs in Nayagarh, 99.60 thousand MTs in Dhankanal. Productivity of sugarcane varies from 41 tonnes/hectare in Nuapada to 84.913 tonnes/hectare in Koraput district in 2005-06.

The Dhankanal district occupied the fourth position in area and in production and fifth position in productivity of sugarcane during 2005-06. The area under sugarcane can be increased in the study area if it proves to be remunerative crop and its market clearance is quick.

In view of the above perspectives, a study on "A Study on Farmers' Perceptions and Constraints of Sugarcane Production: Evidence from village level study in Orissa" was undertaken with some specific objectives. These are (i) to study the status of sugarcane crop in the

study area, (2) to study the farmers' perception regarding sugarcane production in the study area and (3) to study the constraints faced by the farmer in the production of this crop.

## Database and Methodology

Both the primary as well as secondary data were used to serve the purpose this study. The multi-stage stratified random sampling technique was adopted in the study. In the first stage two blocks namely Dhenkanal Sadar and Kankadahada were selected randomly, in the second stage, 16 villages were randomly selected at the rate of 8 villages per block. This constituted 5 per cent of the total number of villages of two selected blocks. In the final stage, list of sugarcane farmers was prepared separately for both types of sample villages and 10 farm households from each of the 16 sample villages were selected randomly. Thus the sample size was 160 farm holdings. These borrower cultivators were further classified into four categories according to their size of operational holdings. The farmers thus selected were interviewed in person and the required information was collected for the agricultural year 2009-10. The survey method was used for collection of data by filling up questionnaires by contacting the selected farmers.

**Table 1: Area, production and yield rate of sugarcane in Orissa**

| Year      | Area in '000 hectare | Production in '000 tonnes | Yield/hectare in tones |
|-----------|----------------------|---------------------------|------------------------|
| 1980-81   | 48.6                 | 3060.0                    | 62.96                  |
| 1981-82   | 50.0                 | 3220.0                    | 64.40                  |
| 1982-83   | 51.2                 | 3169.4                    | 61.90                  |
| 1983-84   | 57.0                 | 3560.0                    | 62.45                  |
| 1984-85   | 45.7                 | 2708.8                    | 59.27                  |
| 1985-86   | 48.0                 | 3101.2                    | 64.60                  |
| 1986-87   | 42.6                 | 2721.9                    | 64.00                  |
| 1987-88   | 42.3                 | 2785.6                    | 65.90                  |
| 1988-89   | 47.0                 | 3200.2                    | 68.00                  |
| 1989-90   | 47.5                 | 3325.0                    | 70.00                  |
| 1990-91   | 49.0                 | 3549.0                    | 72.43                  |
| 1991-92   | 51.0                 | 3602.8                    | 71.64                  |
| 1992-93   | 40.6                 | 2657.3                    | 65.45                  |
| 1993-94   | 38.9                 | 2618.9                    | 67.32                  |
| 1994-95   | 42.0                 | 2900.0                    | 69.00                  |
| 1995-96   | 48.9                 | 3348.5                    | 68.47                  |
| 1996-97   | 51.0                 | 3417.0                    | 67.00                  |
| 1997-98   | 44.26                | 3214                      | 72.62                  |
| 1998-99   | 47.13                | 3059                      | 64.92                  |
| 1999-2000 | 30.97                | 1826                      | 52.99                  |
| 2000-01   | 31.41                | 2102                      | 66.95                  |
| 2001-02   | 29.66                | 1890                      | 63.73                  |
| 2002-03   | 25.21                | 1516                      | 60.15                  |
| 2003-04   | 28.78                | 1810                      | 62.91                  |
| 2004-05   | 33.83                | 2320                      | 68.60                  |
| 2005-06   | 36.71                | 2543                      | 69.29                  |

**Source:** Directorate of Agriculture and Food Production, Govt. of Orissa, Bhubaneswar. Statistical Abstract of Orissa, 2008

## Results and Discussion

Table 1 explains the area, production and productivity of sugarcane in Orissa from 1980-81 to 2005-2006. During this period sugarcane area increased from 48.6 thousand hectares to a maximum 57.0 thousand hectares in the year 1983-84. In later years, the area has shown a declining trend. There after the production of sugarcane recorded an increase of 11.67 percent during 1980-81 to 1996-97 and declined significantly. The production of sugarcane varied from 3060 thousand tones to 2543 thousand tonnes from 1980-81 to 2005-06. This decline may be due to more emphasis given by farmers to cereals and other cash crops than sugarcane.

Table 2 illustrates that sugarcane is produced in all the districts of Orissa with varying degrees. The area under sugarcane was recorded the highest in Koraput (3620 hectares) followed by Nayagarh (2520 hectares), Cuttack (1310 hectares) and Nawrangpur (1160 hectares). The lowest area under sugarcane was recorded in Kandhamal district (10 hectares).

As regards production of sugarcane, the Koraput

district had a production of 306960 tonnes, followed by Ganjam district (151100 tonnes) and Nayagarh (150430 tonnes). The lowest yield was recorded in Kandhamal district. Productivity of sugarcane varies from 41 tonnes/hectare in Nuapada to 84.913 tonnes/hectare in Koraput district in 2005-06. The Dhenkanal district occupied the fourth position in area and in production and fifth position in productivity of sugarcane during 2005-06.

The growth rates of area, production and productivity of sugarcane in Dhenkanal district were studied with 1995-96 as the base year (Table 3). The percent change over previous year was studied as a measure of annual fluctuations. The area under sugarcane fluctuated almost all the years. During 1995-96 to 2005-06, area under sugarcane varied from 1.77 thousand to 1.49 thousand hectares in 2005-06. The index varied from 24.85 to 120.34 during this period, which means that area under sugarcane varied by factors like prices of gur, prices of inputs like fertilizer or cost of labour and availability of labours in the study area. Perhaps this year's market prices induce the farmers to take up sugarcane cultivation and next year's price forces

**Table 2: Area, production and productivity of sugarcane in different districts of Orissa (2005-06)**

| Name of the districts | Area in '000 hectare | Production in '000 tonnes | Yield/hectare (in qt/ha) |
|-----------------------|----------------------|---------------------------|--------------------------|
| Angul                 | 0.18                 | 9.65                      | 535.90                   |
| Balasore              | 0.29                 | 14.38                     | 490.89                   |
| Baragarh              | 0.50                 | 33.83                     | 676.63                   |
| Bhadrak               | 0.32                 | 21.05                     | 668.19                   |
| Bolangir              | 0.94                 | 59.41                     | 633.40                   |
| Boudha                | 0.01                 | 0.56                      | 509.22                   |
| Cuttack               | 1.31                 | 60.19                     | 460.16                   |
| Deogarh               | 0.03                 | 1.68                      | 507.28                   |
| Dhenkanal             | 1.49                 | 99.60                     | 668.5                    |
| Gajapati              | 0.20                 | 12.42                     | 608.89                   |
| Ganjam                | 1.92                 | 151.10                    | 785.32                   |
| Jagatsinghpur         | 0.43                 | 32.87                     | 759.13                   |
| Jajpur                | 0.23                 | 12.97                     | 554.48                   |
| Jharsuguda            | 0.04                 | 2.52                      | 629.43                   |
| Kalahandi             | 0.58                 | 33.18                     | 574.96                   |
| Kandhamal             | 0.01                 | 0.33                      | 478.00                   |
| Kendrapara            | 0.08                 | 5.04                      | 600.00                   |
| Keonjhar              | 0.09                 | 5.40                      | 607.25                   |
| Khurda                | 0.48                 | 28.92                     | 600.00                   |
| Koraput               | 3.62                 | 306.96                    | 849.13                   |
| Mayurbhanj            | 0.03                 | 1.54                      | 453.14                   |
| Nawarangpur           | 1.16                 | 50.30                     | 435.14                   |
| Nayagarh              | 2.52                 | 150.43                    | 596.47                   |
| Nuapara               | 0.02                 | 0.78                      | 410.00                   |
| Puri                  | 0.26                 | 16.03                     | 623.69                   |
| Rayagada              | 0.14                 | 6.67                      | 486.77                   |
| Sambalpur             | 0.05                 | 3.04                      | 552.00                   |
| Sonepur               | 0.08                 | 4.75                      | 609.23                   |
| Sundargarh            | 0.02                 | 0.97                      | 486.18                   |
| <b>Orissa</b>         | <b>16.33</b>         | <b>1073.01</b>            | <b>657.00</b>            |

Source: Directorate of Economics and Statistics Orissa, Bhubaneswar, 2008

**Table 3: Indices of area, production and productivity of sugarcane in Dhenkanal District during 1995-96 to 2005-06**

| Year    | Area             |        |                             | Production                |        |                             | Productivity              |        |                             |
|---------|------------------|--------|-----------------------------|---------------------------|--------|-----------------------------|---------------------------|--------|-----------------------------|
|         | Area in '000 ha. | Index  | % Change over previous year | Production in '000 tonnes | Index  | % Change over previous year | Productivity in tones/ ha | Index  | % Change over previous year |
| 1995-96 | 1.77             | 100.00 | —                           | 12.62                     | 100    | —                           | 71.30                     | 100    | —                           |
| 1996-97 | 2.13             | 120.34 | 20.34                       | 16.17                     | 128.21 | 28.12                       | 75.90                     | 106.45 | 6.45                        |
| 1997-98 | 1.46             | 82.49  | -31.45                      | 10.22                     | 80.98  | -36.80                      | 70.00                     | 98.17  | -7.77                       |
| 1998-99 | 1.46             | 82.49  | 0                           | 10.22                     | 80.98  | -0.19                       | 70.00                     | 98.17  | 0                           |
| 1999-00 | 0.44             | 24.85  | -69.8                       | 37.34                     | 295.82 | 265.30                      | 84.87                     | 119.03 | 21.24                       |
| 2000-01 | 0.55             | 32.77  | 31.87                       | 43.64                     | 345.73 | 16.87                       | 75.24                     | 105.52 | -11.35                      |
| 2001-02 | 0.65             | 36.72  | 12.05                       | 38.68                     | 306.43 | -0.001                      | 59.50                     | 83.45  | -20.91                      |
| 2002-03 | 1.05             | 59.32  | 61.54                       | 62.48                     | 494.97 | 61.52                       | 59.50                     | 83.45  | 0                           |
| 2003-04 | 1.12             | 63.28  | 6.67                        | 71.09                     | 563.17 | 13.77                       | 63.47                     | 89.01  | 6.66                        |
| 2004-05 | 1.19             | 67.23  | 6.24                        | 81.46                     | 645.32 | 14.58                       | 68.51                     | 96.08  | 7.94                        |
| 2005-06 | 1.49             | 84.18  | 25.21                       | 99.60                     | 789.02 | 22.26                       | 66.85                     | 93.75  | -2.42                       |

Source: Directorate of Economics and Statistics Orissa, Bhubaneswar, 2008

**Table 4: Compound growth rate of area, production and productivity for sugarcane crop in Orissa and Dhenkanal District during 1995-96 to 2005-06**

| Items                                      | Area                | Production         | Productivity       |
|--|---------------------|--------------------|--------------------|
| Compound growth rate of Orissa             | -1.43               | 0.06               | 1.86 <sup>**</sup> |
| Compound growth rate of Dhenkanal District | -1.07 <sup>NS</sup> | 5.09 <sup>NS</sup> | 0.41 <sup>NS</sup> |

\*\* Significant at 1% level. NS: Not significant

**Table 5: Distribution of holding in different size groups of sample farms of blocks**

| Size groups            | Dhenkanal Sadar (Region-I) |  | Kankadahada (Region-II)   |  |
|------------------------|----------------------------|--|---------------------------|--|
|                        | Total No. of sample farms  | Average size of operational holding (in ha.) | Total No. of sample farms | Average size of operational holding (in ha.) |
| I (below 1.00 ha)      | 18                         | 0.91   | 26                        | 0.85   |
| II (1.01 to 2.00 ha)   | 28                         | 1.56   | 29                        | 1.51   |
| III (2.01 to 4.00 ha.) | 22                         | 2.68   | 20                        | 2.73   |
| IV (4.00 and above )   | 12                         | 6.34   | 5                         | 6.21   |
| <b>Pooled</b>          | <b>80</b>                  | <b>2.44</b>                                  | <b>80</b>                 | <b>1.89</b>                                  |

**Table 6 Cropping pattern adopted by different size groups of sample farmers (in per cent)**

| Crops        | Dhenkanal Sadar (Region-I) |            |            |            |              | Kankadahada (Region-II) |            |            |            |              |
|--------------|----------------------------|------------|------------|------------|--------------|-------------------------|------------|------------|------------|--------------|
|              | Size group                 |            |            |            |              | Size group              |            |            |            |              |
|              | I                          | II         | III        | IV         | Pooled       | I                       | II         | III        | IV         | Pooled       |
| Paddy        | 35.63                      | 32.13      | 30.68      | 30.12      | <b>32.22</b> | 40.12                   | 41.53      | 40.92      | 42.12      | <b>40.96</b> |
| Pulses       | 14.44                      | 10.54      | 12.34      | 10.08      | <b>11.84</b> | 10.58                   | 10.41      | 9.98       | 10.05      | <b>10.34</b> |
| Oilseeds     | 2.53                       | 2.81       | 2.41       | 2.15       | <b>2.54</b>  | 2.04                    | 2.11       | 2.14       | 2.08       | <b>2.09</b>  |
| Sugarcane    | 36.67                      | 40.08      | 39.92      | 38.92      | <b>39.09</b> | 32.47                   | 33.62      | 34.05      | 31.79      | <b>33.24</b> |
| Vegetables   | 4.12                       | 7.93       | 8.01       | 9.05       | <b>7.26</b>  | 8.36                    | 8.18       | 7.93       | 7.82       | <b>8.15</b>  |
| Others       | 6.61                       | 6.51       | 6.64       | 9.68       | <b>7.04</b>  | 6.43                    | 4.15       | 4.98       | 6.14       | <b>5.22</b>  |
| <b>Total</b> | <b>100</b>                 | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b>   | <b>100</b>              | <b>100</b> | <b>100</b> | <b>100</b> | <b>100</b>   |

**Table 7: Disposal pattern of sugarcane on an average farm in the study area**

| Particulars             | Dhenkanal Sadar (Region-I) |  | Percent       | Kankadahada (Region-II) |  | Percent    |
|-------------------------|----------------------------|--|---------------|-------------------------|--|------------|
|                         | Quantity (q/ha)            |  |               | Quantity (q/ha)         |  |            |
| Sold to mill            | 653.84                     |  | 88.50         | 575.28                  |  | 82.68      |
| Converted to Jaggery    | 42.70                      |  | 5.20          | 75.84                   |  | 10.90      |
| Kept/sold for seed      | 38.42                      |  | 5.78          | 40.36                   |  | 5.80       |
| Sold in the market      | 3.84                       |  | 0.52          | 4.32                    |  | 0.62       |
| <b>Total production</b> | <b>738.8</b>               |  | <b>100.00</b> | <b>695.8</b>            |  | <b>100</b> |

**Table 8: Status of area under sugarcane and constraints faced by sampled farmers in study area**

| Particulars   | No.        | Percent       |
|---|------------|---------------|
| Expanded  | 36         | 21.88         |
| Declined  | 101        | 63.74         |
| No change   | 23         | 14.38         |
| <b>Total</b>  | <b>160</b> | <b>100.00</b> |
| <b>Multiple responses Reasons for decline in area</b> |            |               |
| Delay payment for crop produce                        | 98         | 61.25         |
| Scarcity of water for irrigation                      | 65         | 40.63         |
| Delay in purchase of produce                          | 54         | 33.75         |
| Labour problem  | 12         | 7.50          |
| Low price   | 82         | 51.25         |
| High cost of transportation                           | 44         | 27.50         |
| Small holding   | 53         | 33.13         |
| Harassment by the mill during weighing and unloading  | 62         | 38.75         |
| Long waiting in log queue for unloading and payment   | 47         | 29.38         |
| Mill is far away                                      | 63         | 39.38         |
| High cost of sugarcane cultivation                    | 12         | 7.50          |
| Deduction during the time of weighing                 | 16         | 10.00         |
| <b>Total farmers growing sugarcane=160</b>            |            |               |

them to reduce the area under sugarcane if he bears losses or market problems. The wide fluctuations in area under sugarcane in Dhenkanal district was perhaps not caused by agronomic problems but by economic problems.

The production of sugarcane varied from 10.22 thousand tones in 8.46 thousand tones during the period 1995-96 to 2005-06. The index varied from 8098 to 789.72 during the same period. The percent change over previous year indicated wide fluctuations. The reason for wide fluctuations in sugarcane production was mainly caused by wide fluctuations in area under sugarcane.

The productivity of sugarcane in Dhenkanal district varied from 59.50 tones/hectare to 48.87 tonnes/hectare. This variation was mainly attributed by time of planting, doses of fertilizers and irrigation as reported by the cane growers of the locality. In order to examine the growth behaviour of sugarcane in the district and State, compound growth rates with respect to area, production and productivity were calculated in Table 4.

The compound growth rates of area and production of sugarcane during the period 1995-96 to 2005-06 for the State as a whole were -1.43 per cent and 0.06 per cent, respectively and were found to be not significant. However, the compound growth rate for productivity was found to be significant at 1 per cent level for the State as a whole. But the compound growth rate of area, production and productivity of Dhenkanal district during 1995-96 to 2005-06 were -1.07 per cent, 5.09 per cent and 0.41 per cent, respectively and were found to be not significant.

It is therefore, evident that there was negative growth rate in area, of sugarcane both in the district as well as in the State during 1995-96 to 2005-06. This finding contradicts the hypothesis that growth of area under sugarcane in the district is positive. So the postulated hypothesis is, therefore rejected.

The reasons for decreasing trend in sugarcane area and production over time may be attributed due to lack of high quality varieties of sugarcane and improper managerial abilities of sugar industry in the state. It also reflects that there was a greater degree of diversification to vegetables and pulse crops because of inadequate irrigation facilities.

The average size of holding was estimated to be 2.44 ha for Dhenkanal Sadar (Region-I) and 1.89 ha in Kankadahada Block (Region-II) of the sample district. The operational size of holding of marginal, small, medium and large farmers are found to be 0.91, 1.56, 2.68 and 6.34 ha. as against 0.85, 1.51, 2.73 and 6.21 ha respectively.

The cropping pattern followed by farmers in the study area is given in Table 6. The importance of paddy cultivation in the area comes out very clearly from the survey data. Among other crops the preference of growing sugarcane was also evident among all categories of sample farms. Next these is sugarcane pulses are grown by all the sample farmers in the area. The proportion of area devoted to sugarcane crop varied between 36.67 and 40.08 per cent in region-I as compared to 31.79 to 33.62 per cent in region-II. The marginal and small farmers devoted more area for this crop as compared to large farmers. This might be due to better

irrigation facilities available to these categories of sample farmers. Among other crops, oilseeds and vegetables are also grown by the sample farms indicating diversification of farming in the area under study.

Farmers perceive their land suitable for sugarcane cultivation as many of them were having the crop at present or have grown it in the past. Farmers' point of view was taken regarding the availability of labour in the area for agriculture. Overall, 44 per cent of sampled farmers expressed that labour is easily available while 56 per cent reported shortage of labour in the area. Farmers perception based on their experience indicates a good rating for quality of soil, but poor rating for irrigation water quality. but it is considered sufficient for sugarcane cultivation in this area. However, shortage of labour supply was reported by majority of the farmers in the area. Yet, farmers feel that labour shortage will not be a problem with greater influx of migrant labour, if the area under sugarcane expands.

Table-7 exhibits the disposal pattern of sugarcane in the study area. It was observed that in case of Region-1, 88.50 per cent of the sugarcane production was sold to the mill. As much as 5.20 per cent of sugarcane was converted into Jaggery, 5.78 per cent of sugarcane was kept for seed and 0.52 per cent of sugarcane was sold in the market and that in case of Region-2, 82.68 per cent of the sugarcane production was sold to the mill, 10.90 per cent of sugarcane was converted into Jaggery, 5.80 per cent of sugarcane was kept for seed and 0.62 per cent of sugarcane was sold in the market.

The productivity of sugarcane in Dhenkanal district varied from 59.50 tones/hectare to 48.87 tonnes/hectare. This variation was mainly attributed by time of planting, doses of fertilizers and irrigation as reported by the cane growers of the locality. So a gap was found to be existing between potential yield and realized yield.

Sugarcane cultivation has witnessed many ups and downs in Dhenkanal district. Currently, the crop is passing through a low phase. Out of 160 farmers interviewed in the study area, Out of 160 farmers who were into cultivation of sugarcane crop only 36 farmers i.e 21.88 per cent responded that they have expanded the area under crop, whereas 101 farmers i.e 63.74 per cent have reported a decline in area under this crop. Also 23 farmers or 4.64 per cent of the sampled farmers said there was no change in area under the crop (Table-8).

We tried to trace the reasons for this declining trend in sugarcane cultivation through personal interviews with the farmers. Multiple response method was used for this purpose. The most prominent response of

sugarcane growers was the delay in payments made by the sugar mills. More than 61 per cent of the farmers complained about delayed payments. As there was no alternative with the farmers for the disposal of crop, they had to sell their produce to the sugar mill and wait for the payments. The second important reason cited for poor response to sugarcane cultivation by the farmers was the low price of the sugarcane crop. Their perspective was that prices of other crops like wheat and paddy have increased much more than sugarcane especially in recent years. So, they consider the wheat-paddy system easier for the disposal of produce, quick clearance of payments and at least equally profitable as compared to sugarcane cultivation. About 51.25 percent of sugarcane cultivators were of the view that price of the crop was low. Next important factor discouraging sugarcane cultivation as emerged from the survey was distant location of mill from the study area. Nearly 39.38 per cent cultivators enlisted this as a major constraint in sugarcane cultivation.. This involved a high cost of transportation to the cultivators as well as greater time spent for this purpose. This long distance transportation needs heavy machinery (tractor-trolley), which means more investment. Small cultivators can not afford to keep heavy machinery and stay away from the cultivation. This also causes more wear and tear of machinery, more fuel consumption and more time in transporting the produce to the sugar mill. Discourteous behaviour on the part of mill workers whether gatekeepers of the mills or other administrative staff has been reported as another factor for driving away the egoistic farmers of the study area from sugarcane cultivation. 62 sampled farmers (38.75 per cent) reported that behaviour of mill workers was very rude during weighing and unloading of the cane. They used abusive language especially to small cultivators. There was no arrangement for farmers to take rest as well as no facility for food. Some of the farmers cited delay in purchase of crop by the mills, as an important reason for decline in area under sugarcane. When production was high two-three years back, the mills showed less interest in purchases especially direct village level purchases. This put a damper on the enthusiasm of farmers for expanding sugarcane area. The labour was not willing to wait for harvesting the crop in different time intervals. Labour shortage during harvesting was reported to be another constraint by 7.5 per cent of farmers.

## Conclusion

From the above analysis it emerged that the constraints were mainly related to the payment problems, absence of any sugar other than Shakti sugar

mill, the long waiting period for the disposal of cane besides harassment of the farmers by the staff of sugar mills. The long distance between sugarcane growers and sugar mill has added to difficulties of sugarcane growers, which has led to decline in area under sugarcane. Based on the findings of the study specific policy recommendations have been made which are discussed below.

Sugarcane crop is both labour and capital intensive. It requires heavy quantities of various inputs and hence the cost of production is high. Though the farmers in the area under study realized more returns, they were reported to have incurred more expenditure on various inputs. This was mainly due to ignorance of majority of the farmers about the recommended practices in sugarcane cultivation.

In spite of various efforts made by the extension agencies of the State Department of Agriculture there has not been much impact on the farmer's field concerted efforts should be made by these agencies to educate the farmers about the adoption of modern and scientific practices of sugarcane cultivation, on a continuous basis.

Resource adjustment on all farm size categories have to be effected to increase the output and profit.

The ratio of marginal value product to factor cost of various inputs indicated that use of capital on various farm inputs could be increased. It is also suggested that excess use of any particular input due to under enthusiasm needs to be avoided. The labour utilization was to be reduced particularly on marginal and small farms of sugar cane.

Since sugarcane is a labour and capital-intensive crop, the support price fixed for this crop should commensurate with the cost of cultivation. It should therefore be the concern of the policy makers to formulate suitable policies and offer prices, which will be remunerative to the farmers.

The Government should enact suitable bye-laws and create an enabling condition for contract farming to be widely accepted and adopted.

The Statutory Minimum Price (SMP) of sugarcane is linked to the recovery rate and the level of recovery in influenced by efficiency of plant and machinery operating in sugar factories. There is an imperative need to improve the operational efficiency of plant and machinery and in the process elevate their recovery rates so that sugarcane growers get higher cane price.

The sugarcane (control) order, 1966 not only provides for giving to the farmers the SMP of sugar cane but also Additional Cane Price (ACP) under clause 5A of the order. Governments are required to determine the additional liability of cane price and to notify the same in a time bound manner.

Government should provide necessary incentives to all sugar mills to produce ethanol, alcohol, co-generation of power etc. along with sugar, in a flexible and also permit any new sugar units to be set up if they plan to do so.

Govt. of India should adopt a policy of blending at least 10 per cent ethanol with petrol mandatory after due consultation with stakeholders. The price of ethanol should be linked with the price of petrol to make it remunerative for the sugar mills who will pay higher price to the sugar cane growers.

The production capacity of sugar factories needs to be increased substantially to become variable and improve export prospects in the overseas market. There is a need to formulate a long term strategy by the Government for promoting the export of sugar on sustainable basis.

## References

- Bajpai, P.K. and Jagdish Lal 1985. Trends and variability in Area, Production, Productivity and prices of Sugarcane, its competing crops and gur in India. Annual Report-1985. *Indian Institute of Sugarcane Research Lucknow*, p. 98.
- Chinnappa, B. 1998. "Resource Use, Cost Structure and Marketing of Sugarcane: A Case Study of Karnataka", *The Bihar Journal of Agricultural Marketing* 6(1): 74-79.
- Karisson, B. 1985. Prices of Sugarbeet and Sugar. *Sekonomiska Neddelanden* 47(3): 118-121.
- Lal, J. and Bajpai, P.K. 1982. Agricultural Economics and Statistics. Annual Report -1982. *Indian Institute of Sugarcane Research, Lucknow*, pp.122-125.
- Mohanty, R.N. 1986-87. Area, production and yield of sugarcane. *Orissa Agril. Statistics, Directorate of Agriculture*, p. 49.
- Rao, C.H.H. 1967. Agricultural production function, costs and returns in India. Institute of Economic growth, *Asia publishing House, Delhi*.
- Shukla, S.D. and Pandey, H.K. 1969. Study of Costs and returns of Sugarcane Farms. *Agricultural Situation in India*, 23(1): 1253-1256.