



Research Article

IMPACT OF TRAINING AND ENTREPRENEURSHIP DEVELOPMENT ON VERMICOMPOSTING

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Abstract- Vermicomposting is basically a managed process of worms digesting organic matter to transform the material into a beneficial soil amendment. It is best source of generating additional source of income, economic empowerment along with the already known environmental and agricultural benefits, has been found successful model for the rural or economically resourceful communities. This paper examines the knowledge and impact of entrepreneurship development on vermicomposting in operational area of Dewas District of M.P. i.e., village Narana, Nanadharakhedi and Banger. A total of 40 demonstrations (ten demonstrations in each year) were laid down with the objective to access knowledge and entrepreneurship development of farm women through vermicomposting. The results depicted from the above study that most of the farm women have superficial knowledge of vermicomposting. Highest knowledge were observed in location of vermicompost under the knowledge section of benefits of vermicompost. In case of material required for vermicompost, hundred percent knowledge were found in animal waste, earth worms, soil, grain Straw, green neem leaves, gunny bags. In case of process of preparing vermicompost same result were found in selection of place, collection of animal waste and layer of earth worms. As assessment on economic parameter average gross return, net return and B:C ratio found Rs. 36575, Rs. 28158 and 4.34 respectively in vermicompost as compare to deshi compost were obtained Rs. 23800, Rs. 3550 and 1.18 respectively.

Keywords- Entrepreneurship, Vermicomposting, Empowerment, Knowledge

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Introduction

Women play important role in agriculture as producers of food, managers of natural resources, income earners and caretaker of household food and nutritional security. Giving women the same access to physical and human resources as men could increase agricultural productivity, just as increase in women's education and improvements in women's status over the past quarter century have contributed to more than half of the increase in the rate of social and financial status of family. In order to improve their living condition and to increase their income and knowledge developing the capabilities of farm women for self employment becomes essential. Giving more access to a steady income and economic power or security applies the term economic empowerment [1-2]. Women's empowerment is of great importance, because it is the most important precondition for elimination of world poverty and enhancement of human rights [3]. There are a number of enterprises which can be taken up by farm women to improve their economic status. These can be vermicomposting, value addition in fruits and vegetables, mushroom production, bee keeping, nursery raising, backyard poultry, etc. The vermicomposting is bio-oxidation and stabilization of organic material involving the joint action of earthworms and microorganisms. Although, microbes are responsible for the biochemical degradation of the organic matter, earthworms are the important drivers of the process, conditioning the substrate and altering biological activity [4].

Krishi Vigyan Kendra, Dewas, M.P. started some entrepreneurial activities for farm women in adopted villages of KVK to encourage self employment. Knowledge is one of the most important component behavior and plays an important role in the convert and overt behavior of human beings. Once knowledge is acquired, it helps to develop favorable attitude towards improved practice and thereby motivate an

individual to take certain action in accepting an innovation or any practices. The present study was conducted with a knowledge and generate income to find out various technical, economical and marketing parameters which affected the growth of enterprise of farm women.

Materials and Methods

This study was carried out by Krishi Vigyan Kendra, Dewas, M.P. for four consecutive years from 2010-11 to 2013-14 in the three adopted village of operational area i.e. Narana, Nanadharakhedi and Bangar. First of all we have conducted PRA to know the need of village. In these village, it has been observed that very less income of farm women due to improper use of agriculture waste and animal waste. All farm women actively participated in all unpaid agricultural practices as well as collection of animal waste and prepared compost (deshi khad). To solve this problem KVK Dewas, has planned to conduct On Farm Trial on vermicomposting. For this purpose forty farm women (10 in each year) have randomly selected and trained about the vermicomposting by provide on and off campus trainings. Krishi Vigyan Kendra has also provided the 140 gsm HDPE fabric poly pit of size 6x3x3 feet. These poly pit have fitted in the shaded area and filled with soyabean straw + cattle dung in *rabi* season and wheat straw + cattle dung in *kharif* season. These materials were uniformly mixed in two parts of straw and one part of dung (2:1) and spread in the poly pit of 30 cm layer then sprinkled water to maintain moisture. Repeat this process when poly pit filled completely and left for fifteen days to decompose. After fifteen days the one kg earth worms of species *Eisenia Foetida* was left in the poly pit. The compost was prepared using the method [5].

The poly pit was covered with gunny bags and water was sprinkled periodically to

maintain moisture level to the extent approximately between 40 to 50 percent to ensure optimum earth worm activities. Composting was done for 45 days to achieve a fair degree of decomposition. The final product, which was black fine powder and odorless, was passed through a 3 mm size sieve. In this trial, cost of production, gross return, net return and benefit cost ratio were calculated to estimate the income generation by the farm women through vermicomposting. The data obtained were analyzed for mean, percentage and standard error as per standard procedure [6]. A structured interview schedule was used for purpose of data collection. Finally, collected data were analyzed under four category i.e. overall knowledge, benefits of vermicompost, raw material needed and process of preparing vermicompost.

Results

The result indicated from [Table-5], that the farm women were average production were obtained in four year [Table-1] vermicompost 10575 kg/pit and worms 12 kg /pit. As compare to the compost practices in farm women obtained 11900kg/ pit in consecutive four years. The reason for more production of simple compost might be due to 30-35 percent decomposition in raw material during making of compost (desi khad) as compare to vermin compost. But obtained maximum gross return

of vermicompost due to quality of vermin compost and as well as earth worm production.

The input and outputs prices of conditions revealed during the study of trial were taken for calculating gross return, net return and benefit cost ratio [Table-2]. The economic analysis of the data over the years revealed that highest gross return, net return and benefit cost ratio was obtained in the trial during round the year as compared to farmers practice (compost). During year 2013-14 highest gross return (Rs. 37650 / pit), net return (Rs. 29233 / pit) [7] and B:C ratio (4.47) was recorded as compared to farmers practice (Compost) which recorded in year 2013-14 gross return (Rs. 23200 / pit) net return (Rs. 2950 /pit) and B:C ratio (1.15). Similarly during 2010-11, 2011-12 and 2012-13 trial were obtained gross return Rs. 35450, Rs. 36300, Rs. 36900, net return Rs. 27033, Rs. 27883, Rs. 28483 and B:C ratio 4.21, 4.31, 4.38 respectively. In the case of compost (desi khad) farm women were obtained in 2010-11, 2011-12 and 2012-13, gross return Rs. 22800, Rs. 24000, Rs. 25200, net return Rs. 2550, Rs. 3750, Rs. 4950 and B:C ratio 1.13, 1.19 and 1.24 respectively.

An attempt was made to study in depth knowledge of farm women about vermicomposting. For this the farm women were categorized in three groups on the basis of their obtained knowledge scores.

Table-1 Vermicompost and worms production

Year	Area	Variety	No. of farmer	Material used (kg/pit)		Compost Production (kg/ pit)			Worms Production (kg/ pit)		
				raw material used (kg/ pit)	Worms in vermicompost (kg/pit)	Potential	vermi compost	Desi Compost	Potential	Vermi compost	Desi Compost
2010-11	6x3x3	lisemia Foetida	10	13500	3	10800	10350	11400	15	11	0
2011-12	6x3x3	lisemia Foetida	10	13500	3	10800	10500	12000	15	12	0
2012-13	6x3x3	lisemia Foetida	10	13500	3	10800	10700	12600	15	12	0
2013-14	6x3x3	lisemia Foetida	10	13500	3	10800	10750	11600	15	13.5	0
Average			10	13.5	3	13500	10575	11900	15	12	

Table-2 Gross return (Rs./pit), cost of production (rs./pit), net return (Rs./pit) and B:c ratio as affected by improved and local technologies

Year	Gross return (Rs./pit)		Cost of cultivation (Rs./pit)		Net return (rs./pit)		B:C ratio	
	Vermi compost	(Desi) Compost	Vermi compost	(Desi) Compost	Vermi compost	(Desi) Compost	Vermi compost	(Desi) Compost
2010-11	35450	22800	8417	20250	27033	2550	4.21	1.13
2011-12	36300	24000	8417	20250	27883	3750	4.31	1.19
2012-13	36900	25200	8417	20250	28483	4950	4.38	1.24
2013-14	37650	23200	8417	20250	29233	2950	4.47	1.15
Average	36575	23800	8417	20250	28158	3550	4.34	1.18

Overall Knowledge

It is availed from the [Table-3] that the farm women had either medium or high knowledge about vermicomposting. There were 02 farm women in the category of low knowledge.

Table-3 Categorization of respondents on the basis of their overall knowledge about vermicomposting N=40

S. No.	Knowledge Level	Frequency	Percent
1.	Low	2	7.5
2.	Medium	15	37.5
3.	High	23	55

Benefits of vermicompost

Percentage distribution of farm women by their knowledge about benefits of vermicomposting were presented in [Table-4]. The table revealed that benefits of vermicomposting enterprises in term of location of vermicompost, availability of raw material, easy to prepare, take less time compare to desi khad, take less money, less water requirement and were 97.5 %, 90.00%, 87.5 %, 85.00%, 75.00%, 70.00% and respectively. In the case of knowledge regarding soil and crop quality, results showed low knowledge of farm women. The result may be due to the fact that farm women had more conversation regarding money, raw material, time, space, irrigation etc. only 30.00% farm women could tell about the vermicompost can be sold in village.

Material required for vermicompost

From the [Table-5], it is observed that the percentage of knowledge of farm

women about material required in vermicompost i.e. animal waste, earth worms, soil, grain straws, green neem leaves and gunny bags for covering the bed. Lowest knowledge was found in the vegetable waste (20.00%) and shed on compost pit (20.00%). However, 52.5 percent farm women had knowledge about keeping of dry neem leaves layer inside, which can be used as a substitute for green neem leaves and as a control over pests.

Table-4 Percentage distribution of respondents by their knowledge about benefits of vermicompost N=40

S. No.	Benefit s	Frequency	Percent
1	locations for Vermi composting	39	97.5
2	Availability of raw material	36	90
3	Take less time compare to desi compost	34	85
4	Take less money	30	75
5	Less water requirement	28	70
6	Easy to prepare	35	87.5
7	Generate income	12	30
8	Compost and worms can be sold in village	12	30
9	Improve quality of crop	10	25
10	Enhance the taste of crop produce	5	12.5
11	Enhance germination	2	5
12	Enhance plant growth	3	7.5
13	Enhance crop yield	2	5
14	Improves soil aeration	1	2.5
15	Compost is free from chemicals	9	22.5

Process of preparing vermicompost

The soil of Malwa region not only suffer from scarcity of moisture but also due to

limiting nutrition. These soils contain substantially low amount of organic carbon as there is virtually very low or no recycling of organic materials to the soil. One of the important features of sustainable agriculture is lower dependence on chemical fertilizers, which can be achieved by recycling of on farm waste to maintain or improve fertility of the soil [8].

Table-5 Percentage distribution of respondents by their knowledge about raw materials needed N=40

S. No.	Advantage	Frequency	Percent
1	Animal waste	40	100
2	Earth worms	40	100
3	Soil	40	100
4	Grain straws	40	100
5	Green neem leaves	40	100
6	Dry neem leaves	21	52.5
7	Gunny bags	40	100
8	Vegetables waste	8	20
9	Shed on compost pit	8	20



Fig-1 Training of farm Women for vermicomposting by using low cost material

Percentage distribution of respondents of their knowledge about the process of preparing vermicompost present in [Table-6]. The knowledge score obtained by farm women were selection of place (100.00 percent), collection of animal waste (100.00 percent), layer of animal waste (87.5 percent), layer of earth worms (100.00 percent), vermi pit should be in shed (92.5 percent). Results clearly showed that the farm women were aware about most of the basic and important steps in preparing vermicompost. Lowest knowledge of farm women observed only in layer of agriculture waste (12.5 percent) and separation of vermicompost from earthworms (22.5 percent). Only 25 percent farm women had knowledge regarding species of earth worm which used in vermicomposting.



Fig -2 Filling of farm waste in vermi pit

Table-6 Percentage distribution of respondents of their knowledge about the process of preparing Vermicompost N=40

S.No.	Advantage	Frequency	Percent
1	Selection of place	40	100
2	Collection of animal waste	40	100
3	Collection of grain straw	13	32.5
4	Removing unwanted material from waste	14	35
5	Species of earth worms	10	25

6	Preparing bed 2" above	28	70
7	Layer of Agriculture waste	5	12.5
8	Layer of animal waste	35	87.5
9	Layer of earth worms	40	100
10	Water use as a sprinkler irrigation	26	65
11	Covered vermi pit with gunny bags	25	62.5
12	Vermi pit should be in shed	37	92.5
13	Vermi pit near by water source	11	27.5
14	Separation of vermi compost from worms	9	22.5

Conclusion

The objective of this study is to examine the knowledge and assessment of the income generating activities of farm women through Vermicomposting in Dewas district of Madhya Pradesh. This approach minimizes the possibility that farm women have opportunity of less income generating activities. This is due to the technology of vermicomposting is very low cost and easily adoptable among the farm women even though the illiteracy is not the hurdle for them. By the sell of good quality of compost and worms, also the farm women can upgrade their socio-economic status or they may use this material on their fields to enhance the productivity as well as provoke the availability of chemical fertilizer.

Conflict of Interest: None declared

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