Asian Journal of Agricultural Extension, Economics & Sociology

Volume 41, Issue 5, Page 1-7, 2023; Article no.AJAEES.98736
ISSN: 2320-7027

Adoption of Rice Crop Technology in Barabanki District: Constraints and Remedies

Aswani Kumar [a++], H. C. Singh [b#], Birendra Kumar [c†], Bhartendu Yadav [c‡*] and Satyendra Kumar [d‡]

[a] Agricultural Extension, C.S.A.U.A. & T., Kanpur, India.
[b] Extension Education, C.S.A.U.A. & T., Kanpur, India.
[c] Agricultural Economics and Statistics, C.S.A.U.A. & T., Kanpur, India.
[d] C.S.A.U.A. & T., Lakhimpur Kheri, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2023/v41i51892

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/98736

Original Research Article

Received: 05/02/2023
Accepted: 07/04/2023
Published: 08/04/2023

ABSTRACT

In Barabanki district of Uttar Pradesh 250 respondents were studied on their faced constraints and suggested measures over technology adopted in rice crop by Probability proportion to size and Random sampling method between ATMA and non-ATMA farmers. Descriptive statistics was used to draw and interpret the results from the collected data. Results stated that the most serious constraints were perceived by the majority of trained farmers and non-trained farmers both. It was suggested that proper information dissemination and low-cost input use should be adopted for profitable agriculture and improving socio-economic condition of rural India.

[++] Research Scholar;
[#] Professor;
[†] Assistant Professor;
[‡] Teaching Associate;
**Corresponding author: E-mail: yadvbhartendu@gmail.com;*

Keywords: ATMA; constraints; rice; agriculture.

1. INTRODUCTION

Growth in agriculture is vital in order to ensure fairness in food and nutritional security in the rural areas. There is strong relationship between agriculture growth reduction in poverty and malnutrition and creating equitable society as compared to growth in other sector in the context of the Indian government push to dabble form income by 2020. Agriculture extension system bridges the gap between research labs to a farmers' field. The Indian agriculture is at the turning point today. The agricultural growth has powerful leverage effects on the rest of the economy and all the three basic objectives of economic development of the country, viz. poverty alleviation, output growth, and price stability are the best contribute by the growth of the agricultural sector [1,2]. Agricultural Technology Management Agency (ATMA) is a registered society responsible for more effective and efficient dissemination of available agricultural technologies at district level. The scheme was scaled to 252 districts in the country during the 10th plan [3] (Naidu *et al.,* 2004). ATMA was enhancing the technology dissemination in agriculture sector resulted Food grain production increased from 50 million tonnes in 1950-51 to 257 million tonnes in 2011-12 by a factor of 5.14 [4,5,6]. Therefore, the per capita food production increased by 56 per cent over a period of six decades a commendable achievement. Food production may have to be increased drastically because the population may be 1.69 to 1.8 billion by 2050 and 1.85 to 2.18 billion by 2100. Despite the increasing trends in productivity of crops between 1970 and 2011, great yield of major crops in India are lower than the attainable potential, and considerably below the maximum yields obtained in other countries. Thus, agriculture in India has a long road ahead to realize its full potential [7,8]. Therefore, a study is being conducted to analyze the constraints and obtain ground level view of the producers in Rice Crop Technology dissemination gained by the ATMA farmers in Barabanki district of Uttar Pradesh [9].

2. METHODOLOGY

Probability Proportion to Size (PPS) method was adopted for the study of 125 ATMA farmers (trained) and 125 non-ATMA farmers (untrained) picked from the 16 designated villages (the list of beneficiaries from the two blocks namely Banki and Nandaura, received from the ATMA office, Barabanki), a total of 250 respondents. Survey was conducted and accomplished with a well-structured and pre-tested interview schedule to gather information from the respondents. Data collected was analysed and results were drawn with the help of suitable statistical tools.

3. RESEARCH FINDINGS

The reasons why trained and untrained farmers are less likely to use twelve chosen techniques of advanced rice agriculture technology is presented in Table 1 which summarizes the severity of the limitations.

a. Seed technology: Table 1 clearly shows the limitations experienced by skilled farmers, which are, in decreasing order, ignorance of how to cultivate HYVs of paddy crop (0.21MS) at the top and lack of timely access to HYVs seed (0.17MS) at the bottom.

Like this, the limitations experienced by untrained farmers are listed in declining order, with lack of timely access to HYVs seed (0.59MS) at the top and ignorance of how to cultivate HYVs of paddy crop (0.48MS) at the bottom.

b. Seed treatment: Table 1 shows that the main barrier to low adoption of seed treatment practices for trained farmers was not the availability of seed dressers (0.78MS) at the top of the list, followed by high chemical costs (0.34MS), lack of awareness (0.29MS), and lack of knowledge (0.11MS) at ranked second, third, and fourth, respectively.

Likewise, in case of untrained farmers the constraint faced by them, arranged in descending order viz., not availability of seed dresser (0.92MS) was reported most important constraints which was at first rank after that lack of awareness (0.79MS), high cost of chemicals (0.74MS), lack of knowledge (0.47MS) at ranked second, third and fourth respectively.

c. Soil treatment: It is evident from the Table 1 that the constraint faced by trained and untrained farmers with different mean score value, arranged in descending order viz., high cost of chemicals (0.32MS), lack of assured irrigation (0.31MS), lack of awareness (0.11MS), lack of knowledge (0.08MS) at ranked first, second third and fourth, respectively. These constrains are less important for trained farmers than untrained farmers.

Table 1. Distribution of respondents according to their perceived constraints in adoption of improved paddy cultivation technology

S. No.	Constraints	ATMA Farmers		Non-ATMA Farmers	
	Seed Technology	**Mean Score (MS)**	**Rank**	**Mean Score (MS)**	**Rank**
1	Lack of knowledge of growing HYV paddy	0.21	I	0.48	II
2	Non availability of HYV seed in time	0.17	II	0.59	I
Seed treatment					
1	Lack of knowledge	0.11	IV	0.47	IV
2	Not availability of seed dresser	0.78	I	0.92	I
3	Lack of awareness	0.29	III	0.79	II
4	High cost of seed treatment fungicide	0.34	II	0.74	III
Soil Treatment					
1	Lack of knowledge	0.08	IV	0.59	IV
2	Lack of awareness	0.11	III	0.66	III
3	High cost of chemicals	0.32	I	0.75	I
4	Lack of assured irrigation	0.31	II	0.69	II
Soil Analysis technology					
1	Lack of knowledge	0.08	II	0.52	III
2	Lack of awareness	0.07	III	0.62	II
3	Lack of soil testing facility	0.52	I	0.87	I
Fertilizer technology					
1	Lack of irrigation facility	0.39	II	0.57	III
2	Non availability of fertilizers in time	0.13	III	0.58	II
3	High cost of fertilizers	0.49	I	0.69	I
Plant Protection Technology					
1	Lack of knowledge	0.08	VI	0.45	V
2	Non availability of pesticide	0.11	V	0.56	III
3	High cost of pesticide	0.26	I	0.63	I
4	Adulterated pesticide	0.22	II	0.57	II
5	Unavailability of plant protection equipment's	0.21	III	0.46	IV
6	Non-convinced about their effectiveness	0.19	IV	0.21	VI
Storage and Marketing					
1	Low market price at crops harvesting	0.37	II	0.67	I
2	Lack of remunerative price	0.39	I	0.66	II
3	Lack of transportation facilities	0.32	V	0.51	III
4	Lack of storage facilities	0.36	III	0.33	IV
5	High cast of storage facilities	0.35	IV	0.24	V
6	Lack of market facility	0.21	VI	0.13	VI
General					
1	High cost of diesel	0.84	I	0.94	I
2	Lack of electricity	0.41	II	0.46	III
3	Lack of money	0.37	III	0.49	II
4	Lack of credit facilities	0.29	IV	0.37	IV
5	Required quantity & quality of inputs is not meet available at a common place	0.21	V	0.25	V

Likewise, in the case of untrained farmers the constraint faced by them, arranged in descending order viz., high cost of chemicals (0.75MS), lack of assured irrigation (0.69MS), lack of awareness (0.66MS), lack of knowledge (0.59MS) at ranked first, second, third and fourth, respectively. Also, most important constrains of untrained farmers.

d. Soil analysis technology: According to Table 1, the most significant barrier for skilled farmers was a lack of a soil testing facility (0.52 MS), which came in first place. The least significant restraints were knowledge and awareness deficits (0.08 MS and 0.07 MS, respectively).

Similar restrictions apply to unskilled farmers, with a lack of a soil testing facility (0.87 MS) ranking top, followed by a lack of awareness (0.62 MS) and a lack of knowledge (0.52 MS) at second and third, respectively. For skilled farmers compared to inexperienced farmers, these restrictions are more crucial.

e. Fertilizer technology: The restriction experienced by skilled farmers, listed in decreasing order in Table 1, was the high cost of fertilizers (0.49 MS), the absence of irrigation infrastructure (0.39 MS), and the inability to get fertilizers on time (0.13 MS), respectively. Similar to trained farmers, untrained farmers faced three major constraints: high fertilizer costs (0.69 MS), timely fertilizer supply (0.58 MS), and no irrigation infrastructure (0.57 MS). These three factors were placed first, second, and third in order of importance for untrained farmers.

f. Plant protection technology: It is clear from Table 1 that the constraints faced by trained farmers are, in descending order, as follows: high cost of pesticide (ranked at 0.26 MS), followed by adulterated pesticide (ranked at 0.22 MS), lack of plant protection equipment (ranked at 0.21 MS), lack of conviction regarding their efficacy (ranked at 0.19 MS), non-availability of pesticide (ranked at 0.11 MS), and lack of knowledge (ranked at 0.08 MS).

Similarly, for untrained farmers, the challenge was as follows: high cost of pesticide (0.63 MS) was ranked at first, followed by adulterated pesticide (0.57 MS), non-availability of pesticide (0.56 MS), unavailability of plant protection equipment (0.46 MS), lack of knowledge (0.45 MS), and non-convinced about their effectiveness (0.21 MS), respectively.

g. Storage and marketing: According to Table 1, the constraints faced by trained farmers are as follows, listed in descending order: lack of remunerative price (0.39MS), low market price at crop harvesting (0.38MS), lack of storage facilities (0.34MS), high cast of storage facilities (0.35MS), lack of transportation facilities (0.32MS), and lack of market facility (0.21MS), respectively.

Similarly, for untrained farmers, the constraint they faced was listed in descending order as follows: low market price at crop harvest (0.67 MS), lack of remunerative price (0.66 MS), lack of transportation facilities (0.51 MS), lack of storage facilities (0.31 MS), high cast of storage facilities (0.24 MS), and lack of market facility (0.13 MS), respectively.

h. General: It is clear from Table 1 that the constraints experienced by trained and untrained farmers were of roughly equal severity as shown by the mean score of the farmers' constraints, arranged in descending order: high cost of diesel, lack of electricity, lack of money, lack of credit facilities, required quantity and quality of inputs is not meet available at a common place were at ranked first (0.84MS), second (0.41MS), third (0.37MS), fourth (0.29MS), and fifth (0.84MS).

Similar to this, the constraints faced by untrained farmers were ranked first (0.94MS), second (0.49MS), third (0.46 MS), fourth (0.37MS), and fifth (0.25MS), respectively. These constraints included high diesel costs, a lack of money, a lack of electricity, a lack of credit facilities, and the inability to obtain the required quantity and quality of inputs from a common source.

It is evident from the discussion in Table 1 above that the degree of severity of the same limitations was for untrained farmers rather than untrained farmers based on the study of the mean score of trained and untrained farmers. Because of the ATMA program, trained farmers received training whereas untrained farmers did not get training under any program of this kind.

It is evident from Table 2 above that the majority of trained (0.84 MS) and unskilled (0.95 MS) farmers chose the limitation "high cast of diesels" as their top concern. The lack of a seed dresser (0.79 MS), a soil testing facility (0.49 MS), high fertilizer costs (0.49 MS), a lack of electricity (0.41 MS), and a lack of a remunerative price (0.39 MS) were the other significant constraints faced by trained farmers, and they were ranked second, third-a, third-b, fourth, and fifth, respectively.

The lack of a seed dresser (0.92 MS), a soil testing facility (0.85 MS), a lack of awareness of seed treatment (0.81 MS), and the high cost of chemicals for seed treatment (0.77 MS) were the major challenges faced by untrained farmers, and they were ranked second, third, fourth, and fifth, respectively.

Table 2. Constraints that respondents ranked as their top five most significant type issues

S. No.	Constraints	ATMA Farmers		Non-ATMA	
		Mean Score	Rank	Mean Score	Rank
1	High cost of diesel	0.84	I	0.95	I
2	Not availability of seed dresser	0.79	II	0.92	II
3	Lack of soil testing facility	0.49	IIIa	0.85	III
4	High cost of fertilizers	0.49	IIIb	-	-
5	Lack of electricity	0.41	IV	-	-
6	Lack of remunerative price	0.39	V	-	-
7	Lack of awareness of seed treatment	-	-	0.81	IV
8	High cost of seed treatment	-	-	0.77	V

Table 3. Respondents' distribution based on their overall restrictions

S. No	Categories	ATMA farmers		Non- ATMA farmers	
		Frequency	Percentage	Frequency	Percentage
1	Low (Scores less than 50)	18	14.4	19	15.2
2	Medium (Scores less than 50 to 65)	94	75.2	85	68
3	High (Scores 65 and above)	13	10.4	21	16.8
Total		125	100	125	100

Table 4. Responses were distributed based on how respondents felt enhanced paddy farming techniques should be used

S. No.	Remedial Measures	ATMA Farmers			Non- ATMA Farmers		
		No.	(%)	Rank	No.	(%)	Rank
1	Improved seed variety should be provided at right time	51	40.8	IIIa	73	58.4	Ia
2	A loan should be easily available and at a low rate of interest	42	33.6	IV	52	41.6	V
3	The quality & quantity of fertilizer with other inputs should be available at time and at a common place	35	28	VIIa	41	32.8	VIII
4	Trainings program should be organized in time to time regarding improved practices of paddy crop	25	20	VIIb	73	58.4	Ib
5	Information regarding plant protection should be available at right time	39	31.2	Va	61	48.8	III
6	The input should be provided at low cost to poor and small farmers	53	42.4	II	71	56.8	II
7	There should be proper marketing channel in the area	33	27	VI	56	44.8	IV
8	Farmer should form a cooperative group to sell their produce in bulk quantity	59	47.2	I	51	40.8	VI
9	Transportation facilities should be strong	39	31.2	Vb	49	39.2	VII
10	Government should provide storage facilities at vicinity	51	40.8	IIIb	40	32	IX

According to Table 3 above, most farmers in the trained group (75.2%) fall into the medium category, with the low (14.4%) and high (10.4 percent). Similar to this, the majority (68%) of farmers in the untrained group fall into the medium category, which is then followed by high (16.8%) and low (15.2%), respectively. The trained farmers' total mean score is 36.78, while the untrained farmers' average score is 52.86, with a 16.08 difference between the two. As a result, the disparity in mean score demonstrates how severe the limits are for unskilled farmers.

This leads to the conclusion that trained farmers had an overall mean score of 36.78, while untrained farmers had an overall mean score of 52.86, with a 16.08 difference between the two. As a result, the disparity in mean score demonstrates how severe the limits are for unskilled farmers.

The Table 4 displays the various corrective actions as seen by both skilled and untrained farmers. Most skilled farmers agreed with the advice that they should create a cooperative organization to sell their products in large quantities. 47.2 percent Rated I, "the input should be made affordable to small and impoverished farmers." (42.4%) rated II, stating that "better seed variety should be offered at the appropriate time." (40.8%) rated IIIa, stating that "government should provide storage facilities nearby." Loans should be freely accessible and have reasonable interest rates, according to the (40.8) rated IIIb. 33.6 percent ranked IV, "Plant protection information should be supplied at the appropriate time" According to Va (31.2%), "transportation facilities should be robust." "The quality and amount of fertilizer with other inputs should be supplied at time and at a common site," was graded Vb (31.2 percent). (27%) rated VI, stating that "the region needs have appropriate marketing channels." (28%) graded VIIa and said that "trainings programs should be periodically established for better methods of paddy production." rated VIIb in 20 percent. Most untrained farmers received the advice that "better seed variety should be delivered at the correct time" when it came to untrained farmers. (58.4%) gave the grade Ia, saying that periodic training programs on better paddy cultivation methods should be developed. (58.4%) gave the grade Ib, stating that "the input should be made available to poor and small farmers at a moderate cost." (56.8%) rated II, stating that "knowledge on plant protection should be accessible at the appropriate time." (48.8%) rated III, with "appropriate marketing channel in the region" as their main recommendation (44.8%) rated IV, stating that "loans should be readily accessible and have cheap interest rates." Ranking V, "Farmers should create a cooperative association to sell their goods in huge quantities," (41.6 percent). Ranking VI, "transportation facilities should be robust," 40.8 percent. "The quality and amount of fertilizer with other inputs should be provided at time and at a common area" was placed seventh (by 39.2 percent). 32.2 percent rated VIII, and IX, with 32% saying that the government should build storage facilities nearby.

4. CONCLUSION

Most of the trained farmers (75.20%) had perceived an overall medium level of constraints followed by low and high, respectively, whereas the majority of the untrained farmers (68%) had perceived an overall medium level of constraints followed by high and low, respectively. The most serious constraints were perceived by the majority of trained farmers i.e. ‘high cost of diesel’ ranked first, ‘not the availability of seed dresser’ ranked second, ‘lack of soil testing facility’ ranked third-a and ‘high cost of fertilizers’ ranked at third-b. Likewise, the most serious constraints were perceived by the majority of untrained farmers, i.e. ‘high cost of diesel’ ranked first, ‘lack of soil testing facility’ ranked second and ‘not the availability of seed dresser’ ranked third. Most educated farmers rated the recommendation that farmers join cooperatives in order to sell their products in bulk first, followed by the recommendation that the government makes agricultural inputs more affordable for small and impoverished farmers. Most untrained farmers thought that "improved seed variety should be provided at the right time," "training program should be organized from time to time regarding improved practices of paddy crop," and "information regarding plant protection should be available at the right time," and "the input should be provided at low cost to poor and small farmers" were the most important suggestions.

5. RECOMMENDATIONS

- Farmers must follow improved practices made known and available by agencies.
- Training of producers must be looked seriously into to make farming population skilled.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Matwa J, Deshmukh G. Consequences of ATMA project and related constraints and suggestions in Anand district of Gujarat in

India. Curr Agri Res Jour. 2014;2(2): 98-101.
DOI: 10.12944/CARJ.2.2.06

2. Panda S, Pal PK. Constraints faced by block level ATMA functionaries in providing pluralistic extension services in the Cooch Behar district of West Bengal. Int J Curr Microbiol Appl Sci. 2020;9(11):430-4.
DOI: 10.20546/ijcmas.2020.911.052
3. Kumar N, Mishra A, Mishra S, Yadav SR. Constraints faced by ATMA and Non-ATMA farmers in the adoption of wheat crop technology in central zone of U.P. Journal of Pharmacognosy & Phytochemistry. 2020;9(45):559-62.
4. Ranaware AP, Kolgane BT, Khogare DT. Study on representative farmers in the activities and constraints of ATMA. Agric Update. 2012;7(3&4):275-8.
5. Das P, Borua S. Constraints faced by ATMA extension functionaries of Assam, India and their suggestions to overcome them. Asian Journal of Agricultural Extension. Econ Sociol. 2017;17(1):1-7.
6. Neelam HSC, Kadian KS. Constraints under ATMA extension system and suggestions for its better performance: an explorative study of stakeholders of ATMA in A.P., India. Plant Arch. 2018;18(1):190-4.
7. Chaturvedani AK, Chander M, Pratap J, Goyal J. Constraints in extension services delivery perceived by ATMA beneficiary farmers of Chhattisgarh. Int Arch Appl Sci Technol. 2017;8(1):12-6.
8. Sharma A, Khare NK. Constraints perceived by the farmers friends of M.P. in implementation of ATMA. J Pharmacogn Phytochem. 2017;SP1:980-3.
9. Naidu JYN, Philip H, Asokhan M, Balasubramanian R, Duraisamy MR. Constraints faced by stakeholders under ATMA. J Extension Educ. 2012;28(4): 57-68.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/98736