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Evaluation of Refresher Training Programme on Conservation Agriculture Practices

B. C. Sharma[1], Rakesh Kumar[2]*, P. S. Slathia[3], Ramphool Puniya[4] and Amrish Vaid[5]

[1]Professor and Head, [4]Assistant Professor, Division of Agronomy; Faculty of Agriculture, SKUAS&T-Jammu, Chatha-180009, J&K, India
[2]Ex-Ph.D. Scholar, [3]Professor, Division of Extension Education, Faculty of Agriculture, SKUAS&T-Jammu, Chatha-180009, J&K, India
[5]Professor & Head, Division of Plant Pathology, Faculty of Agriculture, SKUAS&T-Jammu, Chatha-180009, J&K, India
*Corresponding author email id: rkthakyal76@gmail.com

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ABSTRACT

Human behavior consists of knowledge, skill and attitude and timely up gradation of these three components is must for better human resource development. Training is medium for modification of human behavior to efficiently discharge one's own duties and responsibilities at their respective work place. The paper attempts to evaluate the impact of 10 days training programme entitled "Conservation agriculture practices for enhancing productivity and resource use efficiency in major cropping pattern" conducted in the Division of Agronomy, SKUAST-Jammu on knowledge of the participants regarding different aspects of conservation agriculture as well as their opinion towards overall organization of training programme. Gain in knowledge was taken as indicator for assessing the immediate output of the training programme. Participants were exposed to pre and post knowledge test and the results of two sample paired t-test ($p=.000$) so applied revealed that there was significant gain in knowledge about different aspects of conservation agriculture after attending the training programme. Overall majority of the respondents were of opinion that training programme was well planned and very effective and they had learned different practical aspects of conservation agriculture.

INTRODUCTION

Conservation agriculture is a way of farming that conserves, improves, and ensures efficient use of natural resources. It aims to help farmers achieve profits with sustained production levels while conserving the environment. Conservation agriculture boosts productivity and contributes to reducing land degradation and increase food security (Sustainet, 2010). Probably one of the major benefits of CA, which makes it popular with farmers, is it costs less in terms of money as well as time. Once again in the RW systems of South Asia (Hobbs & Gupta, 2004) no-till wheat significantly reduced the costs of production; farmers estimate this at about 2500 rupees/ha ($60/ha). CA results in more biotic diversity in the soil as a result of less soil disturbance and the mulch. This also results in higher surface soil organic carbon than when soils are tilled (Roldan et al., 2003; Alvear et al., 2005; Riley et al., 2005; Madari et al., 2005; Diekow et al., 2005). Two necessary components for the establishment of effective conservation agriculture systems are building of multidisciplinary scientific and technical capacity; and close collaboration with farming communities – rather than only with farmers to capitalize on their existing and traditional knowledge. Agriculture, including Conservation Agriculture, is not a single or uniform technology that can be immediately applied anywhere in a standard manner. Rather, it represents a set of linked principles that encourage the formulation of locally adapted practices, approaches and methods (Corsi and Muminjanov, 2019). Farming community need appropriate skills to practice conservation agriculture. Farming community mainly receives their agricultural technology related inputs from extension system of agricultural universities and field extension functionaries of State Department of Agriculture. Training is the most powerful medium for sharpening and up- gradation of skills of technology providers as well as

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technology consumers. Training constitutes a basic concept in human resource development. It is concerned with developing a particular skill to a desired standard by instruction and practice.

Training is the process of acquiring specific skills to perform a job better (Jucious, 1963). It helps people to become qualified and proficient in doing some jobs (Dahama, 1979). Van Dorsal (1962) defined training as the process of teaching, informing or educating people so that they may become as well qualified as possible to do their job efficiently and perform in positions of greater difficulty and responsibility. In-service training, on the other hand, is offered by the organization from time to time for the development of skills and knowledge of the incumbents (Halim and Mozahar, 1997). Evaluation is an in-built mechanism in extension and training system to find the worth of a programme by providing feedback. It assists for taking corrective measures by the course/ training coordinator for effectiveness of training programmes (Kumar et al., 2005). Model developed by David Kirkpatrick (1994) is probably the best known model for analyzing and evaluating the results of training programs. It takes into account any style of training, both informal and formal, to determine aptitude based on four levels criteria including; *Reaction* (e.g., satisfaction), *Learning* (e.g., increase in knowledge, skills or experience?), *Behavior* (e.g., change in behaviors?), and *Results* (if the material had a positive impact on the organization). Evaluation provides information for decisions concerning future training programmes. This information is highly useful to fine tune the training programme and is used to communicate important facts to concerned individuals/groups or agencies. Besides, evaluation results are useful for formal reporting (Singh et al., 2007). Keeping in view the importance of conservation agriculture and the process of training the present study was undertaken.

METHODOLOGY

A ten days training programme entitled "Conservation agriculture practices for enhancing productivity and resource use efficiency in major cropping pattern" was organized by Division of Agronomy, Faculty of Agriculture, Sher-e-Kashmir University of Agriculture Sciences and Technology of Jammu w.e.f. 04.02.2020 to 13.02.2020 with financial assistance from ICAR, New Delhi. The sample consisted of all the 25 numbers of trainees from states of Maharashtra, Andhra Pradesh, Jharkhand, Himachal Pradesh, Punjab and UT of Jammu and Kashmir. First two levels of Kirkpatrick model were applied i.e. reaction and learning for evaluating training programme. Reaction of participants towards different aspects of training programme was recorded by using different opinion statements immediately after the training programme. Learning of the participants was assessed by exposing them to pre and post knowledge test developed to ascertain the knowledge of the trainees. Items for knowledge test were finalized after reviewing varied literature concerned with conservation agriculture and consultation with concerned experts. Final knowledge test consisted of 40 knowledge items having one score for each item thus total score of knowledge test was 40. The gain in knowledge was operationalized as the difference between the knowledge regarding various aspects of conservation agriculture before and after exposure of training package. SPSS software was used for statistical analysis of data for finding out the value of paired t-test, standard deviation and co-efficient of variation (%).

RESULTS AND DISCUSSION

Status of trainee's knowledge during pre-test and post test

The existing preliminary level of knowledge of the respondents was judged on selected aspects of conservation agriculture. Table 1 show that the highest score obtained by the trainees was 31 and lowest score was 14 with knowledge range of 17 having co-efficient range of 0.37. Standard deviation of knowledge score in pretest was 4.02 and co-efficient of variation was found to be 13.29. Knowledge of participants about different aspects of conservation agriculture was not satisfactory before the initiation of training programme. Similar findings was also supported by Corsi and Muminjanov, 2019 in which they reported that lack of knowledge about Conservation Agriculture systems exists both among extension and technical staff, and at decision-making levels. Same test was again administered to trainee for recording the change in knowledge after the completion of training programme and their responses were recorded. Data

Table 1. Status of trainee's knowledge score during Pre and post-test

	Range of knowledge	Coefficient of range	Average score	Standard deviation	Variance	Coefficient of variation (%)
Pre test	17	0.37	25.00	4.02	16.19	13.29
Post test	11	0.16	34.00	3.15	9.95	9.27

Table 2. Output of paired t-test for showing significance of change in knowledge of participants after training

Paired Samples Correlations

	N	Correlation	Sig.
Pair pre & post	25	.359	.078

Paired Samples Test

	Paired differences					t	df	Sig. (2-tailed)
	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
				Lower	Upper			
Pair 1 pre -post	-8.72000	4.12836	.82567	-10.42410	-7.01590	-10.561	24	.000

indicate that in post test, highest score obtained by the respondents was 38 and lowest score was 27 with a range of 11 and co-efficient of range of 0.16. Standard deviation of knowledge score in post test was 3.15 and co-efficient of variation was found to be 9.27.

Overall gain in knowledge

Data on overall gain in knowledge presented in Table 2 indicate that there was significant difference in the pre-test and post-test scores of the respondents as 't' value (.000) of paired t-test so applied was found to be significant at 1% level of significance. After the exposure of content of training programme a significant improvement was found in knowledge of the respondents. Similar findings were also reported by Singh and Soni (2014).

It is clear from Table 3 that majority (88 per cent) of trainees were of opinion that training programme was highly effective. However, only 12 per cent respondents reported that training was effective. However none of the trainees expressed that training was less effective and not effective. Similar findings were also reported by Koshti & Vijayaragavan (2007); Paul et al., (2015); Arunkumar et al., (2021).

Table 3. Overall level of training effectiveness (N=25)

Level of Effectiveness	Frequency	Percentage
Highly effective	22	88
Effective	03	12

Close scrutiny of data given in Table 4 reveal that 100 percent participants were of opinion that by participating in training programme their knowledge had enhanced about various aspects of conservation agriculture. They reported that trainers had rich knowledge of their subject matter. All the participants were satisfied with the duration of training programme, refreshment and sitting arrangement. Further cent percent participants were satisfied with the learning environment and they want to participate in such trainings in future also. Majority of respondents (84%) admitted that equal emphasis was given to theory and practical in all the sessions of training programme and 80 per cent participants were of opinion that by participating in training programme their attitude changed towards concept of conservation agriculture in particular and towards their routine job in general and different audio-visual aids used by the trainers were helpful in enhancing the learning. Almost three-forth (72%) of participants expressed that they learned new skills to efficiently apply at their work place for better utilization of resources and interaction during the lectures and after every training session was very fruitful. More than half of the participants (68 percent) were of opinion that by participating in training programme they had improved their job proficiency. Similar findings were also reported by Kumar et al., (2005); Manhas et al., (2010); Paul et al., (2015); Kobba et al., (2020).

CONCLUSION

On the basis of results it is concluded that trainees experienced a satisfactorily change in their existing level of knowledge, skill and attitude towards different domains of conservation agriculture and impact of training programme was highly significant in terms of overall gain in knowledge. Trainees were given sufficient practical exposure by way of field visits and different demonstrations to sharpen their skills regarding various practical aspects of conservation agriculture. Participants rated this training programme as highly effective and it will help them in better transfer of conservation agriculture technology to farming community. Overall such type of training programmes foster and strengthen the Research-Extension-Farmer (R-E-F) linkages It is therefore suggested to replicate such type of innovative training programmes for field extension functionaries for better human resource development so that they may contribute in conservation of natural resources which is need of the hour in the era of dwindling farming resources.

REFERENCES

Alvear, M., Rosas, A., Rouanet, J. L., & Borie, F. (2005). Effects of three soil tillage systems on some biological activities in an Ultisol from Southern Chile, *Soil & Tillage Research*, *82*, 195-202.

Arun Kumar, G. S., Nain, M. S., Singh, R., Kumbhare, N. V., Parsad, R., & Kumar, S. (2021). Training effectiveness of skill development training programmes among the aspirational districts of Karnataka, *Indian Journal of Extension Education*, *57*(4), 67-70. http://doi.org/10.48165/IJEE.2021.57415

Corsi, S., & Muminjanov, H. (2019). Conservation agriculture: Training guide for extension agents and farmers in Eastern Europe and Central Asia. Rome, FAO. ISBN - 978-92-5-131456-2

Table 4. Opinion of trainees towards different aspects of training

S.No.	Opinion Statements	Agree		Undecided		Disagree	
		F	%age	F	%age	F	%age
1	Enhanced my knowledge about various aspects of conservation agriculture	25	100.00	-	-	-	-
2	Learned new skills to efficiently apply at my work place for better utilization of resources.	18	72.00	4	16.00	3	12.00
3	Changed my attitude towards concept of conservation agriculture in particular andtowards job in general.	20	80.00	2	8.00	3	12.00
4	Various A.V. aids used by the trainers were helpful in enhancing the learning.	20	80.00	-	-	5	20.00
5	Interaction during the lectures and after every training session was very fruitful	18	72.00	3	12.00	4	16.00
6	Trainers had rich knowledge ofsubject matter	25	100.00	-	-	-	-
7	Equal emphasis was given to theory andpractical	21	84.00	-	-	4	16.00
8	Duration of training was satisfactory	25	100.00	-	-	-	-
9	Excellent learning environment	25	100.00		-		
10	Training has improved my job proficiency	17	68.00	5	20.00	3	12.00
11	Refreshment was satisfactory	25	100.00	-	-	-	-
12	Want to participate in such trainings in future also.	25	100.00	-	-	-	-

Dahama, O. P. (1979). Extension and rural welfare. New Delhi: Ram Prasad and sons, New Delhi.

Diekow, J., Mielniczuk, J., Knicker, H., Bayer, C., Dick, D. P., & Kogel-Knabner, I. (2005). Soil C and N stocks as affected by cropping systems and nitrogen fertilization in a southern Brazil Acrisol managed under no-tillage for 17 years, *Soil & Tillage Research, 81,* 87-95.

Halim, A., & Mozahar, A. (1997). Training and professional development. *In:* Swanson, B. E., Bentz, R. P., & Sofranko, A. J. (Eds.). Improving agricultural extension- a reference manual. Rome: FAO.

Hobbs, P. R., & Gupta, R. K. (2004). Problems and challenges of no-till farming for the rice-wheat systems of the Indo-Gangetic Plains in South Asia. *In:* Lal, R., Hobbs, P., Uphoff, N., & Hansen, D. O. (eds). Sustainable Agriculture and the Rice-Wheat System. Paper 6:101-119. Ohio State University. Columbus, Ohio, USA. Marcel Dekker, Inc., 270 Madison Avenue, New York, New York 10016 p. 101-121.

Jucious, M. J. (1963). *Personal management* (5th edition). Homewood, IL: Richard D. Irwin.

Kirkpatrick, D. L. (1994). Evaluating training programs: the four levels. San Francisco: Berrett-Koehler.

Kobba, F., Nain, M. S., Singh, R., Mishra, J. R., & Shitu, G. A. (2020). Observational analysis of the effectiveness of entrepreneurship training programme in rural development & and self employment training institutes (RUDSETI), *Indian Journal of Extension Education, 56*(1), 13-17.

Koshti, N. R. & Vijayaragavan, K. (2007). Evaluation of training programme on mushroom cultivation, *Indian Journal of Extension Education, 43*(1&2), 31-36.

Kumar, N., Rautaray, S. K., Gupta, M., & Singh, A. K. (2005). Impact of summer school on mechanization of rice production system, *Indian Journal of Extension Education*, *41*(1&2), 54-57.

Madari, B., Machado, P. L. O. A., Torres, E., de Andrade, A.G., & Valencia, L.I.O. (2005). No tillage and crop rotation effects on soil aggregation and organic carbon in a Rhodic Ferralsol from southern Brazil, *Soil & Tillage Research*, *80*, 185-200.

Manhas, J. S., Gupta, N. K., Dangi, K. L., Sharma, V. P., & Singh, A. P. (2010). Evaluation of trainers' training programme on scaling up of water productivity in agriculture for livelihood through teaching cum demonstration, *Rajasthan Journal of Extension Education*, *17&18*, 104-111.

Paul, N., Kumar, R., & Slathia, P. S. (2015). Opinion of extension functionaries of state department of agriculture towards training on mushroom production technology, *Indian Journal of Extension Education and Rural Development*, *23*, 1-4.

Riley, H. C. F., Bleken, M. A., Abrahamsen, S., Bergjord, A. K., & Bakken, A. K. (2005). Effects of alternative tillage systems on soil quality and yield of spring cereals on silty clay loam and sandy loam soils in cool, wet climate of central Norway, *Soil & Tillage Research*, *80*, 79-93.

Roldan, A., Caravaca, F., Hernandez, M. T., Garcia, C., Sanchez-Brito, C., Velasquez, M., & Tiscareno, M. (2003). No-tillage, crop residue additions, legume cover cropping effects on soil quality characteristics under maize in Patzcuaro watershed (Mexico), *Soil & Tillage Research, 72,* 65-73.

Singh, B., Murari, S. Vijayaragavan, K., Padaria, R. N., & Wason, M. (2007). Impact of evaluation building programme of IARI, *Indian Journal of Extension Education*, *43*(1&2), 1-5.

Soni, R. L. & Singh, R. (2014). Impact of short duration training programme on gain in knowledge about horticultural practices, *Indian Journal of Extension Education and Rural Development*, *22*, 138-140.

Sustainet, E. A. (2010). Technical manual for farmers and field extension service providers: Conservation Agriculture, *Sustainable Agriculture Information Initiative*, Nairobi.

Van Dorsal, W. R. (1962). *The successful supervisor*. New York: Harper and Row.