

Transforming Waste into Wealth: The Vermicomposting Revolution by Farmer Hari Chandra Borse in Amalthe Village, Dhule District of Maharashtra

Krishna Chaitanya Tirunagaru¹, Tejas Anil Pawar², Indra Raj Singh⁴

¹Assistant Professor, ²Student, ³Associate Dean, School of Agricultural Sciences and Technology (SAST), Narsee Monjee Institute of Management Studies (NMIMS) (Deemed to be University), Shirpur, Dhule – 425405, Maharashtra, India.

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Background

Vermicomposting is an innovative method of composting organic waste using earthworms, which converts waste into nutrient-rich fertilizer. This process not only helps in managing waste but also improves soil health, making it an essential practice in sustainable agriculture. In India, where agriculture is a primary livelihood for many, vermicomposting offers an effective solution to soil degradation and waste management. In Amalthe village, Shindkheda Taluka of Dhule District, Maharashtra, farmer Hari Chandra Borse has exemplified this sustainable practice, significantly impacting the local agricultural landscape.

Introduction:

On September 19, 2024, first-year B.Sc. (Hons.) Agriculture students visited Mr. Hari Chandra Borse's vermicomposting unit. This visit aimed to provide hands-on experience and practical insights into sustainable agricultural practices, focusing specifically on vermicomposting. Under the guidance of Mr. Borse, students learned about the operational and financial aspects of running a vermicomposting unit, as well as its ecological benefits. Mr. Borse's unit primarily uses the earthworm species *Eisenia fetida*, renowned for its efficiency in breaking down organic matter. The seed material was sourced from Purandar Taluka, Pune, in 2017, highlighting the importance of high-quality inputs for successful composting.



Agriculture students visited Mr. Hari Chandra Borse's vermicomposting unit



Mr. Hari Chandra Borse's vermicomposting initiative:

The primary earthworm species used for vermicomposting in this unit is *Eisenia fetida*, known for its remarkable ability to break down organic matter efficiently. The seed material was brought from Purandar Taluka in Pune District in 2017, underscoring the significance of high-quality inputs for successful composting. Establishment costs for the unit totalled ₹1,95,500.00, with each rearing bed costing ₹3,000. Monthly electricity expenses are ₹600. Each composting bag, measuring 12 feet in length, 4 feet in width, and 2 feet in height, has a capacity of one ton and costs ₹1,800. Profit margins are notable, with earnings of ₹500 per kg for selling earthworms and ₹700 per kg for home delivery. The profit from vermicompost is ₹15 per kg and ₹12,000 per ton. Operationally, the unit employs 20 workers monthly at a daily cost of ₹300 each, reflecting the labour-intensive nature of the process. The conversion of raw material to compost takes about 2.5 months, after which it is processed through a Jhalli machine to ensure purity. The manure used consists of cow dung and dried leaves, demonstrating effective recycling of organic waste. The shed for vermicomposting measures 36 meters in width and 55 meters in length, maintaining an optimal temperature of 30°C for worm activity. During the summer, Mr. Borse employs techniques such as mulching with maize cob sheath and regular watering to sustain moisture levels in the composting beds. Overall, this visit highlights the practical aspects and challenges of running a successful vermicomposting unit.



Commercial vermicompost unit of Mr. Hari Chandra Borse

Cost of Production:

Sl. No.	Particulars	In rupees
Fixed Capital Investment		
1.	Shed establishment cost (55 L X 36 W)	30000.00
2.	1 HP water motor	5000.00
3.	2 HP Vermicompost Screening Machine (Jhalli Machine)	35000.00
4.	Drip lateral pipe	4000.00
5.	Fencing cost	25000.00
6.	Composting bag cost 1800/- (2 L x 4 W x 2 H feet) (6 in number) 1800x50	90000.00
7.	Other hand tools	6500.00
Sub Total		195500.00
Working Capital Investment (for 12 months)		



8.	Earthworm seed material 1kg=500/- (50kg x 500)	25000.00
9.	Labour cost Rs.300/men/day (20 labour for one month) 20x300 = 6000/month (for 12 months 6000x12 = 72000)	72000.00
10.	Electricity Rs. 600/month (600 x 12 = 7200)	7200.00
11.	Summer season management cost (mulching with maize cob sheath)	5000.00
12.	Raw material for compost (Cow dung, dried leaves etc.)	20000.00
Sub total		111200.00
Total		306700.00

Profit on Production

Sl. No.	Particulars	Units/Rs.
1.	One ton vermicompost price	12000.00
2.	Per year 4 times we can produce a compost from single composting bag (4x1200/bag)	4800.00
3.	Total bags 50 (each bag capacity 1 tone) (50x4800)	240000.00
4.	Working capital investment on 5 years (111200x5)	556000.00
5.	Fixed Capital Investment	195500.00
6.	Fixed capital + working capital investment (for 5 years) 556000+195500	751500.00
7.	Total profit in 5 years (240000x5)	1200000.00
Total Profit (1200000-751500)		448500.00
Benefit cost ratio (Total benefit/Total cost)		1.59

The benefit cost ratio (BCR) for this operation stands at 1.59, indicating a highly favourable economic return relative to the investment. This strong BCR underscores the financial viability and potential profitability of the enterprise, further supported by government interventions aimed at strengthening the vermicompost sector.

Available Schemes for Vermicompost Unit Establishment

To support farmers in establishing vermicomposting units, the Indian government offers several schemes:

- **National Mission for Sustainable Agriculture (NMSA):** Provides financial assistance for organic farming practices, including vermicomposting.
- **Sub-Mission on Agroforestry (SMAF):** Offers subsidies specifically for setting up vermicomposting units to promote sustainable farming.
- **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):** Aims to provide wage employment while promoting sustainable practices, including waste management.

Futuristic Action

The future of vermicomposting in India looks bright. As awareness of organic farming increases, more farmers are likely to adopt this practice. Mr. Borse's successful model serves as a blueprint for aspiring farmers. By investing in training and infrastructure, farmers can boost their



productivity and profitability through vermicomposting. Furthermore, collaboration between agricultural universities and farmers can lead to the development of innovative techniques, improving market access for vermicompost and earthworms.

Conclusion

The visit to Mr. Hari Chandra Borse's vermicomposting unit provided invaluable insights into the practical aspects of sustainable agriculture. The students gained first-hand experience in composting, understanding its ecological and economic benefits. With the support of government schemes and community initiatives, vermicomposting has the potential to revolutionize farming practices across India. By turning organic waste into valuable compost, farmers can enrich their soil and contribute to a healthier environment, paving the way for sustainable agricultural practices for generations to come.