Knowledge, Attitude and Practices of Farmers towards Vermiculture Technology

R.R. Kalita[1], M. Dutta Das[2] and Sayanika Bora[3]

1. P.G. Student, 2. Professor, 3. Assistant Professor, Department of Extension & Communication Management,
College of Home Science, Assam Agricultural University, Jorhat, Assam

Corresponding author e-mail: rashmikalita73@gmail.com

ABSTRACT

Organic manure provides a solution to the alarming environmental damage caused by chemical fertilizers. The residues of chemical fertilizer are not only percolating into the soil but have moved into the reservoirs of water, rivers and streams. With the global concern of safe foods, the concept of organic manure was introduced to the farmers. Among the various sources of organic manure, vermiculture technology recognized as having considerable potential as soil amendments and also source of generating additional income along with the environmental balance. And by looking into the benefit of organic manure, most of the farmers of Jorhat District started vermicompost in their houses. Thus the present study was undertaken to analyze the knowledge, attitude and practices of farmers towards vermiculture technology. The study was conducted in Jorhat district of Assam. A multi stage purposive cum simple random sampling design was followed for selection of three blocks from respective subdivision. 120 numbers of respondents, irrespective of gender were selected from 12 villages of the three blocks had been selected for the present study. Data collection was done by using interview cum questionnaire. Data revealed that 75.00 per cent of the respondent had medium level of knowledge and had strong favorable attitude (74.17%). 69.17 per cent of the respondents had medium practice level towards vermiculture technology. The findings revealed that education and organizational membership had showed significant association with knowledge of the farmers towards vermiculture technology. It also further revealed that attending the training programme had also showed significant association with both attitude and practices of farmers towards vermiculture technology.

Key words: *Organic manure; Environmental; Reservoirs of water; Vermiculture technology; Vermicompost;*

Agriculture is the basic source of subsistence for man over thousands of years. It provides a livelihood to half of the world population even today. According to the Food and Agricultural Organization (FAO), people in the developing world, where the population increase is very rapid, may face hunger if the global food production does not rise by 50-60% by the year 2020 AD. The contribution of developing countries to the world agricultural production in 1975 was about 38 per cent, while that of developed countries, which account for 33 per cent of the world's population. Only those countries which can match the demands of the increasing population with increased production can escape mass hunger.

After the green revolution launched in India, substantial increase in the production of food grains was achieved through the use of improved crop varieties and higher levels of inputs of fertilizers and plant protection chemicals. Green Revolution technologies, supported by policies, and fuelled by agrochemicals, machinery and irrigation, are known to have enhanced agricultural production and productivity. Modern agricultural farming practices, along with irrational use of chemical inputs over the past four decades have resulted not only in loss of natural habitat balance and soil health but have also caused many hazards like soil erosion, decreased ground water level, soil salinization, pollution due to fertilizers and pesticides, genetic erosion, ill effects on environment, reduced food quality and increased the cost of cultivation, rendering the farmer poorer year by year (*Ram, 2003*).

The concept of soil, as a living system, is central to alternative farming systems as opposed to chemical farming. It is essential to establish and maintain an active and abundant soil life in order to produce healthy plants. Therefore, the soil must be "fed" in a way, that the activities of beneficial soil organisms, necessary for recycling nutrients and producing humus, are not inhibited. Use of earthworms for degradation of organic wastes and production of vermicompost is becoming popular and is being commercialised. *Darwin (1881)* was the first to show that earthworms affect soil formation and development. Thousands of farmers, in different agro climatic regions of India, are switching over to sustainable agriculture in field and horticultural by adopting vermiculture technology.

Vermiculture technology is the science of cultivating earthworms which feed on waste material and soil and release digested food material back into the soil, thereby producing compost rich in nutrients. Worms are natural ploughers of the soil throughout the day and night, maintaining the fertility and porosity of the soil. The commonly used earthworm species are viz Eisenia foetida, Perionyx excavatus, Lumbricus rubellus and Amyanthus defringens. Vermiculture is considered a proven technology for increasing production and productivity of different crops. The use of vermicompost is not of recent origin but the many of farmers are not aware of its advantages. One of the major goals of extension agencies such as SAUs, ICAR institutes, NGOs and voluntary agencies are working to disseminate and popularize vermiculture technology among the farming community. The technology is not intricate and involves a simple procedure of compost preparation though the farmers adopting the technology but not prepared in a scientific way. There may be some factors like lack of skill in making compost, poor economic conditions or lack of scientific knowledge.

We know that, knowledge develops skills and builds up desirable scientific attitudes required for adoption of vermiculture technology. Keeping this in view, the present study was planned to analyze the "Knowledge, attitude and practices of farmers towards vermiculture technology". The present study was designed with the following specific objectives:

i.   To study the existing socio-economic status of farmers.
ii. To assess the knowledge and attitude of the farmers towards vermiculture technology.
iii. To explore the existing practices of vermiculture technology adopted by farmers.

METHODOLOGY

The present study was carried out in Jorhat District of Assam. A multi stage purposive cum simple random sampling design was followed for selection of three blocks namely Baghchung, Chipahikhula and Titabor from respective subdivision i.e Jorhat and Titabor. 120 numbers of respondents from selected 12 villages of the three blocks who were undergone training on vermicompost formally or informally from various sources had been selected for the present study. Data collection was done by using interview cum questionnaire.

To measure the knowledge level of farmers in this study by using standardized scale developed by *Latika Vyas et al. (2014)* with slight modification. The scale was consists of 43 knowledge statements these statements are based on concept of vermiculture technology, bed preparation, raw material, earthworms, water, filling of bed, maintenance of vermin-bed, harvesting of ready compost, care during transportation and its uses and advantages. The 3 points continuum were know thoroughly, know somewhat and not known with respective weightage 3, 2, 1. The scores so obtained under various questions were summed up. On the basis of the total score obtained, respondents were categorized into three classes i.e. low, medium and high level of knowledge.

Attitude of farmers was measured in this study by using standardized scale developed by *Vyas et al. (2010)* with slight modification. The scale consists of 24 attitude statements where 12 statements were the positive statements and the remaining 12 were the negative statements. The 5 points continuums were most favourable, favourable, neutral, unfavourable and most unfavourable with respective weightage of 5, 4, 3, 2 and 1. On the basis of the total score obtained, respondents were categorized into three classes i.e unfavourable, favourable and most favourable.

RESULTS AND DISCUSSION

From the Table 1, it is revealed that 45.00 per cent of the respondents belonged to middle age group (32-45 years) and majority of the respondents (62.5%) had female members. 81.67 per cent respondents were.

Table 1. Distribution of respondents according to their personnel and socio-economic characteristics

Characteristics	Category	No.	%
Age	Young (18-31)	35	29.17
	Lower Middle (32-45)	54	45.00
	Upper Middle(46-59)	31	25.83
Sex	Male	45	37.50
	Female	75	62.50
Marital status	Unmarried	14	11.67
	Married	98	81.67
	Widow	8	6.66
Caste	ST/SC	20	16.67
	OBC	70	58.33
	General	30	25.00
Occupation	Farming	65	54.17
	Daily wage earner	25	20.83
	Business	27	22.5
	Service	3	2.5
Family type	Nuclear	105	87.00
	Joint	15	13.00
Family size	Small (<4 members)	73	60.83
	Medium (5-8 members)	38	31.67
	Large (>8 members)	9	7.50
Education	Under HSLC	55	45.83
	Under HS	38	31.67
	Under degree	27	22.50
Orgl. membership	No membership	49	40.83
	Member of one org.	35	29.17
	Member of >1 org.	34	28.33
	Office bearer	2	1.67
Land holding	Marginal (<7.5 bigha)	96	80.00
	Small (7.5-15 bigha)	21	17.50
	Small medium (15-30 bigha)	3	2.50
Type of house	Katcha	28	23.33
	Mixed	62	51.67
	Pucca	30	25.00
Material possession	Low	13	11.39
	Medium	92	76.11
	High	15	12.50
Media exposure	Never	16	13.33
	Sometimes	52	43.33
	Regularly	52	43.33
Extension contact	Never	35	29.67
	Sometimes	52	43.33
	Regularly	33	27.50
Training attended	Never	15	12.50
	Sometimes	25	20.83
	Regularly	80	66.67

Most of the respondents (58.33%) belonged to Other Backward Caste (OBC) category. More than one third of the respondents that is (54.17%) had farming as their main occupation and had most of the respondents (80.00%) belong to marginal land holding farmers. Respondents belonged to nuclear families are in 87.00 per cent and 60.83 per cent of the respondents had small family. Majority of the respondents (45.83%) had educational level under HSLC and 40.83 per cent of the respondents were no membership in any organization. 51.67 per cent of the respondents lived mixed house. Large numbers of respondents (70.83%) were seen television regularly and 70.00 per cent of the respondents were from medium socio-economic status group. 47.50 per cent of respondents had contact with Non Government Organization (NGO) sometimes. 66.67 per cent of respondent were attended in the training programme on different field.

Knowledge of the farmers towards Vermiculture technology : The data on knowledge of the farmers towards vermiculture technology is presented in Table 2. Data shows that majority (75.00%) of the respondent had medium knowledge level and 13.33% of the respondents had high knowledge and 11.67% had high knowledge. It is assumed that farmers might require information from the different sources like extension workers, VLEW and other financial institution. The respondents need due to consideration in mass media exposure, organizational membership, extension contact and attending the different training programme. Similar findings found that *Singh et al. (2016), Pagaria (2014)* and *Aski et al. (2014)* etc.

Table 2. Distribution of respondents according to knowledge towards vermiculture technology (N=120)

Category	No.	%
Low	14	11.67
Medium	90	75.00
High	16	13.33

Attitude of the farmers towards Vermiculture technology: The data on attitude of the farmers towards vermiculture technology is presented in Table 3. Data shows that majority (74.17%) of the respondent had favourable attitude level followed by 13.33 per cent had most favourable attitude and only 12.50 per cent had unfavourable attitude towards vermiculture technology. It might be due to lack of detailed knowledge about

vermiculture technology. The persuasion through regular guidance, trainings and demonstration seem to be essential. Similar findings found that *Sharma and Maheshwari (2015), Lavania and Kumar (2014) and Magarvadiya et al. (2014)* etc.

Table 3. Distribution of respondents according to attitude towards vermiculture technology (N=120)

Category	No.	%
Unfavourable	15	12.50
Favourable	89	74.17
Most favourable	16	13.33

Existing practices of Vermiculture technology adopted by the farmers: The data on existing practices of vermiculture technology adopted by farmers is presented in Table 3 Practice was assessed in bed preparation, raw material, earthworms, process of filling bed, maintenance of bed, harvesting of ready compost, care taken before using prepared vermicompost and uses and advantages. Data reveals that most (69.17%) of the respondent had medium practice level followed by 15.83 per cent had high and only 15.00 per cent had high practice level. It might be due to the lack of scientific knowledge regarding vermiculture technology. Similar findings revealed that Subhashini et al. (2017), T*yagi (2016)* and *Sharma et al. (2013)* etc.

Table 3. Distribution of respondents according to existing practices of vermiculture technology (N=120)

Category	No.	%
Low	18	15.00
Medium	83	69.17
High	19	15.83

Table 4. Chi square test result between selected independent variables with knowledge of farmers towards vermiculture technology

Variables	χ^2 value	" ρ " value
Age	15.305	0.358
Education	9.681	.046*
Organizational membership	8.382	.015*
Mass media exposure	1.757	.780
Extension contact	1.335	.855
Training programme attended	8.225	.084

* 5% level of significant

Association between selected independent variables with dependent variables of farmers towards vermiculture technology: Table 4. shows that there was a significant association between respondents'

education, organizational membership associated with knowledge of the farmers towards vermiculture technology because of the " ρ " value of education and organizational membership were lower than the .05 at the 5% level of significant (i.e. .046* and .015*). On the other hand, variables such as age, mass media exposure, extension contact and training programme attended have no significant association with knowledge of the farmers because " ρ " value of these variables were greater than the .05 at the 5% level of significant . Thus, out of six variables two variables showed significant variance for the knowledge of the farmers towards vermiculture technology. Similar findings reported by *Pagaria (2014)* and *Patidar and Patidar (2015).*

Table 5. Chi square test result between selected independent variables with attitude of farmers towards vermiculture technology

Variables	χ^2 value	" ρ " value
Age	10.596	0.717
Education	3.901	.420
Organizational membership	1.961	.375
Mass media exposure	3.023	.554
Extension contact	1.757	.780
Training programme attended	8.015	.048*

* 5% level of significant

Table 5. reveals that there was a significant association between respondents' attending the training programmes associated with attitude of the farmers towards vermiculture technology because of the " ρ " value of training programme attended was lower than .05 at the 5% level of significant (i.e. .048*). On the other hand, variables such as age, education, organizational membership, mass media exposure and extension contact had no significant association with attitude of the farmers regarding vermiculture technology because the " ρ " value of these variables were greater than the .05 at the 5% level of significant. Thus, out of six variables only one variable showed significant variance for the attitude of the farmers towards vermiculture technology. Similar findings reported by *Pagaria (2014) and Patidar* and *Patidar (2015).*

Table 6 reveals that there was a significant association between respondents' attending the training programmes associated with existing practices of vermiculture technology adopted by the farmers because the " ρ " value of training programme attended is less

Table 6. Chi square test result between selected independent variables with existing practices of vermiculture technology adopted by farmers

Variables	χ^2 value	" ρ " value
Age	4.493	0.992
Education	8.146	.086
Organizational membership	1.140	.566
Mass media exposure	3.552	.470
Extension contact	2.100	.717
Training programme attended	3.238	.046*

* 5% level of significant

than 0.05 at the 5% level of significant(i.e. .046*). On the other hand variables such as age, education, organizational membership, mass media exposure and extension contact have no significant association with existing practices of vermiculture technology adopted by the farmers because the " ρ " value of these variables were greater than the 0.05 at the 5% level of significant. Thus, out of six variables only one variable showed significant variance for the practices of the farmers towards vermiculture technology. Similar findings reported by *Pagaria (2014) and Patidar* and *Patidar (2015).*

CONCLUSION

The findings of the present study revealed that majority of the respondents belonged to medium socio-economic status, low extension contact and majority of the respondents had medium level of knowledge, attitude and existing practices towards vermiculture technology. The extension services could not reach the rural farmers for which they were unaware of actual adoption practices of vermiculture technology. Hence, suitable extension programmes should be planned based to perceive problems in study area to increase their efficiency in organic farming.

REFERENCES

Arora, L.; Agarwal, S. and Kalla, N.P. (2012). Knowledge, attitude and practices regarding vermiculture biotechnology of hostel students of rajasthan university. *Rajasthan J. of Ext. Edu.,* **20** : 53-56.

Aski, G.S. and Hirevenkanagoudar, L.V. (2014). Knowledge level of farmers about vermicompost production technologies, Karnataka. *Hind Agril. Res. and Trg. Inst.* **9** (3) : 407-410.

Borhade, M.S.; Kale, M.N.; Kharche, K.V. and Jangwad, P.N. (2016). Knowledge and adoption of organic manure practices by the cotton and soybean growers in Akola district. *Intl. J. of Agri. and Envir. Res.,* **2** (5) : 1178-1186.

Lavania, P. and Kumar, D. (2014). Knowledge and attitude of farmers towards vermi compost technology, Barmer. *Indian Journal of Extension Education* **22** : 56-59.

Magarvadiya, K.D. and Patel, T.V. (2014). Knowledge and attitude of farmers regarding biofertilizers, Gujrat. *Gujrat J.of Ext. Edu.,* **25** (2) : 149-151.

Pagaria, P. (2014). Knowledge and attitude of farmers towards vermicompost technology, Rajasthan. *JKV,* **3** (1) : 42-44.

Ram, B. (2003). Impact of human activities on land use changes in arid Rajasthan: retrospect and prospects, Jodhpur. *In: Human impact on desert environments, Scientific Publishers.* pp. 44-59.

Sharma, S. and Maheshwari, S. (2015). Opinion of tribal women regarding organic farming, Udaipur. *IJEE,* **23** : 54-57.

Sharma, S.; Rao, P.K. and Sharma, R. (2013). Role of women in production of vermicompost: a study of Jammu district of J & K State. *Intl. J. of Scientific and Res. Publications* **3**(1).

Singh, M.; Bhargav, S.K.; Bhagat, V.D. and Sharma, P.R. (2016). Impact of training and entrepreneurship development on vermicomposting, Madhya Pradesh. *Intl.Accreditation and Res. Council,* **8**(50) : 2137-2139.

Subhashini, S.; Daniel, A.R.; Suresh, M. and Balasubramanian, A.V. (2017). Community vermicompost units as a tool for promoting organic farming and women empowerment**.** *Centre for Indian Knowledge Systems* **30** : 16-18.

Tyagi, P. (2016). Organic frming: a review, Dehradun, India. *J. of Agri. and Allied Sci.* **5**(1) : 53-57.

Vyas, L.; Bhardwaj, L. R. and Panwar, P. (2014). A scale to measure knowledge of tribal women regarding vermiculture technology. *Asian J. of Home Science* **9** (1): 162-165.

Vyas, L.; Maheshwari, S.; Dangi, L. K. and Dashora, K. P. (2010). Attitude scale construction for tribal women towards vermiculture technology, Udaipur. *Rajasthan J. of Ext. Edu.* **17**&**18** :56-59.

● ● ● ● ●