

## **Adoption of Improved Sugarcane Production Technologies**

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### **ABSTRACT**

India ranks first among sugarcane growing countries in the world, both in area and production. The crop occupies an area of 1,800 ha. with an average production of 7,800 tonnes and productivity is 4.33 t/ha in Sehore district of Madhya Pradesh. The challenge is to enhance the productivity of sugarcane from existing 75 tonnes/ha to 100 tonnes/ha by 2020 AD. There is a wide gap between the standardized well tested production systems and practices followed by the farmers. The study was conducted in Sehore district, Madhya Pradesh. The data were collected by interviewing 90 farmers selected on the basis of proportionate random sampling from six villages of Sehore Block of Sehore district. It was found that majority of respondents had medium levels of technological adoption. The study is significant for sugarcane production technologies, so that appropriate strategies can be designed for specific segment of the farming community.

**Key words :** Extent of adoption, improved production technology, weed-control measures

### **INTRODUCTION**

Sugarcane is one of the most important cash crops in India. India ranks first among sugarcane-growing countries in the world, both in area and production. Madhya Pradesh may play a greater role in contributing its share in sugar production in order to keep pace with increasing demand of sugar for internal consumption and exports. In Madhya Pradesh, the crop had occupied an area of 0.07 million ha with the production of 2.98 million tonnes (2008-09). In Sehore district, the crop had occupied an area of 1,800 ha with an average production of 7,800 tonnes and productivity of 4.33 tonnes/ha (Commissioner of Land Records, 2009-10). The available stratified data of district regarding area and production of sugarcane shows a decreasing trend as well as the low productivity as compared to state and national average. The transformation of traditional subsistence farming into modern scientific farming through adoption of improved technology is a continuous process. To cope up with fast changing technology an extension network has been established at various levels.

In spite of that, a wide technological gap exists between the available recommended technology and its actual adoption by the farmers. Hence, wider the gap lesser will be the production and vice-versa. Although viable and adaptive technologies have been developed, many of these have not reached to the sugarcane growers. This may be the reason of below potential yield of sugarcane. The sugarcane output can be increased if sugarcane growers adopt the recommended practices of sugarcane production.

### **METHODOLOGY**

The study was conducted in Sehore block of Sehore district. There are 296 villages in the blocks. Out of these, 6 villages were selected purposively owing to maximum area covered under sugarcane crop. A representative sample of 90 sugar-cane growers was drawn from the selected villages for the block and data were collected with the help of an interview schedule (pre-tested). The collected data were classified and tabulated and interpretation was made with help of stratified tools like percentage, mean and standard deviation.

### **RESULTS AND DISCUSSION**

#### **Socio-personal characteristics of sugarcane growers**

The data reveal that most of the respondents (40.00%) were of middle age group followed by young age group (32.22%) and old age group (27.78%). Thus, in study area, majority of the sugarcane growers were in middle age group. The maximum numbers of respondents (25.56%) were found to possess high school level education, 24.44 per cent respondents were higher secondary passed, while 16.67 per cent respondents educated up to college level. It is interesting to note that only 13.33 per cent respondents were illiterates, whereas 8.89 and 11.11 per cent respondents possessed primary and middle school education respectively. Family type of respondents contributes the work force which helps in family occupation and affects the efficiency and nature of work. The data show that a great majority (91.11%) of the respondents lived with joint family, while only 8.89 per cent had nuclear family. Size of land holding is directly

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corelated with the size of land and sugarcane production. Out of the total 90 respondents, higher percentage (30.00%) of the respondents had medium size of land holding followed by 27.78 per cent, 22.22 per cent and 20.00 per cent respondents who had large, small and marginal size of land holding respectively. Technological development for sugarcane production requires more money and resources and a part from this, risk is also involved. The data showed that 42.22 per cent respondents hardly availed credit followed by 34.45 per cent who easily availed and 23.33 per cent faced difficulty to get credit. In the context of annual income, low and medium-income groups covered 34.44 per cent each, while 31.12 per cent respondents had high annual income. The most of the respondents (41.11%) had medium economic motivation, followed by 33.33 and 25.56 per cent respondents had high and low economic motivation respectively. The level of social participation or involvement in society reflected their contribution towards development of related enterprise. The data showed that higher percentage, *i.e.* 36.67, had both medium and high social participation, followed by 26.66 per cent respondents having low social participation. The technological development observed in urban and rural areas seems to be much different, and urban areas visualize more technological advancement. Hence the visits or orientations outside of the social system play an important role in development. Higher percentage of respondents, *i.e.* 41.11 per cent was in the high category of cosmopolitanism followed by 36.67 and 22.22 per cent respondents had medium and low cosmopolitanism respectively.

#### Adoption of improved technology

The data in Table 1 indicate the distribution of sugarcane growers according to their adoption of improved technology. Most of the sugarcane growers (45.56%) had medium adoption of sugarcane production technology followed by 33.33 per cent with low and 21.11 per cent with high adoption of improved technology (Table 1). Thus, it appears that large majority of the sugarcane growers had medium to high adoption of improved technology.

**Table 1: Distribution of respondents based on mean adoption of improved technology**

Categories	Frequency	Percentage
Low (Mean $\pm$ SD)	30	33.33
Medium (Mean $\pm$ SD)	41	45.56
High (Mean $\pm$ SD)	19	21.11
Total	90	100.00
Mean - 39.74	SD :	- 5.96

#### Extent of adoption of sugarcane production technology

The data furnished in Table 2 showed the extent of adoption by respondents of recommended package of production practices. Regarding field preparation, higher percentage of the respondents (45.56) had medium extent of adoption, while 41.11 per cent had high and 13.33 per cent had low extent of adoption. It is evident from the Table 2 that half of the population had medium extent of adoption about improved varieties followed by 33.33 per cent had low and 16.67 per cent had high extent of adoption. The most of the respondents (47.78%) had medium adoption, while 34.44 per cent had low and only 17.78 per cent had possessed high adoption of seed treatment. About seed inoculation, the majority (51.11%) of respondents had medium adoption followed by 28.89 per cent had low and 20.00 per cent with high adoption. Regarding planting techniques, most of the sugarcane growers (44.44%) had medium extent of adoption followed by 36.67 and 18.89 per cent had low and high extent of adoption respectively. Most of the respondents (42.22 %) had medium extent of adoption of fertilizer application while 31.11 per cent had low and 26.67 per cent had high extent of adoption. Regarding irrigation, majority of the respondents (46.67 %) had medium extent of adoption, followed by 33.33 per cent with low and 20.00 per cent had high extent of adoption. The most of respondents (43.33%) showed medium extent of adoption of weed-control measures, while 30.00 per cent had low and 26.67 per cent had high extent of adoption. Most of the respondents (40.00%) had medium extent of adoption, while 34.44 per cent had low and 25.56 per cent had high extent of adoption of insect-control measures. Regarding disease control, higher percentage of the respondents 43.33 had medium extent of adoption, while 36.67 per cent had low and 20.00 per cent had high extent of adoption.

**Table 2. Distribution of respondents based on extent adoption of improved technology practices**

Practices	Extent of adoption					
	Low		Medium		High	
	F	%	F	%	F	%
Field preparation	12	13.33	41	45.56	37	41.11
Improved varieties	30	33.33	45	50.00	15	16.67
Seed treatment	31	34.44	43	47.78	16	17.78
Seed inoculation	26	28.89	46	51.11	18	20.00
Planting techniques	33	36.67	40	44.44	17	18.89
Fertilizer application	28	31.11	38	42.22	24	26.67
Irrigation	30	33.33	42	46.67	18	20.00
Weed control	27	30.00	39	43.33	24	26.67
Insect control	31	34.44	36	40.00	23	25.56
Disease control	33	36.67	39	43.33	18	20.00

### Mean extent of adoption among the respondents according to selected practices

Table 3 showed the mean extent of adoption among the farmers, in respect of the selected practices of sugarcane cultivation. The overall mean extent of adoption for the total respondents was quite low with 47.32 per cent. For some practices like improved varieties followed by field preparation, the adoption was as high as 57.44 per cent and 55.33 per cent respectively.

The adoption in respect of insect control, disease control, seed inoculation, weed control, seed treatment and planting techniques were comparatively low to other practices with 40.22 per cent, 42.33 per cent, 43.22 per cent, 43.44 per cent, 46.67 and 47.11 per cent respectively. The extent of adoption in the case of fertilizer application and irrigation were 52.67 per cent and 50.00 per cent, respectively.

**Table 3: Mean extent of adoption among the respondents according to selected practices**

Practices	Mean adoption score	Per cent mean adoption	Rank
Field preparation	1.66	55.33	II
Improved varieties	5.17	57.44	I
Seed treatment	4.20	46.67	VI
Seed inoculation	3.89	43.22	VIII
Planting techniques	4.24	47.11	V
Fertilizer application	4.74	52.67	III
Irrigation	4.50	50.00	IV
Weed control	3.91	43.44	VII
Insect control	3.62	40.22	X
Disease control	3.81	42.33	IX
Overall extent of adoption	39.75	47.32	
Overall mean extent of adoption	3.97		

### CONCLUSION

The study concluded that majority of the sugarcane growers of the area were in middle-age group, literates having high school-level education and joint family system. As far size of holding is concerned medium land holding, hardly benefitted with credit facility and belonged to low to medium income category. Respondents also had medium to high level of economic motivation, social participation and cosmopolitaness. Extent of adoption of sugarcane production technology was studied with ten recommended practices parameter.

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preparation, the adoption was as high as 57.44 per cent and 55.33 per cent respectively. The adoption in respect of insect control, disease control, seed inoculation, weed control, seed treatment and planting techniques was comparatively low to other practices with 40.22 per cent, 42.33 per cent, 43.22 per cent, 43.44 per cent, 46.67 per cent and 47.11 per cent respectively. The extent of adoption in the case of fertilizer application and irrigation was, 52.67 per cent and 50.00 per cent respectively. In all the 10 recommended practices, higher percentage of sugarcane growers showed medium extent of adoption of every particular practice.

Thus the most of the respondents had medium level of adoption of recommended practices. In general, farmers who had adopted technical recommendation for sugarcane production level got better yield. There is need to popularize the improved sugarcane production technology among farmers which will ensure reduction in cultivation cost and increase productivity.

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