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Impact of model training course (MTC) on knowledge gain of extension functionaries about sustainable *Rabi* oilseed production

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Abstract

A study was conducted with 20 extension personnel represented Sate Departments of Agriculture from eight states of the country to find out the knowledge gain and opinion of the participants about a model Training Course organized by ICAR, Directorate of Rapeseed-Mustard Research, Bharatpur (Raj) on advances in eco friendly management practices for sustainable *Rabi* oilseed production. Findings show that the highest mean Per cent Score (MPS) in pre training test obtained by the respondents was 75.0 and lowest MPS was 31.4 with average knowledge score of 40.2 having co-efficient range of 0. 5899. In post test, highest mean per cent score obtained by the respondents was 86.0 and lowest scoring was 57.8 with average knowledge MPS 68.0 and co efficient of range 0.355. The study shows that initial knowledge of the participants was poor having only 40.2 per cent. After the exposure of training a significant improvement found in knowledge of the participants as the pre test scores increased from 40.2 to 68.0 per cent in post test along with 69.15 per cent gain in knowledge. Participants were fully satisfied with the physical arrangements inside the class as well as out of it. They were also of the opinion that the trainers made effective use of important teaching methods appropriate for the transfer of technology. The trainees reported that they had major learning about the agronomic practices of *Rabi* oilseeds, integrated eco-friendly management of diseases, insects, biogas technology. They also mentioned that they acquired new skills for the farming system, identification of varieties, seed production, hybrid development, identification of major pest and diseases of *Rabi* oilseeds, etc. The opinion of participants regarding overall grading of training was found excellent.

Key Words: *Human resource development, knowledge, opinions, training*

Introduction

Rapeseed-mustard, safflower, linseed, groundnut, soybean, sunflower, sesame, niger and castor are the nine annual oilseeds cultivated in India. Of them, rapeseed-mustard, safflower and linseed are the traditional *Rabi* oilseeds. It is a matter of great national concern, however, that India meets almost 50% of its domestic requirement for vegetable oil from imports. It is also apparent that the potentials of improved available technologies of all oilseeds have not been fully exploited and there exists a wide gap between the demonstrated and the average harvested yield in different states.

However, the high input production systems requiring massive qualities of fertilizers, pesticides, irrigation and machines disregard the ecological integrity of land, forests and water resources, endanger the flora and fauna and cannot be sustained over generations. Hence, eco-friendly management practices would have key roles to play in ensuring sustainable agriculture production, in improving human health and in rehabilitating and conserving the environment to safeguard the well being of the posterity.

It is therefore imperative to have a team of trained extension personnel fully aware of the technical, organizational, institutional and economic aspects of advances in eco-friendly management practices for sustainable *Rabi* oilseeds production and also capable enough to exploit the management practices for their effective transfer to the farmers. In order to maximize the oilseeds production, it needn't be

stressed too strongly that the extension personnel and ultimately farmers must know what is happening in the research fields at all times. In this context, a Model Training Course (MTC) was organized by ICAR-DRMR during December 2014 to refresh and upgrade the knowledge and skill of participants in advances in eco-friendly management practices for sustainable *Rabi* oilseeds (rapeseed-mustard, safflower and linseed) production. Pre-service and regular in service training is vital to effective extension system (Hayward, 1990). Need for enhancing knowledge and skills of extension professionals has increased in recent years due to changing technology and economics scenario. "Model Training Courses" (MTCs) scheme has been implemented since 1996 by Directorate of Extension Ministry of Agriculture, Government of India.

However, a merely organizing a training programme will not be useful until it is effective in terms of gain in knowledge and skills of the participants. The effectiveness of the training programme can also be measured in terms of participants' opinion about the different aspects of training contents and learning situations exposed. Keeping this in view, an impact study was done to evaluate the effectiveness of a 8 days Model Training Courses organized by ICAR-DRMR on advances in eco-friendly management practices for sustainable *Rabi* oilseeds.

Methodology

The study was conducted with 20 state extension officers represented from 8 states namely Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, Punjab and Rajasthan who participated in a eight days Model Training Course (MTC) organized by ICAR-DRMR on "advances in eco-friendly management practices for sustainable *Rabi* oilseeds" during December 03-10, 2014.

For the purpose to find the effectiveness of MTC and opinion of the participants regarding training, two questionnaires were prepared for the present investigations. The questionnaire of knowledge test had multiple choice questions on different aspects of management practices for sustainable *Rabi* oilseed production. The second questionnaire had the different statements of measuring opinion of participants regarding training aspects. The opinion of the participants was measured on three point continuum scale ranging from 'fully satisfied, to a limited extent and not at all'. The study was conducted in three phases: Phase-I Construction of tool and Pre-test, Phase-II Conduction of training and Phase-III Post-test after exposure of training. The questionnaire was administered to the trainees before and after conduct the training. The gain in knowledge by the participants and their opinion were measured after training. The data was tabulated and analyzed with the help of suitable statistical measures such as, standard deviation, mean, mean percent score, t-test etc. Descriptive statistics were used to arrive at conclusion.

Results and discussion

1. Impact of Model Training Course (MTC): The impact of MTC was assessed in terms of gain in knowledge. In this section, the attempt has been made to find out the effectiveness of model training course in terms of knowledge of the participants. The pre and post training level of knowledge of participants was assessed with structured questionnaire. The results have been presented under the following heads:

i) Overall knowledge level of the respondents in pre- test: This section describes the existing preliminary level of knowledge of the participants regarding selected aspects of contents of training programme before exposure of training. A questionnaire was used to test the pre knowledge of the participants. The results are given in the Table 1 and 2. Table 1 show that the highest mean per cent score (MPS) obtained by the respondents was 75.0

Table 1: Score range of knowledge and standard deviation in pre-test

N = 20

Range of knowledge (MPS)	Co-efficient of range	Average score	Standard deviation of knowledge test	Co-efficient of variation (%)
31.4-75.0	0.589	40.2	6.53	14.68

and lowest MPS was 31.4 with average knowledge score of 40.2 having co-efficient range of 0. 5899. Standard deviation of knowledge test in pre test was 6.53 and co-efficient of variation was found to be 14.68.

On the basis of equal distribution of maximum scores knowledge test was categorized into high, medium and low. Table 2 reveals that in pre test majority of the respondents (50 %) had medium knowledge with mean per cent score of raging from 41 to 62, whereas respondents having low level of knowledge was 35 per cent with mean per cent score of below 40 and only 15 per cent respondents were having high level of knowledge with mean per cent score of more than 62. This shows that most of the respondents had the medium level of knowledge in pre test.

The findings are in agreement with the findings of Ram et.al.(2009) and Meena (2010) who found that the respondents had medium level of knowledge.

Table 2. Distribution of respondents by overall knowledge and mean percent score of each category in pre test

N = 20

Knowledge with MPS range	Frequency (n)	Percentage (%)
Low (0-40 MPS)	7	35
Medium (41-62 MPS)	10	50
High (above 62)	3	15

ii) Overall knowledge level of the respondents in post-test : This section describes the knowledge level of respondents after the exposure of training package to the participants. Same knowledge test was used to test the knowledge after the exposure of training and their responses were recorded. Data show in the Table 3 indicates that in post test, highest mean per cent score obtained by the respondents was 86.0 and lowest scoring was 57.8 with average knowledge MPS 68.0 and co efficient of range 0.355. Standard deviation of knowledge test in post test was 7.99 and coefficient of variation was found to be 19.67.

Table 3: Score range of knowledge and standard deviation in post-test

N = 20

Range of knowledge (MPS)	Co-efficient of range	Average score	Standard deviation of knowledge test	Co-efficient of variation (%)
57.8-86.0	0.355	68.0	7.99	19.7

On the basis of equal distribution of maximum scores knowledge test was categorized into high, medium and low. Data presented in the Table 4 reveal that in post test majority of the participants (45%) had medium knowledge with mean per cent score ranged from 46-72, while participants in high level of knowledge were above 72 mean per cent score. Only 20 per cent participants were found in low level of knowledge with mean per cent score of below 45.

Findings are supported by Kaur and Rathore (2013) indicated that the respondents in pre-test had medium level of knowledge.

Table 4. Distribution of respondents by overall knowledge and mean percent score of each category in post-test

N = 20

Knowledge with MPS range	Frequency (n)	Percentage (%)
Low (0-45)	4	20
Medium (46-72)	9	45
High (Above 72)	7	35

iii) Comparison of pre test and post test score for their gain in knowledge : This section describes the comparison between pre test scores and post-test scores to find out the effectiveness of MTC in terms of gain in knowledge by the participants. Paired't' test was applied to find out whether there was significant gain in knowledge of the participants.

The data on overall gain in knowledge is presented in Table 5 indicate that there was significant difference in the pre-test scores and post-test scores of the participants as calculated 't' value, which was found to be significant at 0.01 level of significance.

The mean percent score given in Table 5 shows that the initial knowledge of the participants was poor having only 40.2 per cent. After the exposure of training, a significant improvement found in knowledge of the participants as the pre test scores that increased from 40.2 to 68.0 per cent along with 69.15 per cent gain in knowledge. It is seen from Table 5 that the computed value of 't' (i.e.36.8) was statistically significant at 0.01 level of significance. This shows that there was significant gain in knowledge level of the participants after the training. Findings are similar with the study of Pandian *et al.* (2002) and Jain (2005).

Table 5: Overall gain in knowledge of the participants

Items	Mean per cent Score	Calculated 't' value & Degree of freedom
Pre test	40.2	30.3**
Post test	68.0	
Gain (%)	69.2	

** Significant at 0.01 level of significance

2. Opinion of participants regarding different aspects of MTC : The data were also collected to study the opinion of participants about facilities, resources, atmosphere and methodology on three point continuum.

i) Opinion of participants regarding facilities and resources: Data presented in table 6 regarding resources and facilities of MTC predicts that 100 per cent participants were fully satisfied with class room and lab facilities followed by lodging arrangement (95%), boarding facilities (90%), transport facilities (85%), recreation facilities (70%) and library facilities (65%). No one found in the category of not at all satisfaction regarding facilities and resources of MTC. Findings are similar with the findings of Nagar (2009).

Table 6: Opinion of participants regarding facilities and resources

Item	Degree of satisfaction					
	Fully satisfied		To a limited extent		Not at all satisfied	
	F	%	F	%	F	%
Lodging arrangement	19	95	1	5	-	-
Class room and lab. facilities	20	100	-	-	-	-
Transport facilities	17	85	3	15	-	-
Boarding facilities	18	90	2	10	-	-
Library facilities	13	65	7	35	-	-
Recreation facilities	14	70	6	30	-	-

ii) Opinion of participants regarding training atmosphere and methodology: The result shown in Table 7 regarding training atmosphere and methodology reveals that 100 percent of the participants were fully satisfied from duration of the programmes and use of A.V. aids followed by atmosphere to exchange ideas freely with faculty members (95%). The 90 per cent participants were fully satisfied with medium of instruction, training methods, relevance of contents and the sequencing

Table 7: Opinion of participants regarding training atmosphere and methodology

Item	Degree of satisfaction					
	Fully satisfied		To a limited extent		Not at all satisfied	
	F	%	F	%	F	%
Atmosphere to exchange ideas freely with faculty members	19	95	1	5	-	-
Medium of instruction	18	90	2	10	-	-
Training methods	18	90	2	10	-	
Use of AV aids	20	100			-	
Timely information of day to day activities	17	85	3	15	-	-
Duration of the programmes	20	100	-	-	-	-
Relevance of contents	18	90	2	20	-	-
Adequacy of contents	17	85	3	15	-	-
Sequencing of contents	18	90	2	10	-	-
Practical orientation	16	80	4	20	-	-

of contents. Regarding adequacy of contents and timely information of day to day activities, 85 per cent participants showed their full satisfaction. The 80 per cent were fully satisfied with practical orientation of training. Here also no one found in the category of not at all satisfaction. Similar findings supported by Chandawat *et al.* (2004).

3. Distribution of participants on the basis of level of expectations fulfilled with MTC: The data in Table 8 predicts that the majority of the participants (85%) reported their expectations were fulfilled to a great extent followed by the (15%) participants to some extent.

Table 8: Distribution of participants with level of expectations fulfilled

Expectations Fulfilled	f	%
To great extent	17	85
To some extent	3	15

4. Distribution of participants regarding overall grading of the MTC: In overall grading, Table 9 shows that the majority of participants (65%) rated the MTC as excellent followed by very good (30%). Only 5 percent reported the training as the level of good. Findings are supported by Singh and Pandey (2012).

Table 9: Distribution of participants regarding overall grading of the MTC

Overall grading	f	%
Excellent	13	65
Very good	6	30
Good	1	5

5. Major impact of the MTC: The data were also collected on major learning by the trainees, new skills acquired by them, utility of the course for improving job performance and the action plan suggested by the trainees.

Major learning by the trainees: The trainees reported that they had major learning about the agronomic practices of *Rabi* oilseeds, integrated eco-friendly management of diseases, insects, biogas technology, varietal options for *Rabi* oilseed, management of problematic soil, PPVFRA, hybrid seed production, efficient resource utilization, bee keeping, nutrient management, resource use efficiency, use of ICT, factors affecting adoption of technology, etc.

New skills acquired by the trainees: The trainees acquired new skills for the farming system, identification of varieties, seed production, hybrid development, identification of major pest and diseases of *Rabi* oilseeds, integrated nutrient management, farming system approaches, establishment of biogas,

bee keeping, PRA techniques, use of biofungicides, organic farming, etc.

Utility of the course for improving job performance: The trainees highlighted one or the other technological components of quality seed production, hybrid seed production, nutrient management, resource use efficiency, yield enhancement, use of bio-fungicides, cropping system intensification, integrated disease management, integrated pest management, soil management, post harvest management, commodity market for enhanced productivity in various crops etc as useful for improving their job performance.

Action plan suggested by the trainees: Getting different techniques of eco-friendly management for sustainable production of oilseeds included in package of practices of their respective states, organizing demonstrations, conducting training programmes etc., on the different aspects of eco-friendly management practices were the action plans, the trainees had planned for their area of operation.

Conclusion

It can be concluded from the above findings that there was a significant difference between the pre and post test scores, hence it can be emphatically expressed by the investigation that the model training course was found very effective for imparting knowledge to the agricultural officers regarding eco-friendly management practices for sustainable rabi oilseed production.

Participants were fully satisfied with the physical arrangements inside the class as well as out of it, specifically with respect to boarding and lodging. They were also of the opinion that the trainers made effective use of important teaching methods appropriate for the transfer of technology. The trainees reported that they had major learning about the agronomic practices of *Rabi* oilseeds, integrated eco-friendly management of diseases, insects, biogas technology, varietal options for *Rabi* oilseed, management of problematic soil, PPVFRA, hybrid seed production, efficient resource utilization, bee keeping, nutrient management, resource use efficiency, use of ICT, factors affecting adoption of technology, etc. They also mentioned that they acquired new skills for the farming system, identification of varieties, seed production, hybrid development, identification of major pest and diseases of *Rabi* oilseeds, integrated nutrient management, farming system approaches, establishment of biogas, bee keeping, PRA techniques, use of biofungicides, organic farming, etc.

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