Factors affecting adoption level of recommended soybean production technology of soybean growers of Tikamgarh district

SATISH K. MAKASHRE[1], S.P. SINGH, KAMINI BISHT AND SHEELA RAGHUWANSHI
Deptt. of Extension Education, JNKVV College of Agriculture, Tikamgarh, M.P.

Abstract

In India soybean is popular cash crop giving pronounce yield and profit where other kharif crops cannot be able to give sustainable yield and economic viable. In the world, USA ranks first position for soybean production while India fifth. The study was carried out to find out the factors affecting adoption of recommended soybean production technology of soybean growers. The study was conducted in Tikamgarh block of Tikamgarh district. From Tikamgarh block six villages were selected on the basis of highest coverage and productivity under soybean crop and from each selected village 20 respondents were selected. Thus total 120 respondents were selected randomly. The finding of the study shows that majority of soybean growers had medium knowledge towards soybean production technology and medium adoption level of soybean production technology practices. The results further indicates that age, education, family size, annual income, land holding, social participation, farm power, economic motivation, scientific orientation, mass media exposure, extension contact and knowledge level were found to be significantly related with the adoption of recommended soybean production technology, whereas achievement motivation, innovative proneness and risk orientation had non-significant association with the adoption of recommended soybean production technology.

Keywords: Soybean, Adoption, Production technology

Introduction

Agriculture is the backbone of Indian economy from ancient times. With the vision of food sufficiency, Government of India kept agriculture as the primary focus area for first five year plan. However, Green revolution in late sixties proved to be a major boost in agriculture production.It gave rise to productivity of different crops. The next step in the series of agriculture research and development came in operation with the name Yellow Revolution. This Yellow Revolution is associated with the objective of achieving self-dependence in the production of oil-seeds.Yellow Revolution in India ensured remarkable achievement in production of oil-seeds and edible oils. This revolution gained remarkable momentum in the area of Soybean and Sunflower due to new and high yielding varieties.Soybean had high yield potential, provides cholesterol free oil and high quality protein and hence earned sobriquets like "Golden Bean" or "Miracle Crop" etc.Versatile nature and wide application makes Soybean one of the popular and highly suitable crop for human beings. Besides protein, it is also rich in Vitamins, Calcium, Phosphorous and Iron as well.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 93.033 lac hectares area and production is about 101.283 lac metric ton. Madhya Pradesh is recognized as soybean state in our country. In Madhya Pradeshsoybean is cultivated in about 55.193 lac hectares area with the production of 60.987 lac metric ton while in Tikamgarh district soybean is cultivated in 0.410 lac hectares area with the production of 0.428 lac metric ton (Sopa 2010). 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)

Large scale adoption of recommended available technologies is essential feature of agriculture development. "Key to agricultural development lies in the mind, heart and hands of farmers". Farmers are ultimate decision makers about an innovation introduced in their systems. They are heterogeneous and differ in various characteristics like education, experience in

[1]Ex-M.Sc. student, Deptt. of Extension Education, JNKVV College of Agriculture, Tikamgarh, M.P.

cultivation, farm size, annual income, media participation, extension contact, economic motivation, scientific orientation etc. Their receptivity to different agricultural innovativeness will vary depending on their personal socio-economic and psychological attributes. Hence, an insight into these factors is essential. Therefore, the present study on "Factors affecting adoption level of recommended soybean production technology of soybean growers" was carried out.

Materials and Methods

The study was carried out in Tikamgarh district of Madhya Pradesh. Tikamgarh district comprises of 6 blocks out of which Tikamgarh block was selected purposively because of having largest area under soybean crop. From Tikamgarh block six villages namely, Pahadi-tilvaran, Surajpur, Kundeshwar, Judavan, Charkua and Nachanwarawere selected on the basis of highest coverage and productivity under soybean crop. A list of farmers who were growing soybean crop as a major crop was prepared with the help of RAEO's and other official. From selected six villages, 20 soybean growers were selected by using simple random sampling method, thus total sample size comprised of 120 respondents. Karl Pearson's simple correlation test was used to find out the association between attributes of soybean growers with their adoption level of recommended soybean production technology

Results and Discussion

1. Socio-economic, communication and psychological attributes of soybean growers

The result of the study shows that maximum percentage of soybean growers were of middle age group i.e. 32 to 55 years (65.83%), educated upto high school (29.17%) followed by old and young age group, medium family size (76.67%), belonged to high income group (50 %), small land holding (55.83%), member in social organisations (39.17), medium farm power (60.83%), medium economic motivation (71.67%), medium scientific orientation (72.50%), medium achievement motivation (59.17%), medium innovative proneness (70.83%), medium risk orientation (75%), low extension contact (72.50%), subscribed various mass media sources (82.50%)and were having medium level of knowledge (76.67%) regarding soybean production technology (Table 1).

Table 1: Socio-economic, communication and psychological attributes of soybean growers (N=120)

Attributes	Frequency	%tage
Age		
Young (up to 32 year)	20	16.67
Middle (32 to 55 years)	79	65.83
Old (above 55)	21	17.50
Education		
Illiterate	11	9.17
Only read & write	6	5.00
Primary education	17	14.17
Middle school	19	15.83
High school	35	29.17
Higher secondary	13	10.83
Graduation/More	19	15.83
Family size		
Small family size (up to 3 member)	10	8.33
Medium family size (4 to 11 member)	92	76.67
Large family size (above 11 member)	18	15.00
Annual income		
Low (below Rs 17000/-)	6	5.00
Semi-medium (Rs170001to34000)	46	38.33
Medium (Rs.34001 to 51000/-)	8	6.67
High (above Rs. 51000/-)	60	50.00
Land holding		
Marginal farmers (up to 2.5 ha)	30	25.00
Small farmers (2.51 to 5 ha)	67	55.83
Semi-medium farmers (5.01 o 19 ha)	14	11.67
Medium farmers (10.01 to 21 ha)	9	7.50
Large farmers (above 25 ha)	0	0
Social participation		
Member	47	39.17
Office bearer	39	32.50
Non-member/ Non-office bearer	34	28.33
Farm power		
Low farm power (up to 2)	22	18.33
Medium farm power (3 to 6)	67	60.83
High farm power (above 6)	20	20.83
Economic motivation		
Low economic motivation (up to 17)	18	15.00
Medium economic motivation (17 to 23)	86	71.67
High economic motivation (above 23)	16	13.33
Scientific orientation		
Low scientific orientation (up to 16)	10	8.33
Medium scientific orientation (16 to 22)	87	72.50
High scientific orientation (above 22)	23	19.17
Achievement motivation		
Low (up to 16)	27	22.50
Medium (16 to 21)	77	59.17
High (above 21)	22	18.33
Innovative proneness		
Low (up to 23)	15	12.50
Medium (23 to 32)	85	70.83
High (above 32)	20	16.67
Risk orientation		
Low risk orientation (up to 15)	10	8.33
Medium risk orientation (15 to 22)	90	75.00
High risk orientation (above 22)	20	16.67
Extension contact		
Low extension contact (up to 2)	87	72.50
Medium extension contact (2 to 4)	25	20.83
High extension contact (above 4)	8	6.67
Mass media exposure		
Subscriber/ Owned	105	82.50
Non-subscriber/ Not owned	15	17.50
Knowledge level		
Low knowledge level (up to 7)	12	10.00
Medium knowledge level (7 to 12)	92	76.67
High knowledge level (above 12)	16	13.33

Table 2: Practice wise adoption of soybean production technology by soybean growers (N=120)

S. No.	Package of practices	F	%
1.	Well drained loamy soil is the best soil for cultivation of soybean crop	40	33.33
2.	Two deep ploughing with desi plough practices is used for soybean cultivation	98	81.67
3.	JS-335 is recommended variety of soybean in Madhya Pradesh	80	66.66
4.	Recommended seed rate for soybean cultivation is 75-80kg/hac.	65	54.16
5.	Required spacing of soybean cultivation is 45X5cm	77	64.16
6.	July first fortnight is the right time of sowing of soybean in M.P.	81	67.50
7.	Maize crop is used as inter cropping in soybean	47	39.16
8.	Recommended dose of NPK for soybean cultivation is 40:60:40	63	52.50
9.	Kharif season required irrigation for soybean is 1-2 irrigation	55	45.83
10.	At the time of sowing seed treatment through Biltox 2.5-3g/kg seed help to control Anthracnose	00	00
11.	Before the time of sowing soil treatment through Phorae 10G, 15Kg/hac help to reduce the incidence of stem fly	20	16.66
12.	At the time of sowing seed treatment through Imidacloprid 4-5ml/kg seed help to reduce the incidence of stem fly	00	00
13.	Spray of Trizophos 40EC 1200ml/hac during flowering stage	85	70.83
14.	Seed treatment through Thiomethaxone 3-4gm/kg seed	00	00

2. Adoption of soybean production technology by soybean growers

Table 2 reveals that majority of the soybean growers adopted cultural practices such as two deep ploughing (81.67%), prefer loamy soil for cultivation of soybean crop (33.33%), recommended JS-335 variety (66.66%), recommended 75-80 kg seed rate for soybean cultivation (54.16%), 45X5m spacing (64.16%), optimum time sowing (67.50%), use of balance dose of chemical fertiliser (52.50%), required irrigation (45.83%) and adopted maize as inter cropping (39.16%)

Multiple responses were allowed

Table further indicates that under chemical control measures. 70.83 per cent respondents were spraying Trizophos 40EC for control of insects but none of the respondent was found to use Blitox, Thiamethoxam 70WS and Imidacloprid for seed treatment. However, 16.66 per cent of soybean growers practiced soil treatment through Phorate10G to prevent early seedling mortality due to stem fly.

Table 3: Distribution of soybean growers according to their adoption level of soybean production technology (N=120)

S. No.	Categories	No. of respondents	Percentage
1.	Low adoption (up to 20)	4	3.33
2.	Medium adoption (20 to 24)	97	80.84
3.	High adoption (above 24)	19	15.83

Table 3 shows that out of total soybean growers, majority of soybean growers (60.84%) had medium adoption level followed by high (15.83%) and low (3.33%) adoption level of soybean production technology.

3. Correlation of adoption about recommended soybean production technology

The total score of adoption about recommended soybean production technology for each respondent were put to correlation analysis with socio-economic, communication and psychological attributes. Among the fifteen variables studied (Table 4), ten variables viz. age, education, family size, annual income, land holding, social participation, farm power, economic motivation, scientific orientation, mass media exposure, extension contact and knowledge level were found to be significantly related with the adoption of recommended soybean production technology, whereas achievement motivation, innovative proneness and risk orientation had non-significant association with the adoption of recommended soybean production technology.

The age of soybean growers had significant association with adoption level. The work of Sharma et al (2005) supports the present findings.The variable land holding and social participation exhibited significant association with the adoption level. The finding is supported by Aske (2008). The education of soybean growers has significant association with adoption level. The finding is in line with the work of Aske (2008), Choudhary et al. (2001). The association between family size and adoption level was found to be significantly related which was in conformity with the finding of Mundhwa and Padheriaa (1998). Annual income of soybean growers showed significant

association with the adoption level. The work of Mahoviya (2006), Lokhande (2007) and Choudharyet al (2001) support this finding.Farm power revealed significant association with adoption level. This finding supports the findings the findings of Mahoviya (2006), Mandloi (2007) and Paikra (2008).The study indicated that economic motivation had significant association with adoption level. Similar were the findings of Dwivedi (2007) and Paikra (2008).

Table 4: Relationship between attributes of soybean growers with their adoption level of recommended soybean production technology (N=120)

S.No.	Attributes	'r' value
1.	Age	0.245**
2.	Education	0.308**
3.	Family size	0.233**
4.	Annual income	0.370**
5.	Land holding	0.385**
6.	Social participation	0.364**
7.	Farm power	0.322**
8.	Economic motivation	0.239**
9.	Scientific orientation	0.194**
10.	Achievement motivation	0.038[NS]
11.	Innovative proneness	0.126[NS]
12.	Risk orientation	0.136[NS]
13.	Mass-media exposure	0.331**
14.	Extension contact	0.285**
15.	Knowledge level	0.365**

** Significant at 5% level
NS- Non significant

The association of mass media exposure with the adoption level of soybean growers with adoption level of soybean growers was found to be significant. The finding is in conformity with the findings of Paikra (2008) and Raghuwanshi (2010). The variable extension contact exhibited significant association with the adoption level. The work of Patidar (2007), Pare et al (2006) and Dwivedi (2007) support this finding. The knowledge was found to be significantly association with the adoption level. The observation of Mandloi (2007), Paikra (2008) and Shakya (2007) are in conformity with the findings of present study.However, variables achievement motivation, innovative proneness and risk orientation were found to be non-significantly related with the adoption level of soybean growers.

References

Aske, B. S. (2008). A study on adoption behaviour of tribal farmers in respect of soyben production technology of urban block of Dhar district, M.P. M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur

Choudhary, R. P., Singh P and Mishra B. (2001). Correlation of adoption of improved rice technology. Indian J. Ext. Edu. 37(3&4): 200-201.

Dwivedi, S. L. (2007). A study of adoption gap I on recommended soybean technology among the small and marginal farmers of Sohavali block of Satna district (M.P.) M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur.

James, H. and Bittzer, J. (2011). Production in Kentucky part IV, weed, disease and insect control AGR- 131 (4): 88.

Lokhande, R. K. (2007). A study on adoption of integrated pest management practices by soybean growers in Indore district of M.P. M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur.

Mandloi, R.S. (2007). A comparative study on adoption of soybean production technology in high and low productive block of Dhar district (M.P.) M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur.

Mundhwa, A. B. and Padheriaa, M. A. (1998). A study on entrepreneurial behaviour of dairy women among their different variables categories. Gujarat Agricultural University Reseacrh Journal. 23(2):72-76.

Paikra, T. S. (2008). A study on adoption of integrated pest management practices by the soybean growers in Pali block of Korba district (CG). M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur.

Pare, A., Patel, M. M. and Saxena, K. K. (2006). Determine of knowledge regarding plant protection techniques in soybean cultivation in Sehore district of Madhya Pradesh. JNKVV Jabalpur Research Journal. 40(1&2): 115-117.

Shakya, M. S. (2007). A study on adoption behaviour of chickpea growers in Indore district of M.P. M.Sc. (Ag.) Thesis (unpublished), JNKVV, Jabalpur.

Sharma, H. O., Soni, S. N.,Nahatkar S. B. and Malviya P. K. (2005). Factors effecting on adoption of soybean technolohgy in Jhalawar district of Rajasthan. Madhya Journal of Extn. Educ. 8(7): 14-21.

Soybean Production Association. (2010). Area and production of soybean in India. Kharif 2010 survey conducted by Indore with effect from September. 15-27.