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Attributes of broad bed furrow planter as perceived by the soybean

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Abstract

The present research study was conducted in Akola and Barshitaklitalukas of Akola district of Maharashtra state. Twelve villages were selected on the basis of more acreage under soybean cultivation and where BBF planter is used for sowing of soybean crop. From these villages those who had been using BBF planter for sowing soybean crop were selected constituting a sample of 120 respondents for the study. The broad bed furrow planter (BBF) is attributed to rain water conservation and consequently increasing the yield in dry land area. The data were collected on attributes of broad bed furrow planter as perceived by the soybean growers. The finding of the study revealed that, the majority (62.50%) of the respondents stated BBF planter as advantageous, followed by 61.67 per cent of the respondents who find it compatible with the existing system and previous experience. 55.83 per cent of the respondents stated it as simple and easy to handle, while 60.83 per cent of the respondent found it highly notable. As regard the trial ability, 53.33 per cent of the respondents stated it as trialable on small scale. These were the attributes of broad bed furrow planter as perceived by the soybean growers under study.

Keywords: Attributes, BBF planter, soybean growers, farm mechanization

Introduction

Soybean is an important crop in Vidarbha region in Akola district, the soybean production per unit area is comparatively low. The low yield may be attributed to non-adoption of latest rain water harvesting technologies by the farmers.

The broad bed and furrow (BBF) system has been mainly developed at the international crops research institute for the semi-arid tropics (ICRISAT) in India. It is a modern version of the very old concept of encouraging controlled surface drainage by forming the soil surface into beds. BBF planter is a developed for conservation of water for dry land farming. The planter preparing the broad beds and simultaneously sowing the seeds on the beds at required row and plant spacing. The moisture conservation on broad beds was higher than traditional method of sowing. In-situ water conservation makes the moisture available for the sown crop. It is necessary to adopt suitable technology to conserve the rain water in-situ to ensure adequate moisture during the various growing stages of the crop in rainfed farming.

While analysing the attributes Rogers and Shoemaker (1971) ^[10] identified 5 distinct characteristics of an innovation viz., relative advantage, compatibility (physical and cultural), simplicity, complexity, trial ability and observability this some classification was adopted in the present investigation.

Relative advantage: Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes.

Compatibility

Compatibility is the degree to which an innovation is perceived as being consistent with the existing values passed experience is and needs of the receivers.

a) Physical compatibility: It is the degree to which an innovation is pursued as consistent with the needs or situations of the receivers.

b) Cultural compatibility: It is the degree to which an innovation is perceived as consistent with the existing values of the receivers.

Complexity: Complexity is the degree to which an innovation is pursued as relatively easy or difficult to understand and use.

Observability: Observability is the degree to which the results of an innovation are visible to others.

Trialability: Trialability is the degree to which an innovation maybe experimented on a limited basis

The present investigation was planned to assess the responses of the soybean growers regarding their perception towards BBF planter.

Methodology

The present study was conducted in Akola district of Maharashtra. On the basis of maximum number of farmers using BBF planter in soybean crop. Two tahsils namely, Barshitakli and Akola were selected for the present study. A list of villages using BBF planter in soybean crop was collected. From this list, on the basis of maximum number of farmers using BBF planter in soybean crop within a village were selected from Barshitakliand Akola taluka. Accordingly, 6 villages from each taluka were selected. From each village 10 farmers and thus, total 120 respondents selected for the study, who had been using BBF planter for cultivation of soybean crop. The exploratory research design of social research was used. Attributes of broad bed furrow planter as perceived by the soybean growers was measured with the help of scale developed by Saddaramaiah and Nithya Shree (1996)

[8]. The items of the scale were developed taking into account the attributes of innovations. In all scale consisted of 20 items related with five selected attributes of innovation namely relative advantages (5), compatibility (5), complexity (5), trial ability (3) and observability (2) each item of the scale was rated on a 5point response continuum. In each perceived attribute, there were five statements, thus maximum obtainable score by an individual respondent was 25, whereas minimum was 5. On the basis of this raw score, attribute index was worked out by adopting following formula.

$$\text{Attribute index} = \frac{\text{Actual obtained score}}{\text{Maximum Obtainable score}} \times 100$$

For example: initial cost; very cheap; cheap; cannot say; expensive; very expensive; and scored as 5, 4, 3, 2 and 1 respectively. On the basis of theoretical index range respondents were categorised in three categories.

Results and Discussion

Attributes of broad bed furrow planter as perceived by the soybean growers

In present study, attributes is operationally defined as the degree to which a broad bed furrow planter perceived as useful by soybean growers. The information regarding the attributes of broad bed furrow planter as perceived by the soybean growers was collected, tabulated and analysed.

Table 1: Attributes of broad bed furrow planter as perceived by the soybean grower

Relative Advantage						
Scoring	1	2	3	4	5	
Initial cost	More expensive 34 (28.33)	Expensive 74 (61.67)	Cannot say 03 (02.50)	Cheap 02 (01.67)	More cheap 07 (05.83)	
Net profitability	Very meagre 00 (00.00)	Meager 62 (51.67)	Cannot say 05 (04.17)	Exorbitant 52 (43.33)	Very exorbitant 01 (00.83)	
Consistency of profit	More irregular 00 (00.00)	Irregular 30(25.00)	Cannot say 19 (15.83)	Regular 68 (56.67)	More regular 03 (02.50)	
Saving of time	More time consuming 00 (00.00)	Time consuming 01 (00.83)	Cannot say 5 (04.17)	Time saving 90 (75.00)	More time saving 24 (20.00)	
Multiple potential use	No benefits 00 (00.00)	Single benefits 01 (00.83)	Cannot say 5 (04.17)	Multiple benefit 85 (70.83)	More wider benefit 29 (24.17)	
Mean = 67.77						
Compatibility						
1. Situational compatibility	More unfeasible 00 (00.00)	Unfeasible 01 (00.83)	Cannot say 05 (04.17)	Feasible 97 (80.83)	More feasible 17 (14.17)	
2. Cultural compatibility	More non acceptable 00 (00.00)	Not acceptable 10 (08.33)	Cannot say 03 (02.50)	Acceptable 83 (69.17)	More acceptable 24 (20.00)	
3. Physical compatibility	More incompatibility with need 00 (00.00)	More incompatible with need 23 (19.17)	Cannot say 08 (06.66)	Compatible with need 57 (47.50)	More compatible with need 32 (26.67)	
4. Social compatibility	More non recognizable 00 (00.00)	Non recognizable 21 (17.50)	Cannot say 8 (06.67)	Recognable 66 (55.00)	More recognizable 25 (20.83)	
5. Relational compatibility	More dependent 00 (00.00)	Dependent 60 (50.00)	Cannot say 07 (05.83)	Independent 34 (28.33)	More independent 19 (15.84)	
Mean = 75.20						
Complexity						
Cognitive complexity	More complex 03 (02.50)	Complex 49 (40.83)	Cannot say 09 (07.50)	Simple 56 (46.67)	Very simple 03 (02.50)	
Application complexity	More unadaptable 00 (00.00)	Unadaptable 12 (10.00)	Cannot say 10 (08.33)	Adaptable 76 (63.34)	More adaptable 22 (18.33)	
Resource complexity	More scare 00 (00.00)	Scare 42 (35.00)	Cannot say 03 (02.50)	Abundant 52 (43.33)	More abundant 23 (19.17)	
Reversibility	More irreversible 00 (00.00)	Irreversible 13 (10.83)	Cannot say 04 (03.33)	Reversible 77 (64.17)	More reversible 26 (21.67)	
Labour efficiency	More labour consuming 01 (00.83)	Labour consuming 02 (01.67)	Cannot say 03 (02.50)	Labour saving 84 (70.00)	More labour saving 30 (25.00)	
Mean = 73.70						
Observability						
Observability	More unobservable	Unobservable	Cannot say	Observable	More observable	

		00 (00.00)	00 (00.00)	04 (03.33)	62 (51.67)	54 (45.00)
	Visibility	More invisible 00 (00.00)	Invisible 00 (00.00)	Cannot say 06 (05.00)	Visible 52 (43.33)	More visible 62 (51.67)
Mean = 88.83						
E	Trialability					
	Demonstrability	More non demonstrable 00 (00.00)	Non demonstrable 00 (00.00)	Cannot say 03 (02.50)	Demonstrable 67 (55.83)	More demonstrable 50 (41.67)
	Trialability	More non triable 00 (00.00)	Non triable 00 (00.00)	Cannot say 00 (00.00)	Triable 66 (55.00)	More triable 54 (45.00)
	Point of origin	More unreliable 00 (00.00)	Unreliable 02 (01.66)	Cannot say 02 (01.67)	Reliable 60 (50.00)	More reliable 56 (46.67)
Mean = 88.39						

Mean of overall attribute score= 78.78

It is apparent from Table 1. that, majority (61.67%) of the respondents perceived the initial cost of BBF planter as expensive. In case of net profitability 51.67 per cent of the respondents perceived as it gives meagre profit and 43.33 per cent of the respondents reflect the profitability as exorbitant. As regards consistency of profit, more than half (56.67%) of the respondents perceived it as regular and 25.00 per cent of the respondents stated it as irregular. 75.00 per cent of respondents perceived BBF planter is time saving and 70.83 per cent of the respondents perceived it was having multiple potential use of BBF planter. Regarding the compatibility of BBF planter it was noticed that, majority (80.83%) of the respondents perceived BBF planter is feasible over the situational compatibility and 14.17 per cent of the respondents perceived it as more feasible over the situational compatibility. Majority (69.17%) of the respondents perceived the BBF planter has been culturally acceptable and 26.67 per cent of the respondents perceived it as more compatible with need under the consideration. In case of social compatibility, it is observed that, 55.00 per cent of the respondent found it recognizable followed by more recognizable (20.83%) and non recognizable (17.50%), respectively. With regard to rational compatibility, 50.00 per cent of the respondent found more dependent, followed by 28.33 per cent and 15.84 per cent of the respondent comes under independent and more independent category. Complexity attribute was measured on the basis of cognitive complexity, application complexity, resource complexity, reversibility and labour efficiency required for this technology. In case of cognitive complexity, 46.67 per cent of the respondents observed it as simple and 40.83 per cent respondent found it under complex category. In case of application complexity,

majority (63.34%) of the respondent comes under adaptable category, followed by 18.33 per cent of the respondents stated that, BBF planter was more adaptable. Considering the resource complexity regarding BBF planter, 43.33 per cent of the respondents were having abundant resources, followed by 35.00 per cent of the respondents had scare resources, 19.17 per cent of the respondents comes under more abundant category. In case of reversibility, 64.17 per cent, 21.67 per cent and 10.83 per cent of the respondents were stated it as reversible, more reversible and irreversible respectively. Considering the labour efficiency, majority (70.00%) and 25.00 per cent respondents stated it as labour saving and more labour saving, respectively. In case of observability, 51.67 per cent and 45.00 per cent of the respondents were found is as observable and more observable. Similar results were found to be with regard to visibility i.e. more visible (51.67%) and visible (43.33%), respectively. The visibility and observability were helpful in confirmation of adoption of any technology as perceived by the respondent. If any innovation is trialable they create a positive impact in innovation decision process it may be the leading to acceptance or rejection. The BBF planter was found to be demonstrable and more demonstrable by 55.83 per cent and 41.67 per cent of the respondent. In case of trialability, 55.00 per cent and 45.00 per cent of the respondents perceived it as trialable and more trialable. The point of origin was found to be reliable and more reliable by 50.00 per cent and 46.67 per cent of the respondents. Hence, the overall trialability of BBF planter on the basis of demonstrability, trialability and point of origin was perceived on higher side.

On the basis of theoretical index range respondents were categories in three categories are given in Table. 2

Table 2: Distribution of the respondents according to their level of overall score of attributes

Sr. No.	Level of attributes of broad bed furrow planter	Respondents (n = 120)	
		Frequency	Percentage
A.	Relative Advantage		
1.	Less advantageous (Upto 62.66)	22	18.33
2.	Advantageous (62.67 to 73.32)	75	62.50
3.	Highly advantageous (Above 73.32)	23	19.17
B.	Compatibility		
1.	Less compatible (Upto 64.00)	15	12.50
2.	Compatibility (65.00 to 80.00)	74	61.67
3.	Highly compatible (Above 80.00)	31	25.83
C.	Complexity		
1.	Complex (Upto 61.33)	13	10.83
2.	Simple(61.34 to 78.66)	67	55.83
3.	Very simple (Above 78.66)	40	33.34
D.	Observability		
1.	Less notable (Upto 73.33)	06	05.00
2.	Notable (73.34 to 86.66)	41	34.17
3.	Highly notable (Above 86.66)	73	60.83
E.	Trialability		

1.	Less trialable (Upto 77.78)	07	05.83
2.	Trialable (77.79 to 88.89)	64	53.33
3.	Highly trialable (Above 88.89)	49	40.85

The data depicted in Table. 2 that, majority (62.50%) of the respondents stated that BBF planter was advantageous, followed by highly advantageous (19.17%) and less advantageous (18.33%), respectively. In all BBF planter was found to be advantageous to highly advantageous by 81.67 per cent of the soybean growers. Majority (61.67%) of the respondents stated the BBF planter as compatible, followed by, 25.83 per cent and 12.50 per cent of the respondents perceived it as highly compatible and less compatible. This may be due to absence of previous experience in working with the BBF planter. Overall 87.50 per cent of the respondents perceived the BBF planter as compatible to highly compatible level. Majority (55.83%) of the respondents stated that, BBF planter as simple to handle, followed by 33.34 per cent and 10.83 per cent of the respondents as very simple and complex with the existing system and previous experience of use of BBF planter. In all BBF planter was found to be simple to highly simple stated by 89.17 per cent of the soybean growers. In case of observability, majority (60.83%) of the respondents observed that, BBF planter was highly notable, followed by 34.17 per cent and 05.00 per cent of the respondents as notable and less notable. Overall 95.00 per cent of the respondents perceived the BBF planter as highly notable to notable level. Considering the trialability, majority (53.33%) of the respondents stated that BBF planter was trialable on small scale, followed by 40.85 per cent 05.83 per cent of the respondents noticed it as highly trialable and less trialable with the existing system and previous experience of use of BBF planter. In all BBF planter was found to be trialable to highly trialable by 94.18 per cent of the soybean growers.

The level of overall attributes of the respondents about broad bed furrow planter was ascertained and the findings are given in Table. 3

Table 3: Distribution of respondents according to their level of overall perception of attributes of BBF planter

Sr. No.	Overall attributes levels	Respondents n=120	
		Number	Percentage
1.	Low (Upto 73.96)	22	18.33
2.	Medium (73.97 to 82.18)	70	58.34
3.	High (Above 82.18)	28	23.33
	Total	120	100

According to data provided in Table 3, more than half of the soybean growers (58.34%) had medium perception about attributes of BBF planter, followed by 23.33 per cent of the respondents were having high level of perception about attributes of BBF planter and 18.33 per cent of the respondent had low level of perception about attributes of BBF planter.

Conclusion

The findings of the study revealed that, majority of the respondents observed that, BBF planter was advantageous (62.50%), compatible (61.67%) with the existing system and previous experience of use of BBF planter, easy to understand and handle (55.83%), highly notable (60.83%) and trialable on small scale (53.33%), respectively. Regarding overall attributes of the respondents about the BBF planter found that, more than half of the soybean growers (58.34%) had medium perception about attributes of BBF planter, while 23.33 per cent of the respondents had high level of perception of

attributes about BBF planter and only 18.33 per cent of the respondent had low level of perception about attributes of BBF planter. Hence, it is suggested to aware the farmers regarding its utility and practical use with technical details through various training, on farm trials and demonstrations by the concerned agencies.

References

1. Ashishkumar. Adoption behavior of farmers about recommended technologies of soybean. M.Sc. (Agri.) Thesis, (Unpub.), Dr. PDKV, Akola; c2012.
2. Asrani S, Kaushik S, Yadav KK, Asrani RK. Perceived attributes of poultry farming among scheduled caste rural women. J Dairying Foods & HS. 2012;31(1):68-71.
3. Chavan BJ. Utility perception of farmers about attributes of Bt cotton. M.Sc (Agri.) Thesis (Unpub.), Dr. PDKV, Akola; c2007.
4. Huded S. Perceived attributes of IPM technologies as perceived by Bt cotton growers. M.Sc. (Agri.) Thesis, Univ. Agric. Sci., Dharwad, Karnataka (India); c2013.
5. Jamnal SK. Perceived attributes of soybean production technology by the farmers. M.Sc. (Agri) Thesis, Univ. Agric. Sci, Dharwad, Karnataka (India); c2014.
6. Karthik KB, Manjunath BN. Attributes of hybrid seed production technologies as perceived by farmers. Mysore J Agric. Sci. 2011;45(2):375-378.
7. Khambalkar VP, Waghmare NN, Gajakos AV, Karale DS, Kankal US. Performance of broad bed-furrow planter in winter season of dryland crops. Int. Agric. Eng. J. 2014;23:14-22.
8. Nithya Shree DA, Siddaramaiah BS. A Scale to Measure the Perception of Attributes of an Innovation. University of Agricultural Science. Hebbel, Bangalore. Tropical Agricultural Research. 1996;8:55-61.
9. Prathyusha T, Vasantha R, Jagan Mohan Reddy M. Attributes of Bt cotton (*Gossypium*. spp.): A farmers' perspective. The J Res. ANGRAU. 2014;42(2):46-50.
10. Rogers EM. Diffusion of Innovation. New York: The Free Press; c1995.