

Impact of on-farm trials on integrated pest management in rainfed rice on the knowledge level of farmers

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ABSTRACT

A study was undertaken to assess the impact of on-farm trials on Integrated Pest Management Techniques on the knowledge level of farmers under rainfed conditions in Dhenkanal district of Orissa. The knowledge level of the farmers have been measured by involving three major aspects of Integrated Pest Management viz., i) improved crop management techniques, ii) pest management and iii) weed management. The results revealed that there was a remarkable change in knowledge level of the farmers in all the three aspects of IPM after exposure to on-farm trials. The pre-exposure mean knowledge level was increased from 24.55% to 92.69% indicating a change of 68.4% in the overall knowledge level of the farmers.

Key words: Impact, on-farm trials, integrated pest management, knowledge level

Rainfed farming forms a major thrust area of rice research. In India, rainfed lowland rice is grown 13mha and upland rice in another 6.5 mha from among 45 mha of total rice coverage. To achieve the target of increased rice production due to the growing population, there is a need to raise the productivity, a major portion of which has to be achieved from this ecosystem as the yield level in the irrigated ecosystem have been exploited to the maximum level. The warm and humid climatic condition being conducive for many pests, form a major constraint for increasing rice production in this ecosystem. Therefore, it is essential to evolve suitable location specific integrated pest management strategy that is economically viable, socially acceptable and environmentally safe. In this context, a project work was carried out on “new approaches to integrated pest management in rainfed rice-based production system” in rainfed upland conditions of Dhenkanal district of Orissa with the active participation of farmers and according to their resource availability to increase the crop yield and overall income of the resource poor farmers. A part of the project was to assess the impact of on-farm trials on the knowledge level of the farmers.

MATERIALS AND METHODS

This study was conducted in Dhenkanal district of Orissa as a part of NATP project “New approaches to

IPM in rainfed rice-based production system”. In the present study knowledge was conceptualized as whatever a respondent knew about different components of integrated pest management techniques. Out of total adopted farmers of the project, a target number of 50 respondents were selected randomly from five villages viz., Kandabindha, Sariapada, Balarampur, Kasiadihi and Kumarmunda of Odapada block of the district Dhenkanal.

A separate interview schedule was constructed to measure the knowledge level of farmers involving three major areas viz., I. Improved Crop Management Techniques, II. Pest Management and III. Weed Management. Fifty five 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 ‘55’ 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 their sources and benefits of on-farm trial were gathered and analyzed.

RESULTS AND DISCUSSION

Sources of information were personal, interpersonal and mass media sources relating to agricultural development in general and rice cultivation in particular. A perusal of Table 1 depicts that 'Experts from CRRI' were the major sources of information relating to IPM techniques for 100 per cent of respondents followed by 'Village Agricultural Workers' (76%), 'Personal Experiences' (72%), 'Neighbouring Farmers' (56%), respectively. A small proportion (26%) of the respondents got the information from 'Agriculture Extension Officer' and only 7 respondents from 'Traders and Dealers of Pesticides'.

It can be inferred that experts from 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 ideas, views and experiences more informally and frequently with the concerned scientists.

Conducting on-farm trials in farmers' field was proved to be very effective for creating awareness, acceptance of improved technologies and ultimately getting relative advantages/benefits by adopting the improved technologies. A critical examination of the Table 2 indicates that 'Pest Management' was perceived as the top most benefit as 100 per cent respondents agreed with it because of the knowledge gained for identification of pests and natural enemies and introduction of newer methods of management

Table 1. Distribution of the respondents according to their sources of information relating to integrated crop management techniques (N=50)

Information Sources	Frequency	Percentage*	Rank
Personal Experiences	36	72.00	III
Village Agricultural Workers	38	76.00	II
Traders and Dealers of Pesticides	07	14.00	VII
Neighbouring Farmers	28	56.00	IV
Agricultural Extension Officer	13	26.00	VI
Experts from CRRI	50	100.00	I
Mass Media	19	38.00	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=50)

Areas	Frequency	Percentage*	Rank
Improved Crop Management Techniques	48	96.00	II
Weed Management	44	88.00	III
Pest Management	50	100.00	I
Disease Management	05	10.00	XI
Reduced Cost of Cultivation	41	82.00	V
Labour Saving Techniques	35	70.00	VII
Increased Yield	43	86.00	IV
Sharing of Technology with Fellow Farmers	38	76.00	VI
Helping other Farmers in Practicing the Technology	32	64.00	VIII
Exposure visit to nearby Rice Research Station	27	54.00	IX
Opportunity to attend Farmers' Day related to Rice Technology	24	48.00	X

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

strategies. As many as 96 per cent respondents opined that 'Improved Crop Management techniques' was one of the most important benefits, which ranked 2nd. This indicated the sincere efforts of the CRRI scientists that enabled farmers learn the improved crop management techniques. The other major benefit perceived by the respondents in order of importance were 'Weed Control' (88%), 'Increased Yield' (86.00%), 'Reduced Cost of Cultivation' (82.00%), 'Sharing technology with fellow farmers' (76.00%) and 'Labour Saving Techniques' (70.00%), respectively. 'Disease Management' showed by only 10% of farmers because there were only trace incidence of diseases.

The increase in knowledge level of participants in pest management was studied with regards to five major areas. The results presented in Table 3 clearly indicated that the respondents gained higher knowledge in 'Identification of insect pests and their natural enemies' (92%) which ranked 1st. Similarly, in case of 86% of respondents there was an increase in knowledge level in the area 'Monitoring of Pest' followed by 'Introduction of Trichocards' (82%), 'Introduction of Sex pheromone Trap' (76%) and 'Use of Insecticides' (66%), respectively.

The knowledge levels of the respondents were studied before and after exposure to the on farm trials

and the impact of these trials. A close analysis of the Table 4 depicts that there was a remarkable change in knowledge level (68.14%) in all the three aspects of IPM techniques. In 'Pest Management' the pre-exposure mean knowledge level was increased from 19.44% to 91.66% indicating the highest change of 72.22 per cent. Similarly, in 'Crop Management Techniques' and 'Weed Management' the pre-exposure mean knowledge level was increased from 27.77% to 94.44% and from 25% to 89.8% showing a change of 66.6% and 64.8%, respectively in the mean knowledge level of the respondents. These findings are in conformity with the Ray (1976), Bhat (1980), Manjunath (1980), Singh and Prasad (1986), Narayanaswamy and Eshwarappa (2000), Verma (2000), etc.

It can be inferred from the findings that there was a significant change in knowledge level 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 techniques, opportunity to visit Rice Research Station and to attend field day related to rice technology etc. 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. Conducting on-farm trials in farmers' field proved to be

Table 3. Distribution of respondents according to their increase in knowledge level in pest management

Areas	Frequency	Percentage	Rank
Monitoring of Pest	43	86	II
Identification of insect pests and natural enemies	46	92	I
Introduction of sex pheromone traps	38	76	IV
Introduction of trichocards	41	82	III
Use of Insecticides	33	66	V

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

Table 4. 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
Crop Management(0-27 scores)	7.5(27.77)	25.5(94.44)	18.00(66.67)
Pest Management(0-18 scores)	3.5(19.44)	16.5(91.66)	13.0(72.22)
Weed Management(0-10 scores)	2.5(25.00)	8.98(89.80)	6.48(64.80)
Overall Knowledge Levels (0-55 scores)	13.5(24.55)	50.98(92.69)	37.48(68.14)

(Figures in the parentheses indicate percentage)

a very effective extension approach for creating awareness and acceptance of improved technologies for sustaining rice production.

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