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Knowledge and Perception of IPM Technologies of Rice Growing Farmers in Telangana Region of Andhra Pradesh, India

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A B S T R A C T

The transfer of IPM in rice is undertaken in the 10 villages of Mandal and Quatbullapur Mandal of Rangareddy district of Telangana region of Andhra Pradesh. Out of these 10 villages, a total of 70 farmers from the 5 villages viz. Medchal, Atweli, Dublipur, Girmapur and Railapur were selected randomly. The IPM module for the particular region was developed, validated and promoted with the use of appropriate scouting tactics, proper identification and diagnosis of pests and diseases. The farmers were interviewed personally through a Questionnaire covering various aspects of IPM, socio-economic variables of farmers, knowledge and constraints. IPM programs have proved a track record of significantly reducing the risks related to pesticides, while improving quality, health and welfare of environment. Thus the farmers of the selected region were provided training on IPM and were made aware of the benefit of increased productivity and reduced pest damage.

Introduction

Andhra Pradesh is one of the important rice producing states. The introduction of high yielding rice cultivars and adoption of intensive crop management practices although resulted in substantial increase in rice yields but at the same time it increased the intensity of insects, pests and diseases (1-5). The indiscriminate use of pesticides for the management of these pests led to disturbances in natural ecosystem, leading to resurgence of pests, toxic hazards and residues besides environmental pollution. This dictated the need to look for other alternatives and their use in an integrated manner. IPM is a pest management system that in the context of the associated environment and the pollution dynamics of the pest species, utilizes all suitable techniques and methods in as complete manner as possible and maintains the pest population at a level below those causing economic injury (6-9). The IPM programmes in rice gained momentum from 1986-87 onwards in Telangana Region of Andhra Pradesh. IPM programmes in the state is an attempt to promote ecological, economic and sociological outcomes which is accomplished by the best mix of control tactics together by Directorate of Rice

Research (DDR), Hyderabad with the collaboration of State Agriculture Department under Operational Research Project (ORP). Under this Programme, transfer of rice IPM technology in the villages of Medchal and Qutabullapur mandals of Rangareddy district of Telangana region of Andhra Pradesh was undertaken. The farmers were provided training on IPM and were made aware of beneficial insects and side-effects of indiscriminate use of pesticides (10-12). The IPM module was developed, validated and promoted with the use of appropriate scouting tactics, proper identification and diagnosis of pests and diseases, the use of action economic thresholds and conservation of naturally occurring biocontrol agents.

However, the study on the knowledge perception, adoption and constraints in IPM of important crop like rice has not been undertaken. The study on perception and adoption of the IPM and constraints impeding such options will facilitate in planning the future strategy.

Hence, it was planned to undertake the studies with the following objectives:

i) Perception of farmers towards IPM technologies in selected villages.
ii) To assess the adoption of IPM technologies at farmers level.
iii) To assess the impact of ORP.

Materials and Methods

Operational Research Project is functioning in 10 villages of Medchal Mandal and Quatbullapur Mandal in Rangareddy district of Andhra Pradesh. Out of these 10 villages, a total of 70 farmers from the 5 villages viz. Medchal, Atweli, Dublipur, Girmapur and Railapur were selected randomly. A Questionnaire covering various aspects of IPM, socio-economic variables of farmers, knowledge and constraints was prepared and farmers were interviewed personally. The data collected on the above aspects were analyzed statistically and the results are described in the next section of result and discussion.

Results and Discussion

Socio-economic characteristics of respondents

Age

The study revealed that the percentage of medium age group farmers who adopted rice IPM technologies was very high (56.56) while percentage of old group farmers was very low (14.14). Young group of farmers came at second rank in adopting IPM technologies (Table 1). This also indicated that the young and medium aged group farmers played major role in implementing IPM programmes in rice in Telangana region of Andhra Pradesh.

Education

The education status of respondents was found to be very high and it was 91.43 per cent while only 8.57 per cent farmers were found to be illiterate among the sample of the farmers who adopted IPM (Table 2). This showed that the education of farmers played a critical role in quick adoption of IPM innovations.

Farm power and implements

The main source of farm power was the use of bullocks in this area. The study revealed that the 51.43 per cent of the farmers who adopted IPM technologies were using bullocks while only 2.86 per cent of farmers were using tractor as a farm power (Table 3).

Contacts of farmers with extension workers

Farmers contact with extension personnel was found to be very regular and frequent also. Majority of the farmers (97.15) were reported

that they contacted the field technician frequently twice a week (Table 4).

Cropping pattern

Paddy is major crop in this area and farmers take two crops of paddy in *rabi* and *kharif*. Economy of this region mainly depends on rice cultivation. Farmers grow rice for commercial purpose and sell the rice to the market after milling paddy. Farmers also grow vegetable crops like brinjal, lady-finger and tomato as cash crop and for domestic use. Grape gardening is also getting popularity in the area but mostly amongst well established resourceful farmers (Table 5).

Training undergone by respondents

The study revealed that the majority of the respondents had already got training from the Directorate of Rice Research and State Department of Agriculture (A.P.). The training duration was one day only. Only 7.15 per cent of respondents got training in IPM of rice of more than one day duration (Table 6).

b) Perception and awareness about IPM technology

The awareness of respondents about IPM practices in rice was studied by way of giving the farmers a set of practices and knowing their response about those practices. In all, the 20 practices were included under IPM technology and the extent of awareness was known by grouping the number of practices into low, medium, high and very high categories (Table 7).

It was found that majority of the respondents (50%) were aware of eleven to fifteen IPM practices and were categorized as `high awareness' while 30% of rice growers were falling under very high awareness category knowing sixteen to twenty IPM practices and only 2.86 % farmers were found in the very low category. It is evident that the respondent's awareness about the IPM technology in rice was found to be towards higher side.

Perception towards IPM practices

The perception of respondents towards practices of IPM was analyzed under different farmers categories (Table 8).

It is revealed that (Table 8) the majority of the farmers have positive perception towards the split application of nitrogenous fertilizers as they agreed to the fact that it reduces the occurrence of pests and diseases. The percentage of respondents having positive perception was quite high in all categories.

Positive perception was also observed regarding the application of fertilizers in nursery as almost all of them felt that this helps in increasing vigorous growth of seedlings. It was agreed by maximum number of farmers of different categories, particularly marginal ones (100%) that the field observation every 3-4 days after transplantation helped in immediate identification of pests and diseases.

This ultimately helped in quicker adoption of control measures thereby results in increased yield.

The perception of majority farmers (ranging from 68.50% in case of small, 80% in marginal and large respectively) about the decrease in the yield of Tella Hamsa variety transplanted after 45 days was also observed to be positive.

The perception of majority of the farmers was positive in respect of the statement that higher dose of nitrogenous fertilizers increases the pests and disease problem in the paddy.

Perception of respondents about the insects-pests control

The perception of respondents towards the control of insect's pests under IPM technology was analyzed according to the farmer's categories. In all full such practices there read out the respondents (Table 9).

It was observed that majority of the farmers (92.8%) from all categories had positive perception seen in respect of identification of stem borer in paddy. The positive perception was also about the identification of stem borer and gall midge at different stages of paddy particularly at the nursery stage (81.4%) and the percentage of the marginal farmers was highest than other two categories. As regards the practices like control of stem borer by chemicals particularly by spraying of insecticides at the right stage the positive perception was observed majority of marginal and large farmers.

The percentage of farmers about the perception towards the identification of insects-pests at tillering stage (Leaf hopper) was comparatively low. It can be highlighted that the percentage of small farmers about the different practices was comparatively low than marginal and large ones.

Table.1 Age of the respondents

Age group (years)	Frequency	Percent
Young (upto 35)	20	28. 28
Medium (35 to 58)	40	56.56
Old (58 and above)	10	14.14

Table.2 Education of the farmers

Education level	Frequency	Percentage
Illiterate	6	8.57
Literate (read and write only)	14	20.90
Primary	31	44.28
High School	11	15.71
Graduate /P.G.	8	11.41

Table.3 Farm power and implements used

Items	Frequency	Percent
Bullocks	36	51.43
Tractors	2	2.86
Power Tiller	-	-
Power Sprayer	-	-
Hand Sprayer	22	31.31
Duster	7	10.00

Table.4 Contact of farmer with extension worker

Extension worker	Frequency	Percent
Scientist	40	57.15
Asstt. Director (Agri.)	14	20.00
Agri. Officer	21	30.00
Field Technician	66	97.15

Table.5 Major crops grown by sample farmer's

Name of the Crop	Area (acres)
Paddy	398.00
Groundnut	0.50
Grape	9.00
Lady's finger	8.00
Tomato	6.00
Brinjal	8.00
Wheat	0.50
Maize	1.00

Table.6 Farmer's participation in training programmes

Training undergone	Frequency	Percent and duration
One day	56	80.00
Three day	5	7.15
No training	9	12.80

Table.7 Awareness about IPM technology

Category (number of practices)	Frequency	CF
Low (1-5)	2	2
Medium (6-10)	12	14
High (11-15)	35	49
Very high (16-20)	21	70

Table.8 Perception towards production practices of IPM

	Frequency			
Practices	**Marginal (n=30)**	**Small (n=35)**	**Large (n=5)**	**Total (n=70)**
Higher dose of nitrogenous fertilizers increase pest problems	23 (76.67)	24 (68.58)	5 (100)	52 (74.28)
Split application of nitrogenous fertilizers reduce the pests and diseases problems	28 (93.24)	30 (85.72)	5 (100)	63 (90.00)
Observation of fields by respondents every 3-4 days	30 (100)	32 (80.00)	4 (80.00)	66 (94.28)
Application of fertilizers in nursery give vigorous seedlings	30 (100)	28 (80)	5 (100)	63 (90.00)
Yield will decrease of Tella Hamsa variety transplanted after 45 days	24 (80)	24 (68.50)	4 (80)	52 (74.28)

Table.10 Perception towards the diseases

Diseases	Frequency			Total (N=70)
	MF(n=30)	**SF (n=35)**	**LF (n =5)**	
Tella hamsa attacked by blast in rabi	20 (66.67)	22 (62.66)	4 (80)	46 (65.7)
Blast attack on leaf and panicle of paddy plant	25 (86.34)	26 (74.29)	4 (80)	55 (78.5)
Identification of blast	22 (73.3)	22 (57.15)	3 (60)	47 (67.1)
Blast can be controlled by Hinosan	25 (83.34)	23 (65.72)	3 (60)	51 (72.8)

Table.9 Perception about the insects-pests

Insect-pests	Frequency			**Total**
	MF (n=30)	**SF (n=35)**	**LF (n=5)**	**(N=70)**
Identification of stem borer	28 (93.34)	32 (91.43)	5 (100)	65 (92.80)
Seed root soaking protect with stem borer/gall midge hard	21 (70)	21 (60)	4 (80)	46 (65.70)
Ear head cutting caterpillar loss at the stage of grain hard	13 (43.34)	11 (31.43)	2 (40)	26 (37.10)
Control of stem borer by chemicals	25 (83.34)	22 (62.86)	5 (100)	52 (74.3)
Tolerance variety for stem borer	20 (67.67)	20 (57.17)	3 (60)	43 (61.4)
BPT 5204 planted in August is attacked by gall midge	22 (73.34)	23 (65.72)	5 (100)	50 (71.4)
Identification of gall midge	20 (67.67)	20 (57.15)	3 (80)	43 (62.8)
Control of stem borer by spraying of insecticide at the right stage	24 (80)	20 (57.15)	5 (100)	49 (70)
Control of stem borer by granular insecticide	20 (67.67)	20 (57.15)	3 (60)	43 (61.41)
Identification of insecticides in paddy at different stage a)Nursery i)stem borer	28 (93.34)	26 (74.26)	3 (60)	57 (91.4)
ii)Gall midge	23 (76.37)	20 (57.15)	4(80)	47 (67.4)
b)Tillering stage i)Stem borer	17 (56.67)	15 (42.85)	3 (60)	35 (50)
ii)Leaf hopper	14 (46.67)	13 (37.15)	3 (60)	30 (42.8)
c)Flowering stage i)Gundhi bug	22 (76.34)	20 (57.15)	4 (80)	46 (65.71)

Table.11 Adoption of IPM technology

Category (Number of practices adopted)	Frequency	CF	Percentage
Low (1 to 5)	14	14	20
Medium (5 to 10)	35	49	50
High (11 to 15)	21	70	30

Perception of farmer about diseases of paddy

It was further attempted to analyze the farmer's perception about the diseases in paddy and their control under IPM technology.

It was observed that majority of the farmers (78.5%) had positive perception about the blast attack on leaf and panicle of paddy plant. Similarly, the positive perception is also seen among fairly higher percentage of farmers (72.8%) about the control of blast by spraying of Hinosan.

The percentage of small farmers having positive perception towards different practices about disease control was lower than the marginal and large farmers.

Adoption of IPM technology

The adoption of different practices of IPM technologies was studied on the basis of total number of practices adopted by the farmers. In all, total 15 practices of IPM technology were studied. Thus the farmers adopted practices, five or less were grouped in low adoption category, those were adopting 5 to 10 were included in medium adoption category and those were following 11 to 15 practices were classified in high adoption category.

Table 11 indicates that 50% respondents were following 5 to 10 practices of IPM technology. Thus following under medium adoption category, while 30% of the farmers belong to higher adoption category having followed 11to 15 IPM practices.

In conclusion, the study has amply demonstrated that effectiveness of ORP on rice with reference to IPM technology in terms of acquiring knowledge, perception and adoption of practices and creation of favorable opinion towards IPM among the farmers. The study has established that the farmers knowledge about different practices of IPM technology has been substantially elevated which also reflected in the adoption of these practices. There appears to be a need of considering special schemes for supply of plant protection equipments (sprayer, duster etc.) on subsidy and credit for facilitating the farmers to take up timely plant protection measures.

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