

## *Original Research Article*

### **Relationship between Socio-economic characteristics of Sugarcane growers with their Knowledge and Adoption level of IPM practices**

#### **ABSTRACT**

This study was conducted in Western Uttar Pradesh in which two districts Saharanpur and Muzaffarnagar were selected purposely. A total number of 240 Sugarcane growers were selected through random sampling from sixteen villages. The structured schedule was developed keeping in view the objectives and variables to be studied. Correlation coefficient (r) between different variables and knowledge. Out of 17 variables studied, the variables i.e. education, occupation, annual income, material possession, economic motivation, and risk motivation extent of contact were found highly significant and positively correlated with knowledge extent. The variable like age, caste, type of family, housing pattern, social participation and communication media possession, the extent of contact, scientific orientation, and experience in Sugarcane cultivation was found positively correlated with knowledge extent.

Correlation coefficient (r) between different variables and adoption. Out of 17 variables studied, the variables i.e. occupation, annual income, and material possession were found highly significant and positively correlated with adoption extent. The variables like education and economic motivation were found significant and positively correlated with adoption extent. The variables like caste, housing pattern, social participation, communication media possession, the extent of contact, scientific motivation, risk motivation, and experience in sugarcane cultivation positively correlated with adoption extent.

**KEYWORDS:-** *Adoption, knowledge, correlation, dependent & independent variables etc*

## **INTRODUCTION**

Since the beginning of time, India's economy has been impacted by sugarcane, a significant cash crop. It serves as the primary raw material for the manufacturing of sugar, which annually brings in a sizeable sum of foreign currency for the national exchequer. After the textile industry, the sugar sector is the second-largest agro-based sector (Singh et al., 2009). The onslaught of numerous insect pests, diseases and weeds from the time of planting till crop harvest is the main cause of the low yield of sugarcane in Haryana. Sugarcane plantations have reportedly been harmed by up to 200 different types of insect pests at various stages. In spite of the widespread usage of pesticides, these result in significant crop losses. The uncontrolled use of pesticides has had major negative effects, including the outbreak of secondary pests, the development of pest resistance, toxic residues, and pest resurgence (Mathur and Upadhyay, 1999). The remedy stays in integrated pest management techniques, which will offer a reasonable and acceptable foundation for pest control in sugarcane.

The majority of farmers were unknowing of the biological insect pest control. Education, landholding, socioeconomic status, extension contact, media exposure, risk orientation, economic motivation, and change proneness were among the ten personal characteristics investigated that were found to have a positive and significant correlation with the level of knowledge of overall IPM practises among sugarcane growers. By utilising the proper extension methods such as, it is necessary to educate the farmers about the significance and various IPM practises in sugarcane crops (Nagaraja, 2011).

## **RESEARCH METHODOLOGY**

Out of the 26 districts in Western Uttar Pradesh, Saharanpur and Muzaffarnagar were chosen purposefully based on their agricultural production and productivity. From each

district, two community development blocks were randomly chosen, and from each community development block, four villages were randomly chosen, and from each village, 15 respondents were randomly chosen. Each chosen village's whole sugarcane cultivator population was identified. Through the use of a random sample technique, 240 sugarcane growers were chosen from the list. A pre-trying interview plan was used to help get the data. Correlation coefficient analysis has been completed following the acquisition of data for the study of the relation between independent and dependent variables.

UNDER PEER REVIEW

### 3.2: Sampling designs and selection of the respondents:

**State -**

**Zone**

**District –**

(Two districts were selected from Western Plain Zone)

**Block –**

(Randomly selected 2 blocks from Each district)

**Village –**

(Randomly selected 4 villages From each block)

**Respondent -**

(Randomly Selected 16 respondent from each village)

**Total Respondents- 240**

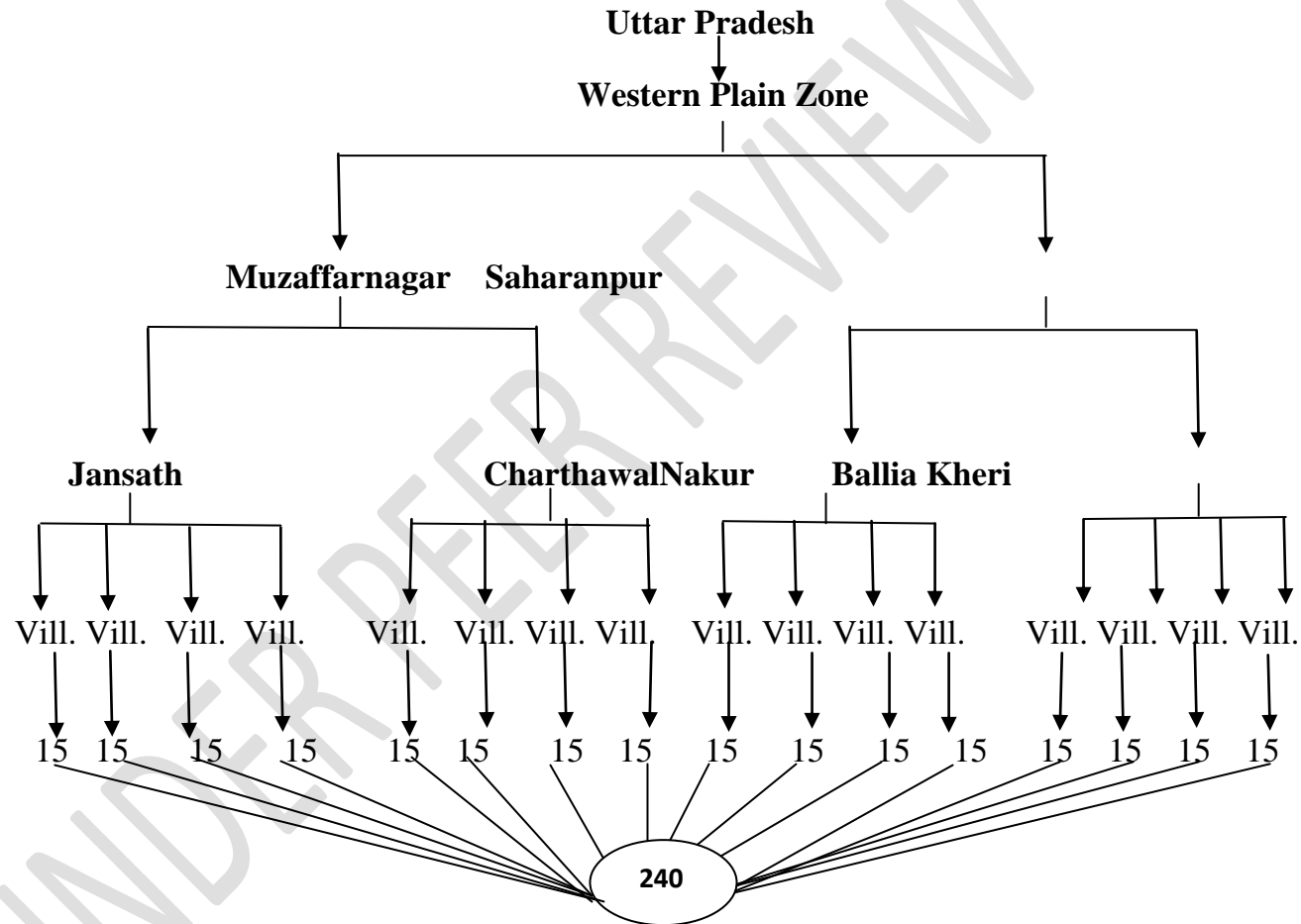


Figure 1. Sampling procedures for selection of respondent for present study

### Standard deviation.

Standard deviation is the square root of mean of the squares of all deviations, the directions being measured from the arithmetic mean of the distribution. It is commonly developed by symbol sigma ( $\sigma$ ).

$$\text{S.D. } (\sigma) = \sqrt{\frac{\sum d^2}{n}}$$

Where,

- $\sigma$  = Standard deviation
- $d$  = Deviation of variables mean
- $n$  = Total number of items

### Correlation coefficient (r).

The following formula can be used to calculate the product movement correlation coefficient (r), which is a measure of the reciprocal relationship between two variables (x and y), where relationship is quantified.

$$r = \frac{\sum (X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum (X - \bar{X})^2 \cdot \sum (Y - \bar{Y})^2}}$$

Where,

r = correlation coefficient

X = value of x independent variables

$\bar{X}$  = mean of X independent variables

Y = value of Y dependent variables

$\bar{Y}$  = mean of Y dependent variables

## RESULTS AND DISCUSSION

**Table:- 1.Measurement of various independent variables of sugarcane growers regarding Integrated Pest Management practices.**

Sr No.	Variables	Mean Score	Standard Deviation	Minimum	Maximum	Rank
1.	Age	43.71	10.61	27	70	IV
2.	Education	2.43	1.24	0	5	XIII
3.	Caste	2.00	0.41	1	3	XV
4.	Type of family	1.48	0.50	1	2	XVI
5.	Size of family	5.00	2.75	2	18	X
6.	Housing pattern	3.00	0.06	2	3	XII
7.	Land holding	3.71	1.91	1	15	XI
8.	Occupation	2.26	0.44	2	3	XIV
9.	Annual income	283612.5	139501.4	91000	765000	I
10.	Social participation	1.46	1.06	0	3	XVII
11.	Material possession	81.79	15.74	42	124	II
12.	Communication media possession	11.84	4.57	4	29	VIII
13.	Extent of contact	70.87	11.96	44	99	III
14.	Economic motivation	16.64	2.04	12	21	VII
15.	Scientific motivation	18.37	2.25	13	23	VI
16.	Risk motivation	18.81	2.15	14	24	V
17.	Experience in Sugarcane cultivation	9.15	3.10	4	15	IX

Table-1 shows that the independent variables and their measurement (Mean score, standard deviation) of sugarcane growers regarding IPM practices. Out of 17 socio-economics variables, the annual income (Mean score, 283612.5), material possession (M.S, 15.74), and extent of contact (M.S, 70.87) were ranked as first, second and third respectively followed by age (M.S, 43.71), risk motivation (M.S, 18.81), scientific motivation (M.S, 18.37), economic

motivation (M.S, 16.64), communication media possession (M.S, 11.84), experience in Sugarcane cultivation (M.S, 9.15), size of family (M.S, 5.0), landholding (M.S, 3.71), housing pattern (M.S, 3.0), education (M.S, 2.43), occupation (M.S, 2.26), caste (M.S, 2.0), type of family (M.S, 1.48) and social participation (M.S, 1.46) were ranked as fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, sixteenth and seventeenth, respectively.

**Table- 2: Correlation coefficient (r) between Socio-economic characteristics of sugarcane growers with their knowledge regarding Integrated Pest Management:**

S. No.	Independent variables	Correlation coefficient
1.	Age	0.0485
2.	Education	0.2748**
3.	Caste	0.0706
4.	Type of family	0.0243
5.	Size of family	-0.0476
6.	Housing pattern	0.0404
7.	Land holding	-0.0582
8.	Occupation	0.3943**
9.	Annual income	0.2146**
10.	Social participation	0.0305
11.	Material possession	0.2292**
12.	Communication media possession	0.0139
13.	Extent of contact	0.0424
14.	Economic motivation	0.3243**
15.	Scientific motivation	0.1123
16.	Risk motivation	0.2287**
17.	Experience in Sugarcane cultivation	0.0493

\*Significant at 0.05% probability level 0.129

\*\* Significant at 0.01% probability level 0.168

Table-2 indicates that out of 17 variables studied, the variables i.e. education, occupation, annual income, material possession, economic motivation, and risk motivation extent of

contact were found highly significant and positively correlated with knowledge extent. The variables like age, caste, type of family, housing pattern, social participation and communication media possession, the extent of contact, scientific orientation, and experience in Sugarcane cultivation were found positively correlated with knowledge extent of sugarcane growers regarding Integrated Pest Management practices. The variable like the size of family and landholding was found negatively correlated with knowledge extent.

Those variables which showed the positive and significant relationship had direct influence over knowledge extent about IPM practices in sugarcane crop. It meant that if the values of these variable increases, the knowledge extent of sugarcane growers regarding IPM practices will also increase.

**Table- 3: Correlation coefficient (r) between Socio-economic characteristics of sugarcane growers with their Adoption regarding Integrated Pest Management practices:**

S. No.	Independent variables	Correlation coefficient
1.	Age	-0.0584
2.	Education	0.1301*
3.	Caste	0.0194
4.	Type of family	-0.0790
5.	Size of family	-0.0697
6.	Housing pattern	0.0775
7.	Land holding	-0.0198
8.	Occupation	0.4119**
9.	Annual income	0.2439**
10.	Social participation	0.00021
11.	Material possession	0.3545**
12.	Communication media possession	0.0893
13.	Extent of contact	0.0518
14.	Economic motivation	0.166112*
15.	Scientific motivation	0.052751
16.	Risk motivation	0.111684
17.	Experience in Sugarcane cultivation	0.004958

\*Significant at 0.05% probability level 0.129

\*\* Significant at 0.01% probability level 0.168

Table- 3 focuses that out of 17 variables studied, the variables i.e. occupation, annual income, and material possession were found highly significant and positively correlated with adoption extent. The variables like education and economic motivation were found significant and positively correlated with adoption extent. The variables like caste, housing pattern, social participation, communication media possession, the extent of contact, scientific motivation, risk motivation, and experience in sugarcane cultivation positively correlated with the adoption extent of sugarcane growers regarding Integrated Pest Management practices. The variable like age, type of family, size of family, and landholding was found negatively correlated with adoption extent.

Those variables which showed the positive and significant relationship had direct influence over adoption extent about IPM practices in sugarcane crop. It meant that if the values of these variables increase, the adoption extent of sugarcane growers regarding IPM practices will also increase.

## **CONCLUSION**

It is concluded from the findings that out of 17 variables studied, the variables i.e. education, occupation, annual income, material possession, economic motivation, and risk motivation, the extent of contact were found highly significant and positively correlated with knowledge extent. The rest of the variables were positively or negatively correlated with knowledge as per the present study we need to increase correlation with knowledge. Those variables which showed the positive and significant relationship had direct influence over knowledge extent about IPM practices in sugarcane crop. It meant that if the values of these variables increase, the knowledge extent of IPM practices will also increase. Results also show that out of 17 variables studied, the variables i.e. occupation, annual income, and material possession were found highly significant and positively correlated with adoption extent. Those variables which showed the positive and significant relationship had direct influence over adoption

extent about IPM practices in sugarcane crop. It meant that if the values of these variables increase, the adoption extent of IPM practices will also increase.

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