Determinants of Utility Perception of Soybean Growers about Recommended Cultivation Technologies

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Abstract: *Agricultural technologies could be viable only when they are used by farmers. But more terrible would it have been if the farmer's perception of these technologies is not only low but wrong. Hence the present investigation was carried out in Akola Panchayat Samiti of Akola district in Vidarbha region of Maharashtra State by conducting field survey with exploratory research design of social research. Total 150 soybean growers constituted the sample for present investigation who cultivated soybean crop continuously since last five years. The key findings of the present study revealed that relatively higher proportion of soybean growers possessed medium level of utility perception about recommended technologies of soybean crop. The multiple regression analysis inferred that among all independent variables socio-economic status, knowledge and attitude were the most important contributory variables for increasing the utility perception of soybean growers about recommended technologies. So, it is necessary to raise the knowledge and attitude level of soybean growers about the recommended technologies. It will be definitely helpful for increasing the utility perception and ultimately the productivity which again helps for raising the socio-economic condition of the soybean growers. In this context, it is implied that the information regarding recommended practices should be disseminated to the soybean growers by extension functionaries.*

INTRODUCTION

To improve the agricultural production, some form of appropriate technology is necessary. An appropriate technology in this context is defined as the latest scientific and technological developments that have been adjusted to suit the local conditions to the highest possible degree. The last twenty years have witnessed great investment in agricultural research and development of new technologies. The national and international research centers have reported significant yield increase in many crops. Insect pest and disease damage to plant, animal and crops have been brought under substantial control. Yet farmers remain unaware and skeptical in taking full advantage of these technologies. Technologies are viable only when they are used by farmers. Doesn't matter how well new technologies work on research stations, if farmers did not utilize them their

development would be in vain and it would be more terrible if the farmers are wrongly perceived about these technologies. Agricultural research system must, therefore, conceptualise an effective mechanism and capacity to implement the transfer of results and measure farmer's perception about these technologies. There is a need to develop a new way of making these technologies acceptable to the farmers so as to increase farmers' perception and invariably their adoption levels (Kamla-Raj, *et.al.* 2007).

Utility perception refers to the act of perceiving. It is the process by which an individual perceives information of stimuli from our environment and translate it into psychological awareness. Perception of any individual towards any object or technologies will be influenced by his motives, past experience, attitude and knowledge.

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In India 96.24 lakh hectare of land was under soybean cultivation during 2008-09 with an average yield of 1124 kg per hectare (Anonymous, 2008). Now-a-days soybean becomes an important leading crop with the Vidarbha farmers. The soybean is an important part of vegetarian's diet because of its nutrients and is good source of protein for diabetics. For increasing adoption and ultimately the productivity of soybean crop the present study was planed with the following specific objectives.

1. To study the basic perception of soybean growers about the various recommended technologies of soybean crop.

2. To ascertain the important contributory factors which influences the utility perception of growers about the various recommended technologies of soybean crop.

MATERIAL AND METHODS

The present research study was based on exploratory research design of social research. The present study was carried out in Akola Panchayat Samiti of Akola district in Vidarbha region of Maharashtra State. Out of seven panchayat samiti in Akola district, Akola Panchayat Samiti was purposively selected for the study. In Akola Panchayat Samiti total area under cultivation is 96,800 ha, out of which the area under soybean crop was 22280 hectors during 2008-2009. The list of villages having cultivation of soybean crop during kharif 2008 was obtained from office of the *Panchayat Samiti.* Out of the total villages, 15 villages were selected purposively where the majority of farmers have taken soybean crop during kharif 2008. The list of soybean growers, who cultivate soybean crop continuously since last five years, was obtained from *talathi* office of respective village. From this list, 10 respondents were selected, from each village by disproportionate method of random sampling. Thus, 150 respondents constituted the sample for the present investigation.

Utility Perception

In the present study, utility perception was operationally defined as personal interpretation of soybean growers about usefulness of recommended soybean cultivation practices. Responses from respondents were collected on three point continuum *viz.,* very useful, useful and not useful by assigning score 2, 1 and 0 respectively. Raw utility perception score was converted into utility perception index by using following formula.

Utility perception index

$$= \frac{\text{Perception score actually obtained}}{\text{Maximum obtainable perception score}} \times 100$$

On the basis of utility perception index score respondents were categorized with the help of equal interval method as follows,

Sr. No.	Utility perception level	Range
1.	Low	Upto 33.33
2.	Medium	33.34 to 66.66
3.	High	Above 66.67

Determinants of Utility Perception

With a view to find the significant contributions of independent variables in utility perception of the soybean growers, all the selected variables were fitted into the regression analysis.

RESULTS AND DISCUSSION

Utility Perception

Detailed practice wise utility perception perceived by soybean growers had been presented in Table 1. From the data presented in Table 1 it is observed that respondents perceived most of the recommended practices as very useful and useful, while cultivating the soybean crop, except in some of the practices they perceived as not useful. Among them majority 115 (76.66%) perceived that use of micronutrients was not useful, followed by recomm- ended sowing depth (13.33%), recommended fungicides (12.00%), spacing (10.64%), recommen- ded fungicides for seed treatment (10.00%). While use of biofertilizers and chemical fertilizers through urea and super phosphate were perceived as not useful by each 7.33 per cent of the soybean growers. This might be due to lower knowledge level of farmers about these particular technologies.

Table 1
Distribution of the respondents according to their utility perception about recommended soybean cultivation technologies

Sr. No. Soybean cultivation technology	Utility perception		
	VU	U	NU
1. Ploughing (one deep ploughing)	109 (72.67)	38 (25.33)	3 (2.00)
2. Harrowing (two to three harrowing)	111 (74.00)	39 (26.00)	0 (0.00)
3. Variety (JS-335, TAMS-98-21)	83 (55.33)	59 (39.34)	8 (5.34)
4. FYM application (10-15 cartloads/ha)	120 (80.00)	26 (17.33)	4 (2.67)
5. Biofertilizers used (Rhizobium japonicum and PSB @ 250 g/10 kg seed)	89 (59.34)	50 (33.33)	11 (7.33)
6. Seed treatment (3 gm thiram + 1gm carbendazim / kg seed + Trichoderma 4 g /kg seed)	60 (40.00)	75(50.00)	15 (10.00)
7. Sowing time : 15th June to 15th July	132 (88.00)	18 (12.00)	0 (0.00)
8. Sowing depth : 3- 4 cm	64 (42.67)	66 (44.00)	20 (13.33)
9. Seed rate : 75 kg /ha (30 kg/acre	78 (52.00)	64 (42.67)	8 (5.33)
10. Spacing: Row to row 30 x 8 cm Plant to plant : 45 × 5 cm	64 (42.67)	70(46.67)	16 (10.6)
11. Intercropping Tur + Soybean (1:2) or Soybean + sorghum + tur (6:2:1)	109 (72.67)	40 (26.67)	1 (0.6)
12. Intercultural operation A. Hoeing (1st hoeing – 15-20 DAS 2nd if necessary)	87 (54.00)	67 (44.67)	2 (1.33)
13. Weeding (1st weeding :30 DAS and 2nd if necessary)	70 (46.67)	78 (52.00)	2 (1.33)
14. Protective irrigation (flowering and pod filling stage)	84 (56.00)	62 (41.34)	4 (2.66)
15. Micronutrient used (Zincsulphate : 10 kg/ha)	10 (6.68)	25 (16.66)	115 (76.66)
16. Fertilizers (NPK through Urea : 35 kg/ha, Superphosphate : 235 kg/ha)	61 (40.67)	78 (52.00)	11 (7.33)
17. Plant protection Stem borer (Trizophos spray 40% a.i. 10 mlit @ 10 lit of water) Leaf eating caterpillar (green leaf minor, tobacco leaf eating caterpillar, hairy catter pillar) (Dusting methyl parathion 2% or Endosulphan 4% dust @ 20 kg/ha or spray Endosulphan 35% E.C. 15 ml@ 10 lit of water)	59 (39.34)	84 (56.00)	7 (4.66)
18. Control measure Bacterial leaf spot (30 gm copper oxychloride + 1 g streptocycline in 10 lit of water) Rust (35 days after sowing, spray mencozeb 25 g in 10 lit of water)	62 (41.33	70 (46.67)	18(12.00)
19. Harvesting (Drying and yellowing of leaves, Brown colour of pods)	107 (71.3)	43 (28.67)	0 (0.0)

(Figures in parenthesis indicate percentage) VU – Very useful, U – Useful, NU – not useful

Table 2
Distribution of the respondents according to their overall utility perception about recommended technologies of soybean

Sr. No.	Utility perception	Respondents (n=150)	
		Number	Per cent
1.	Low	0	0.00
2.	Medium	125	83.33
3.	High	25	16.67
	Total	150	100.00

The efforts have been made to find out distribution of the respondents based on their overall utility perception level about recommended soybean cultivation technologies and same are presented in Table 2.

It is apparent from Table 2 that, very high (83.33%) per cent of the respondents had medium utility level about recommended technologies of soybean and 16.67 per cent possessed high level of utility perception. The findings are in line with the findings given by Manjunath *et al.* (1999).

Table 3
Regression coefficient between selected characteristics of the soybean growers with their utility perception

Sr. No.	Characteristics	Coefficient of regression 'b'	SE(b)
1	Age	0.0695	0.0447
2	Education	0.0797	0.0642
3	Past experience	0.03274	0.2076
4	Land holding	0.196572	0.1556
5	Annual income	0.0692	0.0185
6	Socio-economic status	0.222	0.1058*
7	Irrigation facilities	0.3006	0.2551
8	Input infrastructure	0.1524	0.0893
9	Information sources	0.0445	0.0686
10	Extension contact	0.19003	0.5309
11	Productivity	0.0925	0.0787
12	Family health	-0.8563	0.9058
13	Motivation	0.4550	0.5206
14	Knowledge	0.3983	0.1214**
15	Attitude	0.2173	0.0333**

R^2 = 0.7434   'F' value = 25.88*

* Significant at 0.05 level of probability

** Significant at 0.01 level of probability

Regression analysis of utility perception

The multiple regression coefficients of personal, socio-economic, situational, psychological and communicational characteristics, with their utility perception has been depicted in Table 3.

With a view to find the significant contributions of independent variables in utility perception of the soybean growers, all the selected variables were fitted into the regression analysis.

The results pertaining to the regression analysis revealed that, there was highly positive significant contribution of knowledge and attitude with the utility perception of the soybean growers about recommended technologies, whereas socio-economic status have shown positive significant contribution with utility perception. It means that, increase in socio-economic status; knowledge and attitude of the soybean growers leads to higher utility perception.

The contribution of age, education, past experience, land holding, annual income, irrigation facilities, input infrastructure, information sources, extension contact, productivity and motivation was not found significantly related with utility perception of the soybean growers.

When all the 14 variables were fitted in multiple regression equation the Coefficient of Multiple Determination (R^2) comes to 0.7434 and the obtained R^2 value was tested for its significance by computing F value and comparing it with "t" table value at n-k-1 degree of freedom and was found significant. This shows that all the selected 14 variables explained 74.34 per cent variation in utility perception of soybean growers.

CONCLUSION

The findings emerged out of the study revealed that relatively higher proportion of soybean growers possessed medium level utility perception about recommended technologies of soybean.

Amongst all the recommended technologies of soybean, some of the important practices were not perceived as useful by the farmers. Among them majority 115 (76.66%) perceived that use of micronutrients were not useful, followed by recommended sowing depth (13.33%), recommended fungicides (12.00%), spacing (10.64%), recommended fungicides for seed treatment (10.00%). While use of biofertilizers and chemical fertilizers through urea

and super phosphate were perceived as not useful by each 7.33 per cent of the soybean growers. This might be due to lower knowledge level of farmers about these technologies.

From multiple regression analysis it was inferred that coefficient of determination (R^2) of the independent variables was 0.7434 which means that 74.34 per cent of total variation in the utility perception was explained by the selected 14 independent variables. The non explained variation i.e. 25.66 per cent may be due to the factors not included in study. The variables socio-economic status had positive and highly significant relationship whereas, knowledge and attitude had positive and highly significant relationship with utility perception and other selected variables had no influence on utility perception of soybean growers. That means among all independent variables socio-economic status, knowledge and attitude were the most important contributory variables for increasing the utility perception of soybean growers about recommended technologies.

So, it is necessary to raise the knowledge and attitude level of soybean growers about the above mentioned recommended technologies. It will be definitely helpful for increasing the utility perception and ultimately the productivity which again helps for raising the socio-economic condition of the soybean growers.

In this context, it is implied that the information regarding recommended practices should be disseminated to the soybean growers by extension personnel of the State Department of Agriculture, Zilla Parishad, KVK's, NGO's, Agril. Universities etc. Should have to arrange demonstration, workshops, seminars, distribute the leaflets, folders and other printed material etc. for imparting knowledge and raising attitude level of soybean growers about recommended technologies.

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