

EVALUATION OF MODEL TRAINING COURSE ON SYSTEM OF RICE INTENSIFICATION: APPLYING THE CRITERIA OF KIRKPATRICK MODEL

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ABSTRACT

Evaluating the effectiveness of training programs is very important as it aids in identifying the extent of learning that has taken place and also provides insight on how to improve it. The Model Training Courses are organized to improve the professional competence, upgrade the knowledge and develop technical skills of subject matter specialists/extension workers. It also provides an opportunity for experience sharing, problem solving and interaction between experts and subject matter specialists. The present analysis pertains to the evaluation of the effectiveness of Model Training Course on System of Rice Intensification organized by the Indian Institute of Rice Research, Hyderabad. In the present study, the first two levels of the Kirkpatrick's Four-Level Training Evaluation Model were used. This model helps in objectively analyzing the effectiveness and impact of the training in order to improve it in the future. The *reaction* criterion indicated that majority of the participants were very highly satisfied with all the aspects of the program, i.e., the course content, methodology of conducting the training program, field visits, practical sessions, board and lodging facilities and other logistic arrangements in connection with the program. *Learning* measures the trainees' skills and knowledge which they were able to absorb at the time of training. In the pre-evaluation test 39% of the participants were in the low score category and only 13% were in the high score category. Whereas, in the post evaluation stage it was observed that only 4% were in low and majority were in medium 61% and high score category 35%. It can be concluded that training has resulted in substantial gain in knowledge about SRI method of rice cultivation.

KEYWORDS: Evaluation, Model Training Course, System of Rice Intensification, Kirkpatrick's Evaluation Criteria

INTRODUCTION

Training presents a prime opportunity to expand the knowledge base of all employees and it helps one to strengthen and improve the skills. Van Dersal (1962) defined training as the process of teaching, informing, or educating people so that (1) they may become as well qualified as possible to do their job, and (2) they become qualified to perform in positions of greater difficulty and responsibility. Refresher or Maintenance training is offered to update and maintain the specialized subject-matter knowledge of the incumbents. Refresher training keeps the specialists, administrators, subject-matter officers, extension supervisors, and frontline workers updated and enables them to add to the knowledge and skills they have already. Maintenance or refresher training usually deals with new information and new methods, as well as review of older materials. This type of training is needed both to keep employees at the peak of their possible production and to prevent them from getting into a rut (Van Dersal, 1962). Training evaluation is a critical component of analyzing, designing, developing, and implementing an effective training programme.(IAEA,2003). Evaluating the effectiveness of

training can identify areas where training needs improvement and may also provide insight on ways to improve it (Machles, 2003).

The 'Model Training Courses (MTCs)' scheme has been implementing since 1996 by the Directorate of Extension, Ministry of Agriculture, Government of India and emphasizes demand driven capacity building of extension managers, marketing managers and extension functionaries of the State development departments. The Directorate of Extension, New Delhi sponsored an eight day model Training course on System of Rice Intensification (SRI) which was organized by this Directorate's, Transfer of Technology and Training Section from September 28 to October 5, 2011. The major objectives of the training program were

- To impart knowledge and skills about SRI techniques for enhancing rice production.
- To sensitize the participants to identify field problems in adoption of SRI and
- To prepare location specific action plan for promotion and adoption of SRI.

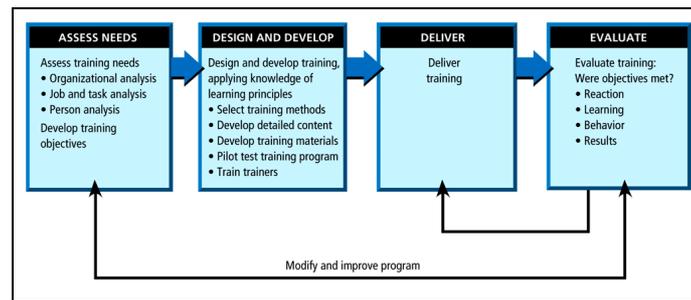
METHODOLOGY

The 'Model Training Courses (MTCs)' are generally organized by ICAR institutes and State Agricultural Universities. The MTCs are of national character and offer training courses in specialized areas in agriculture, horticulture, veterinary, sericulture and extension. MTCs are very cost effective as the training infrastructure and specialists of the host institutes are used for imparting training. The Model Training Courses of 8 days duration offers interface between host institutes and extension field functionaries. The main objectives of 'Model Training Courses (MTCs)' are: To improve the professional competence, upgrade the knowledge and develop technical skills of subject matter specialists/extension workers and to provide an opportunity of experience sharing, problem solving and interaction between experts and subject matter specialists.

The MTC on System of Rice Intensification (SRI) with the above mentioned objectives was organized from September 28 to October 5, 2011 at Indian Institute of Rice Research, Hyderabad. The participants of the training program were development personnel of the Agricultural departments of different states of the country. The total number of trainees was thus 23 from 13 different states of the country (Assam, Karnataka, Kerala, Himachal Pradesh, Mizoram, Manipur, Maharashtra, Madhya Pradesh Gujarat, Haryana, Odisha, Rajasthan and West Bengal). In the present analysis, the concepts of Training Cycle, the steps in training cycle and criteria for evaluation of training programs have been applied to relate these concepts to the results of the analysis on effectiveness of Model Training Course in improving the knowledge of trainees.

THE TRAINING CYCLE CONCEPT

The training cycle provides a structured way to plan and organize an effective training program. The four steps in training cycle are presented in figure.1.

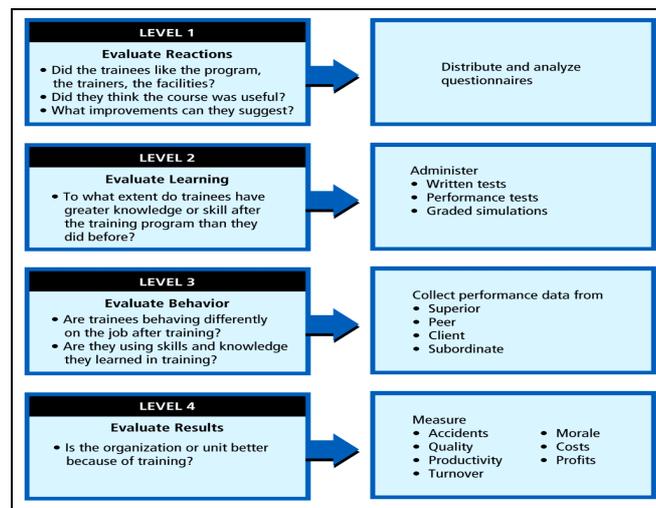


Source: Fisher, Schoenfeldt, & Shaw (2006), Figure 9.1, p. 377

Figure 1: Steps in Training Cycle

KIRKPATRICK'S FOUR-LEVEL TRAINING EVALUATION MODEL

The most popular approach to the evaluation of training in organizations today is Kirkpatrick’s (1998) framework of four ‘levels’ of criteria as depicted in the figure 2. In the present study, the first two levels of the Kirkpatrick’s Four-Level Training Evaluation Model were used. This model helps in objectively analyzing the effectiveness and impact of the training in order to improve it in the future. The four levels are: Reaction, Learning, Behavior and Results. By applying and analyzing each of these four levels, one can gain an understanding of how effective the training was, and how one can improve in the future.



Source of figure: Fisher, Schoenfeldt, & Shaw (2006), Figure 9.4, p. 405

Figure 2: Kirkpatrick's Four-Level Training Evaluation Model

FINDINGS AND DISCUSSIONS

Profile of the Participants

The participants numbering 23, represented 13 States of the country and their profile indicated that majority of the participants were in the middle age group, seven participants were in the range of 25-35 years, five participants were in 35-45, eleven of the participants were in the age group of 45-55 years and a single participant was above 55 years. Thus the minimum age of the participants was 23 years and maximum age was 56 years. With respect to qualification out of 23 participants six of them were with bachelor degree in agriculture, 13 with master degree, four of them were having Ph. D

degree. Their work experience ranged from minimum of 3 years to maximum of 28 years. About 24 percent of the participants reported that they were not aware of the SRI method of rice cultivation. Designation wise the participants represented Agricultural officers (6), Assistant Directors of Agriculture (05), Subject matter Specialists (03), Deputy Director of Agriculture (01) SDAO (02), AAO (02), AEO (02), EO (01) and one Agronomist.

Training Need Assessment

The participants' training need assessment was undertaken on the first day of the training program through a structured schedule. During the introductory session, outline of the program and course content was thoroughly discussed with the participants and the resource faculty of IIRR. As per the suggestions put forth by the participants' modifications were made in the day-to-day schedule after training need assessment. The participants' expressed the practical difficulties in disseminating SRI and problems faced by the farmers in adoption of SRI.

Design of Course Content

Fischer et.al (2006) recommends the designing of training programs to satisfy two key preconditions of Trainee readiness: What do the trainees already know? If we want to start the training program at the right level we need to find out what they already know. Design the training program to build on what the trainees already know. The course content covered the following broad aspects of SRI methods of rice cultivation viz., Rice Research in India-Current status and future prospects, basic principles of System of Rice Intensification, results from AICRIP trials and FLD's on SRI, physiological principles of SRI, Water management in SRI cultivation, Soil related problems in SRI cultivation, selective mechanization in SRI cultivation, Genotype response to SRI method of cultivation, Land preparation, raised seed bed nursery preparation and transplanting, use of marker and weeder in SRI Nutrient dynamics and efficiency in SRI cultivation with reference to organics, Disease dynamics in SRI cultivation, Insect pests and their management in SRI, Hybrid Rice vis-a-vis SRI cultivation, Nematode problems and their management in SRI, Aerobic rice in alternate water saving system, SRI vis-a- vis ICM, Organic sources and their uses in SRI for sustainable rice production, Microbiological properties of soil in respect of SRI cultivation, quality seed production through SRI, Identification of key insect pests of rice in glass house and fields, identification of weeds and their management, action plan preparation for SRI, extension strategies to popularize SRI and Farmers experiences on SRI, Scaling up of SRI.

Deliver the training program

The training program was organized for eight days as per the norms of the Model Training Course in the well equipped training hall of the Institute which provides a comfortable seating arrangement and environment. The daily sessions were planned for continuity in subject matter and with break after two sessions. All the topics were covered as planned in the course outline and the practical sessions were conducted in the afternoon.

A training programme has a better chance of success when its training methods are carefully selected. A training method is a strategy or tactic that a trainer uses to deliver the content so that the trainees achieve the objective (Wentling, 1992). Selecting an appropriate training method is perhaps the most important step in training activity once the training contents are identified. The Course content of the entire training was implemented through lecture-cum- discussion, practical sessions, field visits and demonstrations and question answer sessions. More emphasis was given on demonstration and practical sessions. Visits to the laboratories, experimental fields, glass house and farmer's fields were

arranged to provide a first-hand experience to the participants with latest developments in rice production. The trainees had the opportunity to interact with the farmers at their fields and could compare SRI plots with conventional rice cultivation.

Evaluation of the Training Program

Training evaluation is often defined as the systematic process of collecting data to determine if training is effective (Goldstein & Ford, 2002; Noe, 2002). Kirkpatrick (1976) suggested four criteria to evaluate training programmes: (1) reaction, (2) learning, (3) behaviour, and (4) results. Each criterion is used to measure the different aspects of a training programme. **Reaction** measures how the trainees liked the programme in terms of content, methods, duration, trainers, facilities, and management. **Learning** measures the trainees' skills and knowledge which they were able to absorb at the time of training. Behaviour is concerned with the extent to which the trainees were able to apply their knowledge to real field situations. **Results** are concerned with the tangible impact of the training programme on individuals, their job environment, or the organization as a whole.

The first two criteria suggested by Kirkpatrick to evaluate the training program were used in the present analysis to evaluate the training program. The **reaction** criterion indicated that majority of the participants were very highly satisfied with all the aspects of the program, i.e., the course content, methodology of conducting the training program, field visits, practical sessions, board and lodging facilities and other logistic arrangements in connection with the program (Table 1). Therefore, it is important to measure reaction, because it helps one understand how well the training was received by the audience. It also helps one to improve the training for future trainees, including identifying important areas or topics that are missing from the training.

Learning measures the trainees' skills and knowledge which they were able to absorb at the time of training. At the learning level we measure what the trainees have learned and how much has their knowledge increased as a result of the training. The specific learning objectives designed in the training plan form the starting point for the measurement of change in knowledge, skills or attitude. It is important to measure this, because knowing what the trainees have learnt will help to improve future training.

To measure the amount of learning that had taken place as a result of exposure to the training program, the pre and post knowledge test methodology was used. The trainees were administered a test based on subject matter to be covered during the training program on the first day of the program and the same knowledge test was repeated on the last day of the training program. In the pre-evaluation test 39% of the participants were in the low score category and only 13% were in the high score category. Whereas, in the post evaluation stage it was observed that only 4% were in low and majority 61% were in medium and 35 % in high score category (Table 2). It can be concluded that training has resulted in substantial gain in knowledge about SRI method of rice cultivation.

CHALLENGES IN EVALUATING BEHAVIOUR CHANGE AND RESULTS

It can be challenging to effectively measure change in **behaviour** as a result of being the participant of the training program. This is a longer-term activity that should take place in the work place of the trainee after weeks or months after the initial training. One of the best ways to measure change in behavior is to conduct observations at the trainees' work place and interview the peers' subordinates and supervisor over time. It is important to note that behavior will only change

if conditions are favourable. Moreover, effective learning could have taken place in the training session but, if the overall organizational culture is not conducive for any behavior changes, the trainees might not be able to apply what they have learned.

The behaviour /application evaluation level attempts to quantify to what extent training programs are applied to the workplace as a result of a training program. Evaluating behavior is very important because it measures how well the training actually transfers to the workplace. Of all the levels, measuring the final *results* of the training is likely to be the most costly and time consuming. The biggest challenges are in isolating and identifying which outcomes, benefits, or final results are most closely linked to the training, and the methods to measure these outcomes over the long term. Evaluation at the last two levels is difficult and also expensive (Phillips, 2002).

PARTICIPANTS' FEEDBACK

However, the participants also emphasised the need for more field visits, interactions with scientists and farmers for understanding practical implications of adopting the SRI methodology. The participants' suggested that the training content should be specific to SRI and for inclusion of more field visits to gain knowledge and understanding about the practical aspects of SRI and its prospects and constraints in adoption at farmer's level.

CONCLUSIONS

The training program on System of Rice Intensification was organised by adopting the steps in the training cycle, i.e, and systematic need assessment, design of training, conduct and evaluation. The criteria for evaluation of training program indicated that at the reaction level, majority of the trainees were satisfied and also at the learning level, there was substantial learning in terms of gain in knowledge by the trainees measured through pre test-post test methodology. Majority of the trainees belonged to the medium and high level of knowledge after exposure to the training program. The program was thus successful in creating awareness and increasing knowledge of the participants about SRI. It has provided them the technical competence to motivate farmers to adopt this methodology for resource conservation and improving their livelihood status.

Table 1: Distribution of Trainees Based on Their Extent of Satisfaction with the Training Program

S.No	Aspects	Level of Satisfaction		
		Great Extent	Limited Extent	Not Satisfied
1	Practical orientation of the course	65.21	34.78	-
2	Relevance of reading material	100.00	-	-
3	Changes in daily course schedule	91.30	8.70	-
4	Quality of training	86.96	13.04	-
5	Fulfilment of expectations	73.91	26.09	-
6	Latest technical information in training course	82.61	17.39	-
7	Technical competence of faculty	95.65	4.35	-
8	Field work/visits	52.17	47.83	-
9	Class room facilities	86.96	13.04	-
10	Audio visual facilities	86.98	13.04	4.35
11	Transport facilities	47.83	47.83	4.35
12	Overall training program	78.26	21.74	-

Table 2: Distribution of Trainees Based on Their Knowledge Level

Category	Pre-Evaluation (%)	Post-Evaluation (%)
Low (>21)	39.13	4.34
Medium (Score 22-35)	47.83	60.88
High (Score 36-45)	13.04	34.78

REFERENCES

1. Fisher, C. D., Schoenfeldt, L. F., Shaw J. B. (2006). Human resource management (Sixth edition). Boston, USA: Houghton Mifflin Company
2. International Atomic Energy Agency (2003). Means of evaluating and improving the effectiveness of training of nuclear power plant personnel. Ivancevich, John Human Resource Management.9th Ed.
3. Kirkpatrick, D.L. (1998). Evaluating Training Programs, The Four Levels (2nd Ed.). California: Berrett-Koehler Publishers.
4. Machles, D. (2003). Evaluating the Effectiveness of Safety Training. Occupational Health & Safety, 72(6), 54-63.
5. Noe, R. Anderson. (2002). Employee training & development (2nd Ed.). Boston: McGraw- Hill/ Irwin.
6. Phillips, P. (2002). The Bottomline on ROI: Basics, Benefits, & Barriers to Measuring Training and Performance Improvement. Georgia: CEP Press.
7. Van Dorsal, W. R. (1962). The successful supervisor. New York: Harper and Row.
8. Wentling, T. L. (1992). Planning for effective training: A guide to curriculum development. Rome: FAO

