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## Awareness about insecticides as per the label claim by cotton growers

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**Abstract**

Cotton is currently the leading plant fiber crop worldwide and is grown commercially in temperate tropical region of more than 50 countries with a total coverage of 34 million hectare. The present investigation was carried out in Akola and Murtijapur panchyat samiti of Akola districts in Vidarbha region of Maharashtra State. The results of study revealed that, about 48 per cent (48.00%) of the cotton growers were in middle age group, about 42.00 per cent of the cotton growers educated up to high school level. In case of land holding, 54.00 per cent cotton growers possessed small category of land holding. Most of the cotton growers having agriculture is their main occupation, 65.00 per cent having medium level of experience in cotton cultivation. Maximum cotton growers have bi-seasonal type of cropping pattern. Maximum cotton growers utilize medium (47.00%) level of sources of information. Most of the cotton growers received short duration training. Most of the cotton growers found in medium level of innovativeness (48.00%) and risk preference (69.00%). More than 54 per cent (54.00%) cotton growers found medium economic motivation. Maximum percentage of cotton growers possessed medium level of knowledge about label claim of insecticides. Majority of cotton growers had knowledge about instruction given on bottle, specification and recommendation, major pest of cotton, doses per hectare of recommended insecticides. However higher percentage of the cotton growers had no knowledge about Central insecticides act, label claim of insecticides, recommended insecticides under label claim.

**Keywords:** cotton growers, knowledge, label claim of insecticides

**Introduction**

The cotton seed coat extends into tubular fiber and is spun into yarn. Specific areas of production include countries such as USA, India, China, and Australia where the climatic condition suits the natural growth requirement of cotton including period hot and dry weather. Cotton being a major agriculture crop in India has major impact on overall Indian agriculture sector. Area under cotton cultivation constitutes almost 9% to the total agriculture crop in India.

India is the only country which produces all 4 species of cotton. *i.e.* *Gossypium arborium*, *Gossypium herbaceum*, *Gossypium hirsutum*, *Gossypium barbadense*.

In Maharashtra highest area under cotton in the vidarbha region is in Yavatmal, Buldhana, Amravati, Akola district and highest productivity in the vidarbha region of Amravati district. (543 kg. per hectare).

**Meaning of label claim:** Pesticides Company registered its products as per Insecticide Act 1968 and claimed that the registered products are for management of certain pest on particular crop only as per the written, printed or graphic label on the container approved by the government regulatory agencies. It also includes any written, printed or graphic matter accompanying the pesticides like technical leaflets or brochures. The research findings were helpful to understand the knowledge level of the cotton grower particularly in this area about use of insecticide as per label claim.

**Materials and Methods**

The aim of present study was to assess the knowledge of insecticides as per the label claim by cotton growers, therefore exploratory design of social research was used for the present investigation. The present research work was carried out in Akola and Murtijapur panchyat samiti of Akola districts in Vidarbha region of Maharashtra State. From each panchyat samiti five villages were selected. From each selected village, 10 cotton growers were selected randomly for the present study. Thus, total 100 cotton growers were selected randomly.

**Tools of data collection**

The basic instrument used for study was interview schedule. The data were collected

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by personal interview so as to get valid and complete responses.

**Collection of data**

Survey method of data collection with the help of structured interview schedule was used. The pre-testing of interview schedule was done on 10 cotton growers of non-sampled area. Personal interview technique was used for collection of data. Majority of the selected cotton growers were contacted at field.

**Tabulation and analysis of data**

The information collected through interview was transferred from the interview schedule wherever necessary the information in qualitative form was converted into quantitative form and computation of score was done. The procedure of assigning scores, categorization of independent and dependent variables are analyzed through various statistical tools.

**Knowledge**

A teacher made knowledge test was developed to measure the knowledge of an individual respondent about recommended insecticide under label claim for cotton crop applicable in the field. Response of cotton growers was taken on two point continuum that is yes or no and numerical score of 2 and 1 was assigned respectively. Obtained knowledge raw score was converted into knowledge index by using following formula.

$$\text{Knowledge index} = \frac{\text{Actual knowledge score obtained}}{\text{Maximum Obtainable Knowledge score}} \times 100$$

**Statistical methods used**

The data collected through personal interview were carefully examined for its completeness and correctness. The scoring procedure was decided and all the data from schedule were transferred to master tables. Then the qualitative and quantitative classes arbitrarily or by using mean and standard deviation were formed. The data was tabulated and frequencies and percentage in each class were then worked out.

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

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

**1) Arithmetic mean (X̄)**

It was calculated by summing all the score and dividing it by number of cotton growers.

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

Where,

- ̄X = Arithmetic mean
- ΣX = Sum of respondent score
- N = Number of cotton growers

**2) Standard deviation**

It is measure of variability calculated around mean. The usual symbol of the S.D.

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

Where,

- σ - Standard deviation
- ΣX<sup>2</sup> - Sum of square of X series
- (ΣX)<sup>2</sup> - Square of sum of X series
- N - No. of cotton growers

**3) Coefficient of correlation**

The relationship between independent and dependent were calculated with the help of following given formula.

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Where,

- r - Coefficient of correlation
- ΣX - Sum of the score of variable X
- ΣY - Sum of the score of variable Y
- ΣXY - Sum of products of 'X' and 'Y' variables
- ΣX<sup>2</sup> - Sum of the square of 'X' variable
- ΣY<sup>2</sup> - Sum of the square of 'Y' variable
- N - Total number of cotton growers

**Results and Discussion**

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

**1. Distributional analysis**

Distribution of cotton growers according to their personal, socioeconomic, situational and psychological characteristics  
Distribution of cotton growers according to their knowledge about label claim of insecticides.

**1. Distribution of cotton growers according to personal, socioeconomic situational and communication characteristics age**

**Table 1:** Distribution of the cotton growers according to their age

Sl. No.	Age	Cotton growers (n=100)	
		Frequency	Percentage
1.	Young	20	20.00
2.	Middle	48	48.00
3.	Old	32	32.00
	Total	100	100.00

It was concluded that majority of cotton growers belonged to middle age group followed by old age group categories.

**2. Education**

**Table 2:** Distribution of the cotton growers according to their education

Sl. No.	Education	Cotton growers (n=100)	
		Frequency	Percentage
1	Illiterate	0	0.00
2	Primary school	3	3.00
3	Middle school	8	8.00
4	High school	42	42.00
5	Higher secondary school	34	34.00
6	College	13	13.00
	Total	100	100.00

It could be concluded that higher percentage of the cotton growers i.e.42 per cent were educated up to higher school and Higher secondary school (34.00%).

### 3. Land holding

**Table 3:** Distribution of the cotton growers according to their land holding

Sl. No.	Land holding	Respondent (n = 100)	
		Frequency	Percentage
1	Marginal (Up to 1.00 ha)	20	20.00
2	Small (1.01-2.00 ha)	54	54.00
3	Semi-medium (2.01-4.00 ha)	18	18.00
4	Medium (4.01-10.00)	06	06.00
5	Big (Above 10.00 ha)	02	02.00
	Total	100	100.00

It could be inferred that, maximum number of the cotton growers were having small land holding ranging from 2.01 to 4.00 ha.

**Table 5:** Distribution of the cotton growers according to their farming experience in cotton cultivation

Sl. No.	Experience in cotton cultivation	Cotton growers (n=100)	
		Frequency	Percentage
1	Up to 14 years	8	08.00
2	15– 28 years	65	65.00
3	Above 28 years	27	27.00
	Total	100	100.00

It revealed that majority (65.00%) of the cotton growers had farming experience between 15 to 28 years. Similar result was reported by Bhosale (2014), Bharkhade (2015).

### 6. Cropping pattern

**Table 6:** Distribution of the cotton growers according to their cropping pattern

Sl. No.	Cropping pattern	Cotton growers n= 100	
		Frequency	Percentage
1	Seasonal	35	35.00
2	Bi-seasonal	62	62.00
3	Annual cropping	3	03.00
4	Biannual cropping	0	0.00
5	Perennial	0	0.00
	Total	100	100.00

From table 6 revealed that majority of the cotton growers (62.00%) having bi-seasonal majority cropping pattern followed by seasonal i.e (35.00%) cotton growers having seasonal cropping pattern.

### 7. Source of information

**Table 7:** Distribution of cotton growers according to level of source of information use

Sl. No.	Source of information	Cotton growers n=100	
		Number	Percentage
1	Low	8	08.00
2	Medium	47	47.00
3	High	45	45.00
	Total	100	100.00

From table no. 7, it is revealed that majority of the cotton

### 4. Occupation

**Table 4:** Distribution of the cotton growers according to their occupation

Sl. No.	Occupation	Cotton growers(n= 100)	
		Frequency	Percentage
1	Agriculture + labour	15	15.00
2	Agriculture (Farming)	64	64.00
3	Agriculture + Allied Occupation	13	13.00
4	Agriculture + Business	5	5.00
5	Agriculture + Service	03	03.00
	Total	100	100.00

From above distribution Table 4, it is concluded that majority of the cotton growers had only agriculture as a main occupation.

### 5. Experience in cotton cultivation

growers i.e. (47.00%) belongs to medium category of source of information

### 8. Training Received

**Table 8:** Distribution of cotton growers according to their duration of training received.

Sl. No.	Training received	Cotton growers n=100	
		Number	Percentage
1	Not received	88	88.00
2	Short duration	2	02.00
3	Medium duration	7	07.00
4	Long duration	3	03.00
		100	100.00

From table no 8 it was revealed that the majority of cotton growers not received any training and 7.00 per cent of cotton growers received medium duration training i.e. up to 2-3 days (short duration).

### 9. Innovativeness

**Table 9:** Distribution of the cotton growers according to their innovativeness

Sl. No.	Innovativeness	Cotton growers (n=100)	
		Number	Percentage
1	Low	9	09.00
2	Medium	48	48.00
3	High	43	43.00
		100	100.00

From the table 9 it was revealed that majority of the cotton growers belongs to the medium category of innovativeness i.e.48.00 per cent followed by 43.00 per cent of cotton growers belongs to high category of innovativeness.

### 10. Economic motivation

**Table 10:** Distribution of cotton growers according to their economic motivation

SI. No.	Economic motivation	Cotton growers (n=100)	
		Number	Percentage
1	Low	7	7.00
2	Medium	54	54.00
3	High	39	39.00
	Total	100	100.00

Form the table no 10 revealed that majority of the cotton growers having medium level of economic motivation i. e (54.00%).

## 11. Risk preference

**Table 11:** Distribution of the cotton growers according to their risk preference

SI. No.	Risk preference	Cotton growers (n=100)	
		Number	Percentage
1	Low	6	06.00
2	Medium	69	69.00
3	High	25	25.00
	Total	100	100.00

From table no 11, it was revealed that majority of the cotton growers having medium level of risk preference i.e. (69.00%)

**1.2** Distribution of cotton growers according to their knowledge about label claim of insecticide by the cotton growers

**Table 1.2:** Distribution of the cotton growers according to their knowledge level about label claim of insecticides

Sl. No.	Knowledge level	Cotton growers (n=100)	
		Number	Percentage
1	Low	32	32.00
2	Medium	46	46.00
3	High	22	22.00
	Total	100	100.00

It was observed from the Table 1.2. that majority of the cotton growers (46.00%) had medium level of knowledge about label claim of insecticides.

## 2. Relational analysis

**2.1** Relationship between selected profile of cotton growers with knowledge.

**Table 2.1:** Coefficient of correlation between selected characteristics of the cotton growers with their knowledge

Sl. No	Variables	“r” Values
1	Age	0.367546**
2	Education	0.231973*
3	Land holding	0.320293**
4	Occupation	0.176312
5	Experience in cotton cultivation	0.44899**
6	Cropping pattern	-0.12066
7	Source of information	0.241744*
8	Training received	-0.0551
9	Innovativeness	0.088959
10	Economic motivation	0.249617*
11	Risk preference	0.316377**

\*Significant at 0.05 level of probability

\*\*Significant at 0.01 level of probability

It could be seen from table 20 among selected variables age, land holding, experience in cotton cultivation, risk preference are positively significant with knowledge about label claim of insecticides at 0.01 level of probability. And education, source of information, economic motivation are positively significant with knowledge about label claim of insecticides at 0.05 level of probability. Therefore these characteristics stating that their exits significant relation between these characteristics and knowledge. This indicate that with the increase in the age, education, land holding, source of information, area, economic motivation, risk preference there is increases in the knowledge level about label claim of insecticides by cotton growers.

Whereas, occupation, experience in cotton cultivation, cropping pattern, training received, innovativeness, were not significantly correlated with knowledge about label claim of insecticides by cotton growers at 0.05 level of probability.

## Conclusions

From the present study it was revealed that, More than half (48.00%) of cotton growers were included in the middle age (36 to 50) category, the 42.00 per cent cotton growers were educated up to high school, maximum (54.00) per cent of the cotton growers had small (1.01 ha to 2.00 ha) land holding. Majority of the cotton growers 64.00 per cent had agriculture as their main occupation. Majority (65.00%) cotton growers were having farming experience 15-28 years. Majority of the cotton growers (62%) having bi-seasonal cropping pattern. Majority of the cotton growers i.e. (47.00%) belongs to medium category of source of information. Majority of cotton growers not received any training Majority of the cotton growers belongs to the medium category of innovativeness i.e.48.00per cent. Majority of the cotton growers having medium level of economic motivation i.e. (54.00%). Majority of the cotton growers having medium level of risk preference i.e. (69.00%). The majority of the cotton growers (46.00%) had medium level of knowledge about label claim of insecticides where as 32.00 percent and 22.00 per cent of the cotton growers were having low and high level of knowledge about the label claim of insecticides.

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