Assessing Effect of Technologies Showcasing Programme on Adoption of the Demonstrated Technologies – A Case of Assam

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ABSTRACT

"Technology Showcasing Programme" one of the flagship programme of Assam Agricultural University, Jorhat, which was implemented since 2010-11, covering almost all Agro-climatic zones of Assam. The main objective of the programme was to replace farmers' traditional practices with the recommended cultivation practices of rice and oilseed crop with the help of different stakeholders' viz., KVKs, ASSCA, and State Department of Agriculture. Keeping in mind the present study was designed to assess the effect of programme in terms extent adoption of demonstrated technologies and to study relationship of socio economic characteristics of farmers with their extent of adoption. All total 120 farmers (60 participants and 60 non participants) were selected randomly from two districts of Assam by following random sampling techniques. The findings reveal that majority of participating farmers (43.33%) had medium level of adoption while 80% non participating farmers grouped into low level of adoption. The two mean difference of adoption level is found statistically significant which indicates positive effect of Technology Showcasing Programme. The extension contact, profitability, productivity and cropping intensity were positively correlated and operational land holding was negatively correlated with extent of adoption of demonstrated technologies of rice and toria. Appropriate selection of farmers for the demonstration by considering land holding size, frequency and nature of extension contact, percentage of cropping intensity enhance adoption of technologies.

Key words: *Technology showcasing; Extent of adoption;*

Technology is one of the main component for increasing production and productivity of crop. In order to enhance production and productivity of crop it is utmost important to adopt new technology for cultivation of crops. Technology adoption can only be enhanced through systematic approach. Moreover, food security is another issue which is related with poverty alleviation programme through increasing production and productivity of crop. Modern technologies will be adopted by farmers when required technologies are made available in their door steps through systematic approach. The Assam Agricultural University has been taken such systematic approach for transfer of technologies in the name of Technology Showcasing programme on rice and *toria* in massive scale in state of Assam with active participation of the farmers and other stakeholders. To change the mindset of the farmers by motivating through large scale demonstrations, the programme was implemented by the KVKs of the respective district in collaboration with RARS, State Department of Agriculture, Irrigation and farmers. The main objective of the programme was to replace farmers' traditional practices with the recommended cultivation practices of rice and oilseed crop with the help of different stakeholders' *viz.,* KVKs, Assam State Seed Certification Agency, and State Department of Agriculture. All total 3685 ha area was covered under the programme. Keeping this objective in view the present study was conducted to assess the extent adoption of demonstrated technologies and relationship of socio economic characteristics of farmers with their extent of adoption.

METHODOLOGY

The study was carried out in Jorhat and Sonitpur districts of Assam during 2013-14, where Technology Showcasing Programme was implemented in rice and toria during 2010-11. A purposive-cum proportionate

random sampling design was followed to select 120 sample respondents from the two districts of Assam where 60 participants and 60 non participants' farmers of Technology Showcasing Programme were included. Data were collected through personal interview methods. Extent of adoption as dependant and 14 nos. of socio-economic and psychological characteristics of the respondents as independent variables were considered in the study. The extent of adoption was measured by calculating the adoption scores of each practice for rice and toria and the area in which the practice has followed by a respondent in last season was expressed as percentage of the total cultivable area. Symbolically extent of adoption

$$EA_{ith} = \frac{AA_{ith}}{CA_{ith}} \times 100$$

EA_{ith} = Extent of adoption of ith practice

AA_{ith} = Actual cultivated area under ith Practice

CA_{ith} = cultivatable area under ith Practice

Appropriate statistical techniques like frequency, percentage, mean, and standard deviation, simple co-efficient of correlation and *t* test were used in analyzing and interpreting the data.

RESULTS AND DISCUSSION

Socio economic characteristics of the respondents: The analyze data showed in Table 1 that majority of participants (53.33%) and non participants (45.00%)

Table 1. Socio economic characteristics of participants and non participants

Variables/Category	P	NP
Age- Young (0- 35 years)	11 (18.33)	19 (31.67)
Middle (35 to 50 years)	32 (53.33)	27 (45.00)
Old (Above 50 years)	17 (28.33)	14 (23.33)
Edu. level- Illiterate	6 (10.00)	13 (21.67)
up to class IV	5 (8.33)	6 (10.00)
class V – X	32 (53.33)	27 (45.00)
class XI – XII	13 (21.67)	11 (18.33)
Graduate and above	4 (6.67)	3 (5.00)
Operational land holding		
Marginal (<1 ha)	11 (18.33)	17 (28.33)
Small (1 to 2 ha)	24 (40.00)	30 (50.00)
Semi-medium (2 to 4 ha)	23 (38.33)	11 (18.33)
Medium (4 to 10 ha)	2 (3.33)	2 (3.33)
Size of family		
Small (0-4 member)	19 (31.67)	22 (36.67)
Medium (5-7 member)	33 (55.00)	34 (56.67)
Large	8 (13.33)	4 (6.67)
Occupational status		
Only cultivation	46 (76.67)	45 (75.00)
Cultivation + skilled lab.	2 (3.33)	11 (18.33)
Cultivation + business	7 (11.67)	2 (3.33)
Cultivation + service	5 (8.33)	2 (3.33)
Annual farm income		
Below Rs. 35000	14 (23.33)	11 (18.33)
Rs. 35000 to Rs.70000	29 (48.33)	37 (61.67)
Rs. 70000 to Rs. 105000	11 (18.33)	7 (11.67)
Rs. 1050000 to Rs. 140000	3 (5.00)	1 (1.67)
Above Rs. 140000	3 (5.00)	4 (6.67)
Social participation		
Member	69 (81.18)	71 (93.42)
Active Member	6 (7.06)	0 (0.00)
Office bearer	10 (11.76)	5 (6.58)

cont. Table 1......

Extension contact		
Weekly	30 (50.00)	28 (46.67)
Fortnightly	7 (11.66)	9 (15.00)
Monthly	6 (10.00)	15 (25.00)
Sometimes	17 (28.33)	7 (11.66)
Cropping intensity		
Low (upto 100%)	7 (11.67)	6 (10.00)
Medium (100-200%)	46 (76.67)	47 (78.33)
High (Above 200%)	7 (11.67)	7 (11.67)
Risk preference		
Low (Below 12.54)	0 (0.00)	0 (0.00)
Medium (12.54 to 25.08)	0 (0.00)	0 (0.00)
High (Above 25.08)	60 (100.00)	60 (100.00)
Profitability of demo. tech. of Rice (Rs. /ha)		
Low (Below 1590.6)	15 (50.00)	15 (50.00)
Medium (1590.6 - 3181.2)	3 (10.00)	10 (33.33)
High (Above 3181.2)	12 (40.00)	5 (16.67)
Profitability of demo. tech. of Toria (Rs. /ha)		
Low (Below 1633.5)	23 (76.67)	15 (50.00)
Medium (1633.5 to 3267)	0 (0.00)	15 (50.00)
High (Above 3267)	7 (23.33)	0 (0.00)
Productivity of demo. Rice (kg/ha)		
Low (Below 1287)	4 (13.33)	11 (36.67)
Medium (1287 to 2574)	24 (80.00)	19 (63.33)
High (Above 2574)	2 (6.67)	0 (0.00)
Productivity of demo. Toria (kg/ha)		
Low (Below 371.25)	16 (53.33)	17 (56.67)
Medium (371.25 - 742.5)	0 (0.00)	13 (43.33)
High (Above 742.5)	14 (46.67)	0 (0.00)

(Figures in the parentheses indicates percentage) (P = Participant, NP = Non-Participant)

belonged to middle age category (35 to 50 years). This finding has conformity with Naik (2005) and Shivanand (2007). Majority of participants (53.33%) and non participants (45.00%) had education in between class V-X while for majority of the participants (40.00%) and non participants (50.00%) farmers were small farmers with land holding 1.0 ha to 2.0 hectare. Family size of majority of the participants (55.00%) and non participants (56.67%) was medium size family (5-7 members). The major occupation of participants (76.67%) and non participants (75.00%) was only cultivation with an annual farm income of participants (48.33%) and non participants (61.67%) within the range Rs.53,001 to 70,000. Majority of respondents of both the group participated in social organization as member only few participant farmers (7.06%) were active members in social organizations. Weekly contact with extension agencies such as VLEW, KVK, ADOs, NGO personnel were observed for majority of respondents in both group of respondents Majority of the participants (76.67%) and non participants (78.33%) had medium (100% to 200%) cropping intensity. Full proportion of both the groups of respondents was in high level of risk preference. Majority of participants and non participants (50.00% each) had found low profitability in rice and toria cultivation. In case of productivity, majority of participants (80.00%) and non participants (63.33%) had medium productivity in rice and low productivity (53.33% participants and 56.67% non participants) in toria cultivation.

Extent of adoption of demonstrated technologies: It is evident from Table 2 that majority of participants (43.33%) had medium followed by high level of adoption of demonstrated technologies while for majority non participants farmers (80.00%) had low level followed by medium level of adoption (18.33). This finding is conformity with *Poswal et al. (2005) Singh, P.K et. al.(2010)* and *Chouhan et al. (2013).* The mean score for both participant and non participants groups were 29 and 14. This indicates the there is difference between participants and non participants group in terms of extent of adoption. The t- value of the mean difference is found significant at 1% level of probability. Higher mean score of participants indicate the adoption was more in case of participants farmers which may be due to Technology showcasing programme.

Table 2. Distribution of participants (P) and non participants (NP) according to their overall extent of adoption of technologies (N=120)

Category	No.		Mean	
	P	NP	P	NP
Low (Below 19.8)	14 (23.33)	48 (80.00)	29 (SD=13.15)	14 (SD=9.0)
Medium (19.8 to 39.6)	26 (43.33)	11 (18.33)		
High (Above 39.6)	20 (33.33)	1 (1.67)		

Cal. 't'=7.16**

(Figures in the parentheses indicates percentage) {P = Participant (n₁=60), NP = Non-Participant (n₂=60)}

Distribution of participants and nonparticipants farmers according to adopter category of rice: It is evident from Table 3 that more than 40% respondents of both the group full and partial adopter of HYV seeds and harvesting time. The adopter proportion of demonstrated practices like application Urea, Single super phosphate, Murat of Potash, were more in participants farmers than non participants farmers. While seed treatment, sowing time and methods, spacing, application of DAP, Zink sulphate, weeding and application of pesticide were adopted either full or partially by only participants farmers. Irrigation practices were not adopted by both groups of respondents.

Distribution of participants and nonparticipants farmers according to adopter category of Toria: The 'high yielding variety', 'application of urea, SSP, MOP', 'application of recommended pesticides against diseases and pests and harvesting at physiological maturity' were adopted by majority of participants farmers with more proportion as compared to non participants farmers. The 'seed treatment', 'spacing weeding' and 'irrigation' were not adopted by farmers of both groups.

Relationship between extent of adoption and selected socio economic characteristics of participants farmers: The findings on Pearson Correlation showed that profitability (r=0.45) and productivity (r= 0.41) had moderate positive and significant association with extent of adoption while cropping intensity (r= 0.28) had low positive and significant association with the extent of adoption was found. It implies that with the increase in level of profitability and productivity there is increase in the rate of adoption of demonstrated technologies of rice and

Table 3. Practice wise distribution of adopters of demonstrated technologies of rice by the participants and non participants farmers (N=60)

Practices	P (n$_1$=30)		NP (n$_2$=30)	
	Full	Paral	Full	Partial
Seed source/ use of HYV	14 (46.67)	16 (53.33)	12 (40.00)	15 (50.00)
Seed treatment	0 (0.00)	7 (23.33)	0 (0.00)	0 (0.00)
Sowing time and method of sowing	0 (0.00)	11 (36.67)	0 (0.00)	0 (0.00)
Spacing	0 (0.00)	26 (86.67)	0 (0.00)	0 (0.00)
Application of Urea	15 (50.00)	10 (33.33)	5 (16.67)	22 (73.33)
Application of DAP	10 (33.33)	5 (16.67)	0 (0.00)	0 (0.00)
Application of SSP	4 (13.33)	4 (13.33)	1 (3.33)	5 (16.67)
Application of MOP	14 (46.67)	8 (26.67)	1 (3.33)	6 (20.00)
Application of Zinc Sulphate (ZnSO$_4$)	0 (0.00)	1 (3.33)	0 (0.00)	0 (0.00)
Weeding	3 (10.00)	4 (13.33)	0 (0.00)	0 (0.00)
Irrigation	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Application of pesticides	1 (3.33)	6 (20.00)	0 (0.00)	1 (3.33)
Harvest at physiological maturity	14 (46.67)	16 (53.33)	16 (53.33)	14 (46.67)

Table 4. Practice wise extent of adoption of demonstrated technologies of *Toria* by the participants and non participants (N = 60)

Practices	P (n$_1$=30)		NP (n$_2$=30)	
	Full	Partial	Full	Partial
Seed source/ use of HYV	11 (36.67)	18 (60.00)	5 (16.67)	24 (80.00)
Seed treatment	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Sowing time and method of sowing	0 (0.00)	3 (10.00)	0 (0.00)	0 (0.00)
Spacing	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Application of Urea	11 (36.67)	18 (60.00)	4 (13.33)	23 (76.67)
Application of DAP	0 (0.00)	14 (46.67)	1 (3.33)	14 (46.67)
Application of SSP	11 (36.67)	2 (6.67)	0 (0.00)	2 (6.67)
Application of MOP	10 (33.33)	14 (46.67)	1 (3.33)	12 (40.00)
Application of Borax	0 (0.00)	10 (33.33)	1 (3.33)	7 (23.33)
Application of Zinc sulphate (ZnSO$_4$)	0 (0.00)	3 (10.00)	1 (3.33)	4 (13.33)
Weeding	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Irrigation	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Application of pesticides	2 (6.67)	13 (43.33)	0 (0.00)	3 (10.00)
Harvest at physiological maturity	11 (36.67)	18 (60.00)	5 (16.67)	24 (80.00)

(Figures in the parentheses indicates percentage) P= Participants, NP= Nonparticipants

toria. Again, participants with higher cropping intensity had higher extent of adoption. On the other hand, operational land holding had low negative and significant association with the extent of adoption of demonstrated technologies for rice and toria, i.e. the percentage of adopters was observed better among those participants who were small farmer category (1.0 to 2.0 ha). t was found out that age, educational level, family size, occupational status, annual farm income, social participation, extension contact and risk preference had no profound significant association with extent of adoption. This finding is conformity with *Manjula et al.,* (2007) and *Chouhan et al.,*(2013). Operational land holding was negatively correlated with the extent of adoption of demonstrated technologies in Technology Showcasing Programme on rice and toria.

Table- 5. Relationship between extent of adoption and selected independent variables of participant farmers

Variables	r' values	Cal 't'
Age	0.1381	1.0622
Educational level	-0.0133	0.1015
Operational land holding	-0.2167	1.6904**
Family size	-0.0625	0.4770
Occupational status	0.1959	1.5213
Annual farm income	-0.0935	0.7151
Social participation	0.0740	0.5653
Extension contact	-0.1096	0.8395
Profitability	0.4545	3.8859*
Productivity	0.4079	3.4027*
Cropping intensity	0.2800	2.2213**
Risk preference	-0.0526	0.4009

(* Significant at 1% Level of probability, ** Significant at 5% Level of probability)

CONCLUSION

The majority of participants' farmers were belonged to medium level of adoption category while for non participants' farmers it was low extent of adoption. This indicates that adoption level of demonstrated technologies was significantly higher in case of participants' farmers due to Technology Showcasing Programme. Hence, such a large demonstration programme should be conducted for enhancing adoption level of farmers. Since profitability and productivity of technologies are found important determinants for level of adoption, so due consideration should be given by implementing agency during selection of technologies for a particular situations. Moreover, implementing agency should give emphasis for inclusion small and marginal farmers in such demonstration programme. Some cultivation practices were not adopted by the farmers of both the group due to lack of facilities and compatibility with their situation and existing knowledge and skill, so sincere efforts are required from research system, extension system and policy makers.

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