

Original Research Article

<https://doi.org/10.20546/ijcmas.2019.810.045>

Study on Adoption of Integrated Pest Management Practices by Soybean Growers in Khandwa District of Madhya Pradesh, India

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ABSTRACT

Keywords

IPM, Soybean growers, Adoption, Chi-square test

Article Info

Accepted:
04 September 2019
Available Online:
10 October 2019

The present study was conducted at Pandhana block of Khandwa district Madhya Pradesh. The finding of the research revealed that Integrated Pest Management practice by soybean growers. The out of total soybean growers 47.27% had low adoption level of integrated pest management practices and only 5.46% had high adoption level of integrated pest management practices. The study also indicated the association between various attributed of soybean growers like education, annual income, scientific orientation, attitude toward IPM, knowledge of IPM, mass media exposure, extension contact were found to be 0.05 level of significance with adoption of IPM practices, Whereas age, family size, family type, land holding, area under soybean had showed that non-significant association with adoption level of soybean growers, thus the study highlighted the high adoption of integrated pest management practices by soybean growers.

Introduction

Soybean (*Glycine max*) is the single largest oilseed crop produced in the world of the total 310-320 million tones oilseeds produced annually. It is the most potential among grain legume crops for combating acute nutritional demand. Further its significance is also visualized with its capability to fix the atmospheric nitrogen at the rate of 85-115 kg/ha (Alexander, 1997) besides high yield potential (20 to 25 q/ha). It also provides high

quality protein (40% to 42%), 20% cholesterol free oil and 30% carbohydrate. Soya flour is also used in sweet, papad and similar products instead of besan. It is also found suitable for industrial use like in pharmaceutical, farming, plywood glues, asphalt cements, detergent products, paper boards and laminations, fibre board, shoe polish, textile etc. It is also found its application in Bio-Medical area like Antibiotics etc. Moreover, scientists also searching for its potential applications for not yet explored areas like eco-friendly fuel,

nutritious food varieties etc. Amongst soybean producing countries USA stands position first while India fifth. In India soybean is cultivated in about 120.327 lac hectares area and production is about 129.832 lac metric ton (Sopa 2013). Madhya Pradesh is recognized as soybean state in our country. In Madhya Pradesh soybean is cultivated in about 108.834 lac hectares area with the production of 104.366 lac metric ton (Sopa, 2014) while in Khandwa district soybean is cultivated in 1.945 lac hectares area with the production of 2.400 lac metric tons (Sopa, 2013). The productivity of soybean is affected by many factors viz. crop genetics, resource managements and climatic factors. The losses caused by weeds, insects, diseases are 75%, 15-20%, 10-15%, respectively (James H. and J. Bittzer 2011). Integrated Pest Management (IPM) approaches have been globally accepted for achieving sustainability in agriculture and maintaining the agro-eco-system. It is more relevant due to a number of advantages like safe to environment, pesticide free food commodities, low input based crop production.

The study was conducted in Khandwa District of Madhya Pradesh state with the specific objective to study the socio-personal-economic, communicational and psychological features of the soybean growers, to study the extent of adoption of Integrated Pest Management practices by soybean growers, to find out the association between dependent and independent variables, to find out the constraints perceived by soybean growers in adoption of Integrated Pest Management practices.

Materials and Methods

The study was conducted in Pandhana block consists of 102 villages out of which 5 villages were selected by using proportionate random sampling method. A list of farmers from

selected villages who are growing soybean crop was prepared with the help of agriculture extension official working in study area.

Respondent were selected by using proportionate random sampling method to make the total sample size 110 for the primary data were collected personally by interviewed schedule.

The secondary data were collected from Department of Agriculture, the respondents were asked to give opinion about the use of recommended soybean growers practices (adoption) on three point continuum viz. complete, uncompleted and never and scores 2, 1 and 0 were assigned respectively. Extent of adoption was calculated on the basis of these scores.

Similarly the constraints faced by the soybean growers, were also recorded on the two point continuum namely Yes and No the data were analyzed using frequency, percentage, mean, chi-square test and association between dependent and independent variables.

Results and Discussion

Socio-personal, economic, communicational and psychology features of the soybean growers

The data revealed that majority of respondent (60 %) were in middle age followed by young (33%) and old age (11%) category (Table 1), as old age farmers have almost fixed behavior patterns, so middle aged and especially young farmers must be targeted for imparting in soybean crop the respondents were having up to primary level (31.82) of education followed by illiterate level (24.55), followed by high school level (10.90), followed by college level (5.45) and higher secondary school (3.64%) level of education. The respondent were majority of soybean growers (42.73%) belong

to medium family type, whereas maximum soybean growers (50.91%) nuclear type family. The maximum number of soybean growers (57.27%) revealed that having medium annual income range between 1,83,001 to 3,66,000, whereas maximum soybean growers (47.28%) were found having medium farmers. The table also revealed that the maximum number of soybean growers (39.09%) were found 2.01 to 4 hac.

Area under soybean crop. The finding regarding farm power revealed that the maximum numbers of soybean grower (57.27%) were having low farm power.

Economic motivation of soybean growers was higher (48.18%) in medium and high economic motivation. The higher percentage of soybean growers (73.63%) had medium scientific orientation whereas majority of the soybean growers (64.55%) had medium attitude towards IPM practices.

Results also showed that the maximum soybean growers (52.73%) had medium knowledge of IPM practices. About (64.54%) soybean growers were having medium mass media exposure. The maximum number of soybean growers (59.09%) was found low extension contact the present findings are inconformity with other reporters' viz. verma (2009), Mandloi (2007), Sharma (2007), Pandey (1998)

Adoption of IPM practices by soybean growers

Adoption of IPM practices by the soybean growers. The study revealed that maximum number (47.27%) of soybean growers had low and medium adoption of integrated pest management practices. It was also observed

that only (5.46%) had high adoption of IPM practices (Table 2).

Association between attributes of the soybean growers and their extent of adoption level of IPM practices

Association between attributes of the soybean growers and their extent of adoption level of IPM practices like education, annual income, scientific orientation, attitude towards IPM, knowledge of IPM, mass media exposure, extension contact were found to have significant association with adoption of soybean growers (Table 3). Whereas age, family type, land holding, area under soybean crop had showed that non-significant association with adoption level of soybean growers. Most of the soybean growers (60%) belonged to middle age group (36 to 55 years), whereas in case of education level of soybean growers (31.82%) had educated up to primary school and maximum belonged to medium family size and maximum (50.91%) nuclear family type. The majority of respondents were having medium annual income (1,83,001 to 3,66,000 Rs).

The study revealed that, the higher percentage of soybean growers (47.28%) had medium size group of land holding whereas maximum number (39.09%) of soybean growers belong to 2.01 to 4 hac. area under soybean crop and low number of farm power (57.27%). The study further depicted that, the majority of soybean growers had medium and high economic motivation (48.18%) and scientific orientation (73.63%). In case of attitude towards IPM practices (64.55%), knowledge of IPM (52.73%), and mass media exposure (64.54%) of soybean growers having medium. The extension contact had low (59.09%) of soybean growers.

Table.1 Socio-personal, economic, communicational and psychology features of the soybean growers

Variables	Characteristics	Frequency	Percentage
Age	Young (Up to 35 years)	33	30.00
	Middle (36 to 55 years)	66	60.00
	Old (Above 55 years)	11	10.00
Education	Illiterate	27	24.55
	Up to Primary school	35	31.82
	Middle school	26	23.64
	High school	12	10.90
	Higher secondary	04	3.64
	College	06	5.45
Family size	Small family size	42	38.18
	Medium family size	47	42.73
	Large family size	21	19.09
Family type	Nuclear	56	50.91
	Joint	54	49.09
Annual income	Low annual income	34	30.91
	Medium annual income	63	57.27
	High annual income	13	11.82
Land holding	Marginal farmers (up to 1ha.)	14	12.73
	Small farmers (1.01 to 2 ha.)	12	10.90
	Medium farmers (2.01 to 4 ha)	52	47.28
		32	29.09
Area under soybean crop	Up to 1ha.	35	31.82
	1.01 to 2 ha.	26	23.64
	2.01 to 4 ha.	43	39.09
	Above 4 ha.	06	5.45
Farm power	Low farm power	63	57.27
	Medium farm power	42	38.18
	High farm power	05	4.55
Economic motivation	Low	04	3.64
	Medium	53	48.18
	High	53	48.18
Scientific orientation	Low	03	2.73
	Medium	81	73.63
	High	26	23.64
Attitude toward IPM	Low	08	07.27
	Medium	71	64.55
	High	31	28.18
Knowledge of IPM	Low	32	29.09
	Medium	58	52.73
	High	20	18.18
Mass media exposure	Low	38	34.55
	Medium	71	64.54
	High	01	00.91
Extension contact	Low	65	59.09
	Medium	45	40.91
	High	00	00.00

Table.2 Adoption of IPM practices by soybean growers

S.No.	Categories	Frequency	Percentage
1.	Low	52	47.27
2.	Medium	52	47.27
3.	High	06	05.46
Total		110	100.00

Table.3 Association between attributes of the soybean growers and their extent of adoption level of IPM practices

Variable	Chi-square value	D.F
Age	1.46	1
Education	7.89	3
Family size	2.51	2
Family type	2.30	1
Annual income	5.30	1
Land holding	2.88	2
Area under soybean crop	1.19	2
Farm power	12.84	1
Economic motivation	6.61	1
Scientific orientation	7.99	1
Attitude toward IPM	15.10	1
Knowledge of IPM	24.92	1
Mass media exposure	16.24	1
Extension contact	6.82	1

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How to cite this article:

Shivpal Singh, Dharmendra Yadav and Vijesh Hariyale. 2019. Study on Adoption of Integrated Pest Management Practices by Soybean Growers in Khandwa District of Madhya Pradesh. *Int.J.Curr.Microbiol.App.Sci.* 8(10): 430-435. doi: <https://doi.org/10.20546/ijcmas.2019.810.045>