

VERMI COMPOSTING

1. Introduction

Vermi stands for earthworm. The resultant product, when organic matter is subjected to decomposition with the help of earthworm, is called vermi compost. For composting, smaller burrowing and surface feeder kind of earthworms are found to be suitable. The castings by earthworms contain plant nutrients like nitrogen, phosphorus, potassium and magnesium; the casts also contain enzymes. Earthworms also help in churning the soil as they carry down into the soil the fallen leaves, twigs, straw and similar materials.

2. Market potential

If India is to continue to increase the productivity in agriculture because of limited availability of arable land, it has to continue use of fertilizers. Chemical fertilizers are going to be costlier because of reduction in subsidies. Also chemical fertilizers in the long run affect soil health leading to acidification, micro nutrient depletion and soil degradation leading to poor crop health and poor yields. Chemical fertilizers also increase ground and air pollution and it results in increased green house effect. Also for small and marginal farmers organic fertilizers is both essential and affordable. This will also bring down cost of crop production. Organic fertilizers will also lead to productive use of wastelands.

Vermi composting offers immense scope to small and marginal farmers in creating their own organic manurial resources and alternative income generation. Organic resources available in the country can produce about 20 million tones of plant nutrients per year.

3. Technical details

(a) Protein Content of earthworms

Dried earthworms contain upto two per cent protein by weight.

(b) Process

Vermi composting is done in a pit dug in the soil. For greater efficiency, cement brick tanks are used. The tank is constructed on raised land, that is, above ground to avoid water logging. The floor is higher in the center and slopes on sides. Standard tank size is 10' x 6' x 2.5'. Adequate numbers of holes (8 x 5 cm dia) are dug at the bottom for draining of water.

Bed is about 5 to 10 cm thick of broken bricks or saw dust. On the floor 15 to 20 cm thick worm inhabiting soil is spread. A layer of dung or other animal excreta and kitchen

waste is spread over the soil layer. 200 to 500 worms selected and stored in earthen vessels is then spread in the tank. Cow dung slurry is spread over and the bed covered with straw or dry leaves. The tank is covered with a fine wire mesh. A thatched roof is provided for cover from above. After two weeks, another layer of 5 to 6 cm thick organic matter is spread. Turning of beds is done twice or thrice a week. The bed should be neither dry nor have excess moisture as tested by a wooden rod. Watering should be done regularly to keep the soil moist.

The temperature should not exceed 45°C and moisture requirement is around 10 to 17 percent. Vermi compost is ready in 90 to 120 days. Before harvesting water is stopped and the compost is allowed to dry and used. The worms are collected and reused.

(c) Output

Output from one cycle in a pit of size 10' x 6' x 2.5' will be 3 tones of manure. There will be 10 pits and 3 cycles per pit per year.

4. Raw material requirement per annum

S. No.	Item	Quantity	Rate (Rs.)	Annul Value (Rs.)
1	Agricultural Waste	100 tonnes	Rs.200/tonnes	20,000.00

5. Working capital (At full capacity utilization)

S. No.	Items	Period	Amount (in Rs.)
1.	Cow dung and Agro-waste	One cycle	6,700.00
2.	Casual labour	One cycle	2,000.00
3.	Receivables	10 days	2,300.00
TOTAL			11,000.00

6. Cost of project

S. No.	Items	Total Cost (in Rs.)
1.	Land	Own
2.	Civil works	
a)	10 pits with 9 inch walls brick work in cement, bottom plain cement concrete (Rs.3500 each)	35,000.00
b)	Light thatched roof	3,000.00
c)	Vermi bed (sand, broken stone)	2,000.00
3.	Soil working implements	1,500.00
4.	Miscellaneous (earthworm etc.)/interest/cost escalation	2,500.00
5.	Working capital	11,000.00
TOTAL		55,000.00

7. Means of finance

S. No.	Particulars	Total cost (in Rs.)	%age
1.	Promoter's contribution	-	-
2.	NSTFDC-Term loan	45,000.00	81.82
3.	SCA – Term Loan/Subsidy	10,000.00	18.18
	TOTAL	55,000.00	100.00

Note: The State Channelising Agencies shall arrange to provide subsidy to beneficiary(ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally sponsored schemes.

8. Project economics

S. No.	Particulars	Amount (in Rs.)/unit
A.	Sales realization 3 Tonnes per pit per cycles x 3 cycles x 10 pits x Rs.900 per tonne	81,000.00
B.	Cost of production	
(i)	Cost of raw material	20,000.00
(ii)	Labour cost (casual labour)	6,000.00
(iii)	Misc. expenses	3,000.00
(iv)	Interest	3,300.00
(v)	Sustenance allowance	24,000.00
	Total cost of production	56,300.00
C.	Cash profit	24,700.00
D.	Depreciation/amortisation @ 10%	4,400.00
E.	Net Profit (C-D)	20,300.00

9. Viability indicators

S. No.	Particulars	Amount
1.	Repayment per annum (period - 5 years)	11,000.00
2.	Debt service coverage ratio	1.96
3.	Return on investment (ROI)	36.91%

10. Interest, moratorium & repayment period for beneficiaries

- (a) Interest : 6% p.a. on NSTFDC term loan.
- (b) Moratorium period : 9 months from date of release of funds by SCA.
- (c) Repayment period : 5 years excluding moratorium period.

11. Assumptions/remarks

- ☐ The cost of project may vary in different States & Regions.
- ☐ It is assumed that the products have good demand, and the beneficiaries have relevant experience in the relevant fields.