Impact of on-farm trials on rice-based *Utera* cropping techniques on the knowledge level of the farmers

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ABSTRACT

A study was undertaken in the Khurda district of Orissa to assess the impact of on-farm trials on Rice-based Utera Cropping Techniques on the knowledge level of farmers. The knowledge level of the farmers have been measured by involving three major aspects of integrated management of rice-based utera cropping techniques viz., I) Sowing Time, II) Nutrient Management and III) Improved Cultural Practices. The results revealed that there was a remarkable change in knowledge level of the farmers in all the three aspects of Integrated Crop Management Techniques after exposure to on-farm trials. The pre-exposure mean knowledge level was increased from 20.5% to 89.0% indicating a change of 68.5% in the overall knowledge level of the farmers.

Key words: Impact, on-farm trials, rice-based utera cropping, knowledge level

Utera or *paira* is a system of relay cropping, mainly prevalent in shallow rainfed lowland rice ecosystem of Orissa, Madhya Pradesh, Chhatisgarh, Jharkhand, Assam and West Bengal. It is done by broadcasting the seeds of the other crops in standing rice crop about 2-3 weeks before harvesting of rice, preferably at dough stage. No land preparation is done for seeding of *utera* crops.. Since, *utera* cultivation is closely linked with paddy cultivation, conditions of rice cultivation exert great influence over *utera* crop. Thus, it is very much important that the rice cultivation should be designed so as to improve the productivity of rice and simultaneously bring about improvement in *utera* crop.

The traditional rice growing areas under rainfed shallow lowlands of coastal Orissa are generally monocropped and there is very little scope to raise a second crop after rice by utilizing the residual soil moisture during the month of November or early December as soil moisture receds quickly after the harvest of rice crop. *Utera* cultivation provides great scope to raise a second crop under such situation (Saha and Moharana, 2005). In this context, a project was carried out to evaluate the performance of different crops and their varieties grown as *utera* crop under rice-based *utera* cropping sequence in the rainfed shallow lowland rice production system and to work out the appropriate time of sowing and other crop

management techniques of the entire system and to establish the economic viability of rice-based *utera* cropping system through active participation of the farmers for improving the overall productivity. A part of the project was to assess the impact of on-farm trials on the knowledge level of farmers.

MATERIALS AND METHODS

This study was conducted in five different villages *viz.*, Jeevandeipur, Mansinghpur, Bhatapada, Harikundabaradi and Parikansari of Tangi block in the Khurda District of Orissa as a part of NATP project entitled "Development of agro-techniques for sustainable productivity of rice-based *utera* cropping system". In the present study knowledge was conceptualized as whatever a respondent knew about different components of integrated management of rice-based utera cropping techniques. Out of total adopted farmers of the project, a target number of 30 respondents were selected randomly.

A separate interview schedule was developed to measure the knowledge level of farmers involving three major aspects of Integrated management of rice-based *utera* cropping techniques *viz.*, I. Sowing Time, II. Nutrient Management and III. Improved Cultural Practices.

Fifty questions were framed including open ended and teacher made type. 'One' mark was awarded for each correct answer and '0' for wrong answers. Thus, the minimum and maximum score an individual could obtain were '0' and '50' respectively.

The pre-knowledge level of the respondents was tested by using the developed pre-structured interview schedule through casual conversation. The information collected during pre-knowledge test provided the basic idea about the existing knowledge level of the farmers. After completion of the project, again the knowledge level of the respondents was evaluated through the same interview schedule used for pre-knowledge test. However, along with this, some information relating to sources of information and benefits of on-farm trial were gathered and analyzed.

RESULTS AND DISCUSSION

Sources of information. A perusal of Table 1 depicts that 'Experts from CRRI' were the major sources of information relating to improved management techniques of rice-based *utera cropping* system for 100 per cent of respondents followed by 'Village Agricultural Workers' (73.3%), 'Personal Experiences' (63.3%), 'Neighbouring Farmers' (40.0%) respectively. A small proportion (23.3%) of the respondents got the information from Agriculture Extension Officer.

It can be inferred that experts from the CRRI were the major sources of information among the farmers. This might be due to the fact that the project was directly carried out by the CRRI scientists. That's why the farmers used to exchange their ides, views and experiences more informally and more freely with the concerned scientists.

Benefits of on farm trial. A critical examination of the Table 2 reveals that 'Variety Replacement' was perceived as the top most benefit as 100 per cent respondents agreed with it. Because the farmers have replaced their earlier rice varieties Koliah and Parijat to Vandana and Kalinga III after exposure to On Farm Trials. As many as 96.67 per cent respondents opined that 'Improved Crop Management Techniques' as one of the most important benefit, which ranked 2nd. This indicates the sincere efforts of the CRRI Scientists by which the farmers could learnt the improved crop management techniques. The other major benefits perceived by the respondents in order of importance were 'Weed Control' (93.33%), 'Pest Management' (90.00%), 'Increased Yield' (86.67%), 'Labour Saving Techniques' (83.33%), 'Exposure visit to nearby Rice Research Station' (76.67%) and 'Opportunity to attend Farmers' Day related to Rice Technology' (73.33%) respectively.

Impact of on farm trial on the knowledge levels of the farmers. The knowledge levels of respondents was studied before and after exposure to on farm trials. A close analysis of the Table 3 depicts that there is a remarkable change in the knowledge level (68.5%) in all the three aspects of 'Crop Management Techniques'. In 'Sowing Techniques' the pre-exposure mean knowledge level was increased from 24.0% to 93.7% indicating a change of 69.7 per cent. Similarly, in 'Nutrient Management' and 'Cultural Practices' the pre-exposure mean knowledge level was increased from 15.0% to 82.3% and from 26.9% to 82.2% showing a change of 58.7% and 55.3% respectively, in the mean knowledge levels of the respondents. These findings are in conformity with Bhat (1980), Manjunath (1980), Singh and Prasad (1986), Narayanaswamy and Eshwarappa (2000), Verma (2000).

Table 1. Distribution of the respondents according to their sources of information relating to integrated management of rice-based *utera* cropping techniques (N=30)

Information Sources	Frequency	Percentage*	Rank
Personal Experiences	19	63.3	III
Village Agricultural Workers	22	73.3	II
Neighbouring Farmers	12	40.0	IV
Agriculture Extension Officer	7	23.3	VI
Experts from CRRI	30	100.0	I
Mass Media	9	30.0	V

(*The added percentage is more than 100 since multiple responses were allowed)

Table 2. Benefits of On-farm trial as perceived by the farmers (N=30)

Areas	Frequency	Percentage	Rank
Variety Replacement	30	100.00	I
Improved Crop Management Techniques	29	96.7	II
Water Management	04	13.3	X
Sowing Time	27	90.0	III
Cultural Practices	25	83.3	IV
Nutrient Management	20	66.7	VI
Increased Yield	10	33.3	IX
Sharing of Technology with Fellow Farmers	15	50.0	VII
Helping other Farmers in Practicing the Technology	11	36.7	VIII
Opportunity to attend Farmers' Interaction Meeting	21	70.0	V

(* The added percentage is more than 100 since multiple responses were allowed)

Table 3. Distribution of respondents according to their mean knowledge level before and after exposure to On-farm trials

Areas	Pre-exposure Mean Knowledge	Post-exposure Mean Knowledge	Change in Mean Knowledge
Sowing Techniques(0-25 scores)	6.00 (24.0)	23.42 (93.7)	17.42 (69.7)
Nutrient Management(0-15 scores)	3.43 (15.0)	9.70 (64.7)	6.27 (41.8)
Pest & Disease Management (0-13 scores)	4.26 (32.8)	11.86 (91.2)	7.60 (58.5)
Overall Knowledge Levels (0-50 scores)	10.24 (20.5)	44.50 (89.0)	34.26 (68.5)

(Figures in the parentheses indicate percentage)

It could be inferred from the findings that there was a significant change in knowledge levels of the farmers after exposure to on-farm trials. This can be attributed to different reasons like frequent contacts with CRRI scientists, exposure to improved crop management technologies, opportunity to visit Rice Research Station and to attend farmers' interaction meetings.

Hence, the planners, administrators and researchers must give focal importance to train the grassroot extension workers and progressive farmers on the concept of on-farm trials in farmers' field as this has proved to be a very effective extension approach for creating awareness and acceptance of improved technologies.

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