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A Study on Knowledge of Farmers for the Production of Vermicompost in Kurnool District of Andhra Pradesh, India

M. B. L. Amrutha Kasthuri [a++*] and Ms. Jahanara [a#]

[a] Department of Agricultural Extension and Communication, Naini Agriculture Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, 211007 (U.P.), India.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

A study was carried out to study the knowledge level of farmers in the production of vermicompost. A structured interview schedule was developed to complete the study and 120 farmers were taken from 10 villages of selected block of district purposively. The knowledge level of respondents clearly visible that majority 52.5% of the vermicompost users had medium level of knowledge on vermicompost production technology, 25.30 % and 22.5 % of the vermicompost users has low and high level of knowledge on vermicompost technology respectively. It can be concluded that knowledge level of majority of respondents was medium.

[++] *Research Scholar;*
[#] *Professor and Head of the Department;*
**Corresponding author: E-mail: amruthamurathoti05@gmail.com;*

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1. INTRODUCTION

"In recent years, the disposal of organic wastes from domestic, agricultural and industrial sources has caused increasing environmental and economic problems and many different technologies to address this problem have been developed. The growth of earthworms in organic wastes have been termed vermiculture and the processing of organic wastes by earthworms is known as vermicomposting" [1].

"The awareness of organic matter and concept of sustainable agriculture is gaining impetus among our farmers in recent years to produce good quality consumable agricultural produce. Recycling of available bio-wastes of different sources is helpful and can reduce the environmental pollution. Vermicomposting is an important component of organic farming without much financial involvement, which can convert rural and urban bio-wastes into nutrient rich organic manures. which can be utilized for improving the soil structure and fertility in organic farming" (Sajnanath and Sushama, 2004).

"Vermicompost is becoming popular as a major component of organic farming system. Using vermicompost can fulfil the requirements for organically grown products. The vermicomposting procedure usually starts about a week, when the pit has been lined and filled with manure, grass, straw and covered with soil" (Lynch, 2015). "This method can allow some worms to escape into the soil hence precautions has to be taken by lining the pit before adding the worms and the bedding into the pit" (Nagavallemma et.al.,2004) [2-6].

1.1 Earthworm Selection

Individual study on the different earthworms coming under the umbrella of Epigeic type.

1.1.1 *Eisenia fetida*

Named as tiger worm *Eisenia fetida* is the most common type of earthworm used for vermicomposting. Given its features like rapid rate of growth and easy handling nature it is most preferred for vermicomposting.

1.1.2 *Dendrobaena veneta*

Named as European night crawler *Dendrobaena veneta* is used for industrial vermicomposting given its large structure. However, it has share of disadvantages like low reproduction and maturity rates compared *E. fetida, P. excavatus* and *E. eugeniae.*

1.1.3 *Dendrobaena rubida*

Although it is not commonly used for vermicomposting citing its preference for organic soil this species can also used in vermicomposting.

1.1.4 *Lumbricus rubellus*

Found in moist surfaces *Lumbricus rubellus* takes more time to mature and less rate of reproduction. Citing this disadvantage this is not suitable for vermicomposting.

1.1.5 *Perionyx excavates*

It is found in tropical zones*. Perionyx excavatus* is used in vermicomposting given its advantage of breaking up of organic matter under high range of temperatures.

1.2 Need and Importance

Vermicompost is an eco-friendly natural fertilizer prepared from biodegradable organic wastes and is free from chemical inputs. It does not have any adverse effect on soil, plants and environment. It promotes better root growth and nutrient absorption. It improves nutrient status of soil both macro and micro-nutrients. Vermicompost improves the physical, chemical and biological properties of the soil and it improves soil aeration, texture and tilth thereby reducing soil compaction. Earthworms effectively harness the beneficial soil micro flora, destroy soil pathogen and convert organic wastes into vitamins, enzymes, antibiotics, protein rich products and others organic compounds. It also controls soil as well as environmental pollution and it maintains the soil health and improves water retention capacity of soil because of its high organic matter content.

From vermiculture, we get well decomposed worm casts, which can be used as manure for crops, vegetables, flowers, gardens etc. In the process, earthworms also get multiplied and the excess worms can be converted into vermi-protein which can be utilized as feed for poultry and fish etc. The vermiwash can also be used as

spray on crops. Thus various economic uses can be obtained from organic wastes and garbage and prevent pollution. The total annual waste generated in India in the form of municipal solid waste is 25 million tons, agriculture waste residues 320 million tons. Traditionally the solid waste management practices involve collection and transportation to far off low dumping sites. This leads to fowl smelling area, disease spreading and mosquito breeding grounds involves the dumping of waste into a pit. The bio conversion of waste to vermicompost by this method takes 3-4 months. There is a tremendous to convert the bio-degradable vermicompost technology has promising potential to meet the organic manure requirement in city garbage into valuable agricultural input. When organic manures are used, the chemical nutrients are also utilized well by crops as they improve soil health and balance the negative effects of chemicals. The prime market for vermicompost is in agriculture and horticulture. A large number of farmers are using vermicompost in larger quantities. Small and marginal farmers would do well to produce vermicompost on their own. Home gardens, kitchen gardens and commercial plant nurseries are an excellent example of vermicompost in urban areas. No specific skill is required. It is viable production oriented enterprise with tremendous expansion in rural areas.

2. RESEARCH METHODOLOGY

Descriptive research design was adopted for the study as it describes the characteristics or phenomena that are being studied. The present study was conducted in Kurnool district of Andhra Pradesh. Out of 55 blocks in Kurnool district, Panyam block is selected purposively based upon the nearness to local vermicompost farm. From the selected block, ten villages were selected purposively based upon the nearness to local vermicompost farm. The entire data collected was transformed into the score for tabulation and suitable statistical tests are applied as per the nature of data to draw logical conclusions [7-11].

3. RESULTS AND DISCUSSION

The study entitled “Knowledge of farmers for the production of vermicompost in Kurnool District” was undertaken to assess the knowledge of the respondents towards Vermicompost production technology.

Table 1. Knowledge of the respondents in vermicompost production

S. No	Statements	Knowledge level		
		Fully correct *f* (%)	Partially correct *f* (%)	Not correct *f* (%)
I)	**Knowledge on vermicompost**			
1.	Knowledge on the usage of vermicompost	32 (22.67)	61 (50.83)	27 (22.5)
2.	Aware of the advantages of vermicompost	34 (28.33)	56 (46.67)	30 (25)
3.	Aware amount of vermicompost used for any crop	39 (32.50)	58 (48.333)	23 (19.167)
4.	Aware regarding treatment of soil before application of vermicompost	27 (22.50)	73 (60.83)	20 (16.67)
5.	Participation in training of vermicompost conducted by Government	31(25.83)	61 (50.83)	28 (23.33)
6.	Aware about the preparation of vermicompost	32 (22.67)	62 (51.67)	26 (21.67)
7.	Aware that vermicompost is suitable for any crop	27 (22.5)	65 (54.167)	28 (23.33)
8.	Aware regarding time of application of vermicompost in different crops	30 (25)	67 (55.833)	23 (19.167)
9.	Aware that vermicompost is rich in organic carbon	21 (17.5)	65 (54.167)	34 (28.33)
10.	Aware about species of earthworms used in vermicompost preparation	25 (20.833)	56 (46.67)	39 (32.5)
11.	Aware about the sign when vermicompost is ready	32 (22.67)	58 (48.333)	30 (25)
12.	Aware about use of *Pongamia* and neem leaves in vermicompost	23 (19.167)	56 (46.67)	41(31.167)
13.	Collect non borrowing, organic debris consuming species of earthworms	31(25.833)	54 (45)	35 (29.167)
14.	Water the compost heap adequately to maintain moisture	34 (28.33)	58 (48.33)	28 (23.33)
15.	Turn compost heap upside down every 15-20 days	39 (32.5)	58 (48.333)	23 (19.167)

Table 2. Distribution of respondents according to their knowledge level

S. No.	Category	Number	Percentage
1.	Low (25-40)	30	25.30
2.	Medium (41-56)	63	52.5
3.	High (57- 72)	27	22.5
	Total	120	100.00

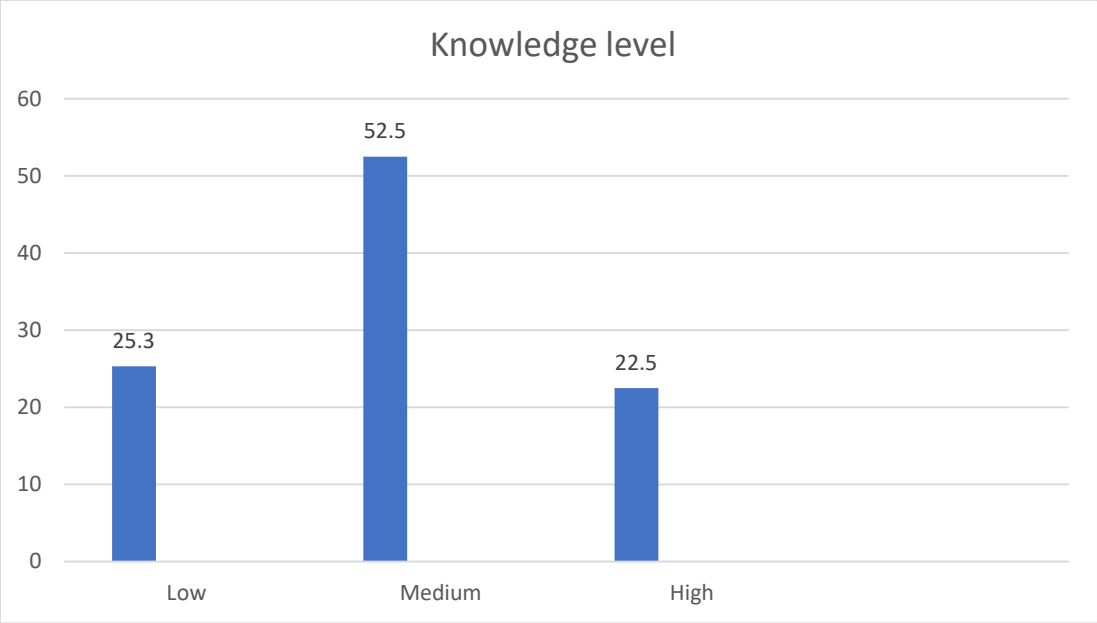

Fig. 1. Distribution of respondents based on their knowledge level

It was clearly visible that majority (52.50%) of the respondents have medium level of knowledge on vermicompost production, 25.30 per cent and 22.5 per cent of the respondents had low and high level of knowledge on vermicompost production respectively.

4. CONCLUSION

It was concluded that majority 52.5 % of the vermicompost producers had medium level of knowledge on vermicompost production, 25.30 % and 22.50 % of the vermicompost producers had low and high level of knowledge on Vermicompost production respectively. knowledge level of majority of respondents was medium. Training should be provided to farmers for increasing knowledge towards vermicompost production which leads to increase in vermicompost farms.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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