KNOWLEDGE STATUS OF FARMERS FIELD SCHOOLS TRAINED AND UNTRAINED RICE GROWING FARMERS

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Abstract: Farmer Field Schools are based on sound community based adult education practices and are an effective way of transferring knowledge through learning by doing. The study was carried out in Krishna district of Andhra Pradesh. A total of 210 farmers (140 trained and 70 untrained) were selected randomly from the 14 FFS. It was found that more than half of the trained farmers possessed medium knowledge, whereas, more than half of the untrained farmers belonged to low knowledge categories.

Keywords: Knowledge, FFS, IPM.

Introduction: Farmers Field Schools were first established in 1989 in Indonesia by plant protection officers in order to test and develop field training methods as part of an Integrated Pest Management (IPM) programme under the FAO-assisted Indonesian National IPM programme. Field schools proved to be an effective means of reaching farmers and helping them to gain access to the knowledge and skills required for crop production and pest management skills. Globally, field schools are now actively promoted by more then 50 national and local IPM/PPM programmes, including both government and NGO led initiatives. Field schools have been integrated in modified forms within at least 5 SPFS projects for learning improved water management, rice and vegetable culture, live stock management and even aquaculture.

Field schools are based on sound community-based adult-education practices and are an effective way of transferring knowledge through learning by doing. Some farmers who have attended IPM / PPM field schools say that they succeed because they gain scientific ideas and knowledge in small, friendly groups and, of course, because they provide farmers with an opportunity to make more money using fewer inputs with new methods brought to communities through the field schools.

Keeping this in view a study was conducted to assess the knowledge gained by rice growing farmers of Farmers Field Schools.

Methodology: An ex-post-facto research design was followed. The study was conducted in Krishna district of Andhra Pradesh because of large area in rice cultivation and active functioning of Farmers Field Schools. 14 FFS were selected randomly. One hundred and forty farmers at the rate of 10 from each FFS were selected randomly for the study. Seventy untrained farmers at the rate of five from each FFS were also selected randomly for comparison. Thus, a total of 210 farmers (140 trained and 70 untrained) from the 14 FFS were selected. For measuring a respondent's knowledge on IPM of rice growing farmers, a knowledge test was developed. The data collected by personal interview method through structured and pretested interview schedule.

Results and Discussion:

Knowledge of Rice Growing Farmers on Integrated Pest Management: A bird's eye view of the table-1 shows that more than half (53.57 %) of the trained farmers possessed medium knowledge followed by high (26.43 %) and low (20.00 %) knowledge on IPM in rice. Whereas, 55.71 per cent of the untrained farmers belonged to low knowledge category followed by medium (34.29 %) and high (10.00 %) categories of knowledge.

Table 1: Distribution of the Respondents According to Their Knowledge on Different Aspects of IPM

S.No.	Category	Trained (n=140)		Untrained (n=70)	
		Frequency	Percentage	Frequency	Percentage
1.	Low knowledge	28	20.00	39	55.71
2.	Medium knowledge	75	53.57	24	34.29
3.	High knowledge	37	26.43	7	10.00
	Total	**140**	**100.00**	**70**	**100.00**
	Mean: 15.59, S.D: 5.66			Mean: 9.15, S.D: 3.29	

It could be observed from the table-1 that majority of the respondents trained in Farmers Field School had medium knowledge level on Integrated Pest Management in rice while the majority of the untrained were in the low category of knowledge.

The FFSs deliberately manipulate the knowledge of the trainees with a view to inject more knowledge about a known practice or fresh knowledge of an unknown practice. Either way, the trainee farmers acquire more knowledge than the untrained farmers. This could be the possible reason for the medium knowledge level with the FFS trainee farmers. Further, to improve the knowledge levels, the department should place in position only the trainers at FFSs to undertake the responsibility of training the farmers. The findings were in line with the results of Manoj (2013) and Neha (2013).

Response Analysis of Knowledge Items of Respondents:

Response Analysis of Knowledge Items of Trained Farmers: To gain an in depth insight on the knowledge of the FFS trained and untrained farmers with respect to package of practices of rice with special reference to IPM, an item wise response analysis was carried out and the results are presented in the Table-2.

It could be analyzed from the Table -2, that majority of the FFS trained respondents know Azadiractin acts as a antifeedant (81.43 %), summer ploughing and destructions of crop residues helps to reduce pest/disease (79.20 %), inorganic fertilizers are more responsible for higher yields than organic fertilizers (74.28 %), the recommended dose of chemical fertilizers to rice during *kharif* season (66.43 %), IPM means keeping pests under ETL level (65.71 %), the ETL for blast is (63.00 %), the ETL for stem borer (61.42 %), herbicides should be selected based on prevailing weed flora (57.8 %), 80% of panicles turn to yellow is the right stage for harvesting rice to get good grain quality (56.4 %), propiconazole is used for control of sheath rot (55.00 %), harvesting of rice at ground level reduces pest attack (55.00 %), seed treatment reduces the seed born diseases (54.29 %), growing up of legumes preceding to rice helps in improving soil fertility, quality of produce and reduction of incidence (51.42 %), cultural, mechanical, biological, chemical control are the components of IPM (50.71 %), nitrogen can be applied in 2 – 3 splits (50.71 %), butachlor is used as pre-emergence herbicide (50.71 %).

On the other hand, majority of the FFS trained respondents did not know about the items like rice crop covered under crop insurance scheme (98.57 %), ETL for rice Gundhi bug (97.14 %), pest defender ratio (90.00 %), balanced use of fertilizers based on soil testing (86.43 %), shallow planting of seedlings (80.71 %), BGA as bio-fertilizer (77.14 %), IPM is a community activity (74.29 %), cost effectiveness of IPM (70.71 %), ETL for BPH and WBPH (69.29 %), herbicide application followed by manual weeding (65.71 %), deep flooding in rice (60.00 %), meaning of IPM (65.71 %), ETL for Gallmidge (51.43 %) and timely planting reduces pest population (50.71 %).

Table 2: Response Analysis of Knowledge Items of Trained Respondents (n=140)

Item	Known		Unknown	
	Frequency	%	Frequency	%
1. Summer ploughing and destruction of crop residue help to reduce pest / disease	111	79.29	29	20.71
2. Harvesting of rice at ground level reduces pest attack	77	55.00	63	45.00
3. Selection of healthy seeds of resistant / tolerant varieties reduces pest / disease occurrence	101	72.14	39	27.86
4. Seed treatment reduces the control of seed born diseases	76	54.29	64	45.71
5. Timely planting / sowing helps to reduce the pest population	69	49.29	71	50.71
6. Growing up of legumes preceding to rice helps in improving soil fertility, quality of produce and reduction of incidence.	72	51.43	68	48.57
7. Balanced use of fertilizers based on soil testing reduces incidence of pest / diseases	49	35.00	121	86.43
8. Blue green algae can be used as bio fertilizer	62	44.29	108	77.14
9. Inorganic fertilizers are more responsible for higher yields than organic fertilizer	104	74.29	36	25.71
10. Shallow planting of seedlings ensures profuse tillering especially in rice	27	19.29	113	80.71
11. Nitrogen can be applied in two to three split doses	71	50.71	69	49.29
12. Butachlor is used as pre-emergence herbicide for rice	71	50.71	69	49.29
13. IPM means keeping the pest population below the ETL level	92	65.71	78	55.71

Item	Known		Unknown	
	Frequency	%	Frequency	%
14. Azadiractin act as _____	114	81.43	26	18.57
15. _____ ratio of pest defender is followed in IPM	14	10.00	126	90.00
16. The recommended dose of chemical fertilizers to rice during the *kharif* season is	93	66.43	47	33.57
17. The ETL for Gall midge is _____ m^2	68	48.57	72	51.43
18. The ETL for stem borer _____ sq.m	86	61.43	54	38.57
19. The ETL for leaf folder is _____ freshly damaged leaves/ hill	55	39.29	115	82.14
20. The ETL for BPH and WBPH is _____ insects per hill	43	30.71	97	69.29
21. The ETL for ear head bug (Gundhi Bug) is _____ insects per Sq.m.	4	2.86	136	97.14
22. the ETL for Blast is _____ % leaf area damaged	87	62.14	53	37.86
23. _____ @ 1 gm per liter of water is used for the control of Sheath Rot	77	55.00	63	45.00
24. _____ % of panicles turn to yellow; it is the right stage for harvesting of rice to get good grain quality.	79	56.43	61	43.57
25. Deep flooding in rice is essential from _____ to_____stages	56	40.00	84	60.00
26. Herbicides should be selected based on prevailing _____	81	57.86	59	42.14
27. Rice crop is covered under _____ scheme	2	1.43	138	98.57
28. _____ application followed by one manual weeding is followed in rice	48	34.29	92	65.71
29. High nitrogen fertilizer / low potassium fertilizers leads to _____	26	18.57	114	81.43
30. IPM is _____ activity not individual activity.	36	25.71	104	74.29
31. Cultural, mechanical, biological and chemical control are the components of _____	71	50.71	69	49.29
32. _____ is cost effective to control pest.	41	29.29	99	70.71

A close examination of the Table-2 reveals that majority of the trained farmers had medium knowledge (53.57 %) and among untrained respondents belonged low knowledge group (55.71 %). The possible reasons for this trend might be attributed due to the fact that FFS programme was initiated during 1994-95 and these eight years period might have provided enough avenues for the majority of the respondents to expose themselves to various IPM related management practices of rice crop. Further, this medium knowledge may be due to the medium farming experience, medium social participation, medium innovation proneness, medium achievement motivation to learn new technologies with special reference to IPM, medium economic and management orientation, medium level of exposure to mass media and medium level of extension contact. The results clearly indicates there is a greater need to develop knowledge levels of respondents through FFS with special reference to IPM, especially in the case of untrained respondents. This finding was in conformity with the results of Manoj (2013) and Neha (2013).

Response Analysis of Knowledge Items of Untrained Farmers: It could be analyzed from the Table -3, that majority of the untrained farmers know that summer ploughing and destruction of crop residue helps to reduce pest/disease (100.00 %) Azadirachtin as antifeedant (86.00 %), harvesting of rice at ground level reduces pest attack (74.00 %), inorganic fertilizers are more responsible for higher yields than organic fertilizers (70.00 %), selection of healthy seeds of resistant varieties reduces pest/disease (60.00 %), IPM means keeping pests under ETL level (54.2 %), and BGA can be used as bio-fertilizer (51.4 %). Majority of the untrained farmers did not known about the items like ETL for leaf folder (100.00 %), IPM is community activity

(98.5 %),pest defender ratio followed in rice (95.8 %), higher nitrogen/low potassium fertilizers leads to broken grains (98.5 %), the ETL for ear head bug (98.51 %), herbicide application followed by one weeding is followed in rice (97.15 %), shallow planting of seedlings ensure profuse tillering especially in rice (97.15 %), recommended dose of chemical fertilizers to rice during *kharif* (95.8 %), IPM is cost effective to control pests (92.86 %), ETL for BPH and WBPH (92.86 %), nitrogen can be applied in 2-3 splits (91.5 %), growing up of legumes preceding to rice helps in improving soil fertility, quality of produce and reduction of incidence (84.3 %), cultural, mechanical, biological, chemical control are the components of IPM (84.3 %), 80% of panicles turns to yellow is the right stage for harvesting of rice to get good grain quality (82.86 %). Propiconazole is used for the control of sheath rot (81.5 %), timely planting/sowing helps to reduce the pest population (73.00 %), ETL for stem borer (72.8 %), ETL for Gallmidge (67.2 %), herbicides should be selected based on prevailing weed flora (65.8 %), ETL for blast (61.5 %), seed treatment reduces the control of seed borne diseases (53.00 %), butachlor is used as pre-emergence herbicide (53.00 %), and balanced use of fertilizers based on soil test reduces incidence of pests (51.5 %).

Table 3: Response Analysis of Knowledge Items of Untrained Respondents (n=70)

Item	Known		Unknown	
	Frequency	%	Frequency	%
1. Summer ploughing and destruction of crop residue help to reduce pest / disease	70	100.00	0	0.00
2. Harvesting of rice at ground level reduces pest attack	52	74.29	18	25.71
3. Selection of healthy seeds of resistant / tolerant varieties reduces pest / disease occurrence	42	60.00	28	40.00
4. Seed treatment reduces the control of seed born diseases	33	47.14	37	52.86
5. Timely planting / sowing helps to reduce the pest population	19	27.14	51	72.86
6. Growing up of legumes proceeding to rice helps in improving soil fertility, quality of produce and reduction of incidence.	11	15.71	59	84.29
7. Balanced use of fertilizers based on soil testing reduces incidence of pest / diseases	34	48.57	36	51.43
8. Blue green algae can be used as bio fertilizer	36	51.43	34	48.57
9. Inorganic fertilizers are more responsible for higher yields than organic fertilizer	49	70.00	21	30.00
10. Shallow planting of seedlings ensures profuse tillering especially in rice	2	2.86	68	97.14
11. Nitrogen can be applied in two to three split doses	6	8.57	64	91.43
12. Butachlor is used as pre-emergence herbicide for rice	33	47.14	37	52.86
13. IPM means keeping the pest population below the ETL level	38	54.29	32	45.71
14. Azadiractin act as _____	56	80.00	14	20.00
15. _____ ratio of pest defender is followed in IPM	4	5.71	66	94.29
16. The recommended dose of chemical fertilizers to rice during the *kharif* season is	3	4.29	67	95.71
17. The ETL for Gall midge is _____ m^2	23	32.86	47	67.14
18. The ETL for stem borer _____ Sq.m.	19	27.14	51	72.86
19. The ETL for leaf folder is _____ freshly damaged leaves/ hill	0	0.00	70	100.00
20. The ETL for BPH and WBPH is _____ insects per hill	5	7.14	65	92.86
21. The ETL for ear head bug (Gundhi Bug) is _____ insects per Sq.m	1	1.43	69	98.57
22. the ETL for Blast is _____ % leaf area damaged	27	38.57	43	61.43
23. _____ @ 1 gm per liter of water is used for	13	18.57	57	81.43

Item	Known		Unknown	
	Frequency	%	Frequency	%
the control of Sheath Rot				
24. _____ % of panicles turn to yellow; it is the right stage for harvesting of rice to get good grain quality.	12	17.14	58	82.86
25. Deep flooding in paddy is essential from _____ to_____stages	2	2.86	68	97.14
26. Herbicides should be selected based on prevailing _____	24	34.29	46	65.71
27. Rice crop is covered under _____ scheme	0	0.00	70	100.00
28. _____ application followed by one manual weeding is followed in rice	2	2.86	68	97.14
29. High nitrogen fertilizer / low potassium fertilizers leads to _____	1	1.43	69	98.57
30. IPM is _____ activity not individual activity.	1	1.43	69	98.57
31. Cultural, mechanical, biological and chemical control are the components of _____	11	15.71	59	84.29
32. _____ is cost effective to control pest.	5	7.14	65	92.86

The item wise analysis as seen from the table had shown that trained respondents had gained more knowledge than the untrained about the items like Azadirachtin act as an antifeedant, IPM practices, ETLs of various pests and diseases and the use of right dosages of inorganic fertilizers. Whereas in the case of untrained respondents there is a clear demarcation in the knowledge levels of the respondents regarding the IPM related practices with respect to management practices of rice. The striking reason for this is that the various independent variables studied clearly denotes that there is a low to medium levels of information processing behavior, low education status, low to medium social participation, low exposure to mass media. Further, greater care has to be taken by the FFS organizers to give more emphasis to the untrained respondents so that the respondents may be benefited much.

Therefore, the FFS programme can further be extended to the areas which are not covered and also untrained respondents in the covered areas in conjunction with the other agricultural development programmes. So that, the effectiveness of FFS would be higher. In addition to this, use of various propaganda and publicity machinery in terms of sincerely implementing various IPM practices in addition to campaigns, meetings, seminars to motivate the farmers to gain more knowledge and harvest good profits.

Z-test for Knowledge Items for Trained and Untrained Farmers of FFS: In order to find out the difference between mean knowledge scores of both types of respondents the 'Z' test was carried and the results are presented in table 24.

Null Hypothesis: There will be no significant difference between the mean knowledge score of FFS trained and untrained respondents in IPM on rice.

Empirical Hypothesis: There is a significant difference between the mean knowledge scores of FFS trained and untrained respondents in IPM on rice.

Table 4: Difference in Knowledge Scores of Trained & Untrained Respondents

S.No.	Category	Mean	S.D.	'Z' value
1.	FFS Trained	15.59	5.66	43.964**
2.	FFS Untrained	9.15	3.29	

'Z' – critical value significant at 0.01 probability level.

It is evident from the above table -4 that the calculated 'z' value was found to be greater than the table value at 0.01 per cent level of probability, hence the null hypothesis was rejected. Therefore, it was concluded that the FFS trained farmers differed significantly from the untrained farmers with respect to the knowledge on IPM in rice. When the respective means were compared it is evident that the mean knowledge scores of FFS trained farmers (15.59) was higher to that of untrained farmers (9.15). This indicates that the FFS trained farmers had higher

level of knowledge than the untrained farmers in respect of IPM in rice.

It is evident from the table- 4, that the calculated 'z' value was greater than the table value at 0.01 per cent level of probability; hence the null hypothesis was rejected. Therefore, it was concluded that the FFS trained farmers differed significantly from the untrained farmers with respect to the knowledge on IPM in rice.

When the respective means are compared it is evident that the mean knowledge scores of FFS trained farmers (15.59) were higher to that of untrained farmers (9.15). This indicates that the FFS trained farmers had higher level of knowledge than the untrained farmers in respect of IPM in rice.

Conclusion: The findings revealed that majority of the FFS trained farmers had medium level of knowledge on IPM practices. Hence efforts should be made to improve the knowledge about IPM practices by educating them through film shows, exhibitions, and field trips, conducting more demonstrations, providing literature on IPM practices and by emphasizing the importance of IPM as well as environmental protection.

References:

1. Manoj, A. 2013. Impact of Farmers' Field Schools on farmers' knowledge, productivity and environment. PhD Thesis submitted to Indian Agricultural Research Institute, New Delhi.
2. Neha, S. 2013. Impact of Farmer's Field School Training Programme on Adoption of Integrated Pest Management practices in Rice by the farmers of the Korba District of Chhattisgarh. M.Sc. (Ag.) Thesis submitted to Indira Gandhi Krishi Vishwa Vidyalaya, Raipur (C.G).

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