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ASSESSMENT OF THE PROFESSIONAL TRAINING COURSE UNDER WATERSHED PROJECT AT FATEHJANG FIELD STATION, PUNJAB, PAKISTAN

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ABSTRACT:- Watershed Project organizing different professional trainings to create awareness about water saving technologies as solar powered irrigation system, drip irrigation, sprinkler irrigation, micro catchment, rooftop rainwater harvesting and irrigation scheduling. Therefore, the project activities also include the training of the professionals from the line departments for the demonstrated technologies to foster the process of adoption. For this purpose Climate and Alternate Energy Water Resources Institute, NARC, organized a professional training on "Water Rehabilitation and Irrigation Technology Improvements" in April, 2014 in collaboration with ICARDA and USDA. Twenty seven professionals from different organizations and departments namely; Al-Mustafa Development Network (ADN), Taleem Foundation, Islamic International University (IIUI) Islamabad, National Agricultural Research Centre (NARC), National Centre for Rural Development (NCRD), National Rural Support Programme (NRSP), On-Farm Water Management (OFWM), Water Management (WM), Potohar Organization for Development Advocacy (PODA), Quaid-i-Azam University (QAU) and Environmental Sciences actively participated in the professional training. The post-training assessment showed that it had positive impact on the awareness of professionals. Majority of the participants were strongly and merely agreed upon the training practicality, technologies adoption probability and its advantages at farmer's field. Overall, most of the training participants were satisfied with the knowledge sharing presentations about the specific technologies discussed during the training.

Key Words: Professional Training; Awareness; Water Saving Techniques; Dissemination; Adoption; Pakistan.

INTRODUCTION

The demand for agricultural water has been increased gradually across the world. Similarly the fresh water availability was bounded globally and water shortage affected almost every continent of the world. Irrigation is essential for agriculture and plays a vital role in productivity. Hence in Pakistan, 97% of water resources were utilized only for crop and food production (Shaikh, 2000). At present, several developing countries have deficient water storage capacity including the countries with copious water availability. Lack of storage infrastructure means that farmers have limited ability to cope with droughts and floods. Most of the world regions especially in Asia, water shortage is allied directly to severe hunger and poverty and about 700 million people survive in intense poverty. The world 70% irrigated area, account from irrigation farming of

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Asia and approximately one third of the region's cropland (Mukherji et al., 2009). Adoption of proper and suitable irrigation scheduling by farmers lead to yield increase. Similarly, the water use efficiency turns into higher with the economic outcome of irrigation (Ortega et al., 2005). Irrigated agriculture has great potential for economic growth and poverty alleviation as irrigation can diminish the threats linked with the erratic rainfed agriculture. It also increases the cropping intensities in humid and tropical zones by extending the wet period. Irrigation also plays an important role in higher productivity, raise crop diversity, increase employment and supportive in lowering food prices (IFAD, 2008). By rising urbanization, industry and agriculture caused the decline of fresh water and enhance the struggle for fresh water used for irrigation on the earth (Ma et al., 2008). Moreover, if the water quality for irrigation is not good then it caused decline in yield (Tanwir et al., 2003; Rukhsana et al., 2005).

The world has1500 m ha of arable land and 288 m ha (19%) is presently irrigated (FAO, 2007). Agricultural productivity is greatly low in many developing countries especially in areas where agriculture is the key source of employment and Gross Domestic Product. However, increasing agricultural productivity is vital for economic growth and development (Doss, 2006). Due to water scarcity, only 25% of the total rainfed area is under cultivation. Highly efficient sprinkler and trickle irrigation techniques have been successfully introduced on a small scale in Pakistan, and are particularly well suited to the water scarce rainfed areas (Khan et al., 2012). Application efficiencies of these systems can be very high (75- 85%) comparing with other methods of irrigation. Efficient irrigation can be carried out even where topography is undulated and soil is of light texture. Rain-gun sprinkler with mobile units and drip irrigation system components have been locally developed, which are comparatively less expensive and have proved successful and potentially promising (PCST, 2005). The modern irrigation technologies such as the drip and the sprinkler have been portrayed as water-saving. These technologies are less labor intensive; results in less crop infectivity and decline health risks of the farmer (Drechsel et al., 2006 and Obuobie et al., 2006). Repetitively quoted that adoption of modern irrigation technologies is a key to escalating water use efficiency in agriculture and minimize the use of meager inputs while sustaining existing intensity of production (Green et al., 1996). It was found that irrigation method and water quality both affected the plant height, germination rate, crop production and the water use efficiency. Drip irrigation system is being used in all over the world and is more efficient than other methods such as surface irrigation methods. The leading countries are France, South Africa and USA with 90%, 37% and 21% area under drip, respectively. Drip irrigation system had field level application efficiencies of 70- 90%, as losses of deep percolation and surface runoff are decreased to very low (Irfan et al., 2014). Rainfed areas receive sufficient rain and if rainwater is collected through innovative techniques, it can be used for crop production (Baig et al., 1999 and Adnan et al., 2009). The supplemental irrigation

plays a critical and essential role in dry land agriculture if practiced scientifically. Among the rainwater collection techniques, two important are (i) in-situ and (ii) catchment based water harvesting (Shah et al., 2011).

Land and water are critical for agriculture as well as for rural upgrading. Moreover, they primarily allied to international challenges of food insecurity and poverty, climate change and mitigation, as well as degradation and declining of natural resources which have an effect on the livelihood of millions of rural people across the world. The estimated food production is enhancing by 70% all over the world while up to 100% in developing countries. The agriculture production systems are facing a big risk due to rising contest for land and water resources. Therefore, for resolving such multi-part challenges, there is need of particular attention and specific counteractive actions. The objectives of the study are to assess the training programme of professionals and to get feedback from the professionals after the practical demonstrations and give suggestions for the improvement of such professional trainings in future.

MATERIALS AND METHOD

The research study was carried out by collecting primary data from professionals who had participated in professional's training conducted at tehsil Fatehjang in 2014. To determine the effectiveness of the training, a constructive post-training evaluation questionnaire was designed and distributed to each participant at the end of training to evaluate the course from their own perspective and give comment honestly regarding the training. The evaluation strategy consisted of the basic information of the professionals like, age, education level, professionals' experience, nature of duty and work and gender involvement. The questionnaire was designed to evaluate the training course and feedback of training professionals about the specific technologies.

The professionals' perception regarding the training course contents and methodology were evaluated on Likert-type scale by ranking the degree of agreeing/disagreeing of various statements from A to E. A= Strongly Agreed = 1, B = Agreed = 2, C = Disagreed = 3, D = Strongly Disagreed = 4 and E= No Opinion =5.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Training Professionals

Data about the main features revealed that age plays a vital role in the denial or selection of new technologies and person's age is customary to have immense contribution towards personal learning, skill and attitude that helps him in right decision. Education also plays a fundamental role in learning of any new skill and improved techniques because the literate persons are more enriched in knowledge and have greater capacity to learn and accept new ideas. The mean value of the training professionals' age was 30 years and the education mean was 16 years. Similarly the training professionals' experience was 6 years with range of 0-36 years.

The majority (33%) of the training participants were performing duties in office, 30% were internees/students and 26% were engaged in field work and transfer of technology through

direct link with the farmers while only 11% were presently deployed for both office work and the field work (Table 1). Similarly the role of female in agricultural activities particularly in rainfed and mountainous areas is prominent; therefore 33% female had also participated in the training.

Table 1. Socio-economic characteristics of the training professionals

Characteristic	Description	% age distribution
Age group (years)	21-30	62
	31-40	30
	41-50	04
	50 end about	04
Literacy status	Intermediate	07
	Bachelor	04
	Master	63
	M. Phil	26
Professional experience	Below 5	55
	05-10	22
	11-15	15
	16-20	04
	Above 20	04
Nature of duty and work	Office Work	33
	Field Work/ Technology	26
	Both	11
	Internee/ Students	30
Gender involvement	Male	67
	Female	33

Training Course Evaluation

About 48% of the training participants were strongly agreed, 48% were merely agreed while 4% were disagreed that the course was relevant to their professional responsibilities (Table 2). Majority (70%) of the participants were strongly agreed and 30% were merely agreed that the course improved their knowledge and skills to great extent. Similarly with the other questions, i.e., enough time was given for field visit; 30% were strongly agreed, 67% were merely agreed while 3% were disagreed. Regarding the question that this training will enable you to help and guide the farmers more realistically; 33% were strongly agreed, 59% were agreed, 4% were strongly disagreed while 4% had not given any opinion (Table 2). Asking questions regarding problems and issues during their professional duties, 26% were strongly agreed, 48% were agreed, 19% were disagreed while 7% had no opinion. The participants were also inquired about the training need of their fellow scientists and 48% were strongly agreed and 52% were merely agreed that they should also be trained. Overall the training activities were very well conducted keeping in

Table 2. Course evaluation of the training

(%)

Statements	Strongly agreed	Agreed	Disagreed	Strongly disagreed	No opinion
The course was relevant to your professional responsibilities	48	48	4	0	0
The course improved your knowledge and skill to great extent	70	30	0	0	0
Enough time was given for field visits (demonstration sites)	30	67	3	0	0
This training will enable you to help and guide the farmers more realistically	33	59	0	4	4
Problems and issues which you usually encounter during your professional duties were discussed during the training	26	48	19	0	7
Your fellow scientists also need to be given such trainings	48	52	0	0	0

Table 3. Feedback of the training

(%)

Statements	Strongly agreed	Agreed	Disagreed	Strongly disagreed	No opinion
The training was more practical and helped to improve skills regarding use and design	44	52	4	0	0
Group discussions were more helpful then lectures	26	63	4	0	7
Instructors invited were relevant and had command on the subjects	48	52	0	0	0
The technologies demonstrated could increase water productivity and farm income	56	44	0	0	0
Would these technologies resolved farmers problems if adopted	33	59	0	0	8
Time allocated to practical should be increased	41	44	7	4	4
The course duration was about right	22	48	26	0	4
Did the training meet your expectations	48	48	0	0	4

view the professional needs and requirements especially of field visits.

Feedback of the Training

About 44% of the participants were strongly agreed, 52% were merely agreed while 4% disagreed that the training was more practical, and helped to improve skills regarding use and design of technologies according to field conditions. Similarly, 26% of the participants were strongly agreed, 63% were merely agreed, 4% were disagreed and 7% had no opinion on the evaluation quarries that group discussions were more helpful than lectures. Equally, with the other questions i.e., invited instructors were relevant and had command on the subject; 48% were strongly agreed while 52% were merely agreed (Table 3). Regarding the questions that the demonstrated technologies could increase water productivity and farm income; 56% were strongly agreed while 44% were merely agreed and would these technologies resolved farmer problems if adopted; 33% strongly agreed, 59% agreed and 8% had showed no opinion. Asking questions that the time allocated to practical should be increased; 41% strongly agreed , 44% agreed, 7% disagreed, 4% strongly disagreed and 4% gave no opinion. It is concluded that the participants were satisfied with the training methodology and feedback positively for all the evaluation indicators.

CONCLUSION AND RECOMMENDATIONS

Increasing water productivity enables greater crop production per unit of water consumed, thereby decreasing reliance on erratic rainfall. The selection of a particular technology for a given set of conditions is not always evident. There is a wide range of technologies available in which some will be more appropriate than others, according to local farmer preferences and local conditions. Farmers would benefit from technical assistance to evaluate and recommend technologies for their particular situations. The utilization of available technologies and modify them in new circumstances will be more advanta-

geous so they are suitable in terms of locality, people and function. Consequently, there is immense need to determine innovative approaches to endure with the available technologies and vastly changes in rainfall with other climatic changes like changes in temperature patterns. Such types of trainings activities build a positive impact and the course has successfully contributed in promoting the new knowledge and consciousness of the professionals during field visits. It is suggested that some notes or hard copies of lectures could be provided to the participants to improve their involvement in discussion. It is also suggested that training manuals be prepared and given to the participants at the end of training and individuals should be invited from the line departments as resource persons to share experiences. The senior resource persons/instructors should be there at the practical session with juniors' assistants so the professionals will show enthusiastic attention in the demonstrations.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

S. No	Author Name	Contribution to the paper
1.	Mr. Muhammad Nisar Khan	Introduction, Conceived the idea, Wrote abstract, Data collection, Results and discussion, Conclusion
2.	Dr.Tariq Hassan	Technical input at every step
3.	Mr. Hassnain Shah	Methodology and overall management of the article
4.	Mr. Saleem Abid	Methodology and data analysis in SPSS
5.	Ms. Irum Raza	Data entry in SPSS and analysis
6.	Mr. Saqib Shakeel Abbasi	References, Results and discussion

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