

Research Article

EFFECT OF TRAINING ON SWEET POTATO CULTIVATION BY CHAR LAND FARMERS IN KURIGRAM DISTRICT

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ABSTRACT

The study aimed at demining the effectiveness of training on sweet potato cultivation for the Char farmers. The relationship between 14 selected characteristics of the farmers and their perception on effectiveness of training and contribution of characteristics on effectiveness of training were also explored. The study was conducted in two randomly selected villages under Kurigram Sadar Upazila. The data were collected by using both numerical and suitable scales whenever necessary. Among the characteristics, agricultural knowledge, training exposure, agricultural credit received commercialization, communication exposure, risk orientation and economic motivation was found significantly correlated with effectiveness of training. The regression coefficients of training exposure, commercialization, communication exposure, innovativeness, agricultural credit received and economic motivation of the farmers have made significant contribution in developing perception about effectiveness of training. These variables combindly explained 27 percent of variation. In addition these variables have both direct and indirect effect on dependent variable of the study.

Keywords: Training, Cultivation, Effectiveness, Sweet Potato, Char Land.

INTRODUCTION

The Char Landers mainly depend on agriculture and agriculture related activities. Orange flashed sweet potato (BARI SP- 4) is suitable to grow in drought, salt and over wet land. Opportunities for off farm activities are marginal. As a result of river erosion cultivable land, crops and homestead are often damaged or devoured by rivers regularly. The level of awareness with respect to health, water & sanitation, environment, rights and gender is at a minimum. High rich vitamin "A" contained orange flashed sweet potato focused on night-blind, brain development. Livelihood strategies linked to environmental change and variability, are, therefore, by necessity, mobile to cope with regular erosion. Traditional development approaches are, consequently, rarely successful in the Chars. These areas have not been the focus of development efforts of the public or private agencies in Bangladesh. Only recently some research has been undertaken to assess the vulnerability and livelihood of Char communities. The Orange flashed sweet potato (BARI SP-4) released in 1994 which was bio-fortified crop but the farmers perceptions are still new to them unfortunately. The offer of orange flashed sweet potato could able to create awareness among the farmers through training. The Scaling Up Sweet potato Through Agriculture and Nutrition (SUSTAIN) project funded by UKAID implemented by International Potato Center (CIP) with the partnerships Bangladesh Agricultural Research Institute (BARI), BRAC at KurigramSadarupazila North part of Bangladesh in 2015. The project's goal and components will continue to focus on improve income and nutritional security for reaching the marginal and smallholder farmer of 1200 households those were be involved in producing sweet potato, 75 of farmers sweet potato vine producer through nursery, 4235 households receiving nutrition masses through training sessions and 500 primary school students trained on nutrition education to promote bio-fortified orange flashed sweet potato and

participating in nutritious recipe preparation and processing with value chain at the target district. Farmers' changes of technology use are influenced by technical training, meeting, oral transmission, and trust on technician and belief level on technology. Men usually use technologies for rice, fruit and fish production, and women use technology for goat, chicken production. Factors that trigger adoption of new technologies comprise of progressive, young and educated male farmers. Factors limited adoption of technology included conservative old men, and weak belief on ensure high yield of new technology. Though farmers have positive perception of technology, they faced problems in technology application due to lack of capital, lack the direction from the government and extension, lack compensation policy in ensure of yield. Training is an educational process that is based on the assumptions of adult learning, deciding on what they want to learn and the best way to learn. It encourages participants to see themselves as a source of information and knowledge about the real world. It refuses to accept that people do not know anything, recognizes the value of popular knowledge and encourages people to participate in their own learning process. When they are encouraged to work with the knowledge they have from experience, they can develop strategies together to change their immediate situation. The participants control the process of learning and the trainers play the role of facilitators. According to Merriam Webster dictionary effectiveness refers to the capacity to persuade or the power to produce a desired result (Business Dictionary, 2010). Effectiveness of training refers to the capacity to persuade the farmers or the power to produce a desired result by disseminating his/her information. In this research the effectiveness of training found out from sustainable agricultural development perspective.

MATERIALS AND METHODS

The researcher selected six villages from two Unions under Sadar Upazila of Kurigram district as the study area. Firstly, two unions were selected purposively among the 8 unions of Sadar Upazila. Then one

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union of the Sadar Upazila was selected. Finally, two villages from that union were selected randomly.

Sampling from Population

Orange Flashed Sweet Potato growers of Char-Lander under Mogalbachha union were the population of the study. Two villages, Char Sitaijhar and Char Kispapur were selected randomly from Mogalbachha union. Total number of population in Char Sitaijhar and Char Kispapur were 1200. Out of this population a number of 292 respondents were selected as sample followed the website <https://www.calculator.net/sample-size-calculator.html>. Finally the researcher was taking more eight samples to make 25% of total number of population. In total of the sample size at both villages were 300 out of total number of population (Table 1).

Union	Village	Population	Sample
Mogalbachha	Char Sitaijhar	1200	300
	Char Kispapur		
Total		1200	300

Collection of Data

Systematic field work is an empanel aspect of socio-economic survey research. In this context, in depth survey and necessary efforts were given to make the field work successful and realistic, data were collected by the researcher himself from 1st February to 31st June, 2017. The researcher took at most care to establish rapport with the respondents, so that they did not feel hesitant or hostile to furnish proper responses to the questions of the interview schedule. The questions were explained and clarified whenever any respondent feel difficulty in understanding them properly.

Measurement of Effectiveness of Training Program on Orange Flashed Sweet Potato (OFSP) Cultivation at Study Area

There were two variables like independent (14) and dependent (4) which were measured by 4 Kirkpatrick's taxonomies. The training was provided International Potato Center (CIP) to improve farmer's livelihood at the study area.

Overview of Training Evaluation Criteria

The choices of approaches and models of training evaluation are primary decision that could be made when evaluating the effectiveness of training. Among others, Kirkpatrick's (1994) four-level model of training evaluation criteria continues to be the most popular. The researcher was used this framework because it is conceptually appropriate and presented in (Table 2).

Table-2 Training evaluation criteria Kirkpatrick's four level model of taxonomical augmented framework.

Kirkpatrick's taxonomy	Augmented framework
Reaction	- Aggregate reaction - Affective reaction - Utility reaction - Difficulty reaction
Learning	- Declarative knowledge - Procedural knowledge - Retention
Behavior Results	- Behavior change or transfer - Results/output

Level-1, reactions criteria, originally was defined as trainees' feelings for and linking of training knowledge with real situation. Reaction

measures may indicate the trainee's motivation to learn. Reactions were emotionally based opinions. In addition, reaction measures may not be a strong indicator of effective training (Tannenbaum and Yukl, 1992). While positive reactions may not ensure learning, negative reactions probably reduce the possibility of learning occurs. However, reaction measures are the most widely applied as evaluation criteria. Alliger *et al.*, (1997) investigated the difference of reactions criteria in previous studies and classified it into affective and utility judgment. Affective judgment measure the extent to which a participant "like" or was satisfied with different components of the training. Utility judgment has attempted to ascertain the perceived utility value, or usefulness of training for subsequent job performance. Level-2, learning criteria, originally refers to the knowledge, skills, and attitude acquired by trainees. Evaluation on learning aims at understanding trainees' comprehension of instruction, principles, ideas, knowledge and skills from training. Additionally, Alliger and Janak (1989) defined learning as the "principle, facts and techniques understood and absorbed by the trainees. No changes in behavior can occur unless one or more of learning objectives have been accomplished at least partly (Kirkpatrick, 1994). Among many aspects of knowledge, however, we include three subcategories of learning: (1) declarative knowledge immediately after training, (2) procedural knowledge, or performance of trained tasks immediately after training, and (3) knowledge that is assessed at a later time (knowledge retention). Level-3, behavior, defined as transferring knowledge, skill, and attitudes learned during training to the job (Kirkpatrick, 1994). Although learning and behavioral criteria are conceptually linked, researches have been limited. A measure was classified as indicating on-the-job performance whenever it appeared that the measure was not only taken some time after training (Alliger *et al.*, 1997). Level-4, results were defined as the final results that occurred because the trainees attended the program of training (Kirkpatrick, 1994). These could include increased production, improved quality, customer satisfaction, decreased costs, reduced frequency and severity of accidents, increased sales, reduced turnover, higher commitment, and profits. However, many organizations have limitation for gathering Level 4 data (Shelton and Alliger, 1993; Tannenbaum and Woods, 1992).

Selection of Statements Related to effectiveness

According to the objectives of the study some related statements were collected from the respondents. At first to measure the effectiveness, 48 statements were selected according to the review of literature, discussion with researchers, teachers and other specialists. The statements were set in such an oversight, so that it may depict the psychological condition of the respondents. As the level of effectiveness were judged as per the four levels, so the 12 statements were set under each level. To identify the four different levels, effectiveness of training program on sweet potato cultivation for char Lander at Kurigram.

Measurement of Training Effectiveness Index (TEI)

To find out the comparative perception of the farmers about all the 48 statements under 4 levels of effectiveness model, a training effectiveness index (TEI) was calculated. The frequency of each cell of the scale was multiplied by weight of that particular cell, for example, the frequency of a statement under "strongly agree" was multiplied by 5, followed by 4, similarly "undecided" by 3, "disagree" by 2 and "strongly disagree" by 1 and finally added the multiplied values of 5 cells of a statement together, the TEI value issues obtained. Similar procedure was followed in calculating TEI value of all the 48 statements under 4 levels such as reaction, learning, behavior and perception of the farmers about all the 48 statement was ascertained based on TEI values.

RESULT AND DISCUSSION

Effectiveness of training on sweet potato cultivation

Effectiveness of training refers to the extent to which the training objectives or training goals are achieved through different training activities. Most of the research on training evaluation has relied on Kirkpatrick's (1967) four-level typology to explore the effectiveness of training. Level-1: reaction is expressed behavior (feelings, likings and disliking) of an individual through various training activities. Level-2: improvement of skills, gathering of knowledge and changing attitudes through various training activities. Alliger and Janak, (1989) defined learning as the "principles, facts, and techniques understood and absorbed by the trainees". No change in behavior can be expected unless one or more of these learning objectives has been accomplished (Kirkpatrick, 1994). This level of evaluation allows trainees to demonstrate their understanding of specific KSAs within the learning program. Level-3, behavior change or transfer, refers to the extent to which a change in behavior has occurred because the trainees attended the program, which is measured (assessed) in the workplace. This level attempts to determine whether trainees (who can apply the acquired specific knowledge and/or skills) use their new knowledge and/or skills when returning to the work environment. Level-4, results, refers to the final output that occurred because the trainees attended the program (Kirkpatrick, 1994). These could include the attainment of organizational goals and objectives, such as a reduction in absenteeism and personnel turnover, productivity gains, and cost reductions. Effectiveness of training of farmers had been measured each four level as well as integrated of each farmer. There were 12 statements contained each level, a total of 48 statements. Each level score range 12 to 60 overall score range from 48 to 240.

Effectiveness of training on reaction level

The sub score of the respondent's on reaction level ranged from 1 to 5 against the possible ranges of 12 to 60. In reaction level the mean value was 42.76 and standard deviation 6.896. Based on the reaction of farmers feedbacks they were classified into three categories namely "low", "medium" and "high" reaction. The distribution of the farmers according to their reaction level in training session towards effectiveness has been presented in (Table 3).

Table 3 Distribution of the farmers according to reaction level in their effectiveness of training

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 33)	47	15.7	42.76	6.896
Medium (34 – 47)	190	63.3		
High (48 and above)	63	21.0		
Total	300	100.0		

The information presented in Table 3 depicted that the highest proportion (63.30 percent) of the farmers showed medium reaction in different training activities and 21.0 percent farmers showed high reactions on various training activities. A few (15.70 percent) of the farmers showed low reactions regarding different training activities. This means the farmers were active training participants, the reaction of participants was encouraging towards perceiving training as effective in cultivating orange flashed sweet potato. The farmers were more eager in gathering knowledge on various outputs of training activities.

Effectiveness of training on learning level

The learning level score in relation to effectiveness ranged from 1 to 5 against the possible range of similar score. The mean value and standard deviation were 40.65 and 7.097 respectively. The farmers were classified into 3 categories such as "low" learning, "medium" learning and "high" learning presented (Table 4).

Table 4 Distribution of the farmers according to learning level of their effectiveness of training

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 33)	51	17.00	40.65	7.097
Medium (34 – 47)	189	63.00		
High (48 and above)	60	20.00		
Total	300	100.0		

The information of Table 4 show that the majority (63 percent) of the farmers had medium learning level compared to 17 percent having low learning, and only 20 percent had high level of learning in respect to effectiveness of training on OFSP cultivation. Thus, the majority (80 percent) of the farmers obtained medium to high learning level. Learning is helpful to increase knowledge, improve skills and change attitudes of an individual. It built confidence of the farmers for making appropriate decisions at the time of need.

Effectiveness of training on behavioral level

The behaviour level scores of the farmers ranged from 1 to 5 against the possible range of 12 to 60 with the mean and standard deviation being 40.28 and 7.56, respectively. Based on their behaviour scores, the farmers were grouped into three categories as "low" (, "medium" and "high". The distribution of the farmers in regards to their behaviour level, of effectiveness of training is shown in the following (Table 5).

Table 5 Distribution of the farmers according to behavioural level of their effectiveness of training

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 33)	59	19.67	40.28	7.555
Medium (34-47)	184	61.33		
High (48 and above)	57	19		
Total	300	100.0		

The majority (80.33 percent) of the farmers had medium to high behavioural change while the rest 19.67 percent had low behaviour level. The proportion of the farmers having low, medium, and high changing behaviour levels were 19.67 percent, 61.33 percent and 19 percent, respectively. The subject matters on which the farmers received training were sweet potato cultivation, pest management, and water management. Training generally improves skills, increases knowledge and changes attitude of an individual towards cultivation of OFSP. Behaviour is an important factor, which enhance demand of knowledge and improve skill on various aspects of improved farming practices.

Effectiveness of training on result level

The result level scores of the farmers ranged from 1 to 5 against the possible range of 12 to 60. The mean and standard deviation were 42.87 and 6.901 respectively. Considering the result scores of the

farmers, they were classified into three categories viz. "low" result, "medium" result and "high" result. The distribution of the farmers with regards to result level of effectiveness of training is shown in (Table 6).

Table 6 Distribution of the farmers according to result level of their effectiveness of training

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Low (up to 33)	62	20.67	42.87	6.901
Medium (34 to 47)	173	57.66		
High (48 and above)	65	21.67		
Total	300	100.0		

The information presented in Table 6 show that majority (57.66 percent) of the farmers had medium results compared to 21.67 percent having high result, and only 20.67 percent obtained low results. Thus, the majority (79.33 percent) of the farmers obtained medium to high level of results. The result showed that the farmers have obtained changed farming outputs like yield and other attributes of sweet potato cultivation. It also built confidence of the farmers for making appropriate decisions at the time of need. Therefore, it is expected that more results derived from a given training by the farmers the more is likely to consider effectiveness of training on cultivation of OFSP due to gathering of knowledge, improvement skills and changes attitude towards improved farming practices.

Overall effectiveness of training on four levels

The overall effectiveness score of the farmers ranged from 113 to 224 against the possible range of 48 to 240. The mean and standard deviation were 144.33 and 21.627, respectively. Considering the overall effectiveness score of the farmers, they were classified into three categories viz. "low", "medium" and "high". The distribution of the farmers according to their overall effectiveness of training is shown in (Table 7).

Table 7 Distribution of the farmers according to overall effectiveness of training

Categories	Farmers		Mean	Standard deviation
	Number	Percent		
Low (113-145)	49	16.34	144.33	21.627
Medium (146-188)	208	69.33		
High (189-224)	43	14.33		
Total	300	100		

The information of Table 7 show that the majority (69.33 percent) of the farmers had medium perception about effectiveness of training compared to 16.34 percent having low effective and 14.33 percent of farmers considered the training as highly effective. Thus, the majority (83.66 percent) of the farmers had medium to high level of proportion about effectiveness of training. The farmer also opined that they made remarkable change in cultivating OFSP because of timely training and other technological support from the concerned authority. The extent of reaction, learning, behaviour and result levels of the farmers have been increasing due to training and overall effectiveness of training as well. It also built confidence of the farmers for making appropriate decisions at the time of need. Therefore, it is expected that more effectiveness of training of the farmers the more is likely to have change their farming behaviour on sweet potato

cultivation. The data of (Table 7) also revealed that more than three-fourths (83.66 percent) of the farmers considered the training as effective in cultivation of OFSP. It may be due to the reason that the training was used based to the farmers and presentation of training subject matter was under stable to the farmers. In addition higher motivation and economic gain from OFSP cultivation prompted farmers to accept training with sincerity.

CONCLUSION

The training is intended as the first step towards practical action that could be carried out to improve agricultural production at regional and national levels. Agricultural training makes a farmer to be a perfect cultivar, there were 51.30 percent of the farmers had training exposure from different GOs and NGOs on different crop cultivation technologies in general and sweet potato cultivation in particular. Therefore, it is concluded that need based and demand driven training is essential for improvement of farming skills judgments of effectiveness of training. Commercialized agricultural system is mainly dependent on the type and way of commercialization in a given society. The orange flashed sweet potato is rich in vitamin 'A' and antioxidant content. Because of quality, the sweet potato is becoming popularized among the rural as well as urban people. The large majority (73.60 percent) of the farmers showed medium to high commercialization of OFSP. Based on the findings it can be concluded that the OFSP is becoming popular among the people of both rural and urban areas meaning the variety getting momentum of commercialization in the farming system.

REFERENCES

- Alliger, G. M., and Janak, E. A. (1989). Kirkpatrick's levels of criteria: Thirty years later. *Personnel Psychology*, 42, 331-341.
- Alliger, G. M., Tannenbaum, S. I., Bennett, Jr., W., Traver, H., and Shotland, A. (1997). A meta-analysis on the relations among training criteria. *Personnel Psychology*, 50, 341-358.
- Chambers, R., & Conway, G. (1992), Sustainable rural livelihoods: practical concepts for the 21st century. IDS Discussion Paper 296, Sussex: IDS, University of Sussex. Retrieved October 29, 2010, from <http://catalogue.nla.gov.au/Record>.
- Sharma, A. K.; Kaur, R., Kumar, V. and Singh, D. 2016. Effectiveness of Model Training Course (MTC) on Advances in Seed Production, Processing and Certification in Rabi Field Crops. *Indian Res. J. Extn.* 16 (3) p.10-14.
- Shelton, S., and Alliger, G. M. (1993). Who's afraid of level 4 evaluation? A practical approach. *Training and Development Journal*, 47, 43-46.
- Tannenbaum, S. I., and Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43, 399-441.