Relational Analysis of Profile of Bt Cotton Growers with their Adoption of Integrated Pest Management for Controlling Pink Bollworm

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Maharashtra state particular has faced the problem of control of pink bollworm in cotton as a more pronounced during last year and the incidence has been identified from the middle of crop season seriously damaging the cotton in late pickings. Hence the Pink bollworm of Bt. (*Bacillus thuringiensis)* otton is the major pest in observed in this state. So the present study was conducted in Beed district of Marathwada region from Maharashtra state. In Beed district and three tehsils namely Beed, Wadwani and Majalgaonwere randomly selected on the basis of area under Bt cotton. From each tehsils 4 villages were randomly selected and from each village 10 respondents were randomly selected to comprise 120 respondents. How profile characters affecting adoption of IPM in Bt Cotton was the major objective of the study. Regarding independent variables age had negative significant relationship with their adoption of Integrated Pest Management for controlling pink bollworm. Independent variables of: i) education, ii) occupation, iii) land holding, iv) annual

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income, v) social participation, vi) economicmotivation, vii) innovativeness, viii) ix) risk orientation, and x) knowledge had significant relationship withtheir adoption of Integrated Pest Management for controlling pink bollworm and extension mcontact had positive and highly significant relationship with their adoption of Integrated Pest Management for controlling pink bollworm.

Keywords: Integrated pest management; pink bollworm; Bt cotton growers.

1. INTRODUCTION

Pink bollworm (*Pectinophora gossypiella*) has now emerged as a major pest of cotton in all cotton growing areas in India. The pest mainly fed on seeds causing economic loss. Infestation occurs in mid and late stages of the crop; it remains undetected due to feeding behaviour and causes loss of yield quality. It impacts boll opening, coinciding with the second picking of cotton in most areas. Since the last 2-3 years, pink bollworm is appearing early (45-60 days after sowing) on Bt cotton hybrids in Central and South India. During 2017, major cotton producing states, like Maharashtra, Telangana, Andhra Pradesh, Karnataka and Madhya Pradesh were under the grip of pink bollworm damage and infestation ranged from 8.00 to 92.00 per cent with the corresponding yield losses off 10.00 to 30.00 per cent. Availability off cotton all round the year promotes rapid build of the pest. In 2018, pink bollworm infestation is likely o be aggravated if suitable management strategies are not adopted in right perspective [1].

Maharashtra state particular has faced the problem of control of pink bollworm in cotton as a more pronounced during last year and the incidence has been identified from the middle of crop season seriously damaging the cotton in late pickings. The pink bollworm control on cotton has become a tough task because the larval stages of this pest were spent within the cotton bolls. Therefore, conventional control methods including insecticidal applications felt difficult to control the pest [2]. Hence, this study was conducted with objective to see how profile characteristics affect the adoption of Integrated Pest Management for controlling pink bollworm.

2. METHODOLOGY

The present study was conducted in Beed district of Marathwada region from Maharashtra state. In Beed district there are 11 Tahsil (In one district small blocks are marked for administrative purpose which are called as Tahsil or Taluka) out of which three Tahsils namely Beed, Wadwani and Majalgaonwere randomly selected on the basis of area under Bt cotton. From each tehsil 4 villages were randomly selected and from each village 10 respondents were randomly selected to comprise 120 respondents. Data were collected by personally interviewing the respondents with the help of pretested structural schedule. Collected data were tabulated properly in primary table. Then with the help of mean and standard deviation data was categorised in different categories. Frequency and percentage was used to interpret data. Coefficient of correlation were calculated on the basis collected data and relationship between profile and adoption was calculated to find out the impact of profile characteristics on adoption of IPM in Bt Cotton.

3. DISCUSSION

3.1 Profile of Farmers

The study of Profile of Bt cotton growers was made with reference to age, education, occupation, land holding, annual income, social participation, extension contacts, economic motivation, innovativeness, risk orientation and knowledge.

The results presented in above table portray that, all profile characteristics found in middle category group. These results were due to the mean +/- Standard deviation. Regarding education, maximum (31.66) respondents were had secondary education (8th standard to 10th standard). More than half (58.33) of the respondents were had Agriculture as their major occupation. 30.00 per cent of the respondents were having small land holding (1 to 2 ha.)This result is in the line with the findings reported by Sable and Kadam [3], Kumar [4].

3.2 Correlation between Profile of Bt Cotton Growers and their Adoption of IPM for Controlling Pink Bollworm

This was used to find out the significant relationship, if any between scores of the independent variables and the scores of the dependent variable of the sample respondents.

Table 1. Distribution of respondents as per their data of profile characters (N=120)

Sr. No.	Variable	Frequency (F)	Percentage (%)
1.	**Age**		
	Young (up to 33 years)	23	19.16
	Middle (34 to 59 years)	75	62.50
	Old (Above 59 years)	22	18.33
2.	**Education**		
	Illiterate	10	8.33
	Primary Education (Std1st to 7th)	30	25.00
	Secondary Education (Std 8th to 10th)	38	31.66
	Higher Secondary Education (11th to 12th)	27	22.50
	Graduate and above	15	12.50
3	**Occupation**		
	Agriculture	70	58.33
	Agriculture+ labour	30	25.00
	Agriculture+ Allied enterprises (Including dairy, poultry, goat rearing)	20	16.66
4.	**Land holding**		
	Marginal(up to 1.00 ha)	33	27.50
	Small(1.0 to 2.00 ha)	36	30.00
	Semi medium(2.01 to 4.00)	26	21.66
	Medium(4.01 to 10.00)	22	18.33
	Big Farmer (10.01 and above)	03	02.50
5.	**Annual income**		
	Low (Up to 40,626)	07	05.83
	Medium (40,627 to 3,58,657)	95	79.16
	High (Above 3,58,657)	18	15.00
6.	**Social participation**		
	Low (Up to 3)	10	08.33
	Medium(4 to 12)	98	81.66
	High (Above 12)	12	10.00
7.	**Extension contact**		
	Low (Up to 15)	23	19.16
	Medium (16 to 25)	80	66.66
	High (Above 25)	17	14.16
8.	**Economic motivation**		
	Low (Up to 20)	23	19.16
	Medium (21to 27)	81	67.50
	High (Above 27)	16	13.33
9.	**Innovativeness**		
	Low (Up to 12)	24	20.00
	Medium (13 to 19)	86	71.66
	High (Above 19)	10	8.33
10.	**Risk orientation**		
	Low (Up to 17)	22	18.33
	Medium (18 to 23)	83	69.16
	High (Above 23)	15	12.50
11.	**Knowledge**		
	Low (Up to 22)	13	10.83
	Medium (23 to 31)	92	76.66
	High (Above 31)	15	12.51

Table 2. Correlation between profile of Bt cotton growers and their adoption of IPM for controlling pink bollworm. N=120

Sr. No.	Independent variables	Co-efficient of correlation
1.	Age	0.015[NS]
2.	Education	0.207*
3.	Occupation	0.237 *
4	Land holding	0.195*
5.	Annual income	0.211*
6.	Social participation	0.212*
7.	Extension contact	0.333**
8.	Economic motivation	0.213*
9.	Innovativeness	0.197*
10.	Risk orientation	0.203*
11.	Knowledge	0.212*

*Significant at 0.05 level of probability; ** Significant at 0.01 level of probability; NS- Non-significant

It can be evident from Table 2 that, variable like education, occupation, land holding, annual income, social participation, economic motivation, innovativeness, risk orientation and knowledge found to be had positive and significant relationship with thetheir adoption of Integrated Pest Management for controlling pink bollworm. It means increase of education, occupation, land holding, annual income, social participation, economic motivation, innovativeness, risk orientation and knowledge increases adoption of IPM in controlling pink bollworm in Bt. Cotton. Extension contact explores the farmers to recent technologies; hence there is high and significant relationship with adoption of IPM. The profile character age was non significant because attack of pink bollworm and its control doesn't depend on age of respondent. Respondent from any age group have to follow the control measures against pink bollworm.These findings are in line with Dinesh et al. [5] and Pavan Kumar and Dhorey [2].

4. CONCLUSION

It was observed that extension agents have to play important role in spreading of IPM practices among farmers to control pink bollworm in Bt. Cotton. They should organize trainings and some exposing tactics like rallies, exhibitions, lectures and demonstration to improve their adoption of IPM in Bt. Cotton.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/65854