

Original Research Article

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Impact of Vermicomposting Technology Training Conducted by KVK in Acquiring the Skills by the Respondents

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ABSTRACT

A Study was conducted to ascertain the level of Acquired Skills of trainees with respect to vermicompost production technology of training imparted by K.V.K. Birauli, Farmers were selected from the four villages namely Morsand, Harpur, Chandauli, and Jagdishpur under Pusa block of Samastipur district and imparted training on vermicompost production technology. 40 trained and 40 untrained farmers from these villages were selected for study purpose making the sample size up to 80 farmers. Findings of the study shows that Mean score on skill acquired in vermicomposting technology of trained farmers was 37.30 compared to that of untrained farmers being at only 10.15 out of a possible score of 100. The mean difference was 27.15, which is statistically significant at 0.01 level of probability indicating that the skill acquired among trained farmers was significantly higher than that of untrained farmers. With respect skill acquired in various component of vermicompost technology, majority of trained farmers (40-80 percent) were found to 'partially competent' on eighteen of the twenty five competencies/skills in vermicompost technology. Among the untrained farmers, majority farmers (ranging from 72.5 to 92.5 percent) were found to possess 'les competency' in all the twenty five components of competencies/skills in vermicompost technology.

Keywords

Skills acquired, Vermicompost technology, KVK training, Vocational training programme, Impact evaluation

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Introduction

Vermicomposting is a bio-oxidative process in which detritivorous earthworms interact intensively with micro-organism and other fauna within the decomposer community, accelerating the stabilization of organic matter and greatly modifying its physical and biochemical properties (Dominguez, 2004). The vermicomposting is gaining strong foot hold among the farmers of Bihar due to its multifunctional roles in benefits in agriculture

and different initiative taken by government to popularize it. The transfer of vermicomposting technology is highly successful and widely adopted by the farming community. It has a visible impact on the economic upliftment of resource poor small and marginal farmers and provided with self-employment opportunities to the youth. To acquaint farmers about the proper technology of vermicomposting, group wise training programme were conducted at R.A.U. Pusa. Later the K.V.K. Birauli of this University has conducted several training

courses on vermicompost technology for giving hand on training to the farmers, the effect of training generated highest interest among the farmers and they have been able to construct the 237 vermicompost pit till date (208 of low cost bamboo pit and 179 brick pit) at farmers' premises. The aim of training was to develop potential knowledge and skill of the trainees to carry out defined task and responsibilities related to vermicomposting. "Training is the process of acquiring specific skills to perform a job better" (Halim and Ali 1997) with the recognition as an important avenue for growth and development of individuals, groups and organisations, scope and application of training have been considerably widened. The aim of training is to develop potential knowledge and skill of the trainees to carry out defined task and responsibilities

Vermicompost training at KVK, Birauli, Samastipur

One of the many demonstration units at KVK, Birauli was the vermicompost unit, which became the center of attention of farmers who were trained in all practical aspects of construction of a vermicompost unit, running it and making vermicompost and vermin wash. KVK, Birauli has taken special programme of augmenting and popularizing vermiculture and production of vermicompost and vermivash among the farmers. The KVK is providing customized service to farmers to establish vermicompost unit at village level along with a model bankable project for financing through the bank. KVK also have the facilities of supply of vermicompost, vermiculture and vermivash to the farmer on the permanent basis.

Specific objective of the study

To study the skill acquired by trained and untrained farmers with respect to

vermicompost technology. The Suitable Schedule was developed for the measurement of skill of the trainee in the study.

Materials and Methods

Skill acquired

The term skill was operationalized during the study as the quantum of practical as well as theoretical practices learnt or acquired by newly trained individual due to exposure of his/her learning. It may also be referred to as the ability of an individual to use knowledge effectively. In other words one can say that skill is practical application of knowledge. All the available past studies showed the measurement of skill by self-analysis method by using verbal type of tests (Prasad, 1973, Khara, 1974; Dhillon, 1979 and Sangha, 1979). Therefore, in view of these facts, during the study the skills acquired was measured with the help of verbal type self-analysis method.

Skill scale developed by Singh (1983) was used in this study after making certain modification. It contains the five components regarding vermicompost technology. These components categorized as (a) Preparation of vermicompost pit and shed. (b) Preparation of Vermi-bed and filling of vermicomposter. (c) Practices during vermicomposting. (d) Preparation of Vermi-wash and Vermi-culture. (e) Harvesting and packing of vermicompost.

In order to measure the score obtained by trained farmer and un-trained farmer, the schedule was used for collection of data against each question. Final score was measured on a three point rating scale *i.e.* 'competent', 'partially competent' and 'not competent' and for this a score of 2, 1 and 0 was given to the respondent. The individual's total score was calculated by summing up the score obtained against each of the item in the

scale. Then the skill acquired score of each respondent was calculated using the formula as given below:

Skill acquired by the farmer

$$\frac{\text{Total obtained score}}{\text{Total obtainable score}} \times 100$$

Therefore, the score ranged from '0' to 100. The system of skill presentation was adopted during the study as:

Instruments used for data collection

Keeping in view the objectives and variables of the study, a structured interview schedule was prepared by reviewing the previous research studies, consulting and discussing with the experts and professional workers in the field of agricultural extension, Krishi vigyan Kendra and state department of agriculture. After construction of schedule and prior to its administration to the sample it was pre-tested by administering it to farmers in non-sample area. On the basis of pre-tested results, necessary modifications and changes were made in the schedule. The final format of the schedule is furnished in Appendix I.

The data were collected by personal interview by researcher using structured interview schedule

The statistical tools such as mean, standard deviation, frequency, percentages'-test', correlation analysis were employed wherever found appropriate and data were analyzed to draw valid inferences. Software called statistical package for social sciences (SPSS) was used for data analysis.

Results and Discussion

An attempt to interpret the results was done while discussing the implications of the findings of the study

Training courses being offered by KVK to farmers basically aim at imparting skills in modern agricultural practices. Training on vermicomposting technology was given to farmer trainee to enhance their competency in doing practices and to enable farmers to acquire skills.

To measure skill acquired in vermicomposting technology, a special schedule was prepared in which twenty five skills were enlisted and farmer's competency was measured on a three point self-rating scale: 'competent'; 'partially competent' and 'incompetent'. The data thus collected were analyzed and the results are presented in Table 1. Skill acquired is a measure of competency of skills acquired by the respondent expressed as percentage of total obtained score on skill acquired over total obtainable score on skill acquired.

As the results in Table revealed, mean score of skill acquired among trained farmers was 37.30 when compared to that of untrained farmers' mean score at 10.15. mean score were indeed very low indicating that trained farmers' competency level was below admissible levels while the mean score of untrained farmers was dismally poor at around 10 out of a possible maximum score of 100. Untrained farmers were incompetent.

Mean difference was 27.15, which is statically significant at 0.01 level of probability ($t=10.784$). This result implies that the skill acquired in vermicompost technology by trained farmers was significantly higher than that of untrained farmers.

Range of scores among trained farmers was between 12 and 68. High value of standard deviation indicated wide variation among trained farmers. Untrained farmers were much more consistent and varied less among themselves on scores of skill acquired in vermicompost technology.

The system of skill presentation was adopted during the study

Skill Acquired	Range of Score
Low	Less than (Mean-SD)
Medium	In between (Mean+SD)
High	More than (Mean+SD)

Table.1 Frequency distribution of skill acquired in vermicompost technology by respondents

Skill acquired	Trained Farmers (n=40)		Untrained Farmers (n=40)	
Mean	37.30		10.15	
Standard Deviation	14.867		5.70	
Range	12-68		0-22	
Mean Difference	27.15 (t=10.784**)			
Categories	Frequency	Percentage	Frequency	Percentage
Low (<Mean-SD)	8	20.0	8	20.0
Medium (Between Mean+SD)	22	55.0	27	67.5
High (>Mean+SD)	10	25.0	5	12.5
Total	40	100	40	100

Table.2 Frequency distribution of various components of skill acquired in vermicompost technology by trained farmer respondents

Sl. No.	Skill acquired in vermicompost technology through training	Trained Farmers' skills (40)		
		Competent	Partially Competent	Incompetent
1.	Competency in construction of brick & cement structure for vermicompost pit	11 (27.5)	20 (50.0)	9 (22.5)
2.	Competency in construction of bamboo structure for vermicompost pit	0 (0)	27 (67.5)	13 (32.5)
3.	Competency in construction of brick & cement structure for vermicompost pit-NADEP	9(22.5)	14(35.0)	17(42.5)
4.	Competency in construction of roof structure for vermicompost pit	6(15)	21(52.5)	13(32.5)
5.	Competency in preparing an in situ pit for vermicomposting (around a tree)	2(5.0)	33(82.5)	5(12.5)
6.	Competency in filling vermibed layer by layer with bio-mass / bedding materials	4(10)	30(75)	6(15)
7.	Competency in maintaining optimum moisture level in vermicompost pit	12(30)	18(45)	10(25)
8.	Competency in removing unwanted materials from vermibed without	4(10)	14(35)	22(55)

	harming the earthworms			
9.	Competency in inoculating the vermibed with earthworm starter culture	10(25)	14(35)	16(40)
10.	Competency in maintaining appropriate proportions of vermicompost materials and the amount of earthworms in vermibed	3(7.5)	27(67.5)	10(25)
11.	Competency in maintaining optimum temperature levels in vermibed	13(32.5)	8(20)	19(47.5)
12.	Competency in removal of excess water accumulated in vermibed	9(22.5)	27(67.5)	4(10)
13.	Competency in preventive and control measures in protection of vermibed from pests including insects, birds and fungi	5(12.5)	14(35)	21(52.5)
14.	Competency in techniques of speeding up the process of composting in vermibed	2(5)	31(77.5)	7(17.5)
15.	Competency in preparation of vermiwash	3(7.5)	14(35)	23(57.5)
16.	Competency in enhancing the amounts of collection of vermiwash	2(5)	32(80)	6(15)
17.	Competency in multiplication of earthworm population	6(15)	16(40)	18(45)
18.	Competency in storing and preserving earthworms in an earthworm bank	0(0)	26(65)	14(35)
19.	Competency in keeping the earthworms active and living for longer periods of time	8(20)	17(42.5)	15(37.5)
20.	Competency in removing earthworms, without any harm, from finished vermicompost	2(5)	30(75)	8(20)
21.	Competency in safe storage of vermicompost for longer periods of time	3(7.5)	19(47.5)	18(45)
22.	Competency in production of better quality vermicompost	5(12.5)	31(77.5)	4(10)
23.	Competency in appropriate application of vermicompost in field crops/fruit crops	0(0)	26(65)	14(35)
24.	Competency in assessing pH level of vermicompost	0(0)	21(52.5)	19(47.5)
25.	Competency in preparing the enriched vermicompost.	0(0)	27(57.5)	13(32.5)

Table.3 Frequency distribution of various components of skill acquired in vermicompost technology by untrained farmer respondents

Sl. No.	Skill acquired in vermicompost technology through training	Untrained Farmers' Skills (40)		
		Competent	Partially Competent	Incompetent
1.	Competency in construction of brick & cement structure for vermicompost pit	0(0)	7 (17.5)	33(82.5)
2.	Competency in construction of bamboo structure for vermicompost pit	0(0)	11(27.5)	29 (72.5)
3.	Competency in construction of brick & cement structure for vermicompost pit-NADEP	0(0)	11(27.5)	29(72.5)
4.	Competency in construction of roof structure for vermicompost pit	0(0)	10(25)	30(75)
5.	Competency in preparing an in situ pit for vermicomposting (around a tree)	0(0)	9(32.5)	31(77.5)
6.	Competency in filling vermibed layer by layer with bio-mass / bedding materials	0(0)	10(25.0)	30(75)
7.	Competency in maintaining optimum moisture level in vermicompost pit	0(0)	5(12.5)	35(87.5)
8.	Competency in removing unwanted materials from vermibed without harming the earthworms	0(0)	8(20)	32(80)
9.	Competency in inoculating the vermibed with earthworm starter culture	3(7.5)	3(7.5)	37(92.5)
10.	Competency in maintaining appropriate proportions of vermicompost materials and the amount of earthworms in vermibed	0(0)	8(20.0)	32(80)
11.	Competency in maintaining optimum temperature levels in vermibed	0(0)	6(15.0)	34(85)
12.	Competency in removal of excess water accumulated in vermibed	0(0)	8(20.0)	32(80)
13.	Competency in preventive and control measures in protection of vermibed from pests including insects, birds and fungi	0(0)	5(12.5)	35(87.5)
14.	Competency in techniques of speeding up the process of composting in vermibed	0(0)	8(20)	32(80)
15.	Competency in preparation of vermiwash	0(0)	10(25)	30(75)
16.	Competency in enhancing the amounts of collection of vermiwash	0(0)	8(20)	32(80.0)
17.	Competency in multiplication of earthworm population	0(0)	9(22.5)	31(77.5)
18.	Competency in storing and preserving earthworms in an earthworm bank	0(0)	9(22.5)	31(77.5)
19.	Competency in keeping the earthworms active and living for longer periods of time	0(0)	9(22.5)	31(77.5)

20.	Competency in removing earthworms, without any harm, from finished vermicompost	0(0)	7(17.5)	33(82.5)
21.	Competency in safe storage of vermicompost for longer periods of time	0(0)	11(27.5)	29(72.5)
22.	Competency in production of better quality vermicompost	0(0)	7(17.5)	33(82.5)
23.	Competency in appropriate application of vermicompost in field crops/fruit crops	0(0)	7(17.5)	33(82.5)
24.	Competency in assessing pH level of vermicompost	0(0)	10(25.5)	30(75.0)
25.	Competency in preparing the enriched vermicompost.	0(0)	7(17.5)	33(82.5)

Various components of skills acquired in vermicompost technology

Skill acquired was measured using a schedule consisting of 25 skills against which the degree of competency was measured. An attempt was made here to compute frequencies of competent/ partially competent/ incompetent among trained and untrained farmers. The results are given in Table 2 for trained farmers and in Table 3 for untrained farmers.

A cursory look at the results in the table revealed that out of the twenty five competencies that were to be acquired eighteen were found to be acquired only partially by majority of trained farmers (42.5 to 80 percent).

About 20-30 percent of trained farmers could acquire only six of the skills in vermicomposting technology. About 40-57.5 percent of trained farmers were less competent on seven skills in vermicompost technology.

Majority of skills are wanting among the trained farmers. The key skills are wanting among the trained farmers, the key skills that trained farmers could acquire partial competency were: construction of vermicompost unit, maintenance of optimum

moisture levels, and proper care and preservation of earthworms.

The key skills in which the trained farmers expressed incompetency were earthworm inoculation, maintenance of optimum temperature levels, preventive care of vermibed and preparation of vermiwash.

Thus it can be concluded that majority of trained farmers acquired partial competency on more than two thirds of the skills in vermicompost technology.

Among the untrained farmers 52.5 percent of them were found to be incompetent on all of twenty five skills in vermicompost technology.

About 45 percent of untrained farmers were found to be partially competent on only eight none of them were found to have acquired any competency in vermicompost technology.

Thus it can be concluded that the untrained farmers could not acquire any of the skills in vermicompost technology were up to a moderate level of competency by trained farmers, but up to very low level of competency by untrained farmers.

Mean score on skill acquired in vermicomposting technology of trained

farmers was 37.30 compared to that of untrained farmers being at only 10.15 out of a possible score of 100. The mean difference was 27.15, which is statistically significant at 0.01 level of probability indicating that the skill acquired among trained farmers was significantly higher than that of untrained farmers.

With respect skill acquired in various component of vermicompost technology, majority of trained farmers (40-80 percent) were found to 'partially competent' on eighteen of the twenty five competencies/skills in vermicompost technology.

Among the untrained farmers, majority farmers (ranging from 72.5 to 92.5 percent) were found to possess 'les competency' in all the twenty five components of competencies/skills in vermicompost technology.

Skill acquired in vermicompost technology among trained farmers

Skill acquired by trained farmers in vermicomposting technology was found to be negatively associated with age of respondents (statistically significant at 0.05 level of probability), which indicate that younger farmers had acquired more skills in vermicomposting technology, as a results of practical training received at KVK Birauli.

Independent variables such as Education, size of land holding, annual family income, innovativeness, mass media utilization, risk orientation, scientific orientation, source of information utilized, and level of knowledge of vermicompost technology were all positively and strongly associated (statistically significant at 0.01 level of probability) with the dependent variables: skill acquired in vermicompost technology.

Skill acquired in vermicompost technology among untrained farmers

Skill acquired by untrained farmers in vermicomposting technology was found to be negatively associated with age of respondents (statistically significant at 0.01 level of probability), which indicate that younger farmers had acquired more skills in vermicomposting technology, although not received any formal training. Education was found to be positively associated with age of respondents (statistically significant at 0.05 level of probability), Other independent variables such as size of land holding, annual family income, risk orientation, scientific orientation, mass media utilization, source of information utilized, and level of knowledge of vermicompost technology were all positively and strongly associated (statistically significant at 0.01 level of probability) with the dependent variables: skill acquired in vermicompost technology among untrained farmers. Social participation and innovativeness were found to be not significantly associated with skill acquired by untrained farmers.

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