RESEARCH NOTE

Knowledge of the Farmer Field School (FFS) Participants on Eco-friendly Farm Technologies in Rice

Naveenkumar G[1], R. Sendilkumar[2], A. Sakeer Husain[3] and Mercy Kutty[4]

1. PG Student (Agril. Extension), 2. Professor (Agril. Extension), 3. Associate Profesor (Agril. Extension), 4. Associate Profesor(Agril. Extension), Department of Agricultural Extension, College of Horticulture, Kerala Agricultural University, Thrissur

Corresponding author e-mail: naveenkumargattupalli@gmail.com

Paper Received on May 12, 2017, Accepted on June12, 2017 and Published Online on July 01, 2017

ABSTRACT

The Farmer Field School (FFS) is a form of adult education, which evolved from the concept that farmers learn optimallyfrom field observation and experimentation. Thispaper presents the results of a study conducted in Palakkad district of Kerala State during 2014-15 to determine the knowledge level of FFS participants on eco-friendly farm technologies in rice cultivation. 61 per cent of the respondents had medium knowledge level on eco-friendly farm technologies with Mean Score Index (MSI) of 66.54. Application of Pseudomonas*was ranked first with MSI of 70.83 followed by application of* Trichoderma *(67.50), application of neem based pesticides and bio pesticides (64.33), use of light traps (62.50), use of* Trichogramma *cards (61.75), use of pheromone traps (59.50), application of PGPR (30.00) and use of* Beauveria*(29.00) in order. Education, innovativeness, scientific orientation, extension participation, institutional support, mass media utilization, number of trainings attended and group interaction exhibited positive and significant relationship with knowledge and of eco-friendly farm technologies.*

Key words: *Knowledge; Eco-friendly farm technologies; Farmers Field School (FFS);*

Providing food to the rapidly growing population has always been a challenge for agricultural professionals in India. Dealing with this challenge needs to devise an efficient programme that goes beyond dissemination oftechnologies among farmers, to help small farmers organize themselves for sharing production and plant protection technologies, marketing and advocacy in such a way that empowers the farming community holistically (*David, 2007*). These objectives can be achieved through FFS approachwhich promotes group learning optimally from field observation and experimentations based on the principles ofadult education and training of farmers (*Vandenberg, 2004*). FFS is described as a platform and "school withoutwalls" for improving capacity of farming communities and stimulating local innovation for sustainable agriculture.It is a group extension method, which builds up agro-ecological and management skills that make farmers expert in their own farms. In this approach farmers meet regularly during the course of the growing season to experiment as a group with new production options. KVK is an instrumental in conducting FFS on various field crops to disseminate eco-friendly farm technologies.

The present study was carried out to knowthe impact of FFS on knowledge levelof paddy grower's eco-friendly farm technologies and to find out the factors associated with knowledge level of paddy farmers.

METHODOLOGY

Knowledge in this study was operationalized as the quantum of scientific information known to the respondents about the eco-friendly technologies that were disseminated through FFS.Knowledge level of respondents on eco-friendly farm technologies in rice was measured through teacher made test prepared based on the content of eco-friendly farm technologies in rice disseminated though FFS. The content and the items of knowledge on eco-friendly farm technologies in rice

were prepared after the detailed discussion held with experts involved in the dissemination process to ensure the content validity. Accordingly 35 questions items representing the eco-friendly farm technology in rice were screened out and constitute the body of content. The selected knowledge items were pre tested for its reliability and validity. Based on item analysis out of 35 knowledge test items used for item analysis 21 items having difficulty index in the range of 20 to 80 and discrimination index above 0.10 were retained. The remaining 14 items were suitably modified based on the item analysis and included in the study (*Naveenkumar & Sendilkumar, 2015*). The selected questions were asked to 100 farmer respondents of five FFS, 20 farmers from each school selected through simple random sampling method. The answer to the question was quantified by giving one score to the correct knowledge and zero score to the incorrect knowledge.

Based on the total score obtained the respondents were categorized viz; low, medium and high knowledge by using mean and standard deviation as a measure of check and a Mean Score Index (MSI) was calculated with respect to the extent of knowledge level on different eco-friendly technologies.

$$MSI = \frac{\text{Actual score obtained}}{\text{Maximumscore possible}} \times 100$$

RESULTS AND DISCUSSION

Knowledge level of the FFS respondents about eco-friendly farm technologies in rice cultivation: The extent of knowledge level of FFS participants on different eco-friendly farm technologies in rice cultivation is presented in the Table 1. Among the practices studied, application of *Pseudomonas*was ranked first with Mean Score Index (MSI) of 70.83, followed by application of *Trichoderma* (67.50), application of neem based pesticides and bio pesticides (64.33), use of light traps (62.50), use of *Trichogramma* cards (61.75), use of pheromone traps (59.50), application of PGPR (30.00) and use of *Beauveria(29.00)*.

Application of Pseudomonas: In the case of application of *Pseudomonas*, the Mean Score Index (MSI) obtained was 70.83, which was higher than total average MSI (66.54), because majority of the farmers had good knowledge level on its use and application (90%), quantity used for seed treatment (70%), seedling root dip (69%), time and stage of application (70%). Farmers had adequate knowledge on 'application of *Pseudomonas* 'which might be due to their past experience, peer group influence and simplicity of the practices for seed treatment might be the other reason for gaining correct knowledge.

Table 1. Knowledge level of the FFS respondents in different eco-friendly farm technologies (N =100)

Technology	MSI	Rank
Application of *Pseudomonas*	70.83	I
Application of *Trichoderma*	67.50	II
Application of neem based pesticides and bio pesticides	64.33	III
Use of light traps	62.5	IV
Use of *Trichogramma* cards	61.75	V
Use of pheromone traps	59.5	VI
Use of PGPR	30.00	VII
Application of *Beauveria*	29.00	VIII
Total	66.54	

MSI=Mean Score Index

Application of Trichoderma: With regard to application of *Trichoderma*, the MSI worked out was 67.50. It was observed that majority of the farmers had adequate knowledge level on use (89%) and its application (86%). The FFS demonstration conducted on seed treatment with *Pseudomonas* and *Trichoderma* might have influenced the knowledge level of respondents. Low cost of seed management practices also a contributing factor.

*Application of neem based pesticides and bio pesticides :*The MSI for knowledge level of farmers on use of neem based pesticides and bio pesticides was 64.33. This is evident that, majority of the farmers had knowledge on the use of neem based pesticides (91%) and bio pesticides (65%). It was learnt that during FFS session, utilization of locally available resource was given more thrust and advocated to reduce application of chemical pesticides. Hence, extension participation might have influenced the respondents in gaining correct knowledge.

*Use of light traps :*Although 76 per cent of the respondents were aware about the use of light traps, majority of the farmers had inadequate knowledge on Economic Threshold Level (ETL) of pests and the distance to be maintained between the traps. Hence the MSI worked was slightly lower (62.50).

Use of Trichogramma cards: With respect to the knowledge on *Trichogramma* cards, MSI obtained was 61.75 it might be due to the fact that although

76 per cent of the respondents had correct knowledge on its usage, and 52 per cent of the respondents had correct knowledge on the number of *Trichogramma* cards to be used per hectare.

Use of pheromone traps: It is noted from the Table 1, that the MSI knowledge level of farmers calculated was 59.5. It might be due to inadequate knowledge level of the majority of the respondents on inter-trap distance maintenance (76%) and number of Pheromone traps to be placed per hectare (44%).

Application of PGPR : In the case of application of PGPR lower MSI (37.00) levels might be due to the fact that 66 per cent of the respondents had inadequate knowledge level on its usage and application.

Application of Beauveria : The probable reason for such a drastic reduction in MSI level (29.00), might be due to the poor knowledge levels of farmers exhibited on the quantity and time of application of *Beauveria.*

Overall knowledge level of the respondents about eco-friendly farm technologies : The results presented in Table 2 indicated that 61 per cent of the FFS respondents had 'medium level of knowledge about the eco-friendly farm technologies'. Whereas 21 per cent and 18 per cent of the FFS participants had 'low and high knowledge level about eco-friendly farm technologies.(*Venkatashivareddy, 2006*)

The probable reasons for this trend might be due to the fact that participants had been trained well in eco-friendly farm technologies during FFS sessions. FFS is being conducted for one complete season with 7 to 11 sessions. FFS participants had enough opportunities to understand cultivation aspects of the crops with Agro Ecosystem Analysis (AESA). In AESA, after observing plant height, plant health, insect pests, predators, soil condition etc. farmers analyse the data and draw up their findings and recommendations with the help of the facilitator.

It is logical to derive from the above discussion that the practices which were complex and difficult to remember were least known to farmers, on the other hand those practices which were simple and being followed for a longer period were known to most of the farmers. The other reason could be low cost of the technologies along with the personal characteristics such as education, farming experience, innovativeness and scientific orientation might have influenced the FFS participants to acquire correct knowledge about most of the eco-friendly technologies.

Table 2. Overall knowledge level of the respondents about eco-friendly farm technologies (N =100)

Category	%
Low	21.00
Medium	61.00
High	18.00

Mean: 24.53 SD: 3.50

Relationship between profile characteristics of rice farmers in FFS with knowledge of eco-friendly farm technologies : The correlation co-efficient values of independent variables with knowledge of eco-friendly farm technologies of FFS participants are furnished in the Table 3. revealed that the correlation co-efficient of nine characteristics *viz.*, education (0.185^{*}), innovativeness (0.257^{**}), scientific orientation (0.198^{*}), extension participation (0.375^{**}), institutional support (0.243^{*}), mass media utilization (0.161^{**}), trainings attended (0.192^{*}) and group interaction (0.275^{**}) exhibited positive and significant relationship with knowledge. The rest had non-significant relationship (*Deshmukhet al. 2014*)

Education and knowledge: The relationship between education and knowledge level of the respondents was found to be significant. Formal education of the respondents might have helped to understanding the complex ill-effects of agrochemicals and facilitates gain

Table 3. Correlation between characteristics of the FFS respondents and their knowledge of eco-friendly farm technologies (N=100)

Variables	'r' values
Age (X_1)	-0.072
Education (X_2)	0.185^{*}
Land holding (X_3)	0.150
Farming experience(X_4)	-0.043
Annual income(X_5)	0.137
Innovativeness(X_6)	0.257^{**}
Risk orientation (X_7)	0.141
Scientific orientation(X_8)	0.198^{*}
Extension participation(X_9)	0.375^{**}
Mass media utilisation (X_{10})	0.161^{**}
Trainings attended (X_{11})	0.192^{*}
Institutional support (X_{12})	0.243^{*}
Group cohesiveness (X_{14})	0.021
Group interaction(X_{15})	0.275^{**}

**Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

in knowledge and become more receptive to new ideas.

Innovativeness and knowledge: Innovativeness was found to be significantly associated with knowledge level. Respondents' awareness on the ill effects of agro-chemicals and different problems faced in controlling pests and diseases might have induced them to try new methods.

Scientific orientation and knowledge: The significant relationship between scientific orientation and knowledge might be due to the fact that respondents with higher scientific orientation has an usage gather more information on eco-friendly farm technologies.

Extension participation and knowledge: It was found that extension participation of farmers had significant relationship with knowledge of eco-friendly farm technologies. This might be due to the fact that, participation in the extension activities provided opportunities to the respondents in gaining knowledge about eco-friendly technologies.

Mass media utilization and knowledge: The relationship between mass media use and knowledge was found to be significant. It could be implied that majority of the farmers had newspaper, farm magazines and television, of which many respondents might have listened and viewed agricultural programmes. As these media covers large areas of agricultural information, interested farmers might have gathered information, resulted in enhanced knowledge on eco-friendly technologies.

Trainings attended and knowledge : It was observed from the Table 3 that there was a significant association between trainings attended and knowledge level of the respondents. During FFS trainings, farmers were exposed to the subject content of eco-friendly farm technologies through lectures, group discussion, experiential learning, farmer-scientist interface, field days and field visits.

Institutional support and knowledge: The significant relationship implied that, the institutional support from KVK, Krishibhavan had played a significant role in increasing knowledge of farmers by conducting appropriate trainings and creating awareness on adoption of eco-friendly technologies.

Group interaction and knowledge: As majority of the respondents belonged to medium to high level of interaction category and their membership in *padasekhara samithi* would be the main reason for positive and significant association between group interaction and knowledge.

CONCLUSION

To conclude that eco-friendly farm technologies having relative advantage, observability, and simplicity were known to all farmers. While, the technologies, which were costly, technicaly complex and require special skill were unknown to few farmers. This particular gap may be briefly addressed in FFS.

REFERENCES

David, S. (2007). The impact of Farmer Field Schools on human social capital. *Journal of Agricultural Education and Extension,* **17**(3): 239-252.

Deshmukh, R.H.; Kadam, R.P. and Bhandari, S.D. (2014). Knowledge level of the farmers regarding improved cultivation practices of kharif jowar. *Advance Research Journal of Social Sciences*, **5**(2): 219-223.

Naveenkumar, G. and Sendilkumar, R. (2015). Item analysis methodology to measure on the knowledge of farmer's on eco-friendly farm technology in rice cultivation. *Journal of Krishi Vigyan*, **4**(1):56-59.

Vandenberg, H. (2004). IPM farmer field schools: a synthesis of 25 impact evaluations report prepared for the FAO global IPM facility. Wageningen University, Netherland.

Venkatashivareddy, V. (2006). Knowledge and adoption of IPM practices among vegetable growers of Gadag district in North Karnataka. M.Sc.(Ag) thesis, University of Agricultural Sciences, Dharwad.

• • • • •