

Impact of Model Training Course on Enhancement of Knowledge of Extension Functionaries in Application of Scientific Potato Production Technologies

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ABSTRACT

Central potato Research Institute, Shimla has been organizing Model Training Courses (MTCs) on scientific cultivation of potato for extension functionaries of agriculture/horticulture department of different states of India. These training courses are very helpful in enhancing the awareness and knowledge level of extension functionaries. The current study was undertaken to assess the impact of model training courses on the knowledge enhancement of trainees and overall evaluation of the training programme. Data were collected on different aspects of the training programme using structured interview schedule and a questionnaire before and after conducting the training programmes. Learning Index was used to measure the gain in knowledge of participant trainees. Results of the study revealed that training had significant impact on enhancing the knowledge level of participants in all areas of potato technologies. Average enhancement in knowledge was estimated to be 17.31 per cent. Majority of the respondents were very well satisfied with the course contents and training delivery methods. More than 70 per cent trainees expressed that the topics of basic knowledge of potato cultivation and potato disease and pest management were very useful. More than half of participants graded training course as excellent. These findings suggested that more number of such trainings should be organized so that the competency level of extension functionaries at grass root level may be improved. This, in turn, will also help potato growers across the country to get information on scientific methods of potato cultivation.

Key words: Impact; Model training course; Learning index;

Potato is one of the basic vegetable of mass consumption in India and abroad and has become 4th important staple food crop after rice wheat and maize (Kalloo *et al.*, 2005). India is the 2nd largest producer of potato in world only behind China. Currently, it produces 36.57 million tonnes of potato from an area of 1.83 million ha with average productivity of 19.9 tonnes/ha (NHB, 2010). With ever increasing population, potato consumption in India is expected to increase manifold in future. According to vision 2030 of Central Potato Research Institute, Shimla, India will require 69.39 million tonnes of potato by the year 2030 (Singh *et al.*, 2011). To increase the production level, the productivity of potato has to be increased. There is a wide gap in productivity of potato in different states of India. North-east states and hilly states like Himachal Pradesh, Jammu and Kashmir and Uttarakhand are very low in

productivity as compared to Gujarat, Uttar Pradesh, West Bengal, Punjab and Bihar. There is no dearth of improved potato production technologies in India but major problem is transfer of technologies to the farmer's field. A survey conducted by National Sample Survey Organization (NSSO) revealed that nearly 60 per cent of the farmers had not accessed any source of information on modern agricultural technologies. Out of remaining farmers who had access to information, only 5.7 per cent reported their source of information as extension worker (NSSO, 2005). This suggests that state department of agriculture has a weak technology delivery system. An effective and efficient extension system at grass root level is pre-requisite to reduce the yield gap in potato and improve its productivity. In this scenario, training of farmers as well as extension officers at district and block level has been identified as the main

mechanism to increase competency level of a person engaged in potato development.

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. Its major emphasis is demand driven capacity building of extension managers, marketing managers and extension functioning of State Development department. These training programmes are organized on priority area of agriculture, horticulture and allied subjects. This eight day training courses are organized by State Agriculture Universities (SAUs), ICAR institutes and other central institute and sponsored by Directorate of Extension.

Central Potato Research Institute, Shimla generates modern technologies for potato and also organizes transfer of technology activities for potato growers and extension workers and other officers of state department on a limited scale. The institute has been organizing Model Training Courses regularly since its inception; on potato production, improvement, utilization, marketing and storage for extension officers of different states of the country. These trainings are sponsored by Directorate of Extension and involve a lot of human as well as financial resources. Therefore, these training programmes needs to be evaluated time to time in order to know the effectiveness of training in bringing desired changes among the trainees behaviour. Keeping in this view, current study was planned to study the impact of Model Training Courses conducted by CPRI on Extension functionaries of state development departments.

METHODOLOGY

The Study was conducted in Shimla district of Himachal Pradesh. CPRI, Shimla organized two on-campus Model Training Courses for master trainers/extension officers of state department in the year 2008 and 2009. Duration of these courses was eight days each and 32 master trainers/extension officers of the agriculture/horticulture departments from different states attended these trainings. These trainees were taken as respondents for this study.

In this study impact of training programme refers

to the manner and extent to which training has influenced the job performance of extension officers in respect to their activities in the organizations. To measure this impact different activities and manner in which training was imparted, were selected as indicators. Impact of training was measured in term of percentage gain in knowledge, level of satisfaction of trainees, usefulness of the topics covered and overall grading of training. Gain in knowledge was measured by use of a well structured questionnaire containing multiple choice questions on potato cultivation, utilization, marketing, storage and improvement. This questionnaire was administered to respondent before and after the conduct of training. Based on difference in marks obtained before and after training, percentage gain in knowledge was calculated. The degree of learning acquired through training was also calculated by use of Learning Index with the help of following formula:

$$LI = \frac{(PoTS - PrTs)}{(100 - PrTs)} \times 100$$

Where, *LI* = Learning Index

PoTS = Post-Training Score in percentage

PrTS = Pre-Training Score in percentage

Level of satisfaction of trainees was measured using a scale having 5 point continuing ranging from 'very well satisfied' to 'partially satisfied', 'partially dissatisfied', 'dissatisfied' and 'highly dissatisfied'. Similarly, usefulness of the topic was measured on a 3 point continuum ranging from 'highly useful', to 'useful' and 'not useful'. Opinion from trainees on degree availability of resources and facilities during training was also studied along with their suggestions to improve the training delivery mechanism. Data was tabulated and analyzed using SPSS software. Descriptive statistics were used to arrive at conclusion.

RESULTS AND DISCUSSION

Demographic characteristics : The background of the trainees was studied and results are given in Table 1. It can be observed that a majority (93.75%) of trainees were male and only 6.25 per cent of were female. Therefore, there is a need to encourage the participation of female extension officers in model training courses. Results also revealed that most of the trainees were either graduate or post graduate. Further, It was observed that majority (53.12%) of the trainees were from old age category with higher experience (37.50%).

This implies that young extension officers may be encouraged to participate in training programme.

Table 1. Background profile of the trainees (N=32)

Characteristics	Categories	No.	%
Gender	Male	30	93.75
	Female	02	6.25
Age	Young (0-35 years)	03	9.37
	Middle (35-45 years)	12	37.50
	Old (> 45 years)	17	53.12
Education	Graduation	13	40.62
	Post Graduation	17	53.12
	Ph. D	02	6.25
Work Experience	Low (0-10 years)	09	28.12
	Medium (10-20 years)	11	34.37
	High (> 20 years)	12	37.50

Gain in knowledge : A questionnaire containing multiple choice questions on different aspect of potato production technology was given to the trainees before and after conduct of training and percentage gain in knowledge was calculated along with Learning Index. The results are given in the following table.

Table 2. Distribution of respondents based on percentage gain in knowledge (N=32)

Percentage gain in knowledge	No.	%
Low (0-10 % increase)	5	15.62
Medium (10-20 % increase)	17	53.12
High (20-30% increase)	10	31.25

Mean=17.31, SD=6.32

Analysis of data in Table 2 revealed that a majority of trainees (53.12%) had reported 10-20 per cent increase in knowledge after training. Gain in knowledge was high for 31.25 per cent of trainees and was low for 15.62 per cent of trainees. Average increase in knowledge of trainees before and after training was

found to be 17.31 per cent which shows that training was successful in increasing the knowledge of respondents significantly. This is in conformity with *Das and Sharma (1998)* who also found that training program contributed significantly in improvement of respondent's knowledge about scientific bee keeping. Learning Index (LI) was calculated using pre and post training average score in percentage and found to be 27.40 which imply that trainees learned a lot about potato technologies due to participation in model training course.

Training was provided on different aspects like planting, fertilizer application, disease and pest management, processing, marketing, storage etc. Subject wise gain in knowledge was also studied with the help of pre and post average score and results are given in Table 3.

The data in Table 3 depicted the distribution of trainees according to their knowledge level in different areas before and after training along with percentage gain in knowledge. The maximum knowledge gain was observed in the area of 'basic knowledge of potato' (31.85%) followed by 'breeding and biotechnological applications in potato' (21.35%), 'potato physiology and post harvest technology' (19.45%), 'True Potato Seed (TPS) technology' (18.80%) and 'seed potato production technology' (16.4%). It implies that most of the trainees were not having proper knowledge in above mentions areas of potato cultivation. This gain in knowledge especially in the field of potato breeding, biotechnology, TPS technology and seed technology will help the extension workers to understand the recent advances in potato and ultimately, they will be able to effectively transfer this knowledge to potato growers of their

Table 3. Distribution of respondents according to their knowledge in different aspects of potato production technologies due to training

Different aspects of potato production technology	Pre-test knowledge score average (%)	Post-test knowledge score average (%)	% gain in knowledge
Basic knowledge of potato	48.45	80.30	31.85
Agronomy and soil science	55.35	64.40	9.50
Potato disease management	43.40	57.45	14.50
Seed Potato Production Technology	34.45	50.85	16.40
Insect-pest management in potato	34.35	47.25	12.90
Potato physiology and Post Harvest Technology	37.55	57.00	19.45
Breeding and Biotechnology application in potato	33.10	54.45	21.35
True Potato Seed Technology	28.27	47.07	18.80
Economics and Marketing in potato	27.50	30.15	2.65

Table 4. Distribution of respondents based on their degree of satisfaction on different aspects of training content and delivery mechanism (N=32)

Particulars	Degree of satisfaction Frequency (%)				
	Very well Satisfied	Partially Satisfied	Partially Dissatisfied	Dissatisfied	Highly Dissatisfied
Course content	25 (78.12)	7 (21.88)	–	–	–
Expression of faculty	27 (84.37)	5 (15.63)	–	–	–
Quality of AV aids used	32 (100)	–	–	–	–
Atmosphere to exchange idea	28 (87.50)	4 (12.50)	–	–	–
Extent of lab facilities	26 (81.25)	6 (18.75)	–	–	–
Extent to which having well help to do job more effectively	24 (75.00)	7 (21.87)	1 (3.12)	–	–
Medium of instruction	29 (90.62)	3 (9.38)	–	–	–
Timely information of day to day action	30 (93.75)	2 (6.25)	–	–	–

Table 5. Distribution of respondents based on usefulness of the topics covered during training

Different aspects of potato production technology	Usefulness of topics Frequency (%)		
	Highly useful	Useful	Not useful
Basic knowledge of potato	26 (81.25)	6 (18.75)	–
Agronomy and soil science	20 (62.50)	12 (37.50)	–
Potato disease management	24 (75.00)	8 (25.00)	–
Seed Potato Production Technology	18 (56.25)	9 (28.12)	5 (15.62)
Insect-pest management in potato	23 (71.87)	8 (25.00)	1 (3.12)
Potato physiology and Post Harvest Technology	13 (40.62)	19 (59.37)	–
Breeding and Biotechnology application in potato	14 (43.75)	13 (40.62)	5 (15.62)
True Potato Seed Technology	6 (18.75)	21 (65.62)	5 (15.62)
Economics and Marketing in potato	22 (68.75)	10 (31.25)	–
Overall usefulness (%)	57.63	36.82	5.55

respective regions. Gain in knowledge in ‘economics and marketing in potato’ was only 2.65 per cent while it was 9.5 per cent in case of ‘agronomy and soil science’. This may be because trainees were already aware of the marketing aspect and fertilizer and water management in potato.

Level of satisfaction : It was measured in terms of degree of satisfaction of trainees on course contents, methods of training and expression of faculties.

Data from Table 4 showed that most of the trainees were very well satisfied with the training contents and training delivery mechanism. 100 per cent of trainees were well satisfied with ‘quality of audio visual aids’ used. More than 90 per cent of respondents were very well satisfied with the ‘medium of instruction’ and ‘timely information on day to day action’ during training. Nearly 22 per cent of respondents were of the view that training will partially help them to do their job more effectively. Only one of the trainees was partially dissatisfied and

none of them were dissatisfied or highly dissatisfied. This result implies that the trainees were mostly satisfied with the course content as well as the manner in which training was conducted.

Usefulness of topics covered : Many topics related to improved technologies for modern potato cultivation were covered during the training programme. The usefulness of these topics was measured and results are given in the following Table 5.

The results from Table 5 revealed that majority of trainees felt; ‘basic knowledge of potato’ (81.25%), ‘insect pest management in potato’ (71.87%) and ‘economics and marketing’ (68.75%) were the highly useful topics. This may be due to high importance of these topics at farmer’s field. More than 65 per cent of respondents felt TPS technology was useful topic for their region. Overall 57.63 per cent of trainees felt that topics covered during training were highly useful while 36.82 per cent felt that topics covered were useful. Only

5.55 per cent of trainees perceived that the topics were not useful for them. It can be said that this model training course included nearly all the topics required by the trainees.

Overall opinion about training: Most of the trainees felt that facilities provided during training were very good to good. Nearly 82 per cent of trainees perceived that class room and laboratory facilities were very good during training programme. Lodging and boarding facilities were found to be very good by more than 56 per cent of trainees. This implies that CPRI had made an adequate arrangement during model training courses for trainees. Opinion from respondents was sought on overall grading of the training programme. It was measured in four categories namely 'excellent', 'very good', 'good' and 'average'. A majority (54.83%) of the trainees graded the training programme as excellent while 35 per cent felt that it was of very good quality.

CONCLUSION

Knowledge and experience gained during model training courses will improve the job performance of

the participants and ultimately potato growers of the country will get benefitted. It is evident from the study that knowledge level of trainees had increased significantly in all aspects of potato cultivation (Learning Index=27.31). The encouraging Learning Index of MTCs necessitates further increase in the number of such training courses keeping into the view that India ranks 68th on potato productivity in spite of being the second largest potato producer in the world (*FAO data triennium ending average 2010*). Meager participation of young trainees in the studied MTCs indicates that extension organisations are deputing senior extension personnel in large number. However, young officers need such training more urgently and encouragement of such participants in these trainings will be more productive for the nation. Further, the impact of such MTC's on actual adoption of technologies learnt and transferred by the extension professionals need to be assessed for their better refinement in field.

Paper received on : *January 31, 2012*

Accepted on : *March 13, 2012*

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