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RESEARCH ARTICLE :

Adoption of vermicomposting technology by farmers of Gulbarga district in Karnataka

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SUMMARY : The present study was conducted in Gulbarga district of Karnataka during the year 2012-13. Based on highest number of vermicomposting pits, four taluks namely Gulbarga, Jewargi, Aland and Afazalpur were purposively selected and from each taluk, two villages were selected and from each village, fifteen farmers were selected randomly. Thus, the total sample size constitutes 120 respondents for the study. The *ex-post facto* research design was used for the study. The data were collected using pre-tested structured interview schedule personally. The collected data were analyzed using appropriate statistical tools. The results of the study revealed that, about 70 per cent of the farmers were between medium to high knowledge category about vermicomposting and majority of them were having knowledge in recommended pit size, pre decomposition of raw material before filling pits and management of ants and termites. More than 70 per cent of the farmers belonged to high adopter category. More than 80 per cent of farmers adopted the recommended practices like the chemical used for pest management, size of the pit and dosage of chemical used for management of ants and termites. The independent variables like land holding, extension participation, mass media utilization of the farmers had shown the positive and significant relationship with their knowledge level and land holding, annual income and scientific orientation exhibited positive and significant relationship with their adoption level

KEY WORDS :
Adoption,
Correlation,
Vermicomposting

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BACKGROUND AND OBJECTIVES

Vermicompost is highly nutritive and a powerful plant growth promoter and protector and is scientifically proving to be a miracle plant growth promoter. It is rich in NPK, micronutrients, beneficial soil microbes and also contains plant growth hormones and enzymes secreted by earthworms. Vermicompost retains nutrients for long time and also protect crops from pests and diseases. It has high moisture holding capacity and hence also reduces the use of water for irrigation by 40-50%. Vermicompost rich in humus (secreted by earthworms) provide the ability to glue clay, silt and sand particles together enhancing the texture and structure of soil and preventing soil erosion. Billions of tons of humic substances are disappearing from soil worldwide every year due to floods,

fires and poor agricultural practices. From vermiculture, we get well decomposed worm casts, which can be used as manure for all agriculture and horticulture 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 fisheries. 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. Vermicomposting has tremendous prospects in converting agro-wastes and 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.

Vermicompost is an eco-friendly natural fertilizer prepared from biodegradable organic wastes and is free from chemical inputs. It promotes better root growth and nutrient absorption and it improves nutrient status of soil both macro and micro-nutrient and alo the physical, chemical and biological properties of the soil and it improves soil aeration, texture and tilth thereby reducing soil compaction. Taking in to consideration the need for higher production of vermicompost and lack of empirical studies as far as knowledge, adoption and constraints from the farmers' point of view in Hyderabad-Karnataka area, the present study was undertaken with an objective to know the knowledge and adoption of farmers about vermicomposting technology.

RESOURCES AND METHODS

The study was conducted in Gulbarga district of Karnataka during the year 2012-13. Gulbarga district was purposively selected for the study because the district stands top in number of vermicompost pits among the six districts that fall under University of Agricultural Sciences, Raichur jurisdiction and also from the point of view of convenience to the researcher. In the present investigation, *ex-post facto* research design was employed. Out of seven taluks, four taluks *viz*., Gulbarga, Jewargi, Aland and Afazalpur were purposively selected, because they had maximum number of vermicompost farmers. From each taluk, two villages were selected based on more number of vermicompost farmers available in the village and from each village, fifteen farmers were selected randomly. Thus, the total sample size constitutes 120 respondents for the study. The data were collected using pre-tested structured interview schedule personally. the collected information was analyzed using appropriate statistical tools like frequency, percentage, mean, standard deviation and correlation etc.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

Adoption of recommended practices by the respondents :

Over all adoption level of farmers about vermicomposting technology :

It is evident from Table 1 that, more than 70 per cent of the farmers belonged to high adopter category, followed by high (32.50 %) and low (30.83 %) adopter categories. The possible reason could be relatively higher extension participation, particularly in demonstration, training and krishimela which have impressed the farmers to go for vermicomposting. The other possible reason might be relatively higher land holding of the respondents influence the more availability of crop and other residues, intern which prompted the farmers go for vermicomposting for recycling of huge quantity of residues available.

Component wise adoption level of the farmers about vermicomposting technology :

It was revealed from Table 2 that, More than 80 per cent of farmers adopted the recommended practices like the chemical used for pest management (95.00 %),

Table 1 : Overall adoption level of farmers about vermicomposting technology **(n = 120)**

Sr. No.	Category	Frequency	Percentage
1.	Low (mean – 0.425 SD)	37	30.83
2.	Medium (mean ± 0.425 SD)	44	36.67
3.	High (mean + 0.425 SD)	39	32.50
	Mean = 13.05 SD = 1.67		

size of the pit (94.17 %), dosage of chemical used for management of ants and termites (84.17 %). The higher majority had adopted above mentioned practices might be because of larger size of land holding, higher income of the farmers, relatively good extension participation that influenced the above situation. Whereas, more than 50 percentage of the respondents had adopted the material filling from first layer to seventh layer, frequency of watering (55.83 %). The possible reason might be respondents had exposure to method demonstration of vermicomposting, where they have been convinced scientific method of material filling, frequency of watering in addition to other operational activities to be taken up at the different stages of vermicompost production. More than 70 per cent of the adopted the vermicomposting technology as per the convenience likes that is material used for pit construction (99.17 %), quantity of worms used per pit (98.33 %), proportion of raw material filled (84.17 %) and duration for each harvest (73.33 %) The above practices were being modified by respective respondents based on their resources availability. The possible reason might be empowerment of farmers about vermicomposting technologies through training, demonstration, influenced for the blending of the

Table 2 : Component wise adoption level of the farmers about vermicomposting **(n = 120)**

Sr. No.	Practices	Recommended		As per Convenience		Not adopted	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	Size of the pit	113	94.17	7	5.83	0	0.00
2.	Materials used for pit construction	1	0.83	119	99.17	0	0.00
3.	Chemicals used for pest management	114	95.00	4	3.33	2	1.67
4.	Dosage of chemicals used for ants and termites management	101	84.17	18	15.00	1	0.83
5.	Residues used for lowest layer of pit	64	53.33	26	21.67	30	25.00
6.	Material used for II layer of pit	66	55.00	25	20.83	29	24.17
7.	Material used for III layer of pit	66	55.00	25	20.83	29	24.17
8.	Material used for IV layer of pit	66	55.00	25	20.83	29	24.17
9.	Material used for V layer of pit	65	54.17	26	21.67	29	24.17
10.	Material used for VI layer of pit	26	21.67	26	21.67	30	25.00
11.	Material used for VII layer of pit	57	47.50	33	27.50	30	25.00
12.	Proportion of raw material filled	10	8.33	101	84.17	9	7.50
13.	Frequency of watering	67	55.83	40	33.33	13	10.83
14.	Earth worms species	65	54.17	40	33.33	15	12.50
15.	Quantity of worms used per pit	2	1.67	118	98.33	0	0.00
16.	Duration for each harvest	16	13.33	88	73.33	16	13.33

Table 3 : Zero-order correlation between knowledge and adoption level of respondents about vermicomposting with their independent variables

Sr. No.	Variables	Adoption
1.	Age	-0.102 ^{NS}
2.	Education	0.042 ^{NS}
3.	Farming experience	-0.041 ^{NS}
4.	Land holding	0.373**
5.	Annual income	0.388**
6.	Source of information	0.196
7.	Extension participation	0.180*
8.	Mass media utilization	0.140 ^{NS}
9.	Economic motivation	0.140 ^{NS}
10.	Risk orientation	0.036 ^{NS}
11.	Scientific orientation	0.269**
12.	Market orientation	0.281 ^{NS}

* and ** indicate significance of values at P=0.01 and 0.05, respectively NS=Non-significant

technology with scientific base in accordance with the requirement of local situation. Whereas in case of not adopted categories very meagre percentage noticed in almost all technologies of vermicomposting, relatively higher percentage is being noticed in material filling for different layer.

Adoption of various practices have also been studied by several workers (Darling and Vasanthakumar, 2004; Ingle, 1997; Jirali, 1996; Karpagam, 2000; Kanavi, 2000; Lakshminarayan, 1997).

Zero order correlation between adoption level of farmers about vermicomposting technology with their independent variables :

The results in Table 3 indicated that, independent variables *viz*., land holding, annual income and scientific orientation exhibited positive and significant relationship at one per cent level of probability. Similarly source of information and extension participation of the farmers shown positive and significant relationship with level of adoption of vermicomposting technology at five per cent level of probability. Whereas age, education, farming experience, mass media utilization, economic motivation, risk orientation and market orientation exhibited non-significant relationship with their adoption level.

Conclusion :

It is clear from the results that, majority of the farmers had correct knowledge regarding vermicomposting technology and majority of them adopted vermicomposting practices. The independent variables like land holding, extension participation, mass media utilization of the farmers had shown the positive and significant relationship with their knowledge level and land holding, annual income and scientific orientation exhibited positive and significant relationship with their adoption level. It is also observed that non-availability of earth worms at hobli level was the major constraint experienced by majority of the respondents. So the developmental departments, organizations involved in agricultural extension activities should make provision for availability of earth worms at hobli level and also concentrate on the variables that have significant relationship with the knowledge and adoption of vermicomposting technology.

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