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RESEARCH PAPER

Measuring perceptions of recommended technologies of sali rice by farmers of Assam

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Abstract : Rice (*Oryza sativa* L.) is the staple food for most of the Asian country including India. To achieve national food security, numerous technologies have already been developed to harness the potential yield of rice. But these technologies still awaits their full exploitation by the farmers due to differential perception of farmers towards those technologies. Farmers' perception towards the attributes of recommended technologies if studied can provide useful information and help in improving the adoption rate and speeding up the whole diffusion process. Therefore, the present study was conducted to determine the perception of the farmers towards attributes of recommended technologies of sali rice for adoption decisions. In the present study sali rice varieties recommended by Assam Agricultural University were studied in Jorhat district of Assam. Total 120 farmers' respondents were taken as a sample. Total five perceived attributes were studied. The study found that a majority of the respondents perceived the recommended practices like variety, seed selection, field preparation, compost application, transplanting age, depth of planting of seedlings and manual intercultural operations to be relatively advantageous. Recommended practices like seed treatment, line transplanting, number of seedlings per hill, water management practices and plant protection measures were perceived to be complex by the majority of the respondents.

Key Words : Perceived attributes, Sali rice technology, Farmers, Assam

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INTRODUCTION

Rice accounts for more than sixty five per cent of caloric intake in the developing countries in tropical Asia. For the poor people, it is the basic crop and the major source of income and employment. In Asia alone, more than 2 billion people obtain 60-70 per cent of their caloric intake from rice and its derived products (Diouf, 2003). The green revolution enabled the rice production to meet the demands of the increasing population and helped many countries to escape from starvation. But it is said that after the 1990s, the rice production has not been increasing at the same rate as that of the population of the world. The decrease in the rice production has become a major concern in relation to the world food security and poverty alleviation which is the dramatic and the most urgent problem of today's world. According to the Food and Agriculture Organization (FAO), the global rice requirement in 2025 will be on the order of 800 million tons. Now, production is less than 600 million tons. The additional 200 million tons needed, will have to be produced by increasing productivity per hectare. The average productivity may have to go up to 8 tons per hectare from the present near 5 t/ha (Swaminathan, 2007). The growth of population is imposing an increasing pressure on the farmers to produce more rice, that too, with better quality to meet the future demands. Moreover, this additional larger quantity of rice has to be produced on limited land, with less water, less labour, and fewer chemicals (*http://ijrce.org/download.php?=58-61.pdf*). The situation is also not different in Assam, a rice based state of India. The productivity of rice in Assam is ranges from medium low to very low (between 2000 to 999 kg/ha) (Source: http://

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drdpat.bih.nic.in/PA-Table-03-Assam.htm). At present there is a wide gap in yield of rice between research station (5.5-4.0 t/ha), front line demonstration (4.5-3.5 t/ha) (Ahmed *et al*. nd) and farmers' field (1.93 t/ha in 2010-11) (Anonymous, 2012). Now, to meet this challenge of reducing the yield gap and increasing rice production, the farmers' adoption rate of technologies has to be increased. Numerous technologies have already been developed to harness the potential yield of rice. But these technologies still awaits their full exploitation by the farmers. Diffusion studies have found that the way targeted adopters perceive the attributes of an innovation is critical and that these perceptions account for 49-87 per cent of the variance in whether or not they adopt (Rogers, 2003). Perception towards the attributes of recommended technologies if studied can provide useful information and help in improving the adoption rate of rice technologies and speeding up the whole diffusion process. Out of different rice, sali rice is grown more extensively by the farmers in Assam. Despite the importance of innovation perception in the adoption decision making of rice, few studies were conducted in this regard. Therefore, the present study was conducted with an objective to measure the perception of the farmers towards the attributes of recommended technologies of sali rice for adoption decisions.

MATERIAL AND METHODS

The study was conducted in Jorhat district of Assam, India during 2012 for the study sali rice technologies recommended by Assam Agricultural University were selected. The district was purposively selected because the average yield of sali rice of Jorhat (1657 kg/ha) was almost equivalent to the average yield of sali rice of the state (1641kg/ha) (Anonymous, 2008-09). Out of three subdivisions, Jorhat and Titabor were purposively selected because of their highest and lowest sali rice productivity, respectively. A stratified and random sampling plan was followed to select 120 numbers of respondents from 12 villages of these two selected sub-division. To know the characteristics of the farmers' six selected characteristcs were also examined. Frequency, percentage, mean and standard deviation were used as statistical tools. In the present study five attributes namely, relative advantage, compatibility, complexity, trialability and observability as mentioned by Rogers (2003) were considered for measurement.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Selected characteristics of respondents:

From Table 1 it can be observed that the majority of the respondents belonged to middle age group (47.50%), had education up to middle school level (23.34%) and were small farmers (47.50%) followed by marginal farmers (26.66%). It is revealed that most of the respondents (85.84%) had low levels of extension contact and had never received any kind of formal training from any institution (74.16%). About 60.83 per cent respondents had a medium level of awareness of the recommended technologies of sali rice.

Perception of the respondents' regarding attributes of recommended technologies of sali rice:

From the Table 2 it can be observed that most of the respondents (90.84%) perceived the recommended varieties to be relatively advantageous. The reasons as cited by majority of the respondents were (a) the yields of the recommended varieties are high and (b) market price of the recommended varieties are high as compared to the local varieties. The reasons as cited by the respondents as to why they perceive the varieties to be not relatively advantageous were (a) certified seeds are costly and (b) some varieties are susceptible to insects/pests attack and water logging condition. The Table 2 indicates that majority of the respondents (82.50%) perceived the recommended varieties as not complex and only 17.50 per cent of them perceived the varieties to be complex. The reason behind this complexity may be the lodging of varieties like Mahsuri etc. Because of the unawareness about the recommended flood prone area varieties, some respondents grew other HYVs which were actually not recommended for flood prone areas and perceived those varieties to be complex since it is a problem for them to follow the recommended sowing and transplanting time in their flood affected areas.

The Table 2 reveals that all the respondents perceived the recommended varieties to be having observability attribute in many cases. The reason behind this may be because they were able to observe the characteristics of the varieties. The majority of the respondents (92.50%) perceived the varieties recommended being compatible with their needs and socio-cultural values and beliefs. All the respondents perceived that the recommended varieties are having the feasibility of being tested in a small area. All the respondents perceived the recommended seed selection practice to be relatively advantageous, less complex, observable, compatible and trialable. The reason behind this is that the traditional practices which they have been following matches with the recommended practices and hence there was a favourable perception about the practices.

The Table 2 reveals that most of the respondents (94.17%) perceived the seed treatment practice to be not relatively advantageous. The majority of the respondents (66.67%) perceived the seed treatment practice to be complex because of the complexity involved in

understanding and in using the appropriate doses of the chemicals. This is triggered by the respondents' lack of training exposure, extension contact, etc. About three forth of the respondents (77.50%) perceived the seed treatment practice to be not compatible with their needs and socio-cultural beliefs and values. But all the respondents perceived the practice to be having trialability on a limited basis.

It can be inferred from the Table 2 that majority of the respondents (79.16%) perceived the field preparation technology as relatively advantageous followed by 20.84 per cent of them considering the technology to be not relatively advantageous. Altogether 100.00 per cent of the respondents perceived that there is no complexity involved in understanding and in using the recommended technologies. The majority of the respondents (81.66%, 100.00% and 100.00%) perceived the technologies to be observable, compatible and having trialability, respectively. The Table 2 reveals that majority of the respondents (96.67%) perceived the fertiliser applications to be not relatively advantageous due to high price of fertilisers in the market and only 3.33 per cent of them perceived the technology to be relatively advantageous. The majority of the respondents (80.00%) considered the fertiliser application to be not complex and only 20.00 per cent of the respondents perceived it to possess complexity. The majority of the respondents (94.17%) perceived the technology to be having observability and only 5.83 per cent of them perceived it to be not observable. About 71.67 per cent of the respondents perceived the fertiliser application to be compatible with their needs and socio cultural beliefs and values and only 28.33 per cent of the respondents perceived it to be not compatible. All the respondents perceived the fertiliser application technology to be trialable on a limited basis. Hence, it can be inferred that the respondents have a favourable perception towards this particular technology except in the case of relative advantage factor which limits the adoption of this technology.

It can be inferred from the Table 2 that majority of the respondents (57.50%) perceived the compost application technology as relatively advantageous followed by 42.50 per cent of them considering the technology to be not relatively advantageous. Altogether 81.67 per cent of the respondents perceived that there was no complexity involved in understanding and in using the recommended technology and only 18.33 per cent perceived that there was complexity involved in using the technology due to its adequate availability. All the respondents perceived the technology to be observable, compatible and having trialability. The reason behind the majority of the respondent possessing favourable perception may be because of the availability of the compost locally, though not adequately; awareness about its effect on soil quality and perception that compost application has no residual/ harmful effect on soil and the plants.

Table 1 : Distribution of respondents according to some of their personal characteristics

Variables	Category	Range	Percentage	Mean	SD
Age	Up to 35years		15.83	49.35	12.89
	36-50years		47.50		
	51 years and above		36.67		
Education	Up to primary school passed		46.66	2.76	1.62
	Middle school passed		23.34		
	X passed		14.17		
	XII passed		8.33		
	Graduate and above		7.50		
	Marginal	Up to 1.00 ha	26.66	2.10	0.89
Land holding	Small	1.1-2.00 ha	47.50		
	Big	2.1 and above	25.84		
Extension contact	Low	0-10	85.84	4.96	12.89
	Medium	11-20	14.16		
	High	21-30	0.00		
Training exposure	No training	0	74.16	0.60	1.19
	1 day training	1	10.00		
	2 days training	2	4.17		
	3 days training	3	5.00		
	4 days training and above	4	6.67		
Awareness on	Low	Below 2.18	32.50	5.85	3.68
recommended	Medium	Between 2.18 and 9.52	60.83		
technology	High	Above 9.52	6.67		

The Table 2 reveals that most of the respondents (95.84%) perceived the recommended transplanting age of the seedlings to be relatively advantageous and only 4.16 per cent of them perceived the technology to be not relatively advantageous. The majority of the respondents (92.50%) considered the transplanting age of the seedlings to be not complex. The majority of the respondents (92.50%) perceived the technology to be having observability. About 92.50 per cent of the respondents perceived the technology to be compatible with their needs and socio cultural beliefs and values and only 7.50 per cent of the respondents perceived it to be not compatible. All the respondents perceived the technology to be trialable on a limited basis. The majority of the respondents possessing favourable perception towards this technology are the reason why the adoption behaviour exhibited towards this technology is good.

It can be inferred from the Table 2 that majority of the respondents (94.16%) perceived the line transplanting technology as not relatively advantageous because of scarcity of labour for which they were costly followed by only 5.84 per cent of them considering the technology to be relatively advantageous. Altogether 100.00 per cent of the respondents perceived that there was complexity involved in using the line transplanting as compared to staggered planting and it is more time consuming. Most of the respondents (90.84%), (90.84%) and (100.00%) perceived that the results of the technology was observable, is compatible and having trialability, respectively. Respondents are having an unfavourable perception towards this recommended technology only in the 'relative advantage' and 'complexity' aspect. And these are the main factors responsible for no adoption of this technology till today.

The Table 2 reveals that the majority of the respondents (63.34%) perceived the recommended number of the seedlings per hill to be not relatively advantageous and 36.66 per cent of them perceived the technology to be relatively advantageous. The majority of the respondents (92.50%) considered the number of the seedlings per hill to be complex and only 7.50 per cent of the respondents perceived it to not complex. The majority of the respondents (89.16%) perceived the technology to be not having observability and only 10.84 per cent of them perceived it to be observable. About 63.34 per cent of the respondents perceived the technology to be not compatible with their needs and 36.66 per cent of the respondents perceived it to be compatible. All the respondents perceived the technology to be trialable on a limited basis. The reason behind this kind of unfavourable perception is because of the problem of flood. This technology was found to be over adopted by a majority of the respondents because they could see visible results only when over adopted.

From the Table 2 it can be observed that all the respondents perceived the recommended depth of planting to be relatively advantageous, not complex, having observability, compatible with their needs and socio cultural values and beliefs and possessing trialability. The reason behind this kind of favourable perception may be because of the match between the recommended technology and what the farmers have been following traditionally. The majority of the respondents (89.16%) perceived the technology to be not relatively advantageous and to be possessed complexity in using it due to the unavailability of irrigation facilities and also due to their fragmented land holdings. Only 10.84 per cent of the respondents perceived the technology to be relatively advantageous and not complex. All the respondents perceived the technology to be having observability. About 95.84 per cent of the respondents perceived the technology to be compatible with their needs

Table 2 : Distribution of the respondents according to their perception regarding the recommended technologies of sali rice (n=120)

Sr. No.	Perceived Attributes	Relative advantage		Complexity		Observability		Compatibility		Trialability	
	Recommended practices	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
1.	Variety	90.84	9.16	17.50	82.5	100.00	0.00	92.50	7.50	100.00	0.00
2.	Seed selection	100.00	0.00	0.00	00.00)	00.00	0.00	100.00	0.00	100.00	0.00
3.	Seed treatment	5.83	94.17	66.67	33.33	0.00	100.00	22.50	77.50	00.00	0.00
4.	Field preparation	79.16	20.84	0.00	100.00	81.66	18.34	100.00	0.00	100.00	0.00
5.	Fertiliser application	3.33	96.67	20.00	80.00	94.17	5.83	71.67	28.33	100.00	0.00
6.	Compost application	57.50	42.50	18.33	81.67	100.00	0.00	100.00	0.00	100.00	0.00
7.	Transplanting age	95.84	4.16	7.50	92.50	92.50	7.50	92.50	7.50	100.00	0.00
8.	Line transplanting	5.84	94.16	100.00	0.00	90.84	9.16	90.84	9.16	100.00	0.00
9.	Number of seedlings per hill	36.66	63.34	92.5	7.50	10.84	89.10	36.66	63.34	100.00	0.00
10.	Depth of planting	100.00	0.00	0.00	100.00	100.00	0.00	100.00	0.00	100.00	0.00
11.	Water management practices	10.84	89.16	89.16	10.84	100.00	0.00	95.84	4.16	15.00	85.00
12.	Plant protection measures	3.33	96.67	76.67)	23.33	85.84	14.16	61.67	8.33	100.00	0.00
13.	Inter culture operations	51.67	48.33	0.00	100.00	82.50	17.50	15.00	85.00	100.00	0.00

and only 4.16 per cent of the respondents perceived it to be not compatible. The majority of the respondents (85.00%) perceived the technology to be not trialable on a limited basis due to the lack of irrigation facilities and also due to the cost involved and only 15.00 per cent of the respondents perceived the technology to be trialable on a limited basis because of the presence of natural sources of irrigation facilities in their locality.

The Table 2 reveals that most of the respondents (96.67%) perceived the recommended plant protection measures to be not relatively advantageous and only 3.33 per cent of them perceived the technology to be relatively advantageous. The majority of the respondents (76.67%) considered the technology to be complex. The majority of the respondents (85.84%) perceived the technology to be having observability. About 61.67 per cent of the respondents perceived the technology to be compatible with their needs and 38.33 per cent of the respondents perceived it to be not compatible. All the respondents perceived the technology to be trialable on a limited basis. The relative advantage and complexity are the major factors determining the no adoption of this technology. From the Table 2, it can be observed that half of the respondents (51.67%) perceived the technology to be relatively advantageous. All the respondents perceived the technology to be not complex. The majority of the respondents (82.50%) perceived the technology to be having observability. About 85.00 per cent of the respondents perceived the technology to be not compatible with their needs due to less infestation of weeds in sali rice and only 15.00 per cent of the respondents perceived it to be compatible. All the respondents perceived the technology to be trialable on a limited basis. Less compatibility of the practice in the farmers' local conditions is the reason for this technology's no adoption by the farmers.

Majority of the respondents perceived the recommended practices like variety, seed selection, field preparation, compost application, transplanting age, depth of planting of seedlings and manual intercultural operations to be relatively advantageous. Recommended practices like seed treatment, line transplanting, number of seedlings per hill, water management practices and plant protection measures were perceived to be complex by the majority of the respondents. In case of seed treatment, fertiliser application, line transplanting, plant protection measure and water management practices, farmers perceived that these were not relatively advantageous. But for adoption relative advantage is the major attributes. Relative advantage is one of the strongest predictors of an innovation's rate of adoption (Rogers, 2003). If the innovation is relatively advantageous then farmers will not consider other attributes to a great extent. But unfortunately farmers perceived the critical recommendations of sali rice which have direct impact on productivity as relatively less advantageous. Therefore, care must be taken to handle this issue so that farmers' rate of adoption of recommended technologies on sali rice will increase. Extension contact may also be strengthened by incorporating farmer-led-extension services. Convergence of services of Krishi Vigyan Kendras and other concerned institutions is important to capacity building of Agricultural Technology Management Agencies to provide need based trainings to the farmers at frequent intervals. Farmers' awareness of recommended technologies on sali rice should be improved. On the other hand innovation generators also should not think that their recommendation is perfect in all the cases. They should consider these attributes carefully before recommending it to farmers. It is better to follow a participatory approach in innovation development and recommendation stages.

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