

Response of coriander (*Coriandrum sativum* L.) cultivars to graded levels of vermicompost¹

B A VADIRAJ², SIDDAGANGAIAH & S NARAYANA POTTY

Indian Cardamom Research Institute

Regional Station

Sakaleshpur - 573 134, Karnataka, India.

Abstract

A field study was undertaken at Sakaleshpur (Karnataka, India) to study the response of three cultivars of coriander (*Coriandrum sativum*) to graded levels of vermicompost in comparison with chemical fertilization (NPK). The study indicated that application of vermicompost significantly increased herbage and seed yield and was comparable to chemical fertilization. The herbage yield was maximum in Rcr-41 (6067.5kg/ha) at 60th day after sowing when 15t/ha of vermicompost was applied. Seed yield was maximum in Rcr-41 (1314 kg/ha) in plants treated with 20t/ha vermicompost. The study also showed that vermicompost can be used as an alternative nutrient source for coriander cultivation.

Key words: coriander, *Coriandrum sativum*, vermicompost, yield.

Coriander (*Coriandrium sativum* L.) is mainly cultivated in Rajasthan, Andhra Pradesh, Madhya Pradesh and Tamil Nadu states of India. Under rainfed conditions, the yield of the crop is very low and in irrigated conditions the yield can be increased by appropriate nutrition practices. Vermicompost, an organic natural manure produced by the degradation of organic wastes by earthworms not only supply nutrients but

also helps in soil and water conservation and also act as a slow release, low order nitrogen fertilizer. The present study was undertaken to evaluate the response of three coriander cultivars to graded levels of vermicompost on herbage and seed yield in comparison with chemical fertilization (NPK).

The field experiment was laid out at Indian Cardamom Research Institute, Regional Station, Sakaleshpur (Karna-

¹Presented at National Seminar on Organic Farming and Sustainable Agriculture, Bangalore, 9-11 October 1996.

²Present address: Centre for Water Resources Development and Management, Sub Centre, Kanjikode (W) P. O., Palghat - 678 623, Kerala, India.

Table 1. Effect of vermicompost on herbage yield of coriander

Treatment	Herbage yield (kg/ha)								
	Rcr-41			Bulgarian			Sakaleshpur Local		
	30 DAS	45 DAS	60 DAS	30 DAS	45 DAS	60 DAS	30 DAS	45 DAS	60 DAS
Control	850.0	1145.0	2312.5	487.5	702.5	1112.5	452.5	497.5	1500.0
Vermicompost									
5 t/ha	1125.0	1605.0	2762.5	682.5	1545.5	2137.5	527.5	1155.5	1845.0
10 t/ha	1332.5	2100.0	3700.0	687.5	2025.0	2982.5	700.0	1327.5	2555.0
15 t/ha	1595.0	2420.0	6067.5	937.5	2060.5	2922.5	952.0	1365.5	2775.0
20 t/ha	2125.0	2992.5	5682.5	1045.5	1695.5	3250.0	1012.5	1625.0	3120.0
25 t/ha	2075.0	2350.0	5370.0	757.0	1615.0	3080.0	911.5	1430.0	2718.0
N:P:K									
(20:20:40 kg/ha)	1832.5	2330.0	5962.5	1000.0	1995.0	2780.0	1111.0	1519.0	2998.0
C D (P=0.05)	605.0	445.0	1120.0	215.0	238.0	800.0	200.0	355.0	470.0

Values indicate pooled data of 2 years

DAS= Days after sowing

taka). The experimental site has an elevation of 1000 m above MSL and an average annual rainfall of 2500 mm, the majority of which is received during the South West monsoon. The temperature ranges from a minimum of 10-12°C during winter (December-January) and a maximum of 30-32°C during summer (March-May). The soil is acidic. The trial was laid out with three coriander cultivars namely, Rcr-41, Bulgarian and Sakaleshpur Local in a Randomized Block Design with three replications. The split seeds were sown during November 1994 adopting a spacing of 20 cm x 10 cm and were thinned out to two plants per hill 20 days after sowing. The herbage yield was recorded on 30, 45 and 60 days after sowing and seed yield at the time of harvest. There were seven treatments namely, five graded levels of vermicompost (5, 10, 15, 20 and 25 t/ha), a single level of chemical fertilization (20:20:40 N:P:K kg/ha) and absolute control. The earthworm species used for the production of

vermicompost was *Eudrilus euginae* and the nutrient composition of the vermicompost was: N (1.22%), P (0.57%), K (1.38%) and Ca (0.44%).

Though all the cultivars responded to vermicompost, the extent of response varied and Rcr-41 recorded the highest herbage yield (Table 1). Further there was an increase in herbage yield with advancement of days in all the three cultivars. The herbage yield in Rcr-41 was maximum (6075.5 kg/ha) at 60th day after sowing in plots treated with 15t/ha vermicompost and was significantly higher than other doses and control. In Bulgarian, herbage yield was maximum (3250.0 kg/ha) at 60th day in plots treated with vermicompost @ 20t/ha vermicompost and was on par with plots treated with 10,15 and 25 t/ha of vermicompost. In Sakaleshpur Local, the herbage yield was maximum (3120 kg/ha) at 60th day when 20 t/ha vermicompost was applied and was on par with 15 and 25 t/ha of vermicompost. However in all the cultivars, chemical

Table 2. Effect of vermicompost on seed yield and seed weight of coriander

Treatment	Seed yield (kg/ha)			1000 seed weight (g)		
	Rcr-41	Bulgarian	Sakaleshpur Local	Rcr-41	Bulgarian	Sakaleshpur Local
Control	681.5	315.0	511.0	8.14	7.90	8.68
Vermicompost						
5 t/ha	855.0	411.0	602.8	8.31	8.09	9.02
10 t/ha	910.0	680.0	1095.0	9.00	8.20	9.20
15 t/ha	1099.0	615.0	1015.0	9.00	9.08	9.19
20 t/ha	1614.0	913.0	1211.0	10.50	9.20	10.40
25 t/ha	1075.0	709.8	999.0	9.40	9.00	10.00
N :P :K						
(20:20:40 kg/ha)	1219.0	1010.0	1210.0	9.20	9.23	10.11
C D (P=0.05)	201.0	261.0	311.0	0.12	0.18	0.26

fertilization was on par with the response obtained with vermicompost. Seed yield was also higher in Rcr-41; maximum seed yield (1314 kg/ha) was obtained in plots treated with 20t/ha vermicompost which was significantly higher than other treatments except chemical fertilization. Higher seed yields were recorded in plots applied with vermicompost compared to control. In Bulgarian, maximum seed yield (1010 kg/ha) was obtained in plots treated with chemical fertilizer and was on par with plots treated with 10, 15, 20 and 25 t/ha vermicompost (Table 2).

The data on 1000 seed weight indicated that application of vermicompost had a significant effect on seed weight (Table 2). The 1000 seed weight values ranged from 81.4 to 10.5 g in Rcr-41, 7.90 to 9.23 g in Bulgarian and 8.68 to 10.40 g in Sakaleshpur Local. The values were higher in vermicompost and chemical fertilizer treated plots and low in untreated control plots.

Vermicompost is an important

biofertilizer for increasing crop production. The significant differences in herbage and seed yield in all the cultivars of coriander treated with vermicompost observed in the present study, may be attributed to the higher level of nutrients besides growth stimulating substances (enzymes, antibiotics and growth hormones) available in vermicompost.

The study also indicated that application of vermicompost at 15-20 t/ha not only increases herbage and seed yield but also seed weight and was comparable to chemical fertilization and hence can be used as an alternative nutrient source for cultivation of corriander.

Acknowledgement

The authors are thankful to Dr. Radha Kale, Associate Professor University of Agricultural Sciences, Bangalore for providing the earthworms and also for her valuable guidance during the course of the study.