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Evaluation of Training on Effective Water Management: A Case of Capacity Building of Extension Personnel in Bihar

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ABSTRACT

The study was undertaken to measure the change in the knowledge, skill, attitude and aspiration level of extension personnel. Data was collected during February, 2010 from 25 extension workers at two point of time (pre and post evaluation). The investigation revealed a considerable impact among the extension personnel as they gained a significant change in acquiring new knowledge, developed participatory skills, changed their attitude and aspirations were fulfilled toward scaling-up of water productivity. Hence, it is expected that this enhanced learning will be effectively transferred to their workplace for the effective water management in agriculture. This systematic appraisal will also provide corrective measures to improve on-going or future training programs. Study also recommends that there is a great need to keep the extension workers up-to-dated in technological advancement especially in water scarce areas as they are playing catalytic role in adoption of agricultural technologies. Information seeking pattern was strong as they received information from scientists of National Agricultural Research System followed by mass media.

Key words: Training, evaluation, KASA.

INTRODUCTION

In India, training evaluation is either ignored or done half-heartedly which invariably fails to reflect the success of training investment. There is scanty evidence of systematic training evaluation, if any and it is restricted to the feedback / reaction of the participants. Although, it is an extremely difficult process, however, it continues to be an essential activity in judging / demonstrating the value of human resource development. Importance of training evaluation is well recognized (Bartram and Gibson, 1999). While expenditures have grown, training organizations have not taken extra step to show payoff of their efforts. Monitoring and evaluation are the in-built components of extension and training systems. Training evaluation acts as a systematic appraisal tool to provide corrective measures to improve on-going or future training programs (Bober and Barlett, 2004). It is a means of justifying training investment among the training consultants and top management. Now-a-days, need for understanding the evaluation techniques is becoming more important and through evaluation process, learning can be enhanced and transferred to their workplace.

Moving toward a more decentralized, participatory and market driven approach, extension system will require substantial investments in up-grading the skills and knowledge of all extension personnel, especially those at field level. Hence, need for strengthening the extension-personnel through effective training programs has become an integral part of agricultural strategy. Significance of water management as a precious input is well evident and these days it has become a critical issue globally. Water resource development and management is imperative for sustainable agricultural in water scarce areas. Perfect blending of extension functionaries, training and technology may lead to maximize the agricultural production for improving the livelihoods (Chand *et al.,* 2003). The study was undertaken to get hands-on-experience for efficient use of water, enhance the scientific outlook in water management which will lead to increase in their knowledge, skill and attitude level of extension personnel. The study was conducted to understand the demographic attributes, and to measure the knowledge, skill, attitude and aspiration levels of extension personnel.

MATERIALS AND METHODS

A fourteen days intensive training program was organized and evaluated at ICAR Research complex for eastern region, Patna (Bihar) India. Data was elicited from 25 extension personnel from Institutes of Indian Council of Agricultural Research, State Agricultural Universities (SAUs), Krishi Vigyan Kendra (KVK) and development departments of Bihar State. Evaluation of trainees was done at all the stages of KASA (Knowledge, Attitude, Skill and Aspiration) model. The model assumes that change in knowledge, attitude, skill and aspiration leads to modification in the scientific practices, which create desired change. The training was conducted through lecture method followed by result or method demonstration following *'learning by doing'* and *'seeing is believing'* principles. Modular approach was applied and whole training program was divided into following modules; (i) Socio-economic facets of water saving technologies (ii) Water management in agronomic and horticultural crops (iii) Water management in live-stock and fishery sector (iv) Agricultural engineering technological interventions (v) Integrated nutrient and disease management (vi) Role of women, financial institutions and participatory approach (vii) Result / method demonstration / interactions / group discussions with farmers, extension functionaries and scientists. Before and after design with singe-group was followed to measure the impact of training. A knowledge test was developed and minimum and maximum obtainable score was 7 to 29. Data on skills were measured on three point continuum namely new skill learnt, known skill sharpened and no new learning. Attitude towards scaling up of water productivity was measured on three point rating scale of agree, undecided and disagree. Aspiration or expectation level was also measured on three point continuum i.e. highly satisfied, satisfied, not satisfied. Non-parametric statistics was employed to test the difference in paired data.

Hypothesis

H_0: Pre and post training skill, attitude and aspiration level of two groups are same.

H_1: There is significant difference in knowledge, skill, attitude and aspiration level at pre and post training stage.

RESULTS AND DISCUSSION

Descriptive analysis

The age of respondents in this study ranged from 25 to 49 years with a mean of 39 years (Table 1). Most of the extension personnel had master degree followed by bachelor degree. Most of them were male and had rural family background. Their job experience ranged from 1 to 28 years with a mean of 11 years. Most of them were engaged in research followed by extension activity. Only few of them had the working experience of less than one year in water related areas. Information seeking behavior of respondents shows that 92 per cent

Table 1. Socio-economic Attributes of trainees Extension Personnel

n=25

Attributes		Category	Frequency	%
1.	Age (in years)	< 33	7	28
		33-45	13	52
		> 45	5	20
2.	Education			
		B. Sc.	7	28
		M. Sc.	13	52
		Ph. D	5	20
3.	Gender			
		Male	23	98
		Female	2	2
4.	Back ground			
		Rural	14	56
		Urban	11	44
5.	Working experience (in years)			
		< 4	7	28
		4-18	13	52
		>18	5	5
6.	Job Area			
	Research		11	44
	Extension		10	40
	Research and extension		2	8
	Extension and training		1	4
	Information technology		1	4
7.	Experience in water related activities (in years)	< 1	2	8
8.	Information source			
	Input dealer		10	40
	Newspaper		12	48
	Radio		12	48
	Television		13	52
	Progressive farmers		6	24
	Scientists of ICAR / SAU / KVK		23	92
	Exhibition		11	44

extension personnel contacted the scientists of ICAR, SAU and KVK for getting agricultural related information. However, mass media (Television) is also playing a key role in dissemination of proven technologies as reported by 52 per cent followed by kisan mela, radio and news paper.

Impact of the training program

Non-parametric test was (Wilcoxon Signed Rank test) employed to test the difference in paired data. The test is based on the magnitude of the difference between the pairs of observation. The values in two groups compared are naturally linked, and usually arise from individuals being measured more that gather before and after the measurements.

Gain in Knowledge level and skill development

Table 2 show that initial knowledge score ranged from 8 to 26 with mean score of 19.76. After exposure to training, knowledge score ranged from 20 to 29 with mean score 24.68. Thus, overall gain in knowledge was found to be 16.13 per cent. However, this improvement was found significant (Z=4.21) as Wilcoxon Signed Rank Test value is higher than table value. As far as participatory skill development is concerned, pre-training score varied from 11-37 with an mean of 23.91.The score of post-training ranged from 25-48 with the mean scored 38.74. Thus, the difference was 30.92 per cent which is significant at 0.01 per cent (Z=4.41).

Changed in attitude and aspirations fulfilled

Table 3 depicts that pre-evaluation attitude score ranged from 7 to10 with 9.04 mean score while post-training score was observed in the range of 14 to 20 with mean value 19.08. Consequently, study shows a nearly 50 per cent change in attitude toward scaling up of water productivity. The pre and post-evaluation scores for expectation / aspirations ranged from 6 to12 and 12 to 18, respectively. The average score was found to be 8.64 and 14.64, respectively. The aspirations of the extension personnel measured as 55.38 to 93.46 per cent with a difference of 38.46 per cent. This change is significant (Z=5.00). As the study was conducted at KASA model and all four variables were measured and a significant

Table 2. Gain in knowledge and skills through training

Particulars	Gain in Knowledge			Skill Developed		
	Pre-Training	Post- Training Training	Change (%)	Pre-Training	Post-Training	Change (%)
Minimum & maximum score	7-29	7-29	-	0-48	0-48	-
Range of score obtained	8-26	20-29	-	11-37	25-48	-
Mean-score	19.76	24.68	-	23.91	38.74	-
Overall improvement (%)	-	-	16.13	-	-	30.92
'Z' Value	-	-	4.21**	-	-	4.41**

** Significant at 0.01 % level

Table 3. Change in attitude and aspiration level through training

Particulars	Change in Attitude			Aspirations fulfilled		
	Pre-Training	Post- Training Training	Change (%)	Pre-Training	Post-Training	Change (%)
Minimum & maximum score	0-20	0-20	-	6-18	6-18	-
Range of score obtained	7-10	14-20	-	6-12	12-18	-
Mean-score	9.04	19.08	-	8.64	14.64	-
Overall improvement (%)	-	-	50.20	-	-	38.46
'Z' Value	-	-	4.26**	-	-	5.00**

** Significant at 0.01 % level

change in knowledge, attitude, skill and aspiration level was observed, hence, null hypothesis is rejected.

Moving toward a more decentralized, participatory and market driven approach, extension system will require substantial investment and improvement in up-grading the knowledge, skills, attitude and aspiration level of field extension personnel. The investigation reveals a significant impact of the training conducted on scaling up of water productivity in agriculture. Study reveals that extension personnel gained a significant change in acquiring new knowledge, developed participatory skills, changed their attitude and aspirations were fulfilled toward scaling-up of water productivity. It is expected that the enhanced learning will be effectively transferred to their workplace for effective water management in agriculture. This systematic appraisal will also provide corrective measures to improve on-going or future training programs, consequently, justifying the training investment. As water resource development and management is imperative for sustainable agricultural, study reveals that few of them had experience in water related technologies. Hence, there is a great need to keep them up-to-date in technological advancement especially in water scares area as they are playing catalytic role in adoption of agricultural technologies. The strong information seeking pattern and wide experience can be effectively utilized in research and extension activities through organization of need-based and skill-oriented training programs.

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