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Cost of cultivation in select vegetable crops in Dharmapuri District of Tamilnadu

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Abstract

The horticulture sector is receiving a high priority in rural economy. Tamil Nadu is a prominent horticulture producer in India, contributing significantly to national production with a mix of fruits, vegetables, spices, and more. The state's diverse agro-climatic conditions, along with available wastelands, support a wide range of horticultural crops. Horticulture in Tamil Nadu is not only a source of food but also has the potential for economic benefits, including export earnings. Globally India is the second largest producer of fruits and vegetables; Objective To study was to analysis the Cost of Cultivation in Select Vegetable Crops in Dharmapuri District of Tamil Nadu. To find the constraints in production and Marketing of Select Vegetable Crops in Dharmapuri District of Tamil Nadu.; Conclusion The study brings to light the economic disparities in cultivating select vegetable crops beetroot, carrot, and radish in the Dharmapuri district of Tamil Nadu. Among these, carrot cultivation stands out as the most economically viable, yielding the highest net income of Rs. 2,17,700 per acre, driven by strong market prices and moderate input costs. Beetroot, while profitable (Rs. 86,800 net income), suffers from high irrigation expenses, limiting its competitiveness. Radish, though requiring the least investment, yields the lowest returns (Rs. 12,500), revealing its limited profitability under existing conditions. Despite uniform yields across crops (6 tonnes per acre), market price variations and input efficiency are key profitability drivers. The study also highlights serious constraints

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affecting production, such as seasonal labour shortages, pest infestations, high input prices, and delays in input supply. These challenges contribute to elevated production costs and reduced farm efficiency.

Key words : Cost of cultivation, Cost and return, Beetroot, Carrot, and Radish.

Tamil Nadu is a prominent horticulture producer in India, contributing significantly to national production with a mix of fruits, vegetables, spices, and more. The state's diverse agro-climatic conditions, along with available wastelands, support a wide range of horticultural crops. Horticulture in Tamil Nadu is not only a source of food but also has the potential for economic benefits, including export earnings. The horticulture sector is receiving a high priority in rural economy. It comprises of a wide varieties of crops from fruits, vegetables, nuts, spices, medicinal plants, flowers to plantation crops. It provides value addition, employment opportunities, nutritional security, raw materials to agro- based industries and also potential for export earning. The changing consumption pattern of the people towards superior agricultural commodities such as fruits and vegetables due to raising real per capita income, swelling urbanization and opening up of the economy to the global market, etc. creates demand for horticultural products. Globally India is the second largest producer of fruits and vegetables; the largest producer of mango, banana, coconut, cashew, papaya and pomegranate and the largest producer and exporter of spices.

Production : Horticulture Crops: Tamil Nadu data was reported at 23,111.255 Ton th in 2025. This records an increase from the previous number of 22,199.676 Ton th for 2024. Production: Horticulture Crops: Tamil Nadu data is updated yearly, averaging 19,634.234 Ton th from Mar 2012 (Median) to 2025, with 14 observations. The data reached an all-time high of 23,111.255 Ton th in 2025 and a record low of 15,996.210 Ton th in 2019. Production: Horticulture Crops: Tamil Nadu data remains active status in CEIC and is reported by Department of Agriculture & Farmers Welfare. For the preparation of the manuscript relevant literature[1-8] has been consulted.

Review of literature :

Hosen, Mohammad (2024): The findings of the study revealed that the majority (72 percent) of the farmers had medium knowledge, while only 14 percent had either high or low levels of knowledge of vegetable cultivation. Among the eight selected characteristics of the farmers, six (age, education, farm size, family income, extension media exposure, and cosmopoliteness) showed a significant relationship with their knowledge, whereas five showed positive and one showed a negative relationship. Family size and innovativeness did not show any relationship with their knowledge.

Kumar, Sunny & Kumar, Sanjay & Singh, Jasdev & Singh, Prabhjit. (2019): Study was conducted to compute the cost of

cultivation of important vegetables like potato, pea, chilli, and cauliflower in Punjab. The total cost of cultivation on per acre basis amongst the selected vegetables was found to vary between '80867 between Rs 80867 for potato to Rs 112955 for cauliflower. The benefit cost ratio was found to be the highest for cauliflower and least for potato. Untimely frost at maturity stage, unavailability of electricity at crucial time and high cost along with non-reliability of seed were the major problems faced by vegetable growers. The study emphasized the need that government should ensure supply of quality seed, supply of electricity for minimum 8 hours a day and strengthening the extension activities to boost the vegetables production in the state.

Objective :

- To study was to analysis the Cost of Cultivation in Select Vegetable Crops in Dharmapuri District of Tamil Nadu.
- To find the constraints in production and Marketing of Select Vegetable Crops in Dharmapuri District of Tamil Nadu.

The study was carried out to analysis the cost of cultivation in select vegetable crops in Dharmapuri of Tamil Nadu. The secondary data were collected from the Department of Agriculture, Ministry of Agriculture & Farmers welfare and Government of India. This study was collected from primary data collection for vegetable cultivators to collecting this data average this table. Period of study was one year from 2024 to 2025.

Tools of analysis :

Cost of cultivation :

For estimating the cost of cultivation of cauliflower per acre, the standard cost concepts used in cost of production in farm management studies were used to estimate various types of costs in the present study.

Cost A: Includes the wages of hired and owned human labour, machine labour, value of grafts, value of manure, fertilizers and plant protection chemicals, depreciation of machinery and buildings, land revenue and interest on working capital.

Cost B: Includes Cost A plus rental value of land plus interest on fixed capital and amortized establishment cost.

Cost C: Includes Cost B plus value of imputed family labour.

Net income: The profit at Cost C, that is, the difference between gross income and Cost C represents the net income of the farm enterprise.

Cost and returns in cultivation of select vegetable crops :

A clear understanding about the economics of select vegetable crops production in Dharmapuri district is needed and the cost and return in production of select vegetable crops was estimated and conferred in this unit. Cost of cultivation was calculated on per Acre and offered in Table-1.

Table-1 shows that comparative study of growing beetroot, carrot, and radish in Dharmapuri district shows clear economic differences among the three crops. Carrot farming has the highest total cost of Rs. 1,35,300 per acre, but it also brings in the highest gross

Table-1. Cost and returns in cultivation of select vegetable crops

S. No	Particulars	Select Vegetable		
		Beetroot	Carrot	Radish
1.	Land preparation	6,000	6,000	6,000
2.	Human labour	14,000	15,000	12,000
3.	Seed and sowing	7,200	7,200	7,200
4.	Irrigation	14,000	21,000	7,000
5.	Fertilizer	7,000	7,000	7,000
6.	Fertilizer application	2,500	2,500	2,500
7.	FYM	1,700	1,700	1,700
8.	Machinery	1,000	1,000	1,000
9.	Weeding	3,500	3,500	3,500
10.	Chemical	7,200	7,200	7,200
11.	Chemical application	1,100	1,100	1,100
12.	Harvesting	7,000	7,000	7,000
13.	Loading	7,000	7,600	6,400
14.	Transport cost	3,700	4,000	3,500
15.	Other expenses	2,200	2,200	2,200
I.	**Total cost A1**	**85,100**	**94,000**	**75,300**
	Rent paid for leased in land	7,000	7,000	7,000
II.	**Cost A2= cost A1 + Rent paid for leased in land**	**92,100**	**1,01,000**	**82,300**
	interest on owned capital	6,000	9,000	4,500
III.	**Cost B1= cost A1+ interest on owned capital**	**91,100**	**1,03,000**	**79,800**
	rental value of owned capital	20,000	20,000	20,000
IV.	**Cost B2= cost B1+ rental value of owned capital**	**1,11,100**	**1,23,000**	**99,800**
	imputed value of family labour	-	-	-
V.	Cost C1= cost B1+ imputed value of family labour	91,100	1,03,000	79,800
VI.	Cost C2= cost B2+ imputed value of family labour	1,11,100	1,23,000	99,800
VII.	Cost C3= cost C2+ 10% of cost C2	1,22,210	1,35,300	1,09,780
VIII.	**Gross income**	**1,80,000**	**3,00,000**	**1,50,000**
IX.	**Net income**	**94,900**	**2,06,000**	**74,700**

Source: Computed

income of Rs.3,00,000 and a net income of Rs. 2,06,000, making it the most profitable option. Beetroot costs Rs. 1,22,210 to grow and provides a net income of Rs. 94,900, indicating moderate profitability. In contrast, radish is the cheapest to grow at Rs.1,09,780, but it yields the lowest net income of Rs.74,700, showing its limited economic viability given the current market and input conditions. Interestingly, all three crops have similar physical yields of 6 tonnes per acre. However, differences in market prices significantly affect income, with carrots fetching the highest price per unit, which boosts its profitability. The cost structure analysis shows that irrigation is a major expense for both carrot and beetroot, while labour costs are the largest for radish cultivation. Additionally, farmers encounter several key production challenges, such as labour shortages during peak times, pest and insect problems, high input costs, increasing wage rates, and delays in agricultural input supplies. These issues collectively raise production costs and lower farm efficiency. In conclusion, carrot stands out as the most economically efficient crop despite its higher costs, while radish, although less expensive to grow, offers lower returns. Beetroot, which is in between, has moderate profitability but is affected by high irrigation expenses. The results highlight the need for focused efforts in improving input supply, labour availability, and pest management to improve the sustainability and profitability of vegetable farming in the area.

Table-2. Yield analysis of selected vegetable crops

Yield	Beetroot	Carrot	Radish
a. Economic product (tonnes)	6	6	6
b. Value (Rs)	6000*30 **=1,80,000**	6000*50 **=3,00,000**	6000*25 **=1,50,000**
c. Days in cultivating	50-70	90-110	30-45

Source: Computed

Table-2 shows that yield analysis of beetroot, carrot, and radish farming in Dharmapuri district reveals that, although all three crops produce the same physical yield of 6 tonnes per acre, their economic values vary greatly due to differences in market prices and crop cycles. Carrot has the highest value at Rs.3,00,000 per acre (Rs.50/kg), followed by beetroot at Rs.1,80,000 (Rs.30/kg), and radish at Rs.1,50,000 (Rs.25/kg). This difference clearly shows that market price is essential in determining profitability, even when the quantity produced is the same. Additionally, the growing duration varies significantly among the crops. Carrot takes the longest to grow (90–110 days), while radish grows the fastest (30–45 days), and beetroot is in the middle (50–70 days). This affects farmers' planning for crop rotation, labor management, and recovering their investments. While radish provides a quick return, its lower market price reduces its economic attractiveness. On the other hand, carrot's longer growing period is justified by its much higher returns, making it a more profitable choice for farmers who can manage the longer cultivation time and initial costs.

Table-3. Constraints faced in select vegetable crops production by sample farmers

S.No.	Nature of Constraints	Mean Score	Rank
1	Non-availability of labour during season	64.80	I
2	High incidence of pest/insects	55.69	II
3	High cost of inputs	44.73	III
4	High wage rate	40.55	IV
5	Supply of inputs on time	38.70	V

Source: Computed

Table-3 shows that analysis of the cost of cultivation in select vegetable crops in Dharmapuri District exposes key inefficiencies and systemic challenges despite notable profitability in crops like carrot and beetroot. While high gross incomes may suggest economic viability, the reality is more complex. Farmers face persistent constraints, with the non-availability of labour during peak seasons emerging as the most severe issue, followed closely by the high incidence of pests and insects, escalating input costs, and high wage rates. These factors collectively inflate production costs and compromise farm profitability. Furthermore, the untimely supply of agricultural inputs reflects systemic inefficiencies that hinder timely operations and effective farm planning. The continued dependence on manual labour, in the absence of adequate mechanization, exacerbates these vulnerabilities. Therefore, to ensure sustainable and efficient vegetable production, there is a critical need for targeted policy interventions focusing on rural mechanization, timely input delivery, labour market reforms, and integrated pest management. Without addressing these structural bottlenecks, the full economic potential of vegetable cultivation in the region may remain unrealized.

The study brings to light the economic disparities in cultivating select vegetable crops beetroot, carrot, and radish in the Dharmapuri district of Tamil Nadu. Among these, carrot cultivation stands out as the most economically viable, yielding the highest net income of Rs.2,17,700 per acre, driven by strong market prices and moderate input costs. Beetroot, while profitable (Rs.86,800 net income), suffers from high irrigation expenses, limiting its competitiveness. Radish, though requiring the least investment, yields the lowest returns (Rs.12,500), revealing its limited profitability under existing conditions. Despite uniform yields across crops (6 tonnes per acre), market price variations and input efficiency are key profitability drivers. The study also highlights serious constraints affecting production, such as seasonal labour shortages, pest infestations, high input prices, and delays in input supply. These challenges contribute to elevated production costs and reduced farm efficiency. To unlock the full potential of vegetable farming in Dharmapuri, the study recommends strategic policy interventions focusing on Rural mechanization, Timely delivery of quality inputs, Labour market reforms, Integrated pest management. Only through addressing these structural issues can vegetable cultivation in the region transition from subsistence to a

sustainable, income-generating enterprise.

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