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## Correlates of training needs to the sugarcane growers in Yavatmal district

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### Abstract

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. The present investigation was carried out in Umardhed and Pusad tahsils of Yavatmal districts (MH). The results of study revealed that the majority of the respondents had possessed medium Irrigation availability followed by economic motivation, innovativeness, knowledge, risk orientation while, 30.00 per cent of them were in with high category of training needs.

The result of correlation analysis revealed that the Variables like age, education, land holding, farming experience, social participation, risk orientation, irrigation availability and extension contact found to be positive and significant relationship with training needs. The variables like annual income, innovativeness and economic motivation of the respondents were non-significantly related with training needs of sugarcane growers.

**Keywords:** sugarcane growers, training needs, correlation analysis

### 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. The main product of Sugarcane is sugar, however, there are many byproducts of sugarcane industry are bagasse, molasses, pressmud and green top, which are used by various industries like Bagasse based industries mainly produce pulp, paper, particle boards using bagasse as a fuel, cattle feed, medium for cultivation of edible mushroom, production of furfural etc., Molasses based industries mainly produce potable alcohol for Distillery, Acetic Acid, Fuel Alcohol, Cattle feed and many Pharmaceutical products etc. Press mud based industries mainly produce fertilizer and the wax and compost industries, as animal feed.

The investigation is focused on training needs of sugarcane growers; this is helpful to account training needs of sugarcane growers in sugarcane production technology.

The finding of the present study would be immense helpful to extension personnel engaged in the task of promoting sugarcane production of sugarcane growers through formulation of appropriate training programmes in the light of perceived training needs of sugarcane growers. Research was carried out for findings of the training needs of sugarcane growers about recommended sugarcane production technology.

### Materials and Methods

The study was conducted in Umardhed and Pusad tahsil of Yavatmal district in the year 2014-15. The number of villages in these two tahsil collectively was 12. Equally 6 villages from each tahsil were selected and from each village 10 sugarcane grower was randomly selected for the present study.

### Collection of data

The data were collected in a face to face situation by contacting personally to the selected sugarcane growers.

### Variables and their measurement

For the present study two sets of variables, namely, independent and dependent variables were selected. The independent variables included were personal, socio-economic, communicational and psychological characteristics, knowledge, and irrigation availability. The dependent variable was training needs of sugarcane growers.

**Tabulation and analysis of data**

The collected data were carefully examined for completeness and correctness before tabulation. Both qualitative and quantitative classes were formed.

Following statistical techniques were used in the present study for analysis of data.

1. Arithmetic mean (X)
2. Standard deviation (SD)
3. Coefficient of correlation

**Arithmetic mean ( $\bar{X}$ )**

Arithmetic mean was calculated by summing of all individual score and dividing it by total number of cases.

The formula is,

$$\bar{X} = \frac{\sum X}{n}$$

Where,

$$\bar{X} = \text{Arithmetic mean}$$

$$\sum X = \text{Sum of respondents.}$$

$$N = \text{Number of respondents.}$$

**Standard deviation**

It is the most stable index of variability which was employed in research studies. It is the measure of variability calculated around mean.

Standard deviation usually denoted by Greek word ( $\sigma$ ) that is sigma and the formula can be denoted as follows:

$$\sigma = \frac{\sqrt{\sum (X_i - \bar{X})^2}}{n}$$

Where,

$$\sigma = \text{Standard deviation}$$

$$X_i = \text{Score of each respondent}$$

$$\bar{X} = \text{Mean}$$

$$n = \text{Number of respondents.}$$

**Coefficient of correlation**

This technique was used to find out the relationship between two variables and the following formula was used for computation of 'r' value.

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

Where,

$$r = \text{Coefficient of correlation}$$

$$X = \text{Score of independent variables}$$

$$Y = \text{Score of dependent variables}$$

$$\bar{X} = \text{Mean of independent variable}$$

$$\bar{Y} = \text{Mean of dependent variable}$$

If 'r' calculated is more than the table value at 0.01 and 0.05 level of probability of (n-2) degree of freedom, the relationship was considered to be significant and if less than table, then the relationship was considered non-significant.

**Results and Discussion**

The data collected from the sample sugar growing farmers were analyzed as per the methodology outlined and the result of the analysis are under following heads.

1. Training needs
2. Relational analysis

**1. Training needs**

An attempt was made in the present study to assess the training needs of sugarcane growers about recommended sugarcane production technology.

**Table 1:** Distribution of sugarcane growers according to their training needs about recommended sugarcane production technology.

Sr. No.	Training needs	Respondents (n=120)		
		Most important	Important	Less important
1.	<b>Selection of land</b>	11 (09.16)	22 (18.34)	87 (72.50)
2.	<b>Preparatory operations</b>			
	i. Ploughing	15 (12.50)	23 (19.16)	82 (68.34)
	ii. Harrowing	05 (04.16)	25 (20.84)	90 (75.00)
	iii. Manure application	14 (11.66)	25 (20.84)	81 (67.50)
	iv Furrow layout	25 (20.84)	45 (37.50)	50 (41.66)
	Average	15 (12.50)	30 (25.00)	75 (62.50)
3.	<b>Planting time</b>			
	i. Adsali	18 (15.00)	22 (18.34)	80 (66.66)
	ii. Pre-seasonal	15 (12.50)	15 (12.50)	90 (75.00)
	iii. Seasonal/Suru	25 (20.83)	28 (23.34)	67 (55.83)
	Average	19 (15.83)	22 (18.33)	79 (65.84)
4.	<b>Planting material</b>			
	i. Disease resistant ability	36 (30.00)	74 (61.66)	10 (08.34)
	ii. High germination percentage	11 (09.17)	49 (40.83)	60 (50.00)
	iii. High yield	28 (23.34)	41 (34.16)	51 (42.50)
	Average	25 (20.83)	55 (45.83)	40 (33.34)
5.	<b>Selection of variety</b>			
	i. Disease resistant	37 (30.84)	66 (55.00)	17 (14.16)
	ii. High yield	25 (20.84)	50 (41.66)	45 (37.50)
	iii Water stress resistant	83 (69.16)	34 (28.34)	03 (02.50)
	Average	48 (40.00)	50 (41.66)	22 (10.34)
6.	<b>Planting method</b>			
	i. Strip method	47 (39.16)	22 (18.34)	51 (42.50)
	ii. Flat bed method	28 (23.34)	38 (31.66)	54 (45.00)

	iii. Ridges & Furrows	23 (19.16)	33 (27.50)	64 (53.34)
	iv. Broad Furrows	14 (11.67)	33 (27.50)	73 (60.83)
	Average	28 (23.34)	32 (26.66)	60 (50.00)
	<b>Inter cropping</b>			
7.	i. Selection of inter crop	33 (27.50)	35 (29.16)	52 (43.34)
	ii. Variety	12 (10.00)	34 (28.34)	74 (61.66)
	iii. Sowing method	25 (20.83)	37 (30.84)	58 (48.33)
	Average	23 (19.16)	35 (29.17)	62 (51.67)
	<b>Irrigation method</b>			
8.	i. Drip irrigation	64 (53.33)	46 (38.33)	10 (08.34)
	ii. Long furrow irrigation	13 (10.84)	49 (40.83)	58 (48.33)
	iii. Furrow irrigation	28 (23.33)	40 (33.33)	52 (43.34)
	iv. Sub-surface irrigation	55 (45.83)	48 (40.00)	17 (14.17)
	Average	40 (33.33)	46 (38.33)	34 (28.34)
	<b>Management of fertilizer</b>			
9.	i. Types of chemical fertilizer	53 (44.17)	62 (51.67)	05 (04.16)
	ii. Content in chemical fertilizer	46 (38.33)	52 (43.33)	22 (18.34)
	iii. Method of fertilizer application	62 (51.66)	46 (38.34)	12 (10.00)
	iv. Fertilizer dose	73 (60.83)	31 (25.83)	16 (13.34)
	Average	58 (48.34)	48 (40.00)	14 (11.66)
	<b>Bio-fertilizer</b>			
10	i. Types	76 (63.34)	29 (24.16)	15 (12.50)
	ii. Selection	61 (50.83)	49 (40.83)	10 (08.34)
	iii. Dose / ha	73 (60.84)	36 (30.00)	11 (09.16)
	Average	70 (58.34)	38 (31.66)	12 (10.00)
	<b>Micro-nutrient</b>			
11	i. Type	83 (69.17)	26 (21.66)	11 (09.17)
	ii. Use	75 (62.50)	20 (16.67)	25 (20.83)
	iii. Dose / ha	74 (61.67)	35 (29.17)	11 (09.16)
	Average	77 (64.16)	27 (22.50)	16 (13.34)
	<b>Weedicides</b>			
12	i. Types	65 (54.16)	52 (43.34)	03 (02.50)
	ii. Use	67 (55.84)	42 (35.00)	11 (09.16)
	iii. Time of application	40 (33.34)	60 (50.00)	20 (16.66)
	Average	57 (47.50)	51 (42.50)	12 (10.00)
	<b>Disease &amp; Pest control</b>			
13	ii. Prominant diseases	50 (41.66)	66 (55.00)	04 (03.34)
	i. Prominant pests	47 (39.17)	70 (58.33)	03 (02.50)
	iii. Use of fungicides	65 (54.17)	53 (44.17)	02 (01.66)
	iv. Use of pesticides	56 (46.66)	61 (50.84)	03 (02.50)
	Average	54 (45.00)	62 (51.66)	04 (03.34)
	<b>Integrated pest management</b>			
14	i. Epiricania melonoleuce	24 (20.00)	66 (55.00)	30 (25.00)
	ii. Trichogama egg parasite	41 (34.17)	65 (54.17)	14 (11.66)
	Others IPM	65 (54.16)	52 (43.34)	03 (02.50)
	Average	43 (35.83)	61 (50.83)	16 (13.34)
	<b>Sugarcane harvesting</b>			
15	i. Maturity signs	34 (28.34)	53 (44.16)	33 (27.50)
	ii. Maturity index	26 (21.66)	39 (32.50)	55 (45.84)
	iii. Time of seizing irrigation	21 (17.50)	46 (38.34)	53 (44.16)
	Average	27 (22.50)	46 (38.34)	47 (39.16)

From above the Table 1 observed that training needs about sugarcane practices are as following.

#### **Selection of land**

In section of land majority of respondents (72.50%) were less important.

#### **Preparatory operations**

In preparatory operation most of respondents were most important training needs about, followed by furrow layout (20.84%), ploughing (12.50%), manure application (11.66%) and harrowing (04.16%), respectively.

#### **Planting time**

In planting time most of respondents were most important

training needs about Seasonal/Suru (20.83%), followed by Adsali (15.00%) and Pre-seasonal (12.50%), respectively.

#### **Planting material**

In planting material most of respondents were most important training needs about disease resistant ability (30.00%), followed by high yield (23.34%) and high germination percentage (09.17%), respectively.

#### **Selection of variety**

In selection of variety most of respondents were most important training needs about water stress resistant (69.16%), followed by disease resistant (30.84%) and high yield (20.84%), respectively.

### Planting methods

In planting methods most of respondents were most important training needs about strip method (39.16%), followed by flat bed method (23.34%), ridges and furrows (19.16%) and broad furrows (11.67%), respectively.

### Intercropping

In intercropping most of respondents were most important training needs about selection of intercrop (27.50%), followed by sowing method (20.83%) and variety (10.00%), respectively.

### Irrigation method

In irrigation method most of respondents were most important training needs about drip irrigation (53.33%), followed by sub-surface irrigation (45.83%), furrow irrigation (23.33%) and long furrow irrigation (10.84%), respectively.

### Management of fertilizer

In management of fertilizer most of respondents were most important training needs about fertilizer dose (60.63%), followed by method of fertilizer application (51.66%), types of chemical fertilizer (44.17%) and content in chemical fertilizer (38.33%), respectively.

### Bio fertilizer

In bio-fertilizer most of respondents were most important training needs about type of bio-fertilizer (63.34%), followed by bio-fertilizer dose/ha (60.84%) and selection of bio-fertilizer (50.83%), respectively.

### Micro-nutrient

In micro-nutrient most of respondents were most important training needs about type of micro-nutrient (69.16%), followed by use of micro-nutrient (62.50%) and micro-nutrient dose/ha (61.67%), respectively.

### Weedicides

In weedicides most of respondents were most important training needs about use of weedicides (55.84%), followed by types of weedicides (54.16%) and time of application (33.34%), respectively.

### Disease and pest control

In disease and pest control most of respondents were most important training needs about use of fungicides (54.16%), followed by use of pesticides (46.66%), prominent diseases (41.66%) and prominent pests (39.17%), respectively.

### Integrated pest management

In integrated pest management most of respondents were most important training needs about others IPM (54.16%), followed by Trichogama egg parasites (34.66%) and Epiricania melonoleuce (20.00%), respectively.

### Sugarcane harvesting

In sugarcane harvesting most of respondents were most important training needs about maturity signs (28.34%), followed by maturity index (21.66%) and time of seizing irrigation (17.50%), respectively.

### Overall Practices wise training need of sugarcane growers

Nutshell above the Table 17 observed that the practice wise most important training needs of sugarcane growers about

micro-nutrient (64.16%), followed by bio fertilizer (58.34%), management of fertilizer (48.34%), weedicides (47.50%), disease and pest control (45.00%), selection of variety (40.00%), integrated pest management (35.83%), irrigation method (33.33%), planting method (23.34%), sugarcane harvesting (22.50%), planting material (20.83%), Intercropping (19.16%), planting time (15.83%), preparatory operations (12.50%) and selection of land (09.16%), respectively.

**Table 2:** Distribution of sugarcane growers according to their overall training needs to sugarcane growers

Sr. No.	Categories	Respondents (n=120)	
		Frequency	Percentage
1	Low	27	22.50
2	Medium	57	47.50
3	High	36	30.00
	Total	120	100.00

Above the Table 2 observed that 47.50 per cent of the respondents were belonged to medium category of training needs, followed by 30.00 per cent of them were in with high category of training needs and whereas, 22.50 per cent which belonged low category of training needs of sugarcane growers.

### Relational analysis

In order to find out the relationship between selected personal, socio-cultural, situational and psychological characteristics of respondents and training needs of sugarcane growers was workout. The result obtained from relational analysis has been presented in Table 3

**Table 3:** Correlation coefficients of characteristics of the respondents with their training needs

Sr. No.	Independent Variables	Training needs ('r' value)
1.	Age	0.2061*
2.	Education	0.2162*
3.	Land holding	0.2103*
4.	Farming experience	0.2060*
5.	Annual income	0.0633 <sup>NS</sup>
6.	Extension contact	-0.2724**
7.	Social participation	0.2452*
8.	Innovativeness	-0.0629 <sup>NS</sup>
9.	Economic motivation	0.1835 <sup>NS</sup>
10.	Risk orientation	0.3320**
11.	Knowledge	-0.2576**
12.	Irrigation availability	0.2102*

\*\* - Significant at 0.01 per cent level,

\* - Significant at 0.05 per cent level,

NS - Non-significant

It can be observed from Table 3 that variables like age, education, land holding, farming experience, social participation and irrigation availability found to be positive and significant relationship with training needs of sugarcane growers at 0.05 per cent probability. Variable like extension contact and risk orientation had positive and significant relationship with training needs of sugarcane growers at 0.01 per cent probability. The variable like knowledge had negatively and significant relationship with training needs of sugarcane growers at 0.01 per cent probability. However, annual income, innovativeness and economic motivation of the respondents were non-significantly related with training needs sugarcane growers.

### Conclusions

From the present study it was revealed that, there is training need for sugarcane growers, as study shows About 71.67 per cent of the respondents were belonged to medium level of innovativeness, followed by 72.50% respondents were belonged to medium level of economic motivation, 65.00% respondents were belonged to medium level of risk orientation, Majority of the respondents 69.17% respondents had possessed medium level knowledge, 80.83% respondents had possessed medium Irrigation availability, About 47.50 per cent of the respondents were belonged to medium category of training needs of sugarcane growers. Concerning to relational analysis, study showed that the variables like age, education, land holding, farming experience, social participation, risk orientation, irrigation availability and extension contact found to be positive and significant relationship with training needs.

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