Adoption of improved Sugarcane Cultivation Practices by the Farmers in Karnal district of Haryana

Abstract

The present study was conducted in Karnal district of Haryana state. The study was taken up in Indri block of Karnal district. 12 respondents were selected from 10 villages of the block which constitutes total number of 120 respondents. The findings of the research revealed the adoption level of recommended sugarcane cultivation practices. Most of sugarcane growers i.e., 55.83 % of the total respondents had the medium extent of adoption, whereas 25.00 per cent respondents were observed in the high adoption level group and remaining 19.17 per cent respondents formed low adoption level group. Socio economic characteristics like Annual income, Land holding, social participation and Extension contact were positively and significantly related with extent of adoption of farmers regarding recommended sugarcane cultivation practices. Whereas, positively and non-significant relationship between age, education, family type and family size and their level of adoption of recommended sugarcane cultivation practices.

Keywords: *Adoption, cultivation, improved practices, Sugarcane growers.*

I. INTRODUCTION

Sugarcane (*Saccharum officinarum* L.) is an important commercial crop of India. Sugarcane and sugar beet are used for large scale production of sugar in the world. Amongst the sugar producing plants, sugarcane is responsible for about 60.00 per cent of world's sugar production. Sugarcane is cultivated mainly in the tropics, though in India it is also grown in sub-tropical areas. Sugarcane is the main source of sugar in Asia and Europe. Sugarcane is grown primarily in the tropical and sub-tropical zones of the southern hemisphere. Sugarcane is the raw material for the production of white sugar, jaggery (gur) and khandsari. It is also used for chewing and extraction of juice for beverage purpose. **(IISR Lucknow 2019).**

Sugarcane (*Saccharum officinarum* L.) also known as Noble cane is a tall perpetual plant growing upright even up to five or six meters and produce multiple stems. The cultivated sugar cane belongs two main groups: (a) thin, hardly north Indian types *S. barberi and* the Chinese *S.*

sinenses and (b) bulky juicy noble cane *S. officinarum* very high-quality cane is *S. officinarun.* The origin of *S. officinarum* is the Indo-Myanmar China border with New Guinea as the main centre of collection. The *S. officinarums* is called the *"*noble canes, due to solid, juicy, low-fibred canes of high sucrose substance. The origin of *S. robustum* is New Guinea. The origin of *S. spontaneum* is subtropical India. The environment of these two wild canes (Thick cane) might have originated in New Guinea. beginning India it spreads almost certainly to China, Arabia, Egypt.

Sustainable Sugarcane Initiative as a technology which provides high productivity with saving of irrigation water, reduce the seed cane cost, increases the farm income through intercrops and facilitating mechanical cane harvesting due to wider spacing. The Sustainable Sugarcane Initiative (SSI) aims to supply practical options to farmers for improving the productivity of land, water, and labour decrease crop period, providing factories a longer serious season and increased service opportunity for workers reduce the overall pressure on water resources and ecosystems. **(ICRISAT,2009).**

In Haryana, the annual yield of sugarcane amounted to about 86,169 kilograms per hectare in fiscal year 2021. The yield of sugarcane produced across India was approximately 83 thousand kilograms per hectare that year. Sugarcane is an important cash or profit crop in the country. Production technology for increasing the level of adoption, farmers need to be convinced about recent knowledge regarding production technologies. In this regard, it is imperative to examine their status of knowledge and the factors which hinder the process of their adoption.

II. RESEARCH METHODOLOGY

For the study, the research design adopted was descriptive in nature since the phenomenon was already occurred. Karnal district of Haryana was selected by purposive sampling for the present study, because most of the farmer are growing Sugarcane crop. There are 8 blocks in Karnal districts out of which Indri block were selected through purposive sampling methods on the basis of maximum area under Sugarcane cultivation. A complete list of all the major Sugarcane growing villages was prepared in consultation with the personnel of revenue and agriculture department from the identified tehsils. From selected Indri block ten villages namely Kalsaura, Japti chhapra, Syed Chhapra, Nabiabad, Fatehgarh, Rampura, Hanauri, Dhano kheri, Khanpur

and Manoharpur were selected by because the area having highest number of Sugarcane growers in these villages with the help of village Patwari and agricultural supervisor of respective village. From that list 120 respondents were selected randomly for the present study. The primary data was collected with help of structured interview schedule and secondary data were collected from library, journal and other material. The entire data was further tabulated and analyzed through appropriate statistical tools.

III. RESULTS AND DISCUSSION

- **Socio-economic profile of the respondents**

Table 1: Socio economic characteristics of the respondents

Characteristics	**Frequency(n=120)**	**Percentage**
Age group		
Young (up to 35 years)	31.0	25.83
Middle (From 36 to 55 years)	80.0	66.66
Old (Above 55 years)	9.0	07.51
Education group		
Illiterate	19	15.83
Primary education	26	21.67
Higher secondary	32	26.67
Intermediate	34	28.33
Graduate & above	9	7.5
Land holding group		
Less than 1 hectares (Marginal)	30	25.00
1 to 2 hectares (Small)	40	33.33
4 to 10 hectares (Medium)	43	35.83
More than 10 hectares (Large)	7	5.83

Annual income group		
Below 48,000	40	33.33
48,000 to 96,000	52	43.33
Above 96,000	28	23.33
Family size group		
Small size (up to 5 members)	46	38.33
Large size (Above 5 members)	74	61.67
Family type group		
Nuclear family	85	70.83
Joint family	35	29.17
Extension contacts group		
Low (Below 3)	2	1.67
Medium (From 3 to 9.50)	108	90
High (Above 9.50)	10	8.33
Social participation group		
No Participation	58	48.33
Participation in one organization	37	30.83
Participation in two organization	20	16.66
Participation in more than two organization	05	4.10

The data presented in table 1 reveal that majority 66.66 % of farmers were found in Middle age group followed by young age group (25.83%) and old age group (07.51%) respectively. Majority of farmers (28.33%) were intermediate school followed by 26.67 per cent, 21.67 per cent, 15.83 per cent were having higher secondary, primary education, illiterate education respectively, while 7.50 per cent farmers were graduates & above respectively. Majority of the farmers 35.83% possessed medium category of land holding followed by 33.33% with small land holding and rest 25.00 % with marginal land holding, followed by 5.83% with large land holding category.

Majority of farmers 43.33 % were in 48,000 to 96,000 level of income group on the other hand 33.33% had below 48,000 level income group remaining 23.33% farmers were in above 96,000 income level group. Majority of farmers 61.67% were large size of family followed by 38.33% with small size of family. Majority of farmers 70.83% were nuclear type of family followed by 29.17% with joint family category. Majority of Sugarcane growers 90.00 per cent had medium extension contacts while 8.33 per cent and 1.67 per cent farmers were having high and low extension contacts, respectively. Majority of farmers 48.33 per cent had no participation level of social participation followed by 30.83 per cent, 16.66 per cent and 4.10 per cent with participation in one organization, participation in two organization and participation in more than two organization level of social participation respectively.

- **Adoption level of farmers about recommended sugarcane cultivation practices**

Table-2: Distribution of farmers under different adoption categories with regard to recommended sugarcane cultivation practices by the farmers.

Sr. No.	**Category**	**Frequency**	**Percentage**
1	Low	23	19.17
2	Medium	67	55.83
3	High	30	25.00
Total		**120**	**100**

Table-2 depicts that majority of the respondents 67 (55.83%) fell in the medium adoption level group, whereas 25.00 per cent respondents were observed in the high adoption level group and remaining 19.17 per cent respondents formed low adoption level group. It is hereby concluded that majority of farmers were having medium level of adoption followed by high and low adoption level, respectively.

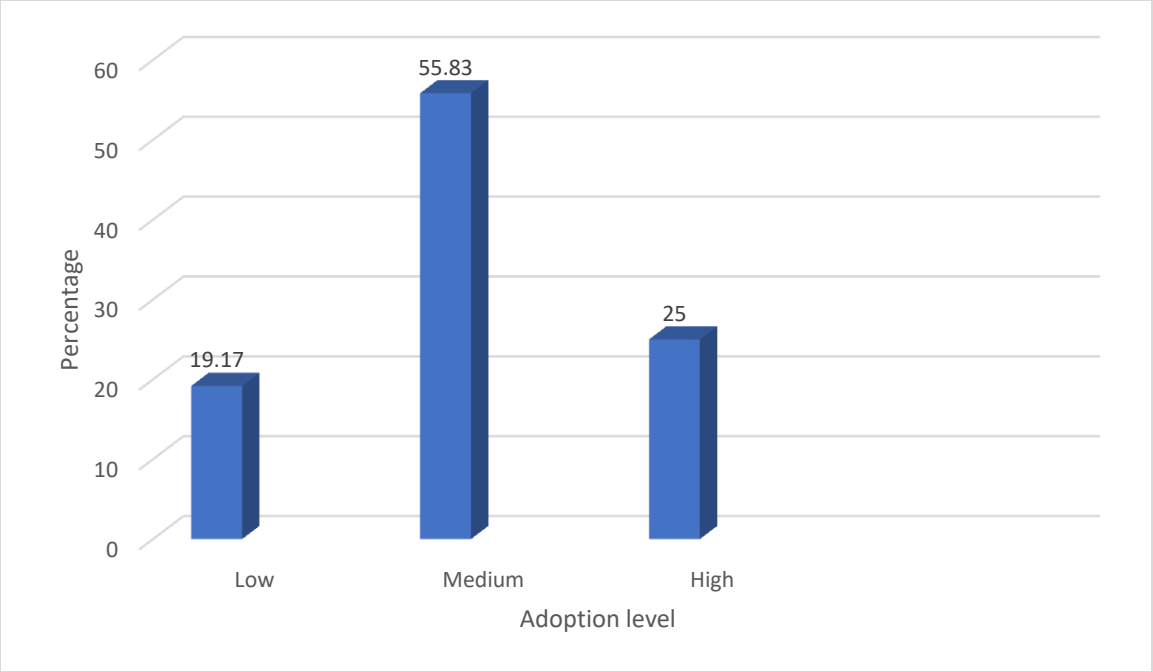

Fig: 1. Distribution of farmers according to their adoption level

Table-3 Extent of adoption of respondents about improved sugarcane cultivation practices.

Sr. No.	**Package of practices**	**Frequency**	**Percentage**	**Rank**
1	Use of High yielding varieties	94	78.33	III
2	Soil and field preparation	46	38.33	IX
3	Seed treatment	44	36.67	X
4	Time of sowing	83	69.17	VI
5	Seed rate and recommended spacing	97	80.83	I
6	Fertilizer application	85	70.83	V
7	Irrigation management	91	75.83	IV
8	Weed management	60	50.00	VIII
9	Plant protection measures	63	52.50	VII
10	Harvesting	95	79.17	II

It was found that the overall adoption of Using Seed rate and recommended spacing was ranked first with 80.83 per cent likewise, Using recommended harvesting methods with 79.17 per cent,

Following recommended use of high yielding varieties with 78.33 per cent, Using recommended irrigation management with 75.83 per cent, Using recommended fertilizer application, Using recommended time of sowing were ranked second, third, fourth, fifth and sixth respectively in adoption by the sugarcane growers. A high adoption was found in these practices because these practices do not require much specialized skills by farmers. It was found that sugarcane growers had less adoption regarding using plant protection measures with 52.50 per cent, using weed management with 50.00 per cent, Soil and field preparation with 38.33 and adoption of Using recommended seed treatment with 36.67 per cent and they were ranked seventh, eighth, nineth and tenth, respectively. It was observed that it may be due to lack of knowledge of soil treatment chemicals, high cost of micro- nutrients may cause less adoption of these recommended practices by the sugarcane growers.

Table-4. Result of Correlation coefficient

Relationship between selected independent variables of sugarcane growers and their level of adoption of recommended package of practices

Sr. No.	Independent variables	Correlation coefficient (r)
1	Age	0.093NS
2	Education	0.044 NS
3	Annual income	0.255**
4	Land holding	0.522**
5	Family size	0.032NS
6	Family type	0.016NS
7	Social participation	0.244**
8	Extension contacts	0.325**

The values of coefficient of correlation furnished in Table 4 clearly shows that level of adoption of recommended package of practices were positively and significantly related at 5% level of significance with Annual income, Land holding, social participation and Extension contact.

There was positively and non-significant relationship between age, education, family type and family size and their level of adoption of recommended package of practices.

IV. CONCLUSION

This study in the Karnal district of Haryana that majority Middle age group, intermediate education level, small category of land holding, 48,000 to 96,000 level of income group, large size of family size, nuclear type of family, medium level of extension contacts and no participation level of social participation. Adoption level of the farmers about recommended production technology of Isabgol majority of respondents 55.83 per cent had the medium level extent of adoption. Adoption of farmers about recommended production technology of Isabgol first rank is given to Seed rate and recommended spacing with 80.83 per cent, followed by Harvesting with 79.17 per cent, use of high yielding varieties with 78.33 per cent. Whereas less adoption regarding Soil and field preparation with 38.33 and adoption of Using recommended seed treatment with 36.67 per cent respectively.

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