

INFLUENCE OF VERMICOMPOST IN THE FIELD PERFORMANCE OF BHINDI (*ABELMOSCHUSESCULENTUS*L.) IN A LATERITE SOIL

The role of organic matter in crop production is undisputable. In the usual composting of dung material, significant loss of nitrogen occurs during composting and hence it is inefficient (Chandra and Seckler, 1980). Vermicomposting was found to be an efficient method to obtain quality manure (Sane *et al.*, 1984). With a view to study the effect of vermicompost on crop growth and yield, an experiment was conducted at the Regional Agricultural Research Station, Pilicode, Kerala during 1993-94, with bhindi as the test crop.

The experimental soil was gravelly laterite with a pH of 5.1. The organic matter content was medium (1.05%) and available P₂O₅ and K₂O were low. The experiment was laid out in randomised block design with six treatments and four replications. Farm yard manure and vermicompost were applied in different proportion to supply the recommended quantity of organic manure (12 t ha⁻¹). The proportions were :

T1	100% of vermicompost
T2	75% of vermicompost + 25% FYM
T3	50% of vermicompost + 50% FYM
T4	25% of vermicompost + 75% FYM
T5	100% FYM
T6	No organic manure

The NPK content of the FYM applied was 0.60, 0.30 and 0.5% respectively while that of the vermicompost applied was 2.5, 0.6 and 0.75 respectively. The vermicompost was prepared using the earthworm *Eudrillus eugeniae*. Fertilizer application and all other cultural practices were carried out as per the package of practice recommendations of the Kerala Agricultural University (KAU, 1993).

The results indicated that vermicompost enhanced growth and yield of the crops. The biometric characters such as number of leaves, height of plant and number of branches (recorded one month after planting) varied significantly among the treatments. Application of 100% vermicompost resulted in the highest vegetative growth. The treatment T2 (75% vermicompost+25% FYM) also recorded observations which were on par with 100% vermicompost. In all the characters except in the height of the plant, the treatments 100% FYM and no organic manure were on par. At the same time when FYM was substituted with vermicompost up to 50 per cent, (in different proportions) significant variations were observed in growth and yield of the crop. This highlights the difference in the nutrient content of these two organic manures and also the pattern of nutrient availability to the plants.

With regard to the yield of fresh fruits also, application of 100% vermicompost gave the maximum yield which was on par with that of T2. It could also be observed that the yield recorded was in the increasing order with increased substitution of FYM with vermicompost. A possible explanation for the beneficial effect of vermicompost may be the accumulation of mobile substances in earthworm castes as reported by many workers (Lunt and Jacobson, 1994; Dash and Patra, 1979; Senapati *et al.*, 1980 and Bano *et al.*, 1984). Earthworms are reported to excrete plant growth promoting substance into castes (Nielsen, 1965). Kale *et al.* (1992) observed that vermicompost application enhanced the activity of beneficial microbes like N₂ fixers and colonization by mycorrhizal fungi and hence play a significant role in N₂ fixation and phosphate mobilisation leading to better uptake by the plant. Thus the increased availability of nutrients and uptake by the plants would have resulted in better growth and yield in plots treated with vermicompost.

Table I. Biometric characters and yield of bhindi as influenced by the application of vermicompost

Treatment		One month after planting			At harvest			
		No of leaves	Height of plant, cm	No. of branches	No. of fruits	Length of fruit, cm	Fresh wt. of fruit, g/plant	Height of plant, cm
T1	100% Vermicompost	5.97	25.46	2.70	4.94	17.78	176.03	73.00
T2	75% Vermicompost + 25% FYM	5.88	24.31	2.11	4.10	16.21	124.91	69.00
T3	50% Vermicompost + 50% FYM	5.63	23.94	1.63	4.00	16.20	106.09	63.40
T4	25% Vermicompost + 75% FYM	5.59	22.74	1.58	3.30	16.08	105.20	63.25
T5	100% FYM	5.20	22.16	1.45	2.76	15.81	71.09	48.80
T6	No organic manure	4.75	16.86	1.45	2.22	15.40	47.19	47.20
CD (0.05)		0.612*	2.738**	0.618*	1.206**	0.848*	54.176**	4.237**

* Significant at 5 percent level

** Significant at 1 per cent level

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