

Agricultural Transformation in Tamil Nadu: Trends, Challenges and Future Prospects

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Abstract

Agriculture in Tamil Nadu occupies a central role in sustaining rural livelihoods and ensuring food security, despite significant resource constraints and climatic challenges. The state depends heavily on monsoon rainfall, with per capita water availability of only 900 cubic meters compared to the national average of 2,200 cubic meters. Yet, through extensive irrigation infrastructure covering nearly 60% of its 47.6 lakh hectares of net sown area, Tamil Nadu has consistently achieved high productivity levels. In 2023–24, agriculture contributed approximately ₹1.5 lakh crore to the state's GSVA, while employing 41.1% of the rural workforce, the majority being small and marginal farmers. Productivity achievements are notable, with the state ranking first in oilseeds, groundnut, and sugarcane, second in maize, and third in paddy. Diversification into horticulture (16.3 lakh hectares producing 235.22 lakh MT) and organic farming (34,000 hectares with 11,820 registered farmers) reflects evolving practices that enhance resilience. Policy support ranging from ₹15,542.84 crore cooperative crop loans, ₹3.58 lakh crore institutional credit, and mechanization subsidies to free power worth ₹7,216 crore has underpinned this progress. The findings illustrate how Tamil Nadu's agriculture, through innovation, expanded credit access, and sustainability-oriented measures, has managed to balance persistent challenges with emerging opportunities for inclusive growth.

Keywords: Tamil Nadu agriculture, crop productivity, credit support, organic farming, horticulture

1. Introduction

Agriculture continues to serve as a cornerstone of livelihood and food security in Tamil Nadu, notwithstanding considerable resource constraints and climatic uncertainty. The state's farming systems remain heavily reliant on monsoon rainfall and water availability, with per capita water resources standing at just 900 cubic meters, well below the national average of 2,200 cubic meters. This scarcity is further compounded by recurring droughts, floods, and an increasingly erratic monsoon cycle, all of which pose challenges to the sustainability and productivity of farming systems. Even so, Tamil Nadu has made considerable progress through the expansion of irrigation infrastructure covering nearly 60 per cent of the net sown area alongside advances in technology and improved market access.

In recent years, agriculture's contribution to Tamil Nadu's Gross State Value Added (GSVA) reached approximately ₹1.5 lakh crore (6% of the total GSVA) and supports 41.1% of the rural workforce, predominantly small and marginal farmers. The state has emerged as a leader in crop productivity, ranking first nationally in oilseeds, groundnut, and sugarcane; second in maize; and third in paddy. This research paper examines the evolving agricultural landscape in Tamil Nadu, analyzing patterns of land

use, irrigation, cropping trends, mechanization, organic farming, financial support, and the impacts of climate variability.

Grasping these interlinked patterns is essential for shaping agricultural policies capable of withstanding shifting environmental and economic pressures while safeguarding rural incomes and food security. Drawing on secondary data compiled from government departments and institutional reports, this study offers a detailed examination of the trends, obstacles, and future outlook shaping agriculture in Tamil Nadu. The sections that follow present the empirical results and their policy implications, offering direction for agricultural development that is both inclusive and sustainable.

2. Review of Literature

Agricultural development in Tamil Nadu has been the subject of extensive academic inquiry, highlighting diverse dimensions such as land use changes, irrigation practices, organic farming, and climate variability. **Kurien (2010)** illustrated that Tamil Nadu's agricultural sector has undergone dynamic changes over the past decades, characterized by increased output, altered production techniques, and evolving organizational patterns. Despite historical concerns about stagnation, empirical evidence reveals substantial shifts in cropping intensity and diversification at the village level.

Irrigation stands as a key driver of agricultural productivity across the state. According to a World Bank report examining Tamil Nadu's project to modernize irrigated agriculture, rehabilitating irrigation infrastructure and expanding micro-irrigation methods like drip systems has meaningfully boosted yields across paddy, pulses, maize, and horticultural crops (**World Bank, 2023**). In a related vein, **Sivasubramanian (2016)** examined patterns of irrigation expansion and emphasized that sound water resource management must be woven into efforts to sustain agricultural intensification.

Organic farming has been gaining traction in Tamil Nadu as growers and consumers respond to mounting concerns over the environmental and health costs of chemically intensive cultivation. **Rajalakshmi (2023)** traced the advantages, obstacles, and policy support surrounding organic agriculture in the state, pointing to growing awareness on both the production and consumption sides. **Yet Logesh et al. (2023)**, focusing on the Cauvery Delta Zone, found that organic farmers contend with a range of difficulties from labor scarcity to complicated certification procedures and weak market linkages suggesting that stronger institutional support is needed if organic practices are to be scaled up meaningfully.

Climate variability and its adverse effects on agriculture have also been widely studied. **Easwaran (2023)** conducted a decadal analysis of rainfall and temperature trends in Central Tamil Nadu, revealing increased climate extremes and greater variability, which pose substantial risks to agricultural production. These findings emphasize the urgent requirement for climate-resilient agricultural practices and effective policy interventions to mitigate risks from changing climatic conditions.

Furthermore, the development of groundwater irrigation has demonstrated a positive correlation with increased cropping intensity and productivity, as shown by a study in Krishnagiri district (**AJAEES, 2021**). Such intensification, however, must be balanced with sustainable water resource management to ensure long-term agricultural viability.

Collectively, these studies provide a comprehensive understanding of the multifaceted factors shaping agricultural development in Tamil Nadu. They underscore the critical interplay between technological modernization, sustainability efforts, and climate challenges that this research paper aims to explore further.

3. Objective of the Study

This study's central aim is to present a thorough assessment of Tamil Nadu's agricultural sector, examining its present-day trends, the challenges it faces, and the prospects ahead. It sets out to evaluate key dimensions including land use patterns, irrigation practices, cropping trends, the extent of mechanization, the uptake of organic farming, and how climate variability is affecting agricultural performance. In doing so, the study seeks to pinpoint the factors that most shape productivity and sustainability, with the goal of informing policy recommendations that can support agricultural growth while safeguarding environmental and socio-economic sustainability.

- To analyze changes in land use and cropping patterns in Tamil Nadu.
- To evaluate the role and effectiveness of irrigation and water resource management.
- To assess the growth and constraints of organic farming practices in the state.
- To understand the impacts of climate variability on agricultural productivity and sustainability.

4. Research Methodology

This research is built around a descriptive and analytical framework that draws on secondary data gathered from a range of credible sources. Core data have been sourced from government publications, including those of the Directorate of Economics and Statistics, Tamil Nadu; reservoir release reports from the Water Resources Department; fertilizer and electricity consumption figures compiled by the Department of Agriculture and Farmers Welfare; and agricultural credit statistics published in the Reserve Bank of India's statistical handbooks. This has been supplemented by a review of institutional reports and scientific literature covering agriculture, irrigation, organic farming, and climate variability in the state. Together, this approach enables a well-rounded assessment that combines quantitative data with qualitative insights drawn from established sources.

5. Agriculture in Tamil Nadu

Dependence on Water Resources : Agriculture in Tamil Nadu relies heavily on monsoons and uses about 75% of the state's water resources. Despite an average annual rainfall of 965.6 mm, the state faces fluctuations, leading to droughts and floods. With a surface water potential of 24,864 MCM and usable groundwater capacity of 22,423 MCM, per capita water availability stands at only 900 cubic meters against the national average of 2,200 cubic meters.

Contribution to the State Economy : In 2023-24, Tamil Nadu's Agriculture GSVA stood at around ₹1.5 lakh crore, contributing 6% to the total GSVA. It remains the fifth-largest sector after manufacturing, real estate, construction, and trade & repair services, while employing 41.1% of the rural workforce.

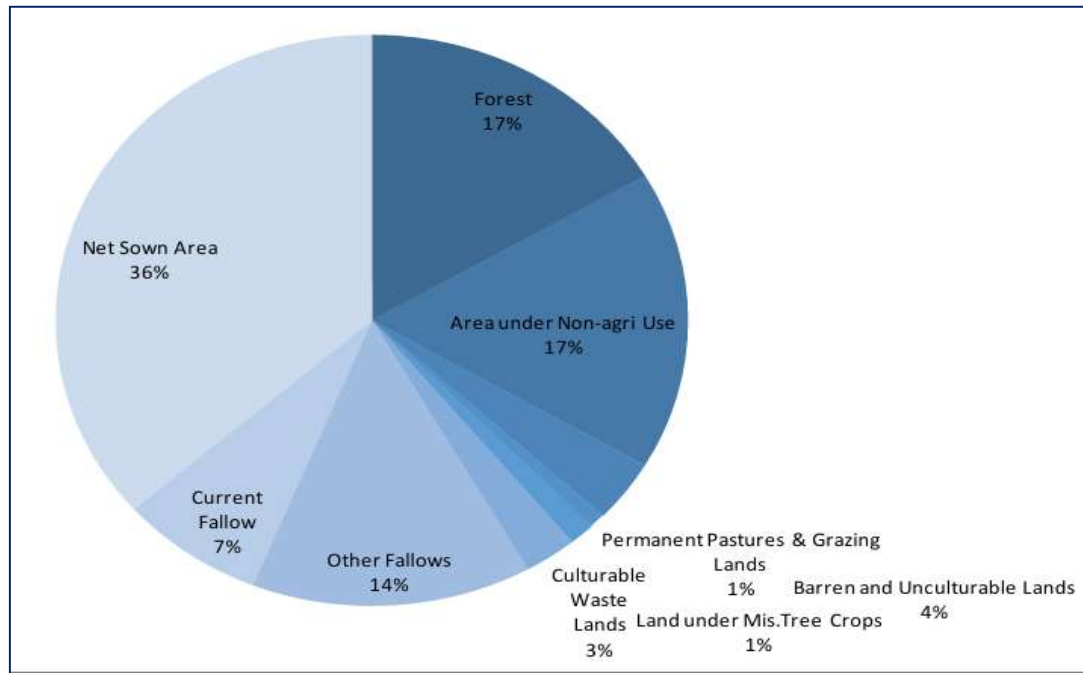
Landholding Patterns and Farmers : In 2021-22, 92.3 lakh farmers cultivated 64.6 lakh hectares in the state. Small and marginal farmers account for 93.5% (86.3 lakh farmers), cultivating 62.7% of the total area with an average holding size of only 0.7 hectares.

Achievements in Productivity : Despite water-related challenges, Tamil Nadu has emerged as a leading state in agricultural productivity. In 2022-23, it ranked first in oilseeds, groundnut, and sugarcane; second in maize; and third in paddy. Advances in technology, irrigation, and market access have been crucial to these gains.

6. Land Use Pattern

Tamil Nadu's total geographical area extends to 130.3 lakh hectares, within which the net sown area is recorded at 47.6 lakh hectares. This figure implies that a mere 36.5 per cent of the state's landmass is presently brought under cultivation, a proportion that reflects the constrained availability of agricultural land relative to the state's overall geographical extent.

Chart 01 : Land Use Pattern in Tamil Nadu, 2023-24



Source: Directorate of Economics and Statistics, GoTN

The above chart 01 depicting Tamil Nadu's land use pattern indicates a fairly diverse allocation of land across several categories, with the Net Sown Area constituting the single largest share at 36 per cent of the total geographical area. Forest cover and land under Non-agricultural Use follow, each accounting for 17 per cent, pointing to the substantial proportions set aside for conservation on one hand and developmental activities on the other. The remaining land is distributed among Other Fallows (14 per cent), Current Fallow (7 per cent), Barren and Unculturable Lands (4 per cent), Culturable Waste Land under Miscellaneous Tree Crops (3 per cent), and Permanent Pastures and Grazing Lands, which occupy the smallest share at just 1 per cent.

The state's agricultural productivity is significantly enhanced by its extensive irrigation infrastructure, which supports around 60% of the net sown area through 2,241 canals, 41,123 tanks, and over 4.67 lakh wells of various types. The irrigation sources show a heavy dependence on groundwater, with wells (both bore wells and open wells) accounting for 65.19% of irrigated land, while canals supply 20.91% and tanks contribute 13.90%. This distribution highlights the critical role of groundwater resources in sustaining Tamil Nadu's agriculture, though it also underscores the vulnerability of the sector to groundwater depletion and the need for sustainable water management practices.

7. Table 01: Water Released from Major Reservoirs in Tamil Nadu

Reservoir (Depth in Feet)	2019-20	2020-21	2021-22	2022-23	2023-24
Mettur (120)	205.1	195.7	237.3	710.7	111.3
Bhavanisagar (105)	68.9	54.9	73.7	84.7	57.3
Amaravathy (90)	9.8	17.3	19.3	23.1	12.2
Periyar (152)	22.0	23.9	36.7	27.5	18.5
Vaigai (71)	16.9	16.7	32.2	30.4	22.6
Papanasam (143)	20.7	90.8	34.0	23.5	23.6
Manimuthar (118)	6.5	8.2	6.6	4.4	2.8
Pechiparai (48)	18.8	13.9	9.4	4.7	12.6
Perunchani (77)	11.7	7.8	11.3	7.5	6.7
Krishnagiri (52)	7.0	6.1	13.9	44.8	1.3
Sathanur (119)	2.2	4.5	30.0	46.8	12.9
Poondi (35)	7.5	10.3	37.3	16.9	16.6
Sholayar (160)	36.6	20.1	22.7	25.5	14.7
Parambikulam (72)	22.9	29.0	17.8	40.7	Nil
Aliyar (120)	11.5	12.0	15.4	13.9	Nil
Thirumoothy (60)	16.3	19.7	22.1	17.8	9.9

Source: WRD, GoTN. TMC = 1 thousand million cubic feet.

The data reveals significant variations in water releases across Tamil Nadu's major reservoirs over the five-year period from 2019-20 to 2023-24. Mettur reservoir consistently dominates water releases, contributing the highest volumes across all years, with a remarkable peak of 710.7 TMC in 2022-23 - more than triple its releases in other years. This exceptional release in 2022-23 likely reflects abundant rainfall and inflow conditions during that period. Other major contributors include Bhavanisagar, which maintained relatively stable releases between 54.9 to 84.7 TMC, and reservoirs like Sathanur, Krishnagiri, and Poondi, which showed considerable fluctuations based on seasonal conditions.

The data also highlights the variability in reservoir performance, with some showing dramatic year-to-year changes while others maintain more consistent patterns. Papanasam reservoir experienced its highest release of 90.8 TMC in 2020-21, significantly higher than other years, while smaller reservoirs like Manimuthar and Pechiparai generally maintained lower but more stable release patterns. Notably, Parambikulam and Aliyar reservoirs reported no releases in 2023-24, indicating either maintenance activities, drought conditions, or strategic water conservation measures.

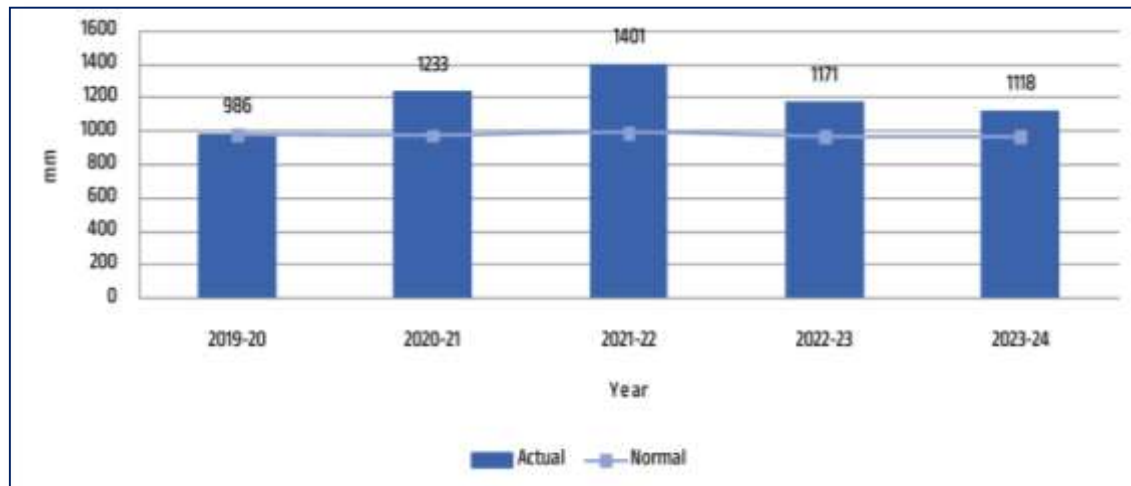
The overall pattern suggests that Tamil Nadu's water management system is highly dependent on monsoon variability, with 2022-23 appearing to be an exceptionally wet year that allowed for substantial water releases, particularly from major reservoirs. The subsequent drop in releases in 2023-24, including complete cessation from some reservoirs, underscores the critical importance of monsoon performance for the state's water security and agricultural sustainability.

8. Water Availability and Climate Impact

Except for 2019-20, Tamil Nadu's annual rainfall has consistently surpassed normal levels, demonstrating generally favorable hydrological conditions. However, climate change poses growing

risks to agriculture, as evidenced by 67 days of extreme weather events in the first nine months of 2024, which adversely affected thousands of hectares of cropped area.

Chart 02- Tamil Nadu's Annual Rainfall (mm) 2019-2024 (June to May)



Source: Directorate of Economics and Statistics, GoTN

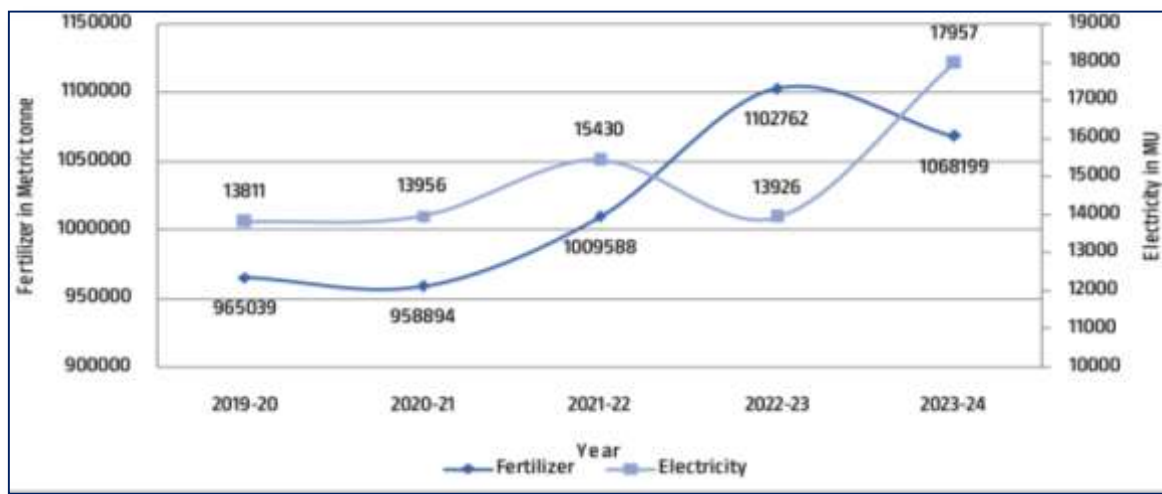
The bar-and-line chart 02 shows Tamil Nadu's actual annual rainfall (bars) against the normal long-period average (line) over five water years. In 2019-20, actual rainfall was 986 mm, falling slightly below the normal of around 1,000 mm. The following three years—2020-21 (1,233 mm), 2021-22 (1,401 mm), and 2022-23 (1,171 mm)—all exceeded the normal average, with 2021-22 marking the highest surplus. In 2023-24, actual rainfall dipped to 1,118 mm but still remained modestly above the normal, illustrating that aside from 2019-20, the state has generally enjoyed higher-than-average monsoon precipitation.

9. Fertilizer and Power Consumption Trends

The intensification of agriculture in Tamil Nadu has been underpinned by rising use of chemical fertilizers. NPK consumption climbed from 9,65,016 tonnes in 2019-20 to a peak of 11,35,789 tonnes in 2022-23, before moderating to 10,68,934 tonnes in 2023-24 amid a slight contraction in gross cropped area for paddy, pulses, and cotton and a growing shift toward organic inputs. This pattern reflects both the drive for higher yields through nutrient inputs and a nascent but meaningful diversification of farming practices.

In parallel, agricultural power consumption experienced notable growth, rising from 13,811 million units in 2019-20 to 15,430 million units by 2021-22. A temporary dip to 13,926 million units in 2022-23 gave way to a sharp jump to 17,957 million units in 2023-24, fuelled by expanded groundwater pumping and other mechanized operations. To sustain this critical support, the Tamil Nadu government earmarked ₹7,216 crore in 2024-25 for three-phase free power subsidies, underscoring the policy emphasis on electrification as a pillar of agricultural productivity.

Chart 03 : Fertilizer and Electricity Consumption



Source: Department of Agriculture and Farmers welfare

The dual-axis line chart 03 illustrates the parallel trends in fertilizer consumption and agricultural electricity use in Tamil Nadu from 2019-20 to 2023-24. Fertilizer use (left axis) dipped slightly from 965,039 tonnes in 2019-20 to 958,894 tonnes in 2020-21, then rose sharply to 1,009,588 tonnes in 2021-22 and peaked at 1,102,762 tonnes in 2022-23 before moderating to 1,068,199 tonnes in 2023-24. Meanwhile, power consumption (right axis) climbed steadily from 13,811 MU in 2019-20 to 15,430 MU in 2021-22, dipped to 13,926 MU in 2022-23, and surged to a record 17,957 MU in 2023-24.

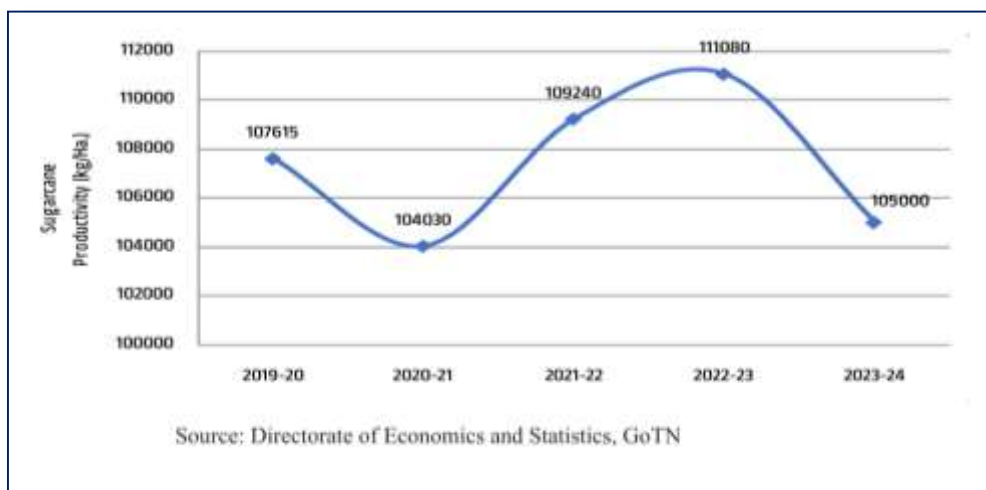
These trends reflect intensified reliance on both chemical inputs and energized groundwater pumping. The synchronized peaks in 2021-22 and 2022-23 underscore periods of robust cropping activity, while the 2022-23 dip in electricity use despite high fertilizer application suggests shifts in cropping patterns or efficiency measures. The strong rebound in power use in 2023-24 highlights ongoing expansion of irrigated area and mechanization.

10. Cropping Pattern and Crop Performance

Food vs. Non-Food Crops and Area Shifts: Food grains primarily paddy, maize, jowar, bajra, ragi, and millets constitute about 62% of Tamil Nadu's gross cropped area, with non-food crops such as oilseeds, sugarcane, and cotton making up the remaining 38%. Pulses alone cover 11.72% of the cropped area. Over 2019-20 to 2023-24, paddy's share rose from 32.1% to 34.4%, driven by state-level procurement incentives atop the Union government's MSP, while jowar and pulses saw declines in area from 4.5 to 3.54 lakh hectares and from 8.24 to 7.17 lakh hectares, respectively. Conversely, maize gained ground, expanding by 1.21 lakh hectares during the same period.

Production Trends and Productivity Rankings : Paddy production dipped to 68.81 lakh tonnes at the pandemic's onset but rebounded to 70.48 lakh tonnes by 2023-24, alongside maize rising from 24.76 to 28.36 lakh tonnes and sugarcane from 141.19 to 159.27 lakh tonnes. According to 2024's Agricultural Statistics at a Glance, Tamil Nadu led the nation in oilseeds, groundnut, and sugarcane productivity, ranked second in maize, and third in paddy. In 2023-24, rice yielded 3,235 kg/ha (national average: 2,882 kg/ha), oilseeds 2,287 kg/ha (1,314 kg/ha), and sugarcane 105,000 kg/ha (78,953 kg/ha), though productivity of several crops dipped slightly in 2024-25 due to erratic monsoon rains and cyclone impacts.

Chart 04 : Productivity (Yield) of Sugarcane in Tamil Nadu (Kg./Ha.)



Source: Directorate of Economics and Statistics, GoTN

The trend in sugarcane productivity in Tamil Nadu reveals modest year-to-year fluctuations, beginning at 107,615 kg/ha in 2019-20, dipping to 104,030 kg/ha in 2020-21, then recovering strongly to 109,240 kg/ha in 2021-22 and peaking at 111,080 kg/ha in 2022-23 before easing to 105,000 kg/ha in 2023-24. This pattern suggests that agronomic improvements and favorable weather conditions drove productivity gains up to 2022-23, whereas variable rainfall and post-monsoon stresses appear to have contributed to the modest decline observed in the most recent year.

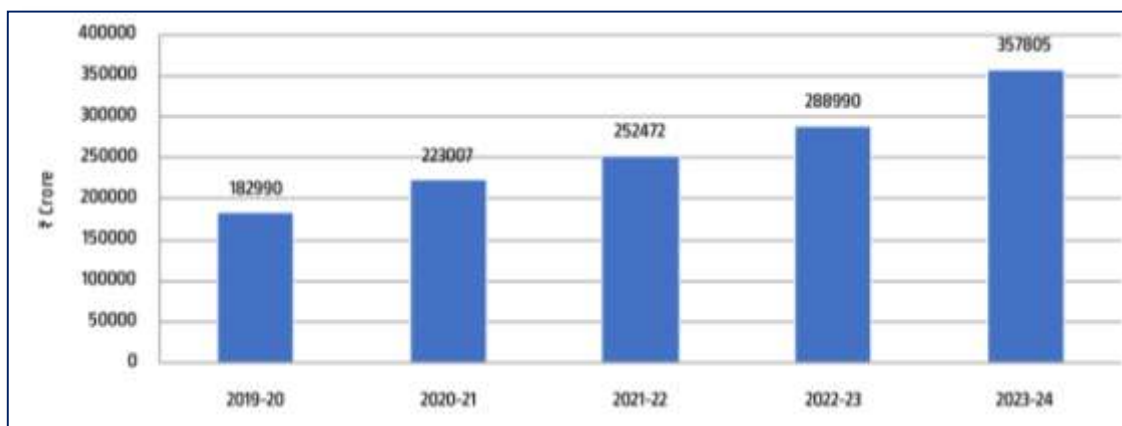
11. Financial Support Framework for Farmers

Credit Provision and Trends : Primary Agricultural Co-operative Credit Societies (4,454 PACCS and 151 branches) extend loans across 12,525 panchayats, disbursing a record ₹15,542.84 crore in crop loans to 18.36 lakh farmers in 2023-24. Scheduled commercial bank credit rose from ₹1.83 lakh crore in 2019-20 to ₹3.58 lakh crore in 2023-24, positioning Tamil Nadu first nationally. Total institutional credit reached ₹4.39 lakh crore, comprising ₹2.42 lakh crore in crop loans and ₹1.97 lakh crore in term loans.

Market Support and Price Incentives : Beyond the MSP, the state adds ₹105/quintal for paddy and ₹215/tonne for sugarcane, procuring 29.91 lakh tonnes of paddy from 3.72 lakh farmers and distributing ₹6,442.8 crore. The government operates 284 regulated markets with extensive storage and trading facilities (total capacity 40,365 tonnes) and 193 Uzhavar Sandhais, while eNAM is active in 213 markets.

Crop Insurance under PMFBY : The state subsidizes 49% of PMFBY premiums, enhancing risk coverage. Enrollment peaked in 2020-21 with a ₹2,685 crore payout, though participation and insured area have fluctuated due to evolving climate risks and targeted outreach.

Chart 05 : Credit to Tamil Nadu Agriculture by Commercial Banks



Source: Handbook of Statistics on Indian States, RBI

The bar chart 05 demonstrates a steady upward trajectory in agricultural credit disbursed by commercial banks to Tamil Nadu farmers, rising from ₹1,82,990 crore in 2019-20 to ₹3,57,805 crore in 2023-24 nearly doubling over the five-year period. Credit flow increased progressively each year: ₹2,23,007 crore in 2020-21, ₹2,52,472 crore in 2021-22, and ₹2,88,990 crore in 2022-23, before surging to the record high in 2023-24. This consistent growth reflects expanding agricultural activities, greater financial inclusion, and the state's leadership position in securing institutional credit for its farming community, positioning Tamil Nadu as the top recipient of commercial bank agricultural credit nationally.

12. Agricultural Mechanization Support

During 2023-24, the Tamil Nadu government distributed 5,654 power tillers, 2,437 tractors, and 2,428 rotavators to 28,230 farmers, at a combined subsidy outlay of approximately ₹188 crore, as part of its broader push to extend heavily subsidized machinery to small and marginal cultivators. In view of the additional constraints confronting SC and ST farmers, the state provides these groups with a further 20 per cent subsidy, thereby working towards more equitable access to essential equipment such as power tillers, rotavators, paddy transplanters, and multi-crop threshers.

Building on this effort, the 2024-25 Kalaingar All Village Integrated Development Programme targeted the constraints of shrinking landholdings by distributing 4,332 power tillers with a ₹21 crore subsidy. This initiative promotes the use of smaller, more appropriate implements, enhancing productivity on fragmented plots. To streamline access and reduce administrative friction, the Agricultural Engineering Department also launched the e-Vaadagai mobile app, enabling farmers to book machinery, make digital payments, and bypass in-person visits to departmental offices.

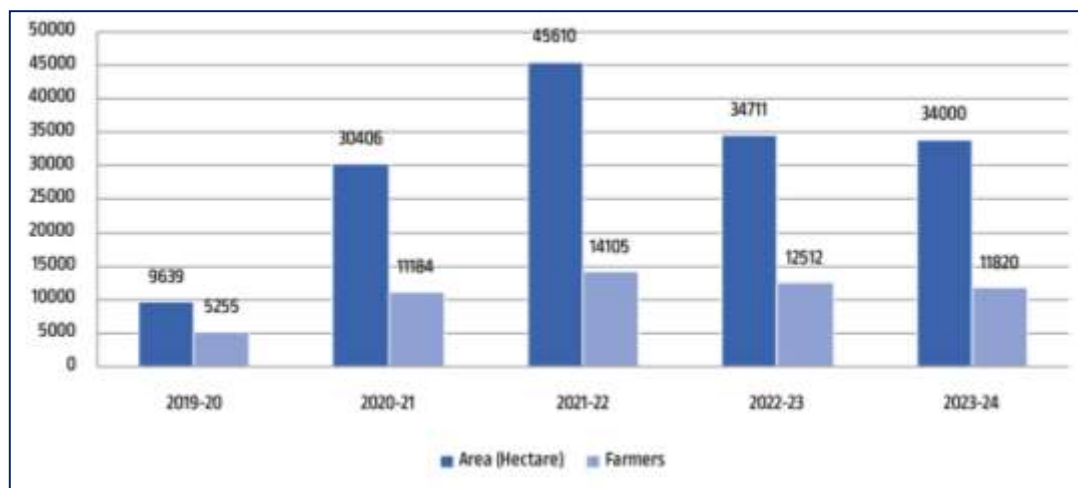
Looking ahead, the subsidy allocation for mechanization has been increased to ₹242 crore in 2024-25, reflecting the government's commitment to modernizing agriculture, reducing drudgery, and driving efficiency gains among the state's most vulnerable farming communities.

13. Growth of Organic Farming

Organic agriculture in Tamil Nadu has expanded considerably, with the number of farmers registered under the Tamil Nadu Organic Certification Department increasing from 5,255 in 2019-20 to 11,820 in

2023-24, while the area under organic cultivation rose correspondingly from 9,639 to 34,000 hectares. This growth points to a deliberate move towards chemical-free cultivation practices that improve soil health and curb environmental pollution, a trend that has established TNOCD as the country's foremost body in certified organic farming.

Chart 06 : Organic Farming in Tamil Nadu



Source: Department of Agriculture and Farmers welfare, GoTN

The dual-bar chart 06 depicts the rapid expansion of organic agriculture in Tamil Nadu from 2019-20 to 2023-24. The area under organic cultivation surged from 9,639 hectares in 2019-20 to a high of 45,610 hectares in 2021-22 before moderating to 34,000 hectares in 2023-24, while the number of registered organic farmers nearly tripled from 5,255 to 11,820 over the same period. This growth trajectory underscores strong farmer uptake and supportive policies, although the post-2021-22 adjustment in cultivated area suggests consolidation as the sector matures and certification processes stabilize.

14. Expansion of Horticulture

Horticulture has emerged as a key driver of agricultural growth in Tamil Nadu, with 16.3 lakh hectares brought under cultivation in 2023-24. Plantation crops occupy 7.59 lakh hectares, vegetables 3.63 lakh hectares, and fruits 3.34 lakh hectares, while the remainder is devoted to spices, condiments, medicinal and aromatic plants, and floriculture. This diverse horticultural landscape yielded a total production of 235.22 lakh metric tonnes, reflecting strong market demand and the sector's crucial role in enhancing farm incomes and rural livelihoods.

Table 02 : Area, Production and Yield of Horticulture Crops in 2023-24

Horticulture Crop	Area (lakh ha)	Production (lakh MT)	Productivity (MT/ha)
Fruit	3.34	75.29	22.52
Vegetable	3.63	92.36	25.46
Plantation	7.59	56.28	7.41
Spices & Condiments	1.11	3.30	2.97

Medicinal & Aromatic	0.16	1.68	10.52
Flower	0.47	6.31	13.55
Total	16.30	235.22	

Source: Policy Note-Agriculture 2024-25.

Tamil Nadu's horticulture sector demonstrates both breadth and productivity, with vegetables leading in output intensity (25.46 MT/ha) despite occupying only 22% of the total horticultural area. Fruits and flowers yield 22.52 MT/ha and 13.55 MT/ha respectively, reflecting strong per-hectare returns. Plantation crops dominate in area (47% of total) but have lower productivity (7.41 MT/ha), consistent with their perennial nature and longer production cycles.

Spices, condiments, and medicinal crops occupy smaller plots yet contribute important niche outputs, with medicinal and aromatic plants achieving over 10 MT/ha. Taken together, the combined output of 235.22 lakh MT from an area of 16.3 lakh hectares underscores the role of horticulture in raising farm incomes, diversifying cropping patterns, and meeting the rising market demand for high-value produce.

15. Conclusion

Tamil Nadu's agriculture demonstrates both resilience and adaptability in the face of significant structural and climatic challenges. Despite limited per capita water availability of only 900 cubic meters against the national average of 2,200 cubic meters, the state has successfully expanded irrigation infrastructure to cover nearly 60% of its 47.6 lakh hectares of net sown area. Consequently, agriculture contributed approximately ₹1.5 lakh crore to the state's GSVA in 2023-24, while sustaining the livelihoods of 41.1 per cent of the rural workforce predominantly small and marginal farmers operating an average holding size of merely 0.7 hectares.

The sector's strength lies in its productivity achievements and diversification. Tamil Nadu ranked first nationally in oilseeds, groundnut, and sugarcane productivity, second in maize, and third in paddy, with yields of rice (3,235 kg/ha) and sugarcane (105,000 kg/ha) well above national averages. Cropping patterns have shifted in favour of paddy and maize, while horticulture expanded to 16.3 lakh hectares in 2023-24, producing 235.22 lakh MT of high-value crops. At the same time, organic farming grew significantly, with registered farmers more than doubling from 5,255 in 2019-20 to 11,820 in 2023-24, covering 34,000 hectares.

Policy interventions have played a central role in enabling this progress. Massive credit expansion commercial bank loans doubling from ₹1.83 lakh crore in 2019-20 to ₹3.58 lakh crore in 2023-24 along with crop loan disbursement of ₹15,542.84 crore by cooperatives, ensured financial inclusion. Subsidized mechanization, organic certification support, and targeted procurement incentives (such as the ₹105/quintal bonus for paddy) further strengthened farm incomes. Additionally, free power subsidies worth ₹7,216 crore in 2024-25 underpinned intensive irrigation and mechanization, helping small and marginal farmers adopt modern practices.

Tamil Nadu's agriculture reflects a delicate balance between constraints and innovations. While climate variability such as 67 extreme weather days in 2024 and fluctuating reservoir releases poses ongoing risks, the state's integrated approach of infrastructural expansion, credit access, mechanization, and diversification has helped maintain agricultural growth and resilience. The trajectory suggests that

sustained emphasis on water management, organic farming, and high-value horticulture will be critical for securing future food security and rural livelihoods in Tamil Nadu.

16. REFERENCES

1. Directorate of Economics and Statistics, Government of Tamil Nadu. (2025). Land use pattern and agricultural productivity data for Tamil Nadu, 2023-24. Government of Tamil Nadu.
2. Department of Agriculture and Farmers Welfare, Government of Tamil Nadu. (2025). Fertilizer and electricity consumption trends in Tamil Nadu agriculture (2019-20 to 2023-24). Government of Tamil Nadu.
3. Easwaran, M. (2023). Decadal analysis of climate variability and its impact on agriculture in Central Tamil Nadu. *Climate Research Journal*.
4. Kurien, C. T. (2010). Agricultural development in Tamil Nadu: Two decades of land-use change at village level. In *Understanding Green Revolutions: Agricultural Development in Tamil Nadu* (pp. [page numbers]). Cambridge University Press. <https://www.cambridge.org/core/books/understanding-green-revolutions/agricultural-development-in-tamil-nadu-two-decades-of-land-use-change-at-village-level/5E5AAD6ED5F54FC2CF3E1BC2FAE48DC9>
5. Logesh, R., Kumar, S., & Kannan, P. (2023). Constraints faced by organic farmers in the Cauvery Delta Zone, Tamil Nadu. *Journal of Organic Agriculture and Sustainable Development*.
6. Policy Note on Agriculture, Government of Tamil Nadu. (2024-25). Area, production, and yield of horticulture crops in Tamil Nadu.
7. Rajalakshmi, R. (2023). Benefits, challenges, and policies supporting organic farming in Tamil Nadu. *International Journal of Agricultural Sciences*, [Volume(Issue)].
8. Reserve Bank of India. (2025). Handbook of Statistics on Indian States: Credit to Tamil Nadu agriculture by commercial banks (2019-20 to 2023-24). RBI Publications.
9. Sivasubramaniyan, B. (2016). Irrigation growth trends and water resource management in Tamil Nadu. *Journal of Agricultural Studies*.
10. Tamil Nadu Organic Certification Department. (2025). Growth and status of organic farming in Tamil Nadu (2019-20 to 2023-24). Government of Tamil Nadu.
11. Water Resources Department, Government of Tamil Nadu. (2025). Water released from major reservoirs in Tamil Nadu (2019-20 to 2023-24). Government of Tamil Nadu.
12. World Bank. (2023). Tamil Nadu Irrigated Agriculture Modernization and Water-Bodies Restoration and Management Project Performance Assessment Report. World Bank Group. <https://ieg.worldbankgroup.org/reports/india-tamil-nadu-irrigated-agriculture-modernization-and-water-bodies-restoration-and-1>
13. AJAEES. (2021). Impact of groundwater irrigation development on agricultural productivity in Krishnagiri District, Tamil Nadu. *Asian Journal of Agricultural Extension, Economics & Sociology*