

## Study on effectiveness of farmer field school (FFS) approach in rice ecosystem for integrated pest management

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### ABSTRACT

Pesticides have become an integral part of crop production scenario, as one third of realisable crop output is lost due to the depredations by pests and diseases. Indiscriminate use of pesticides poses numerous negative externalities. Farmers' awareness regarding the ill-effects of pesticides on water and air is very limited. Farmers Field School was conducted in Aranmula rice ecosystem for integrated pest management among a set of 30 plots designated as IPM treatment and another set of 30 plots designated as non-IPM or Local Treatment. The primary learning material at a Field School was the rice field of 10 hectares area, where most Field School activities took place. It was a field based learning experience for the full cropping season, with 14 meeting times with an approximate length of four to five hours per meeting so that farmers could observe and analyse the dynamics of the rice field ecology across a full season. The primary difference between the two was that the non-IPM fields received an imbalanced dosage of nutrient treatment as well as chemical pesticide sprays while in the IPM fields farmers applied a balanced fertiliser treatment (NPK), planted at lower densities with wider spacing and need based botanical as well as bio pesticide application. Benefit cost ratio was higher for IPM farmers (2.01) compared to that of non-IPM farmers. Over and above, FFS gave two main results: Farmers regained the competence to make rationally based decisions concerning the management of their crops (in contrast to the instructions which were part and parcel of the Green Revolution packages). Secondly the participants gained social competence and confidence to speak and argue in the public.

**Key words :** Rice, Ecosystem, Pest management.

### INTRODUCTION

Pesticide use in Indian agriculture increased from 2353 metric tonnes in 1950-51 to about 90,586 metric tonnes in 1995-00 (Carrasco-Tauber, C. and Moffitt, J.L., 1992). FAO reports indicated that there is a list of 233 agricultural pests which have become resistant to nine major groups of pesticides. Consumption of pesticides is concentrated on two crops, namely cotton and rice. The consumption of organochlorine and organophosphorus group of pesticides with adverse effects on environment is still higher in India (Sharma. V.P. 1999).

Farmers' awareness regarding the ill-effects of pesticides on water and air is very limited (Gandhi and Patel 1997). IPM techniques and skills, by involving a varieties of methods like cultural, mechanical, biological and chemical have shown increase in rice yield in 40 ha of farmers field during 1983 to 1990 with low cost on plant protection inputs, resulting in net saving to the growers. Though the average production cost was higher in IPM plots, the percent increase in yield of rice obtained in IPM plot was found significant. (Misra *et al.* 1994). In this study a modest attempt has been made to popularize IPM techniques through Farmer field school.

The FFS approach adopted in rice ecosystem is an effective approach to technical education and capacity building. Here farmers generated knowledge that is functional and necessary to improve their production and livelihood potential. Training in the field school followed the seasonal cycle and the field was the primary learning venue. The field school offered farmers the opportunity to learn by doing, by being involved in experimentation, discussion and decision-making. This strengthened the role of farmers in the researcher-extensionist-farmer chain. It also improved the sense of ownership of rural communities in technological packages and new knowledge and skills.

Through local analysis and experience, farmers adjusted input and technical packages to better suit local conditions. The FFS served as a means to better extension work. Improvement in the livelihood of participating farming communities was envisaged when each farmer's capacity to analyse problems and identify solutions was built. The school provided farmers with tools which enabled them to analyse their own production practices and identify possible solutions.

### METHODOLOGY

The Krishi Vigyan Kendra, Pathanamthitta District, Kerala in

collaboration with Central Integrated Pest Management Centre, Kochi (CIPMC) and State Department of Agriculture conducted Farmers Field School at Aranmula rice ecosystem in Pathanamthitta District, Kerala for integrated pest management in a group of 30 farmers and non IPM measures among other group of 30 farmers. The primary learning material at a Field School was the rice field of 10 hectares area, where most Field School activities took place. It was a field based learning experience for the full cropping season, with 14 meeting times with an approximate length of four to five hours per meeting so that farmers could observe and analyse the dynamics of the rice field ecology across a full season. Field School plots received two treatments. A set of plots which was designated as IPM treatment and another set as designated as non-IPM or Local Treatment. The primary difference between the two was that the non-IPM fields received an imbalanced dosage of nutrient treatment as well as chemical pesticide sprays while in the IPM fields farmers applied a balanced fertiliser treatment (NPK) with integrated nutrient management, planted at lower densities with wider spacing and need based botanical as well as bio pesticide application. Due to the importance of the field study plots in the learning process, the Field School meeting place was usually close to the field study plots under shaded coconut trees.

### Data collection

The data pertaining to the general information of paddy farmers, *inter alia*, holding size, cropping pattern, costs and returns, plant protection measures used, awareness of farmers with regard to the toxicity level of pesticides, safety procedures followed during application of plant protection chemicals (PPCs), experience of farmers with regard to the health hazards after PPC application and endemics observed in the region were collected by personal interview method using a pre tested schedule designed for the study.

### Activities:

Each meeting of FFS consisted of the following set pattern of activities:

- Agro-ecosystem field observation, analysis and presentations;
- Discussion on special topics
- Group dynamics.

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