



E-ISSN: 2618-0618
P-ISSN: 2618-060X
© Agronomy
www.agronomyjournals.com
2025; 8(2): 01-03
Received: 02-11-2024
Accepted: 06-12-2024

Dr. P Satish

Associate Professor, Department of
Agronomy, College Farm, College
of Agriculture, PJTSAU,
Hyderabad, Telangana, India

Dr. SA Hussain

Senior Professor, Department of
Agronomy, College Farm College of
Agriculture, PJTSAU, Hyderabad,
Telangana, India

Tejas Ranka

4th Year Student at College of
Agriculture, PJTSAU, Hyderabad,
Telangana, India

K Shruti

4th Year Student at College of
Agriculture, PJTSAU, Hyderabad,
Telangana, India

Corresponding Author:

Dr. P Satish

Associate Professor, Department of
Agronomy, College Farm, College
of Agriculture, PJTSAU,
Hyderabad, Telangana, India

International Journal of Research in Agronomy

Economic viability of vermicompost unit at college farm, PJTSAU Hyderabad

P Satish, SA Hussain, Tejas Ranka and K Shruti

DOI: <https://doi.org/10.33545/2618060X.2025.v8.i2a.2501>

Abstract

Vermicompost is the excretion of the invertebrate annelids, earthworms which is replete of high nutritive value, as an output of intestinal digestion of organic matter by them. Since Vermicompost is wholly a proper organic manure offering numerous evident agrarian and ecological benefits, this when applied, increases the microbial activity in the soil rendering nutrients more soluble and easily accessible to plants by lowering soil pH at microsites and facilitating chelation of organic acids produced by them. An analysis of costs and return framework is critical for production and marketing of any product, as it provides structured approach to assess profitability. In view of this, the present study has been made to analyze the cost and return set up of Vermicompost production and marketing of Vermicompost unit, College farm, College of Agriculture Rajendranagar Professor Jayashankar Telangana Agricultural University (PJTSAU). The total cost incurred per ton of vermicompost was Rs. 5747.13. Total fixed costs which amounted to Rs. 1137.93 per ton accounted for around 19.80% of total cost of production. While, the total marketing costs amounted to Rs. 643.68 per ton, in which Transportation, accounting for Rs. 172.41 per ton, had the maximum share since the producer himself had to transport the raw materials and compost between distant markets and production unit.

Keywords: Vermicompost, cost analysis, production, marketing, profitability, organic manure

Introduction

Vermicomposting is an environmentally sustainable method of recycling organic waste into valuable nutrient-rich compost through the action of earthworms. This process not only mitigates the environmental impact of organic waste disposal but also enhances soil quality, making it a key practice in sustainable agriculture. The use of earthworms in composting accelerates the breakdown of organic matter, resulting in a compost that is rich in essential nutrients and beneficial microorganisms Thiripurasundari, K and Divya (2017) ^[4]. Vermicompost is a type of organic manure that is widely regarded as the world's best fertilizer. It is produced by earthworms and is composed of a mixture of worm casting, organic materials, humus, live earthworms, their cocoons, and other microorganisms. Earthworms are capable of consuming practically any type of organic matter, with one kilogram of worm capable of consuming one kilogram of residue each day. Therefore, vermicomposting is a cheap and effective way to recycle food scraps, agro-industrial waste, household waste, and animal waste from pigs, chickens, and cattle. Actinomycetes, which thrive in the presence of earthworms and bacteria both, grow more quickly when soil passes through earthworms Prajapathi *et al* 2023 ^[3]. Vermicompost unit serves as an innovative approach to waste management, soil enrichment, and economic development. The vermicomposting process entails several expenses, such as acquiring organic waste, maintaining the vermiculture unit, labor, and equipment. Nonetheless, the potential profits from selling the produced vermicompost can greatly exceed these costs, assuming there is a steady demand for the product (Margit Olle, 2019) ^[2]. In this context, assessing the economic performance of vermicomposting operations-especially regarding expenses, income, and profitability is essential for evaluating its feasibility as a sustainable business model. As a natural fertilizer, vermicompost improves soil structure, water retention, and nutrient availability, promoting healthier plant growth and reducing the dependency on chemical fertilizers.

Given the growing emphasis on organic farming and waste management solutions, vermiculture presents a promising alternative for agricultural and horticultural sectors. The unit was established in the year 2019 at college farm college of agriculture Rajendranagar Hyderabad. This research paper examines the costs associated with the revenue generated and the overall profitability of vermicompost in the college farm, PJTAU.

Objectives

To evaluate the various costs associated with vermicompost production.

To analyze, calculate and present the cost and returns from production and sale of vermicompost.

Methodology

The present study has used both primary and secondary data. The primary data were collected from the Vermicompost Production Unit at College Farm, PJTAU. The secondary data were collected from published resources.

The data (Table-1) indicates that 80.20% of the total costs are attributed to the total variable cost, which is made up of two parts: material costs and labor costs. The material costs are mainly contributed by the raw materials like Farm Yard Manure (FYM), earthworms, bedding material (paddy straw), bags and threads, etc.; and account for 62.35% of the total variable cost. The remaining 37.65% of the total variable cost is made up of

labor costs, which are incurred for a variety of tasks such as pit filling, watering, waste collecting, sieving, weighing, and packing. All of these labor and material costs added up to Rs. 4609.20 per ton of vermicompost, which was the total variable cost. The total cost incurred per ton of vermicompost was Rs. 5747.13. Total fixed costs which amounted to Rs. 1137.93 per ton accounted for around 19.80% of total cost of production. These fixed costs included the land and shed rent, rental value of machinery, tools and equipment. The interest on fixed capital was calculated @10% and amounted to Rs. 103.45, accounting for 9.10% of the total fixed costs. Overall the total production costs per ton of vermicompost was Rs. 5747.13, and the majority share of these costs was contributed by the variable costs which accounted for 80.20% of total costs (Subbareddy *et al* 2004) ^[7]. The reason for such high variable costs was because raw materials like FYM, earthworms, bedding material were the main components of vermicompost production and were required in large quantities, along with sufficient labor to carry out the activities. Hence the cost of these inputs accounted for a major share in the total cost of vermicompost production. The results corroborate with the findings of the Thiripurasundari and Divya 2017 ^[4] and Siddharth Kumar 2021 ^[6].

Cost of Vermicompost Production

The total costs incurred in production of a ton of vermicompost are given in the table.

Table 1: Cost of Vermicompost Production

SL. No.	Particulars	Cost of Vermicompost Production (Rs./ton)		
		Units	Physical Quantity	Value (Rs.)
1.	Variable Costs			
	I. Material Costs	Rs.		2873.57
				(62.35)*
	Farm Yard Manure (FYM) + transport	Kgs	2298.85	2068.97
	Earthworms (+ transport)	Kgs	15.33	689.66
	Bags	Rs.		38.31
	Thread	Rs.		19.16
	Bedding Material (Paddy Straw)	Kg	19.16	57.47
	II. Labor Costs			1735.63
				(37.65)*
	Filling of pits	MD	0.77	433.91
	Watering	MD	0.77	433.91
	Sieving	MD	0.77	433.91
	Packing and Weighing	MD	0.77	433.91
	III. Total Variable Costs (I+II)	Rs.		4609.20 (80.20)***
2.	Fixed Costs			1034.48
				(90.90)**
	1. Shed Rent	Rs.		689.66
	2. Rental Value of Machinery:			
	a) Sieving Machine	Rs.		114.94
	b) Weighing Machine	Rs.		114.94
	c) Stitching Machine	Rs.		57.47
	d) Tarpaulin	Rs.		38.31
	3. Drum & Equipment for Vermiwash	Rs.		19.16
	IV. Interest on Fixed Capital (@ 10% interest rate)	Rs.		103.45 (9.10)**
	V. Total Fixed Costs	Rs.		1137.93 (19.80)***
	VI. Total Production Costs (III+V)	Rs.		5747.13

Note: * Percentage to total variable cost; ** Percentage to total fixed cost;

*** Percentage to total cost; MD- Man Days

Expenditure and Profits Generated from Sale of Vermicompost and Vermiwash

The following table shows the costs and returns from production and sale of vermicompost.

Table 2: Capital & Revenue from Sale of Vermicompost and Vermiwash

		(Rs./ton)
Sl. No.	Particulars	Rs.
1.	Production Cost per ton(A)	5747.13
2.	Marketing Costs per ton (B)	643.68
	a) Standardization	76.63
	b) Packing	95.79
	c) Transport	172.41
	d) Storage	153.26
	e) Miscellaneous	145.59
3.	Total Production of Vermicompost	2610 kgs
4.	Price Realized per ton from Vermicompost (C)	9000
5.	Price Realized 77 litres Vermiwash (D)	2298.85
	Net Returns per ton [(C-B-A)+D]	4908.04

$$\text{Net Benefit-Cost Ratio} = \frac{\text{Net Returns per ton}}{\text{Total Production Costs per ton}} = \frac{4908.04}{5747.13} = 0.854$$

The results (Table-2) shows that the production cost per ton of vermicompost was Rs. 5747.13. However, a significant cost was also incurred for marketing of the produce in various activities like standardization, packing, transport, storage and other miscellaneous activities. The total marketing costs amounted to Rs. 643.68 per ton, in which Transportation, accounting for Rs. 172.41 per ton, had the maximum share since the producer himself had to transport the raw materials and compost between distant markets and production unit. The table also shows the price realized on an average per ton of vermicompost amounted to Rs. 9000. Along with vermicompost, 77 litres of vermiwash was also prepared which contributed to the total sales, and amounted to Rs. 2298.85 per ton of vermicompost. So, overall the net returns per ton of vermicompost amounted to Rs. 4908.04. Chhonkar 2002 ^[1], Margit Olle, 2019 ^[2] and Siddharth Kumar 2021 ^[6] also reported similar findings.

Results

The study clearly shows that the costs of producing and distributing vermicompost were reasonable, and the higher returns received indicate a viable business model for the producers. The net returns per ton of vermicompost was Rs. 4908.04. As calculated above, we can see that the Net Benefit-Cost (B:C) Ratio of the Vermicompost Unit comes out to 0.854, which is greater than 0, and thus suggests a profitable business enterprise. similar findings were reported by Chhonkar (2002) ^[1] Thiripurasundari and Divya 2017 ^[4].

Conclusion

In conclusion, vermicompost stands out as a highly valuable resource in both organic and conventional agriculture due to its rich nutrient content, ability to improve soil health, and environmental sustainability. Its uses range from enhancing soil fertility, improving water retention, and promoting the growth of healthy crops, to reducing the need for chemical fertilizers. Vermicompost not only supports sustainable farming practices but also aids in waste management by recycling organic matter, making it an essential component in eco-friendly agricultural systems.

As the global shift toward organic farming intensifies, vermicompost will undoubtedly play a crucial role in this transformation. Its benefits align with the increasing demand for chemical-free, sustainable food production, positioning vermicomposting as a critical practice in modern agriculture. Furthermore, the establishment of a vermicompost production unit offers farmers a promising business opportunity. By tapping into the growing demand for organic inputs, farmers can not only improve the productivity of their own farms but also create a profitable business model that can serve local markets and beyond.

The vermicompost production unit offers a viable and scalable solution for farmers seeking to diversify their income streams and establish a full-time business. Given the rising need for organic farming solutions, the future of vermiculture and vermicomposting as a business opportunity is extremely promising. As such, a vermicompost production unit is an important and lucrative business venture that holds significant potential for farmers to increase their earnings while contributing to sustainable agricultural practices.

References

1. Chhonkar PK. Soil research in India: Some oversights and failures. *Journal of the Indian Society of Soil Science*. 2002;50(4):328-332.
2. Olle M. REVIEW: Vermicompost, its importance and benefit in agriculture. *Agraarteatus, Journal of Agricultural Science*. 2019;2:93-98.
3. Prajapati SK, Soni RL, Patel K, Prajapati BK. Vermicomposting method and its importance in sustainable crop production. *Food and Scientific Reports*. 2023;4(5):51-60.
4. Thiripurasundari K, Divya SV. Cost and return structure of vermicompost production and marketing in Tirunelveli District. *EPRA International Journal of Economic and Business Review*. 2017;5(1):120-122.
5. Singh R, Kumar N. Vermiculture - A boon for hill farmers of Himalayas. *Indian Farming*. 2001;51(3).
6. Kumar S, Gauraha AK, Sharma S, Bhaskar SK. An economic analysis of production and marketing of vermicompost in Balod District of Chhattisgarh. *International Journal of Current Microbiology and Applied Sciences*. 2021;10(7):532-538.
7. Subba Reddy S, Raghu Ram P, Neelakanta Sastry TV, Bhavani Devi I. *Agricultural Economics*. New Delhi: Oxford and IBH Publisher; 2004.