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## **An economic analysis of vermicompost production in Chhattisgarh**

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#### **Abstract**

Vermicomposting is a biotechnological procedure of composting, in this process definite earthworm's species are used to intensify the procedure of waste transformation and produce an effective end product. The present investigation is based on primary data collected from 10 vermicompost producer. For the present study, Raipur, Bilaspur and Mahasamund districts were selected purposively. The data was collected by personal interview with the help of pre-tested well prepared interview schedules. Per cubic meter net income on total cost was higher in constructed method i.e., Rs.14157.69 than vermibed method i.e. Rs. 2201.68. Benefit-cost ratio of per cubic meter was higher in constructed method (1:1.23) than vermibed method (1:0.26). These ratios indicate that constructed method is superior to vermibed method.

**Keywords:** Vermicompost, constructed method, vermibed, cost, net income, gross income

#### **Introduction**

Vermicomposting is a LEISA (Low External Investment Sustainable Agriculture) technology it can increase the soil health. By the help of vermiculture, vermicompost are produced in which very less prized organic material are used and this material is transformed into high prized compost. Vermicomposting method is very cheap in cost because of the effortlessly inputs material availability, information requirement is also fewer, fewer labour requirement is also less and returns to investment are in short period of time. In India Rural and urban area production of vermicompost is closely 7000 (MMT) of organic waste (Bhiday, 1998) <sup>[1]</sup> per year. Through vermicomposting reprocessing of organic is possible. To study the economics of production and marketing of vermicompost.

#### **Sampling methodology**

The study was conducted in Raipur, Bilaspur and Mahasamund district of Chhattisgarh. These districts are selected purposively where maximum producer are involved in vermin-compost production.

#### **Data collection**

Primary data were collected from the sample vermin-compost producers through survey method and personal interview with the help of pre-tested well prepared interview schedules covering various aspects to answer the objectives of this study. The primary data were also collected from rural vendors and other channel of marketing prevailing in the study area. Each of selected samples of vermicompost producers were approached personally for recording relevant data.

#### **Results and Discussion**

The present investigation was carried out in Raipur, Bilaspur and Mahasamund district of Chhattisgarh. For the study 10 vermicompost producers were selected. Among all the above districts the required information and data was collected with the help of pretested schedules.

#### **Total cost, gross income, net income and benefit-cost ratio for constructed method of vermicompost production (per quintal)**

Item wise expenditure of vermicompost production for constructed method was calculated and are presented in Table 1. The total variable cost of Unit-1, Unit-2, Unit-3 and Unit-4 are Rs.208.22, Rs.170.81, Rs.256.15 and Rs.174.41 Respectively. The fixed cost of Unit-1, Unit-2,

Unit-3 and Unit-4 are Rs.21.70, Rs.19.49, Rs.23.83 and Rs.26.81 Rs. respectively. Whereas, Total Cost of Unit-1, Unit-2, Unit-3 and Unit-4 are Rs.229.92, Rs.190.30, Rs.279.98 and Rs.201.22 Rs. Respectively. The total average cost of different physical inputs for units as per the data is Rs.19.96 for culture, Rs.27.84 for cow dung, Rs.41.92 for crop wastage, Rs.3.04 for electricity & water, Rs.49.7 for packaging cost, Rs.71.91 for labour charges, and Rs.16.67 for Miscellaneous cost.

The gross income is same Rs.500 for all unit. The input-

output Ratio of unit-1, unit-2, unit-3 and unit-4 are 1:2.17, 1:2.63, 1:1.79 and 1:2.27 respectively. The net income is the amount remaining after subtracting all costs and expenses from revenue. The net income of unit-1, unit-2, unit-3 and unit-4 are Rs.270.08, Rs.309.70, Rs.220.02 and Rs.298.78 respectively. Net benefit – cost Ratio of unit-1, unit-2, unit-3 and unit-4 are 1:1.17, 1:1.63, 1:0.79 and 1:1.27 respectively. The total averages of gross income, input–output ratio, net income, net benefit-cost ratio for units are Rs.500.00, 1:2.27, 274.64 and 1:1.27 respectively.

**Table 1:** Total cost, gross income and net income for constructed method of vermicompost production (per quintal)

Particulars	Unit-1	Unit-2	Unit-3	Unit-4	Average
<b>Variable Cost</b>					
Culture	16.67	18.18	20.00	25.00	19.96
Cow dung	30.00	16.36	20.00	45.00	27.84
Crop wastage	35.00	38.18	42.00	52.50	41.92
Electricity & water charges	2.86	3.64	2.67	3.00	3.04
Packaging cost	49.70	-	-	-	49.70
Labour charges	43.71	74.18	136.00	33.75	71.91
Miscellaneous cost	16.67	18.18	6.00	3.50	8.88
7% charges on variable	13.62	11.17	16.76	11.41	13.24
Total variable cost (A)	208.22	170.81	256.15	174.41	202.40
<b>Fixed Cost</b>					
Construction Cost	10.12	9.09	11.11	12.50	10.70
Depreciation cost	9.61	8.63	10.55	11.88	10.17
Interest on fixed capital @10%	1.97	1.77	2.17	2.44	2.09
Total fixed cost (B)	21.70	19.49	23.83	26.81	22.96
Total Cost (A+ B)	229.92	190.30	279.98	201.22	225.36
Gross Income	500.00	500.00	500.00	500.00	500.00
Input-output Ratio	1:2.17	1:2.63	1:1.79	1:2.48	1:2.27
Net Income	270.08	309.70	220.02	298.78	274.64
Net Benefit-Cost Ratio	1:1.17	1:1.63	1:0.79	1:1.48	1:1.27

#### Total cost, gross income, net income and for vermibed method of vermicompost production (per quintal)

Item wise expenditure of vermicompost production for constructed method was calculated and is presented in Table 4.3. The total variable cost of unit-1, unit-2, unit-3, unit-4, unit-5 and unit-6 are Rs.254.88, Rs.211.99, Rs.316.31, Rs.301.38, Rs.314.31, and Rs. 315.65 respectively. The total fixed cost of unit-1, unit-2, unit-3, unit-4, unit-5 and unit-6 are Rs.61.11, Rs.110, Rs.137, Rs.110, 137 and Rs.110 respectively. Whereas, total cost of unit-1, unit-2, unit-3 and Unit-4, unit-5 and unit-6 are 315.99, 321.99, 453.82, 411.38, 491.94 and 425.65 Rs. Respectively. The total average cost of different physical inputs for units as per the data is 50.97 Rs. for culture, Rs 34.95 for cow dung, Rs.42.73 Rs. for crop

wastage, Rs. 7.46 for electricity & water, Rs.50 for packaging cost, Rs.118.53 for labour charges, and Rs.17.42 for Miscellaneous cost.

The gross income was 500 Rs. for every unit. The Input-Output Ratio of Unit 1, Unit-2, unit-3, unit-4, unit-5 and unit-6 are 1:1.58, 1:1.55, 1:1.10 and 1:1.29 respectively. The net income of unit-1, unit-2, unit-3, unit-4, unit-5 and unit-6 are Rs.184.00, Rs.178.00, Rs.46.18, Rs.88.61, Rs.48.19 and Rs.74.35 Rs respectively. The benefit-cost ratio are 1:0.58, 1:0.55, 1:1.10, 1:0.21, 1:0.10 and 1:0.17 respectively. The total average of gross income, input–output Ratio, net income, net benefit-cost ratio for units Rs.500.00, 1:1.29, 103.22 and 1:0.29 respectively.

**Table 2:** Total cost, gross income and net income for vermibed method of vermicompost production (per Quintal)

Particulars	Unit-1	Unit-2	Unit-3	Unit-4	Unit-5	Unit-6	Average
<b>Variable Cost</b>							
Culture	83.33	50.00	31.25	60.00	31.25	50.00	50.97
Cow dung	22.22	30.00	37.50	40.00	37.50	30.00	34.95
Crop wastage	38.88	40.00	50.00	50.00	37.50	40.00	42.73
Electricity & water charges	2.47	1.87	5.00	6.67	18.75	10.00	7.46
Packaging cost	50.00	-	-	-	-	-	50.00
Labour charges	27.41	56.25	180.00	110.00	187.50	150.00	118.53
Miscellaneous cost	13.89	20.00	21.87	15.00	18.75	15.00	17.42
7% charges on variable	16.67	13.86	20.69	19.71	20.56	20.65	18.69
Total Variable cost (A)	254.88	211.99	316.31	301.38	314.31	315.65	285.75
<b>Fixed Cost</b>							
Vermibed price	55.55	100.00	125.00	100.00	125.00	100.00	100.92
Interest on fixed capital @10%	5.55	10.00	12.50	10.00	12.50	10.00	10.09
Total Fixed cost (B)	61.11	110.00	137.50	110.00	137.50	110.00	111.02

Total Cost (A+B)	315.99	321.99	453.82	411.38	491.94	425.65	396.77
Gross Income	500.00	500.00	500.00	500.00	500.00	500.00	500.00
Input – Output Ratio	1:1.58	1:1.55	1:1.10	1:1.21	1:1.10	1:1.17	1:1.29
Net Income	184.00	178.00	46.18	88.61	48.19	74.35	103.22
Benefit – Cost Ratio	1:0.58	1:0.55	1:0.10	1:0.21	1:0.10	1:0.17	1:0.29

### Per cubic meter average production, cost, gross income and net income for constructed and vermibed method of vermicompost production. (Rs. /year)

Per cubic meter cost, gross income and net income was calculated in table 4.4. It was observed that per cubic meter production of vermicompost in quintal was higher 51.55 q in constructed method compared to 21.33 q in vermibed method. Per cubic meter total cost of vermicompost production was comparatively higher in Constructed method was Rs.11549.70 than vermibed method Rs.8463.

Per cubic meter total gross return earned by producer was Rs.25625 in constructed method and for vermibed method it was Rs.10665. Net income on total cost was higher in constructed method i.e., Rs.14157.69 than vermibed method Rs. 2201.68.

**Table 3:** Average production, cost, returns and net income for constructed and vermibed method of vermicompost production. (Rs /year)

Sr. No.	Particulars	Constructed Method	Vermibed Method
1.	Total Cost	11,549.70	8,463.10
2.	Production	51.25	21.33
3.	Gross Income	25,625	10,665
4.	Input – Output Ratio	1:2.21	1:1.26
5.	Net Income	14157.69	2,201.68
6.	Benefit- Cost Ratio	1:1.23	1:0.26

### Summary and Conclusion

In Raipur, Bilaspur and Mahasamund districts of Chhattisgarh state, vermicompost is commonly produced in 4 to 6 cycles, for different methods of vermicompost production i.e. constructed method and vermibed method. It was observed that per cubic meter production of vermicompost in quintal was higher in constructed method i.e., 51.55 q than vermibed method i.e., 21.33 q, because in constructed method vermicompost is commonly produced in 6 cycles but in case of vermibed it was only 4 cycles. Per cubic meter net income on total cost was higher in constructed method i.e., Rs.14157.69 than vermibed method i.e., Rs. 2201.68. Benefit-cost ratio of per cubic meter was higher in constructed method (1:1.23) than vermibed method (1:0.26). These ratios indicate that constructed method is superior than vermibed method. The total cost for per quintal production of vermicompost was Rs.396.77 in vermibed method. Whereas it was Rs.228.57 in constructed method. Net income of per quintal vermicompost production on total cost was higher Rs.271.43 in constructed method, while it was Rs.103.22 in vermibed method. The per quintal benefit cost ratio was higher (1:1.27) in constructed method while it was (1:0.29) in vermibed method.

### Suggestions

1. Establishment of public earthworm culture production units at village level.
2. Training facilities for interested new producers of vermicompost.
3. Government of India should provide subsidies to vermicompost producing units.
4. Adequate financing facility shall be made available from co-operative banks and other financing societies.

### References

1. Bhiday MR. Earthworms in agriculture. Indian Farming 1994;43(12):31-34
2. Chinnappa Reddy BV, Subba Reddy PN, Kale RD. Economic impact and production efficiency of vermicompost use in agriculture: methodological approaches, Agric. College, University of Agric. Sci., VC Farm, Mandya 2007.
3. Jadhev IB. Adoption of vermicompost technology by the farmers. M.Sc. (Agri.) Thesis, Dr. PDKV, Akola 2000.
4. Kokate KA. Cost and returns from vermicompost production in Nashik district. M.Sc. (Agri.) thesis submitted to MAU, Parbhani 1976.
5. Maury ARP, Bhalerao MM. Economics of vermicompost production Sewapuri (U.P.). Agril. Banker 1985;8(4):20-21.
6. Ranwa RS, Singh KP. Economics of vermicompost production and cost of production, Indian J. of current agriculture 1996;34(30):15-29
7. Rao MS, Tripathi BN. A study of economics of production and marketing of vermicompost in Kankipadu block of Krishna district, Andhra Pradesh. Indian J. of Agril. Econ 1980;49(3):220-223.
8. Shivakumar C. Production and marketing of vermicompost in Dharwad district Karnataka J. Agric. Sci 2009;22(4):850-853.
9. Shweta, Mamta Sharma. Biomass and vermicompost production by the earthworm, *Lampitoma auritii* in different organic wastes. Journal of Applied Zoological Researches 2003;14(1):98-100.