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# Socio-economic and technological transformation among sugarcane growers of Surguja district (C.G.)

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**Abstract**
The present study was carried out in the Surguja district of Chhattisgarh state. Data were collected from 120 respondents as 60 beneficiary respondents and 60 non-beneficiary respondents of six selected villages. The results of the study in socio-economic status *viz*; occupation, landholding, productivity, source of irrigation, cropping pattern, cropping intensity, annual income, the contribution of sugarcane in annual income and material possession were found positive and statistically significant among the beneficiary and non-beneficiary respondents of sugarcane growers as in their transformation of overall socio-economic status. Similarly in case of the technological level of adoption *viz*; planting method, selection of variety and seed replacement, application of manures and fertilizers, irrigation, cultural operation and plant protection measures were found positive and significant changes in between beneficiary and non-beneficiary respondents as a result of technological transformation of registered sugarcane growers of a sugar factory. Hence, it can be concluded that the socio-economic status and technological adoption among sugarcane growers' respondents were positive and significant transformations due to Maa Mahamaya Co-operative Sugar Factory Ambikapur of Chhattisgarh.

**Keywords:** Sugarcane, beneficiary and non-beneficiary respondents, socio-economic status, technological adoption and transformation

## 1. Introduction
Agriculture is one of the most significant sectors of the Indian economy. It is the only means of living for almost two third of the workers in India. The agriculture sector of India has occupied 42.4 percent of India's geographical area (Annual report 2020-21) [2] and is contributing 20.2 percent of India's GDP in 2020-21 (Source: National Statistical office). Sugarcane (*Saccharum officinarum*) family Gramineae (Poaceae) is an important commercial crop grown in India and used for large-scale production of sugar in the world. About 110 countries produce sugar from cane or beet, and eight countries produce sugar from cane and beet. Sugarcane accounts on average 80 percent of global sugar production (International sugar organization). Sugarcane is cultivated mainly in the tropical and sub-tropical areas in India and also the southern hemisphere. The main source of sugar is dependent on sugarcane in Asia and Europe. It is the raw material to produce white sugar & jaggery (gur) and is used for chewing and extraction of juice for beverage purposes.
In India, the total area under sugarcane cultivation is 48.57 Lakh hectares and 2nd largest producer of sugar in the world having 399.25 million tons of production with average productivity of 82205 Kg/hectare (Source: Annual report 2021-22 of Ministry of Agriculture & Farmers Welfare, Government of India).
Chhattisgarh is comprised of agro-climatic region as the Northern hills zone, plains and Bastar plateau. The scope of sugarcane is bright in Chhattisgarh, it is cultivated in 34.85 ('000 ha.) area and the production of sugarcane was 86.25 ('000 metric tons) with average productivity of 24.75 tons/ha. The production of Northern hills was 11.04 lace metric tonnes with average productivity of 49.96 tons/ha.

## 2. Methodology
The study was carried out in the Surguja district under the northern hill zone of Chhattisgarh state, in the periphery of Maa Mahamaya Co-operative Sugar Factory Ambikapur during the years 2021–2022. Out of seven blocks, two blocks, Lundra and Batauli considered in which six sugarcane growing villages were purposively selected with ten beneficiaries and ten non-beneficiaries of sugarcane growers as registered and non-registered members of the sugar factory. Thus, 120 respondents whereas 60 beneficiary and 60 non-beneficiary respondents of a sugar factory were finally selected. The data was collected with the help of well develop structured interview schedule.

## 3. Results and Discussions

**Table 1:** Distribution of beneficiary and non-beneficiary respondents according to their dimension of socio-economic transformation

| Dimension of Socio-economic Transformation | Beneficiary | Non-beneficiary | % change | 'z' value |
|---|---|---|---|---|
| Occupation | 1.82 | 1.78 | 2.25 | 0.236* |
| Land holding | 2.22 | 1.98 | 12.12 | 1.753* |
| Productivity | 2.27 | 1.70 | 33.52 | 6.388* |
| Source of irrigation | 3.48 | 3.33 | 4.50 | 0.856* |
| Cropping pattern | 4.98 | 4.92 | 1.21 | 0.284* |
| Cropping intensity | 2.07 | 1.95 | 6.15 | 0.801* |
| Annual income | 2.23 | 1.85 | 20.54 | 2.461* |
| Contribution of sugarcane in annual income | 2.27 | 1.75 | 29.71 | 5.416* |
| Material possession | 44.78 | 41.33 | 8.34 | 5.442* |
| Overall Socio-economic Transformation | 66.12 | 60.60 | 9.10 | 6.987* |

Significant at 0.05 level of probability.

Table 1 reveals the mean score of the beneficiary respondents in occupation, land holding, productivity, source of irrigation, cropping pattern, cropping intensity, annual income, the contribution of sugarcane in annual income and material possession *viz*; 1.82, 2.22, 2.27, 3.48, 4.98, 2.07, 2.23, 2.27 and 44.78 was observed. Whereas, the non-beneficiary respondents of a sugar factory obtained as mean scores of 1.78, 1.98, 1.70, 3.33, 4.92, 1.95, 1.85, 1.75 and 41.33 respectively, which is lower than the beneficiary respondents of the sugar factory. Similarly, the changes in the percentage of each dimension of beneficiary respondents were higher as compared to non-beneficiary respondents as a result of the transformation. The overall change in the socio-economic status of beneficiaries over non-beneficiary respondents was 9.10 percent obtained, which was significant. The analysis of 'z' test indicates that there was a significant difference with a 0.05 level of probability in socio-economic status between the beneficiary and non-beneficiary respondents of the sugar factory in the study area.

**Table 2:** Distribution of beneficiary and non-beneficiary respondents according to their level of socio-economic status

| Level of socio-economic status | Beneficiary | | Non-beneficiary | | 'z' value |
|---|---|---|---|---|---|
| | Frequency | Percentage | Frequency | Percentage | |
| Low (54 to 58.3) | 2 | 3.33 | 20 | 33.33 | 6.987* |
| Medium (58.4 - 68.4) | 45 | 75.00 | 37 | 61.67 | |
| High (68.5 and 76) | 13 | 21.67 | 3 | 5.00 | |
| Total | 60 | 100 | 60 | 100 | |

$\bar{X}$= 63.4, S.D.= 5.1; Significant at 0.05 level of probability

Table 2 depicted the overall socio-economic status of the beneficiaries 75.00 percent of respondents belonged to the medium level of socio-economic status. This was followed by 21.67 percent of respondents who had belonged to a high level of socio-economic status, remaining 3.33 percent of sugarcane growers had belonged to a low level of socio economic status. Similarly, In non-beneficiary, 61.67 percent of respondents belonged to a medium level of socio-economic status, followed by 33.33 percent of respondents had belonged to a low level of socio-economic status, remaining 5.00 percent of respondents belonged to a high level of socio-economic status. The analysis of 'z' test indicates that there was a significant difference with a 0.05 level of probability in socio-economic status between the beneficiary and non-beneficiary respondents of a sugar factory.

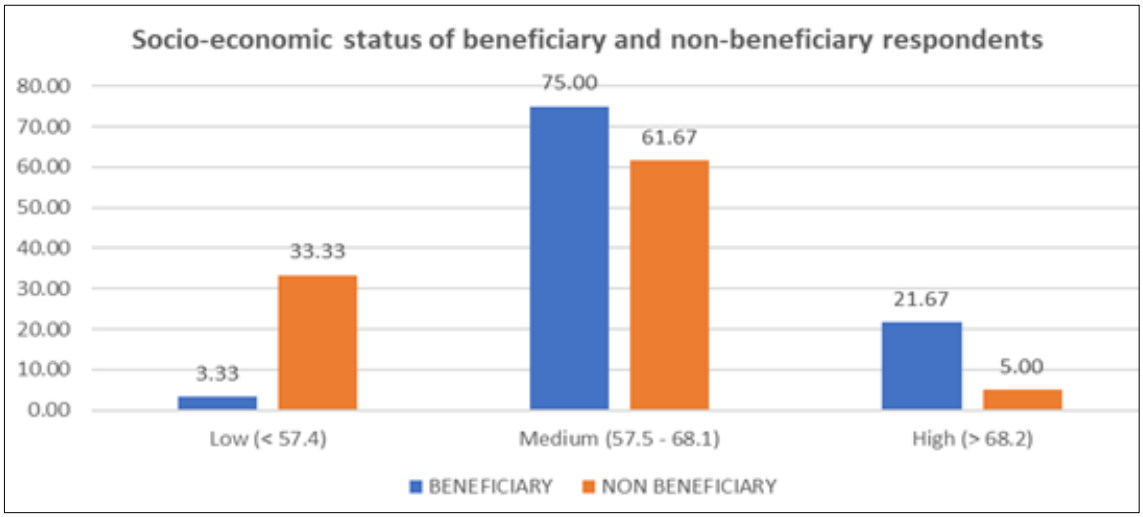


**Fig 1:** Distribution of beneficiary and non-beneficiary respondents according to their socio-economic status

**Table 3:** Distribution of beneficiary and non-beneficiary respondents according to their dimension of technological transformation

| Package of practices | Beneficiary | Non-beneficiary | % change | z' value |
|---|---|---|---|---|
| Planting method | 88.25 | 70.67 | 24.88 | 8.534* |
| Selection of variety and seed replacement | 81.25 | 66.67 | 21.87 | 5.741* |
| Application of manures and fertilizers | 70.21 | 56.67 | 23.89 | 5.812* |
| Method of irrigation | 91.81 | 75.42 | 21.73 | 7.922* |
| Cultural operation | 79.79 | 62.64 | 27.38 | 7.303* |
| Plant protection measures | 73.87 | 60.30 | 22.76 | 5.139* |
| Overall technological transformation | 80.62 | 64.97 | 24.09 | 8.788* |

Significant at 0.05 level of probability

Table 3, reveals that the technological adoption index of the beneficiary respondents in planting method, selection of variety & seed replacement, application of manures and fertilizers, method of irrigation, cultural operation and plant protection measures *viz*; 88.25, 81.25, 70.21, 91.81, 79.79 and 73.87 was observed. Whereas the non-beneficiary respondents of the sugar factory were a technological adoption index of 70.67, 66.67, 56.67, 75.42, 62.64 and 60.30 respectively, which is lower than the beneficiary respondents of the sugar factory. Similarly, the changes in the percentage of each technological practice of beneficiary respondents were higher as compared to non-beneficiary respondents as the technological transformation in sugarcane cultivation. The overall change in the technological adoption index of beneficiary over non-beneficiary respondents was 24.09 percent obtained, which was statistically significant.

**Table 4:** Distribution of beneficiary and non-beneficiary respondents according to their technological level of adoption

| Technological level of adoption | Beneficiary | | Non-beneficiary | | 'z' value |
|---|---|---|---|---|---|
| | Frequency | Percentage | Frequency | Percentage | |
| Low (42 to 60) | 3 | 5.00 | 18 | 30.00 | 8.788* |
| Medium (61 - 84) | 30 | 50.00 | 39 | 65.00 | |
| High (85 and 96) | 27 | 45.00 | 3 | 5.00 | |
| Total | 60 | 100 | 60 | 100 | |

$\bar{X}$= 72.8, S.D.= 12.4; Significant at 0.05 level of probability

Table 4, depicts that, in beneficiaries 50.00 percent of respondents had belonged to a medium level of technological adoption followed by 45.00 percent of respondents who had belonged to a high level of technological adoption and remaining 5.00 percent of respondents had belonged to a low level of technological adoption. Similarly, In non-beneficiaries, 65.00 percent of respondents belonged to a medium level of technological adoption followed by 30.00 percent of respondents who had belonged to a low level of technological adoption and remaining 5.00 percent of respondents had belonged to a high level of technological adoption. The analysis of 'z' test indicates that there was a significant difference with 0.05 level of probability in the technological adoption between the beneficiary and non-beneficiary respondents of a sugar factory.

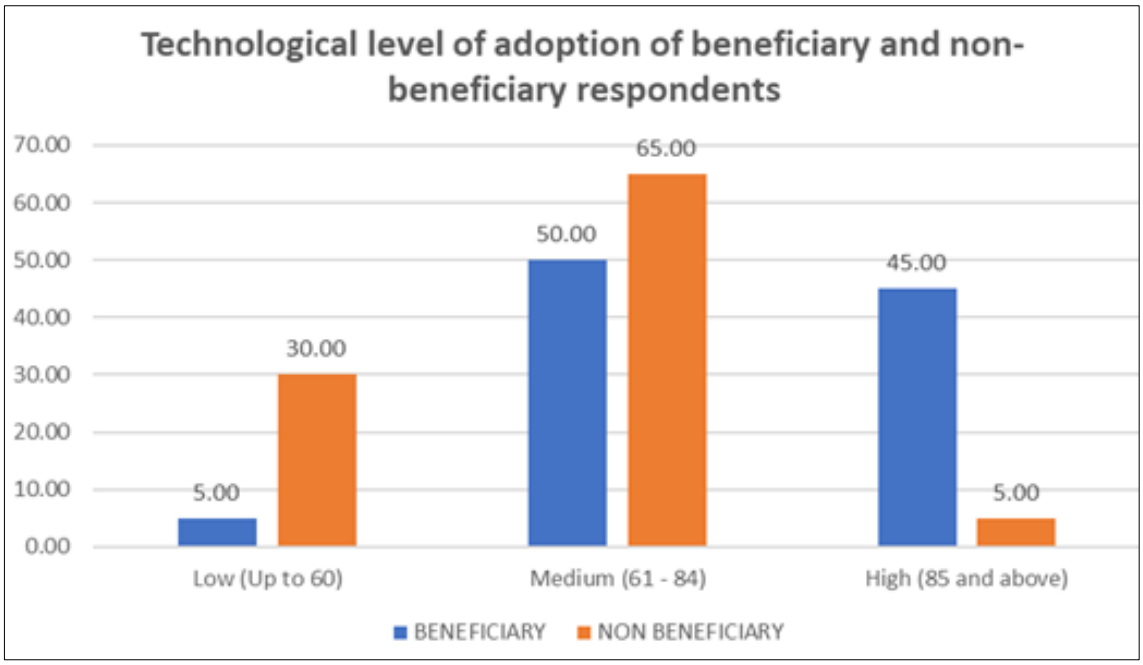


**Fig 2:** Distribution of beneficiary and non-beneficiary respondents according to their technological level of adoption

## 4. Conclusions

It can be concluded that a majority of the beneficiary and non-beneficiary respondents had a medium level, and the socio-economic status of the beneficiary respondents was a better and more significant change from the non-beneficiary respondents. Whereas it can also be concluded that a significant transformation of technological adoption index in selected practices of sugarcane cultivation was found between the beneficiary and non-beneficiary respondents and the overall technological level of adoption was a better and significant difference (z value=8.788*) was found between the beneficiary and non-beneficiary respondents. Hence, the present study can be concluded that the socio-economic status and technological adoption among sugarcane growers' respondents were positive and significant transformations due to Maa Mahamaya co-operative sugar factory Ambikapur of Chhattisgarh.

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