

RESEARCH ARTICLE

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# Knowledge of integrated weed management practices by the farmers in Marathwada region

P.B. GARDI AND R.P. KADAM

**ABSTRACT :** The present study was conducted in Marathwada region of Maharashtra state. Present study was carried out in randomly selected Parbhani district. Four talukas was selected purposely from Parbhani district by considering highest area and production of the soybean crop namely viz., Purana, Palam, Parbhani and Gangakhed. Three villages from each taluka were selected randomly, thus, the make 12 villages were selected for study. Ten respondents were selected from each village with the help of those who have cultivating soybean crop on his farm was selected randomly. Thus, the total 120 respondents were selected for the study. The major soybean crops selected for study because soybean crop is infested by number of weeds like Shippi (*Echinochloa crus-galli*), Kena (*Commelina benghalensis*), Dudhi (*Euhorbia* spp.), Hazardani (*phyllanthus niruri*), Nagarmotha (*Cyperus rotundus*), Hariyali (*Cynodon dactylon*) etc. which causes loss of farmer upto 40 to 60 per cent in yield, weeds in soybean can be effectively controlled by using integrated weed management practices. Thus, the study was conducted for considering the problem of weed control in soybean crop. Ex-post facto research design was used for present study. The data were collected with the help of personal interview method with the help of interview schedule. It is revealed Table 1 that 69.17 per cent of the respondents were from medium farming experience, 45 per cent respondent were educated upto secondary (middle) school level, 35.83 per cent had small size land holding (upto 2 ha), 89.17 per cent of the respondents engaged in only agriculture, 78.34 per cent of the respondents were from medium income i.e. (Rs. 77103 to 409000) group, 50.84 per cent of the respondents had medium social participation, 62.50 per cent of the respondents used medium sources of information, 59.17 per cent of the respondents had medium extension contact, 59.17 per cent of the respondents had medium level of market orientation, 61.67 per cent, of the respondents had medium level of risk orientation and 62.50 per cent of the respondents had medium level of knowledge. Education, land holding, occupation, annual income, sources of information, extension contact and market orientation and risk orientation had significant relationship with adoption of integrated weed management practices.

**KEY WORDS :** Knowledge, Integrated weed management

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## INTRODUCTION

Soybean (*Glycine max* L.) is known as 'golden bean' in India and most important grown in India for dual purposes that is oil seed as well as pulse crop. Soybean is

known as “poor man’s meat” which is rich in unsaturated fatty acids with anti-cholesterol properties. The oil of soybean contains lycethin and vitamin ‘A’. In addition to protein and oil, it also contains vitamin ‘A’ (710 IU), vitamin B (300 IU) and vitamin C, D, E and K it contains small amount of Ca, Mg, P. Hundred grams of soybean provides 400-430 calories as against 350 calories from same quantity of cereals. The major soybean growing districts in Maharashtra are Buldhana, Latur, Amravati, Yavatmal, Parbhani, Washim, Nanded, Akola and Hingoli. In Maharashtra Buldhana district rank first in area (4.121 lakh ha) and third in production (2.576 lakh MT) while Latur rank second in area (3.800 lakh ha) and first in production (3.363 lakh MT) during the year 2014-2015. (Source: [www.sopa.org.in](http://www.sopa.org.in)). In Marathwada region area under soybean in Parbhani district during the year 2014-2015 was (1.883 lakh ha) with the production of (1.601 lakh MT) and rank fifth in area, production and productivity in Marathwada region of Maharashtra state. (Source: [www.sopa.org.in](http://www.sopa.org.in)). An analysis revealed that losses caused by weeds in India were to the tune of 24.38 million tons in cereals, 0.70 million tons in oilseeds, 0.98 million tons in pulses and 9.9 million tons in fibre and other commercial crops, valued at Rs.5972 crores annually (Anonymous, 2014- 15). Oilseeds and cereals crop is infested by number of weeds like Shippi (*Echinochloa crus-galli*), Kena (*Commelina benghalensis*), Dudhi (*Euhorbia* spp.), Hazardani (*Phyllanthus niruri*), Nagarmotha (*Cyperus rotundus*), Hariyali (*Cynodon dactylon*) etc. which causes loss upto 40 to 60 per cent in yield. Weed in soybean can be effectively controlled by using herbicides like Alachlor, Basalin, Pendimethylene.

## EXPERIMENTAL METHODS

The present study was conducted during 2015-16 year in Marathwada region of Maharashtra state. Present study was carried out in randomly selected Parbhani district. Four talukas was selected purposely from Parbhani district by considering highest area and production of the soybean crop namely viz., Purana, Palam, Parbhani and Gangakhed. Three villages from each taluka were selected randomly, thus, the make 12 villages were selected for study. Ten respondents were selected from each village with the help of those who have cultivating soybean crop on his farm was selected randomly. Thus, the total 120 respondents were selected

for the study. The major soybean crops selected for study. The data were collected with the help of personal interview method with the help of interview schedule. Data was classified, tabulated and analyzed by using methods mean, frequency, percentage, standard deviation, co-efficient of correlation and multiple regressions. The present study was conducted with the following specific objective:

- To know the profile of the farmers.
- To know the level of overall knowledge about integrated weed management practices in soybean crop
- To know the relationship between the profile of respondents with knowledge.

## EXPERIMENTAL RESULTS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

### To know the profile of the farmers :

It is revealed Table 1, that 69.17 per cent of the respondents were from medium farming experience (22 to 34 years), followed by 16.66 per cent and 14.17 per cent of the respondent were from high and low farming experience, i.e. (35 year and above), and (upto 21 year) respectively, as far as education is 45 per cent respondent were educated upto secondary (middle) school level, followed by 31.67 per cent were educated upto primary level, 12.5 per cent were educated upto high school, 8.33 per cent were educated upto graduate level and 7.50 per cent were can read and write, remaining 0.83 per cent were can read only.

It was observed 35.83 per cent had small size land holding (upto 2 ha) followed by 31.67 per cent respondents semi medium (2.1 to 4 ha) land holding and 20.00 per cent were medium land holding (4 ha to 10) and 10 per cent of the respondent were marginal land holding and remaining 2.5 per cent were from big land holding (10 ha and above). Most of the farmers (89.17%) per cent of the respondents engaged in only agriculture followed by 10.83 per cent respondents had agriculture + business and no any in agriculture + service as their occupation. Majority (78.34%) of the respondents were from medium income i.e. (Rs. 77103 to 409000) group followed by 14.16 per cent and 7.5 per cent respondents were from

**Table 1 : Distribution of farmers according to their profile** (n=120)

Sr. No.	Profile of the farmers	Category	Respondents	
			Frequency	Percentage
1.	Farming experience	Low ( upto 21 years)	17	14.17
		Medium (22 to 34 years)	83	69.17
		High (above 35 years)	20	16.66
2.	Education	Illiterate	00	00
		Can read only	01	0.83
		Can read and write	02	1.67
		Primary (1 <sup>th</sup> to 4 <sup>th</sup> std.)	38	31.67
		Middle (5 <sup>th</sup> to 7 <sup>th</sup> std.)	54	45.00
		High School (8 <sup>th</sup> to 10 <sup>th</sup> std.)	15	12.50
		Graduate	10	8.33
3.	Land holding	Marginal farmers (up to 1.00)	12	10.00
		Small farmers (1.01 to 2.00)	43	35.83
		Semi-Medium farmers (2.01 to 4.00)	38	31.67
		Medium farmers (4.01 to 10.00)	24	20.00
		Big farmers (10.01 and above)	3	2.50
4.	Occupation	Only Agriculture	107	89.17
		Agriculture + Business	13	10.83
		Agriculture + Service	0	00.00
5.	Annual income	Low (upto 77102)	09	7.50
		Medium (Rs. 77103 to 4090000)	94	78.34
		High (Rs. 409001 and above)	17	14.16
6.	Social participation	Low (upto 0)	23	19.16
		Medium (1 to 2)	61	50.84
		High (3 and above)	36	30.00
7.	Sources of information	Low (upto 18)	21	17.50
		Medium (19 to 33)	75	62.50
		High (34 and above)	24	20.00
8.	Extension contact	Low (upto 10)	32	26.67
		Medium (11 to 23)	71	59.17
		High (24 and above)	17	14.16
9.	Market orientation	Low (upto18)	23	19.16
		Medium (19 to 24)	71	59.17
		High (25 and above)	26	21.67
10.	Risk orientation	Low (upto 18)	17	14.17
		Medium (19 to 23)	74	61.67
		High (24 and above)	29	24.16

**Table 2: Distribution of the respondents according to their overall knowledge about recommended integrated weed management practices in soybean crop (n=120)**

Sr. No.	Integrated weed management practices	Respondents	
		Frequency	Per cent
<b>Knowledge about cultural weed management practices</b>			
1.	Sowing time	118	98.33
2.	Method of sowing	117	97.50
3.	Use of hand weeding	118	98.33
<b>Number of hand weeding</b>			
1.	One at 25 DAS	109	90.84
2.	One at 45 DAS	105	87.50
3.	Crop rotation	105	87.50
4.	Use of hoeing	107	89.67
<b>Time of hoeing</b>			
1.	First at 20 DAS	115	95.84
2.	Second at 30 DAS	110	91.67
3.	Irrigation management	115	95.84
4.	Use of well decomposed FYM	116	96.67
5.	Weed free seed used for sowing	92	76.67
6.	Farm hygiene	117	97.50
7.	Balance use of fertilizer (RDF)	70	58.33
<b>Intercrops</b>			
1.	Soybean + pegoanpea	80	66.67
2.	Soybean +jowar	27	22.50
<b>Knowledge about mechanical weed control</b>			
1.	Ploughing and how many essential	115	95.84
2.	Harrowing and how many essential	118	98.33
3.	Inter-cultivation through different implement	90	75.00
4.	Cleaning of machinery to prevent spread of weeds	80	66.67
<b>Knowledge about chemical weed control</b>			
1.	Knowledge about name of recommended herbicide used for soybean crop	102	85.00
2.	Knowledge about recommended per ha. dose of herbicide	55	45.84
3.	Time of herbicide application (pre- sowing/pre emergence/post emergence)	119	99.67
4.	Use appropriate recommended doses	58	48.33
5.	Name of pre sowing herbicide ( Eg. Trifluralin 48EC, Fluchloralin 45EC )	30	25.00
6.	Name of pre emergence herbicide for soybean crop (Eg. Pendamethalin30EC, Chlomazone 50 EC ).	52	43.33
7.	Name of post emergence herbicide for soybean crop Eg., Quizalofopethyle, persuit)	116	96.67
8.	Knowledge about sufficient moisture in soil during herbicide application	112	93.33
9.	Knowledge about types of spray pump used for spraying herbicide (knapsack spray pump )	90	75.00
10.	Knowledge about types of nozzle used for herbicide application in soybean crop (Flat fan /flood jet type nozzle)	60	50.00
<b>Knowledge about biological weed control</b>			
1.	Use of biological control method	10	8.33
2.	Precautions while using Bioherbicide	00	00
3.	The bioagent not feed on other useful plants	9	7.50
4.	Use of mycoherbicide (Eg. Devine, collego)	00	00
5.	Use of insects for control weeds (Eg. Beetle <i>Zygogramma bicolorata</i> )	8	6.50
6.	Use of birds like Geese(for feeding on grasses or nutsedge in soybean)	00	00
<b>Category</b>			
1.	Low (upto 16)	23	19.17
2.	Medium (17 to 27)	75	62.50
3.	High (28 and above)	22	18.33
	Mean = 21.99		S.D. = 5.54

high and low income *i.e.* (Rs. 409001 and above) and (upto 77102) group, respectively. More than half (50.84%) of the respondents had medium social participation followed by 30.00 per cent high and 19.16 per cent respondents had low social participation.

Majority (62.50%) of the respondents used medium sources of information followed by 20.00 per cent and 17.5 per cent respondents used high and low sources of information, 59.17 per cent of the respondents had medium extension contact; followed by 26.67 per cent and 14.16 per cent respondents had low and high extension contact with extension agencies, respectively. More than half (59.17%) of the respondents had medium level of market orientation followed by 21.67 per cent and 19.16 per cent respondents had high and low level of market orientation, respectively, 61.67 per cent, of the respondents had medium level of risk orientation followed by 24.16 per cent and 14.17 per cent respondents had high and low level of risk orientation, respectively.

**Level of overall knowledge about recommended integrated weed management practices in soybean crop :**

As regard the knowledge level of the soybean growers about the recommended integrated weed management practices were categorized with the help of control were categorized with the help of mean ± S.D. Overall level of knowledge possessed by the respondents in Table 2, indicated that 62.50 per cent of the respondents had medium level of knowledge, followed by 19.17 per cent of the respondents had low level of knowledge and remaining 18.33 per cent of the respondents had high

level of knowledge aboutintegrated weed management practices in soybean crop.

The finding of the study is similar to that of Deshmukh (2006); Bedre (2009); Sasane (2010); Singh and Chauhan (2010) and Mane (2012).

**To know the relationship between the profile of respondents with adoption :**

Characteristics namely education, land holding, occupation, annual income, sources of information, extension contact and market orientation and risk orientation had significant relationship with adoption of integrated weed management practices. Whereas, farming experience and occupation did not show any statistical significant relationship adoption of integrated weed management practices. Simlar finding noticed by Dhakane (2003); Bedre (2009); Sawale (2011); Mane (2012) and Lad (2013).Similarly Kumara *et al.* (2014) worked on the effect weed management practices and fertility levels on soil health in finger millet–groundnut cropping system and the results found were more or less similar to the present investigation.

**Conclusion :**

Majority of the respondents were educated up to secondary school level, belonged to small size of land holding with medium annual income of Rs. 77103 to 409000 per annum, had 22 to 34 years of medium farming experience, agriculture as main occupation and had medium social participation, medium extension contact, medium sources of information, medium market orientation and medium risk orientation. As regards levels of knowledge of the respondents were under medium

**Table 3 : Profile of respondents with doption**

Sr. No	Variables	'r' values
1.	Farming experience	-0.228*
2.	Education	0.458**
3.	Land holding	0.379**
4.	Occupation	-0.102 <sup>NS</sup>
5.	Annual income	0.382**
6.	Social participation	0.255*
7.	Sources of information	0.647**
8.	Extension contact	0.522**
9.	Market orientation	0.385**
10.	Risk orientation	0.444**

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively

NS= Non-significant

category in knowledge of integrated weed management practices by the farmers. Education, land holding, occupation, annual income, sources of information, extension contact and market orientation and risk orientation had significant relationship with knowledge of integrated weed management practices. Whereas, farming experience and occupation did not show any statistical significant relationship knowledge of integrated weed management practices.

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