ANALYSIS OF FARMER FIELD SCHOOLS AS A TOOL OF CAPACITY BUILDING FOR RESOURCE POOR FARMERS IN KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT

The present study was conducted in 2010 to analyze Farmer Field Schools (FFS) as a tool of capacity building for resource poor farmers in Khyber Pakhtunkhwa, Pakistan. For this purpose, seven districts were selected from Khyber Pakhtunkhwa province including Peshawar, Charsadda, Nowshera, Mardan, Swabi, Kohat and Hangu. Data regarding capacity building of resource poor farmers were obtained from 280 randomly selected farmers through “survey” method and were analyzed using Statistical Package for Social Sciences (SPSS). The results indicate that the highest capacity building took place in the area of controlling pre-harvest losses by the resource-poor farmers which was ranked 1st with mean value 3.37 followed by controlling post-harvest losses and timely and balanced use of fertilizers which were ranked 2nd and 3rd with mean values 3.23, 3.11, respectively. Under the crop protection issue, the highest capacity building by farmer respondents took place in the areas of insect/pests’ identification which was ranked 1st with mean value 3.26 followed by recognizing insect/pests’ mode of action and insect/pests’ control by local recipes which were ranked 2nd and 3rd with mean values 3.07 and 2.87, respectively. However, farmers highest capacity building occurred in the area of chemical weed control which was ranked 1st, closely followed by manual and cultural weed control measures which were measures ranked 2nd and 3rd with mean values 3.12, 2.95, and 2.67, respectively. Likewise, the highest capacity building by farmer respondents took place in the area of furrow irrigation which ranked at the top with mean value 3.30 followed by border and basin irrigation techniques which stood 2nd, and 3rd with mean values 2.95, 2.83, respectively. It can be concluded from the study that FFS have highly built up capacity of farming community due to its practical way of training.

Keywords: Farmers’ Field Schools, Benefits to Farmers, Resource Poor Farmers

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INTRODUCTION

Agriculture is the backbone of Pakistan’s economy. It accounts for over 21% of gross domestic production and employs 45% of the total work force. Agriculture contributes to growth as supplier of raw materials to industry besides serving as market for industrial products and contributes substantially to Pakistan’s exports earnings. Nearly 62% of the country’s population lives in rural areas and is directly or indirectly linked with agriculture (GoP, 2009-10). However, crop production in Pakistan is among the lowest as compared to the world’s averages (Khan, 2004) which can be increased reasonably using improved crop management practices by farmers. For achieving this goal, many extension strategies have so far been tried from time to time in Pakistan, but none of them seems to be effective in serving the farmers by increasing farm productivity and improving their income. Therefore, Government of Khyber Pakhtunkhwa introduced a new extension approach known as Farmers’ Field Schools (FFS) in 2004 to benefit the farming community by building their capacity through discovery based learning techniques (Khatam et al 2010).

FFS is a season-long, field oriented and discovery-based learning opportunity. It comprises a group of farmers who are facilitated by extension field staff in conducting various integrated crop management practices. FFS comprises a group of approximately 25 to 30 farmers who attend the field school weekly or fortnightly to learn through discoveries and simple experimentations.

The participants of the groups work in sub groups of 4 or 5 farmers who learn how to make and record detailed observations regarding the growth stages of crop, insect/pests and their threshold level, weeds, weather conditions, soil condition and overall plant health (Habib et al. 2007). FFS provides a chance to its participants to learn together, test and adopt various practices, using practical ways of learning through observation, discovery, critical thinking and group decision making process. This process improves farmers’ skills, builds self-confidence
and thus makes them capable of effective decision making. The basic aim of FFS is to build the capacity of farmers to analyze their crop production and protection systems, identify and prioritize problems, test possible solutions and finally apply the most suitable one. The skills and knowledge gained from the participatory learning process of FFS enables farmers to adopt existing technologies to be more productive, profitable, and responsive to their varying agro-ecological conditions (Khisa, 2003).

FFS creates conformity between conventional and scientific knowledge thus enabling farmers better decision makers in their respective agro-ecology. FFS approach develops as well as modifies technologies that actually work and are acceptable to farmers (Nederlof and Odonkor, 2004; Röling, 2002; Röling et al., 2004). FFS develops farmers’ skills and knowledge thus makes them empowered in choosing appropriate crop management practices. Sherwood et al. (2000) reported that FFS approach was based on the principles of growing a healthy crop, preserve predators, regularly observing the crop and help farmers become experts at their farms. This approach mainly aims at empowering the farmers through completing various tasks themselves. In this regard, Kenmore (2002) stated that FFS characterizes a changed model in agricultural extension i.e. participatory methods are used in order to help farmers develop their diagnostic skills, critical thinking and inculcating creativity and decision making.

Quizon et al. (2001) affirmed that the main aspects determining the cost-effectiveness of the FFS training and the benefits gained from this approach is the participation of farmers in planning various activities. Besides offering opportunities of learning by practical training, FFS is also used as a tool of benefitting farmers by technology transfer to them. In this context Asiabaka et al. (2003) reported that FFS approach was adopted to scale up the agricultural technologies having greater potential for improving livelihood. In the same way, Feder et al. (2004) stated that FFS is a rigorous training approach introduced in many developing countries in the last decade to encourage uptake of knowledge and production approaches which are ecologically sensible, and in particular, those Integrated Pest Management (IPM) practices rationalized the use of pesticides. The findings of their study confirmed that better knowledge resulted in reduced use of pesticides, and trained farmers had sufficiently improved their knowledge. Other evidence regarding benefits of FFS approach was reported by Tripp et al. (2005) who determined the outcomes of FFS programme for IPM in rice in Sri Lanka. The outcome of the study showed that FFS farmers had minimized the use of insecticides than other farmers during the previous season, as well as in different seasons and at all locations. There was also evidence that FFS farmers had improved their knowledge as they could name more predators, applying insecticides after recognizing various insects, and were less caring for controlling leaf-feeding insects in the early times of its growth. Although, the main aim of FFS approach was to minimize the use of pesticides, numerous other subjects were also highlighted including management of soil fertility. David (2007) conducted a case study of farmers who participated and did not participated in the cocoa Integrated Crop and Pest Management (ICPM)-FFS in Cameroon. He concluded that FFS graduates got high test scores than the non-FFS participants, below average scores in the aspects of tree physiology and rational use of pesticide. In the same way, van den Berg and Jiggins (2007) found that FFS has significantly impacted in two main areas: 1. Direct achievements in the reduction of pesticides and 2. In several cases, yield have substantial increased rather consistent in various Asian countries, but success in other continents is yet to be established, because FFS efforts were more recent over there.

Keeping in view the importance of FFS as mentioned above, this study was designed to analyse “Farmer Field Schools” as a strategy for benefitting resource poor farmers in Khyber Pakhtunkhwa province, Pakistan.

MATERIALS AND METHODS

The population for the study consisted of FFS farmers in the study area, which comprises 7 districts of Khyber Pakhtunkhwa i.e. Peshawar, Charssadda, Nowshera, Mardan, Swabi, Kohat and Hangu. Four FFS out of 16 from each district were selected at random. Ten farmers out of 25 were randomly selected from the FFS of each district, thereby making a total of 280 respondents. The primary data were collected by the researchers using “survey” method. The validity of the data collection instrument was got checked by the experts in the Department of Agricultural Extension, University of Agriculture Faisalabad. After making minor amendments, the research instrument was pre-tested for its reliability. The data were analyzed through computer software Statistical Package for Social Sciences (SPSS 16.0) and results were drawn.

RESULTS AND DISCUSSION

Results shows that the highest capacity building took place in the area of controlling pre-harvest losses by farmers which was ranked 1st with mean value 3.37 followed by controlling post-harvest losses and timely and balanced use of fertilizers which were ranked 2nd and 3rd with mean values 3.23, 3.11, respectively. However, comparatively less capacity was built up in the aspects of recommended seed rate, sowing methods, farm yard manure (FYM) decomposition, high yielding varieties, soil analysis and land preparation by the respondents (Table 1).
The highest rating of controlling pre-harvest losses was due to the reason that 94% of the participant farmers had small landholdings that is why they could not afford this much losses to crops and showed highest interest in learning regarding control of pre-harvest losses. The mean values indicate that pre-harvest losses ranged from medium to high but tended towards medium as far as capacity building by farmer respondents. However, the capacity building in the rest of the aspects of crop production technology by farmer respondents fell between low and medium but tended towards medium categories. The findings of the study in hand are strengthened by those of Aslam et al. (2006) who stated that a large size of horticultural crops in Pakistan including fruit, vegetables and flowers go to waste in pre and post-harvest handling and during the transportation of these commodities. They estimated that on average 25-40% of annual production of the horticultural crops in Pakistan is lost because of poor pre and post-harvest practices/conditions and David (2007) who conducted a case study of those farmers who participated in an ICPM-FFS on cocoa in Cameroon and those who did not participate in the ICPM-FFS. The results of the study confirmed the efficiency of discovery based learning supported by a facilitator. FFS provided its participant farmers with sufficient opportunities to learn new skills and knowledge regarding cocoa ICPM as compared to the non-FFS participants and most of the participant farmers applied these skills and knowledge on their farms. FFS graduates had higher test scores than non-FFS participants and below average scores in the field of tree physiology and used pesticide rationally. He argued that FFS can prove to be a starting point for bringing about social change and this is possible by improving capability of farmers to make efficient observations in the field, applying new knowledge and skills to solve varied problems, communicating in better style, enhancing self confidence, and motivating farming groups to support cocoa production activities as well as efficiently comprehending other livelihood proposals within their own resources and environment.

Table 1. Mean, standard deviation and rank order of crop production technologies introduced through FFS based on the benefits obtained by farmer respondents

<table>
<thead>
<tr>
<th>Capacity building in crop production technology</th>
<th>Rank order</th>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling pre-harvest losses</td>
<td>1</td>
<td>948</td>
<td>3.37</td>
<td>1.19</td>
</tr>
<tr>
<td>Controlling post-harvest losses</td>
<td>2</td>
<td>903</td>
<td>3.23</td>
<td>1.17</td>
</tr>
<tr>
<td>Timely and balanced use of fertilizers</td>
<td>2</td>
<td>872</td>
<td>3.11</td>
<td>1.16</td>
</tr>
<tr>
<td>Recommended seed rate</td>
<td>3</td>
<td>847</td>
<td>3.02</td>
<td>1.14</td>
</tr>
<tr>
<td>Sowing methods</td>
<td>4</td>
<td>831</td>
<td>2.95</td>
<td>1.18</td>
</tr>
<tr>
<td>Farm Yard Manure decomposition</td>
<td>5</td>
<td>821</td>
<td>2.90</td>
<td>1.16</td>
</tr>
<tr>
<td>High yielding varieties</td>
<td>6</td>
<td>812</td>
<td>2.82</td>
<td>1.13</td>
</tr>
<tr>
<td>Soil analysis</td>
<td>7</td>
<td>776</td>
<td>2.74</td>
<td>1.14</td>
</tr>
<tr>
<td>Land preparation</td>
<td>8</td>
<td>751</td>
<td>2.71</td>
<td>1.09</td>
</tr>
</tbody>
</table>

Source: Field data n=280

Table 2. Mean, standard deviation and rank order of various crop protection technologies introduced through FFS based on the benefits obtained by farmer respondents

<table>
<thead>
<tr>
<th>Capacity building in Crop protection technology</th>
<th>Rank order</th>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insect/pests’ identification</td>
<td>1</td>
<td>905</td>
<td>3.26</td>
<td>1.16</td>
</tr>
<tr>
<td>Insect/pests’ mode of action</td>
<td>2</td>
<td>851</td>
<td>3.07</td>
<td>1.34</td>
</tr>
<tr>
<td>Insect/pests’ control by local recipes</td>
<td>3</td>
<td>798</td>
<td>2.87</td>
<td>1.26</td>
</tr>
<tr>
<td>Insect/pests’ killing by pesticides</td>
<td>4</td>
<td>767</td>
<td>2.76</td>
<td>1.28</td>
</tr>
<tr>
<td>Insect/pests’ manual control</td>
<td>5</td>
<td>745</td>
<td>2.68</td>
<td>1.17</td>
</tr>
<tr>
<td>Insect/pests’ biological control</td>
<td>6</td>
<td>730</td>
<td>2.64</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Source: Field data n=280

Table 2 indicates that highest capacity building by farmer respondents took place in the areas of insect/pests’ identification which was ranked 1\textsuperscript{st} with mean value 3.26 followed by recognizing insect/pests’ mode of action and insect/pests’ control by local recipes which were ranked 2\textsuperscript{nd} and 3\textsuperscript{rd} with mean values 3.07 and 2.87, respectively. However, less capacity building occurred in the areas of insect/pests’ killing by pesticides, manual and biological insect/pests’ control measures by the farmer respondents.

The mean values indicate that capacity building in insect/pests’ identification and recognizing their mode of action ranged from medium to high, but tended towards medium. However, capacity building in all other categories of crop protection technology fell between low and medium, but tended towards medium categories. The highest rating of capacity building in insect/pests’ identification followed by their mode of action was due to the fact that farmer respondents wanted to gain knowledge about selecting the right pesticide and to know pests’ life cycle to control them right at the larval stage that would certainly lower their cost of production. The present research findings are supported by those of Tripp et al. (2005) who found that FFS approach could enhance farmers’ knowledge in the identification of pests and their timely management and also improve their understanding about agro ecosystem system analysis (AESA).
The present study results are in accordance with those of Chizari et al. (1999) who pointed out that weed control was the only farming practice where extension agents preferred chemical weeding over mechanical weeding, and also with those of Hamidullah et al. (2006) who pointed out that weeds were to be controlled with the use of proper chemicals whenever needed. The highest rating of chemical weed control measures by farmers may be due to the fact that it saves time that can be utilized in performing other activities, less laborious and perfectly eradicates weeds from the field.

The rating also show that benefits of all the weed control measures ranged from low to medium with a tendency towards medium category. The low rating of benefits of all the weed control measures was due to hard terrain, stony soil condition, less use of pesticides and high prices of weedicides. The present study results are in accordance with those of Chizari et al. (1999) who stated that weed control was the only farming practice where extension agents preferred chemical weeding over mechanical weeding, and also with those of Hamidullah et al. (2006) who pointed out that weeds were to be controlled with the use of proper chemicals whenever needed. The highest rating of chemical weed control measures by farmers may be due to the fact that it saves time that can be utilized in performing other activities, less laborious and perfectly eradicates weeds from the field.

Table 3 shows that farmers rated chemical weed control 1st, closely followed by manual and cultural weed control measures which were ranked 2nd and 3rd with mean values 3.12, 2.95, and 2.67, respectively based on the capacity building of poor resource farmers under FFS. However, mechanical weeds control measure was ranked at the bottom by the farmer respondents.

The rating clearly indicates that only furrow irrigation technique fell between medium and high with a tendency towards medium category. The low rating of benefits of all the weed control measures was due to hard terrain, stony soil condition, less use of pesticides and high prices of weedicides. The present study results are in accordance with those of Chizari et al. (1999) who stated that weed control was the only farming practice where extension agents preferred chemical weeding over mechanical weeding, and also with those of Hamidullah et al. (2006) who pointed out that weeds were to be controlled with the use of proper chemicals whenever needed. The highest rating of chemical weed control measures by farmers may be due to the fact that it saves time that can be utilized in performing other activities, less laborious and perfectly eradicates weeds from the field.

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CONCLUSION AND RECOMMENDATIONS

It can be concluded from the results that farmer respondents highly build up their capacity under FFS in the areas of controlling pre and post harvest losses, timely and balanced use of fertilizers, insect/pests’ identification, recognizing insect/pests’ mode of action and their control by local recipes, rational use of chemical, manual and cultural weed control measures, furrow, boarder and basin irrigation techniques. However, comparatively less capacity was built up in the aspects of recommended seed rate, sowing methods, decomposition of farm yard manure, high yielding varieties, soil analysis, land preparation, insect/pests’ killing by pesticides, controlling insect/pests’ through manual and biological, mechanical weeds control measure, flood irrigation. Therefore, the government, NGOs, farming community and facilitators of FFS should lay more emphasis on the less beneficial aspects in order to make them stronger and beneficial.

REFERENCES


