

## RESEARCH ARTICLE

# Adoption of integrated pest management practices by pigeonpea growers

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## ABSTRACT

The present study was conducted mainly with the objective to study the adoption of integrated pest management technology by pigeonpea growers. For this study, Latur and Osmanabad districts were selected randomly by considered the large area under pigeonpea cultivation. It was noticed that, majority of the respondents with 11 to 29 years of farm experience, were educated upto Primary as well as Secondary level, small farmers in land holding, medium in family size, low annual income, agriculture and subsidiary enterprises of occupation, medium social participation, medium extension contact, medium risk orientation and medium economic motivation. It was observed from study that majority (46.67 %) of respondents had medium level of adoption. Out of ten independent variables family size, annual income, occupation, social participation, and risk orientation had positive but non-significant relationship with adoption of pigeonpea growers regarding IPM technology in pigeonpea.

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## INTRODUCTION

Red gram also known as pigeonpea (Arhar or tur in local language) is an important pulse crop of India, and is being cultivated on 35.6 lakh ha area. Among total pulses, the red gram accounts for 14.5 per cent in area and 15.5 per cent in productivity. Maharashtra is the largest producer with approximately 10.51 lakh ha area with average productivity of 6.03 q/ha.

At present agriculture, productivity of pigeonpea crop in India is very low as compared to world standard. This is due to the lack of management practices and attack of various pests. Pest is responsible for causing damage to many of field, horticulture and plantation crops. Pest problems are originated with the origin of agriculture *i.e.* growing of single species of plants over a large area. In pigeonpea various pests attacks reduce the production of crop. So, it is necessary to control the pest attack by using integrated pest management technology. Integrated pest management can reduce the

human and environmental exposure to hazardous conditions. It also helps in lowering the overall cost of pesticide application.

Integrated pest management technology emphasizes not only on the reduction in use of pesticide and control the level of pest causing economic injury but also to facilitate the use of cultural, mechanical, chemical and biological methods of pest control.

Thus, it implies that farmers need to acquire the maximum skill necessary to make self decision based on specific farm condition and discourage the discriminate use of pesticides. Therefore, the present study was selected with the following objectives :

–To study the personal characteristics of pigeonpea growers, to study the adoption of pigeonpea growers about integrated pest management technology and to study the relationship of the personal characteristics of pigeonpea growers with their adoption of integrated pest management

relationship of the personal characteristics of pigeonpea growers with their adoption of integrated pest management technology.

## MATERIALS AND METHODS

The present study was confined to the Latur and Osmanabad districts in Marathwada region as considerable area under pigeonpea cultivation. Latur and Osmanabad districts in Marathwada region are situated in south-eastern part of Maharashtra. There were selected by using multistage random sampling technique. From each district, two tahsils were selected randomly for study. From Latur district, Latur and Chakur tahsils and from Osmanabad district Osmanabad and Kalamb were selected as considerable area under pigeonpea cultivation. From each tahsil, three villages were select randomly on the basis of area under pigeonpea cultivation.

Ten pigeonpea growers were selected randomly from each village to comprise the sample of 120 respondents for study. Respondents were selected according to the considerable area under pigeonpea cultivation. The study sample consisted of having 120 respondents from four tahsils. The data were collected with the help of structured schedule. The respondents were contacted personally at their home or at their farms as per their convenience. In line with the objectives of the study, a structured interview schedule was prepared. It included questions pertaining to the different personal characteristics of independent variables. Another part of the schedule consisted of the questions regarding to adoption of recommended IPM practice. The schedule was finalized after reviewing the relevant literature and discussion with the members of the advisory committee

## RESULTS AND DISCUSSION

The results of the present study as well as relevant discussions have been presented under following sub heads:

### Personal characteristics of pigeonpea growers :

It was observed that from Table 1 that, majority of the respondents were from 11 to 29 years of farm experience, educated up to Primary School level, followed by High School level, Higher Secondary School level and Collage level. The data presented in Table 1 indicated that majority of the respondents were from medium size families, were medium farmers and had agriculture and allied enterprises like dairy, poultry and goat rearing as major occupation with low level of annual income.

With regard to social participation, most of the respondents (62.50 %) had medium level of social participation and had medium level of extension contact, followed by high level and low level of extension contact. It was noticed from

Table 1 that majority (74.17 %) of the respondents had medium level of economic motivation and 71.67 per cent respondents had medium level of risk orientation.

### Extents of adoption of pigeonpea growers regarding IPM technology :

From Table 2 regarding cultural practices, it was noticed that majority of the respondents *i.e.* 90.00 per cent had medium adoption of cultural practices including followed summer deep ploughing, adopt trap crop, take up trimming of field bunds, adopt field sanitation practices, weed control method, taking intercropping practices and use of pest resistant variety for sowing while, 3.33 per cent and 6.67 per cent of the respondents had low and high adoption of cultural practices, respectively.

In mechanical practices it was observed that 46.67 per cent respondents had medium adoption of mechanical practices, including adoption of sex pheromone trap, regular destruction of damaged pods at each harvest stage, crop rotation, distance between two trap, maintaining plant and row to row distance for controlling insect pest attack, changing sowing time, while 43.33 per cent and 10.00 per cent of the respondents had low and high adoption of mechanical practices, respectively.

In case of biological practices of IPM technology, 70.00 per cent respondents had low adoption of spraying of neem seed karnel extracts, take benefits of spraying neem seed karnel extracts, use of HANPV and correct time of spraying HANPV in field, use of bioagents, trichocards and BT powder for controlling pod borer, keeping sex pheromone trap in field While, 29.17 per cent and 00.83 per cent of the respondents had medium and high adoption of biological practices of IPM technology used in pigeonpea for controlling insect pests, respectively.

Regarding the chemical control, it was noticed that 50.00 per cent of the respondents had low adoption while, 48.33 per cent and 1.67 per cent of the respondents had medium and high adoption respectively about adopting pest control measure, pesticide use for controlling pod borer, used chemical seed treatment before sowing, applying synthetic pyrethroids for controlling insect pests of pigeonpea.

It was revealed from Table 3 that majority 46.67 per cent of respondents had medium level of adoption followed by low level (35.83 per cent) respondents and high level (17.50 per cent) of the respondents. Thus, in general, the farmers possessed medium level of adoption of IPM technology in pigeonpea.

### Relationship between personal characteristics of respondents with adoption of IPM technology in pigeonpea :

It is avident delineate from Table 4 that, out of ten independent variables, family size, annual income, occupation,

Table 1: Distribution of pigeonpea growers according to their personal characteristics			(n=120)
Sr. No.	Category	Frequency	Percentage
1.	<b>Farm experience</b>		
	Low (Up to 10 years)	27	22.50
	Medium (From 11 to 29 years)	67	55.84
	High (above 29)	26	21.66
2.	<b>Education</b>		
	Illiterate	13	10.83
	Primary School (1 <sup>st</sup> - 7 <sup>th</sup> )	31	25.83
	Secondary School (8 <sup>st</sup> - 10 <sup>th</sup> )	29	24.16
	Higher Secondary (11 <sup>th</sup> -12 <sup>th</sup> )	28	23.33
	Graduate/ Post graduate	17	14.16
3.	<b>Farm size</b>		
	Small (up to 4 members)	13	10.84
	Medium (5 to 8 members)	63	52.50
	Large (Above 8 members)	44	36.66
4.	<b>Size of land holding</b>		
	Small farmers (1 to 2 ha )	19	15.83
	medium farmers (2.1 to 6 ha)	73	60.84
	Big farmers (Above 6)	28	23.33
5.	<b>Occupation</b>		
	Agriculture	26	21.67
	Agriculture + labour	14	11.67
	Agriculture + Allied enterprises (Including dairy, poultry, goat rearing)	80	66.66
6.	<b>Annual income (Rs.)</b>		
	Low annual income (up to 40,970)	65	54.83
	Medium (40,971 to 1,85,969)	41	34.17
	High annual income(Above 1,85,969)	14	11.67
7.	<b>Social participation</b>		
	Low (up to 4)	24	20.00
	Medium (5 to 8)	75	62.50
	High ( above 8)	21	17.50
8.	<b>Extension contact</b>		
	Low	13	10.84
	Medium	90	75.00
	High	17	14.16
9.	<b>Economic motivation</b>		
	Low (up to 27 )	14	11.67
	Medium (from 28 to 32)	89	74.17
	High (Above 32)	17	14.16
10.	<b>Risk orientation</b>		
	Low ( up to 26 )	25	20.83
	Medium ( from 27 to 32)	86	71.67
	High ( Above 32)	9	7.50

social participation and risk orientation had positive but non-significant relationship with adoption of pigeonpea growers regarding IPM technology in pigeonpea at 0.05 level of probability. Whereas farm experience had negative but significant and size of land holding had negative and non-

significant relationship with adoption of IPM technology in pigeonpea while education, extension contact and economic motivation had positive and high significant relationship with adoption of pigeonpea growers regarding IPM technology in pigeonpea. Related to the present investigation, Bhopale *et*

Sr.No.	Practices	Adoption	
		Frequency	Per cent
<b>I.</b>	<b>Cultural practices</b>		
	Low	4	3.33
	Medium	108	90.00
	High	8	6.67
<b>II.</b>	<b>Mechanical practices</b>		
	Low	52	43.33
	Medium	56	46.67
	High	12	10.00
<b>III.</b>	<b>Biological control</b>		
	Low	84	70.00
	Medium	35	29.17
	High	01	00.83
<b>IV.</b>	<b>Chemical control</b>		
	Low	60	50.00
	Medium	58	48.33
	High	02	1.67

Sr. No.	Category	Frequency	Per cent
1.	Low (up to 39)	43	35.83
2.	Medium (from 40 to 65)	56	46.67
3.	High (above 65)	21	17.50
	Total	120	100

Sr. No.	Category	Correlation co-efficient 'r'
1.	Farm experience	-0.544**
2.	Education	0.598**
3.	Size of land holding	-0.080
4.	Family size	0.099 <sup>NS</sup>
5.	Annual income	0.033 <sup>NS</sup>
6.	Occupation	0.074 <sup>NS</sup>
7.	Social participation	0.086 <sup>NS</sup>
8.	Extension contact	0.449**
9.	Economic orientation	0.303**
10.	Risk orientation	0.066 <sup>NS</sup>

\* and \*\* Indicate significance of value at P=0.05 and 0.01, respectively

al. (2001). Sudhakar and Kanagasabapathi (2002) and Sawant (2007) had made some contribution in cotton crop while Sangram (1997) worked on knowledge and adoption of I.P.M. practices by red gram growers of Gulbarga district of Karnataka.

#### Conclusion :

- Majority of the respondents with 11 to 29 years of farm experience, were educated upto Primary as well as Secondary level, small farmers in land holding, medium in family size, low annual income, agriculture and subsidiary enterprises of occupation, medium social participation, medium extension contact, medium risk orientation and medium economic motivation.
- Majority of the respondents fully adopted the cultural and mechanical practices of IPM, practices like adoption deep summer ploughing, clean up campaign, crop rotation and intercropping.
- Education, extension contact and economic motivation

had positive and high significant relationship with adoption of pigeonpea growers regarding IPM technology in pigeonpea.

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