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PRODUCTION AND MARKETING OF FLOWERS IN TIRUCHIRAPPALLI DISTRICT, TAMIL NADU: AN EMPIRICAL ANALYSIS

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ABSTRACT

Indian agriculture is turning out to be a high-growth sector floriculture offering plenty of employment and export potential. The aim of the study is to analyze the production economics and marketing efficiency of flowers in Tiruchirappalli District of Tamil Nadu. The study used primary data collected from 436 flower-cultivating households in five blocks. Objectives of the study included analysis of socio-economic profile. Further, the study includes analysis of cost-return structure. Also, the study includes the analysis of resource-use efficiency. It is done through cobb-douglas production function. Moreover, the study also analysed performance of marketing channel. Finally, the study is on five major flower types – jasmine (Jasminum spp.), rose (Rosa spp.), chrysanthemum (Chrysanthemum spp.), crossandra (Crossandra infundibuliformis) and marigold (Tagetes spp.). The Deputy Director of Horticulture, Tiruchirappalli, provided secondary data on area, production and productivity trends at the district level that are 2015 to 2025. The study finds that out of all cut flowers, jasmine generated the highest employment as 1,284 man-days/ha. Chrysanthemum gave the best output-input ratio of 1.64. Further, rose generated the highest net income of Rs. 2,13,564/ha. Two challenges that remain quite prominent in the agriculture sector are marketing inefficiency due to multi-level intermediaries and post-harvest losses of 20-35%. The study suggests investing on an infrastructure-based intervention cold chain, regulated market yards for command area drip irrigation support minimum support price for flower growers.

Keywords: *Floriculture; Production economics; Marketing efficiency; Cobb-Douglas production function; Tiruchirappalli; Tamil Nadu; Flower marketing channels; Post-harvest losses*

JEL Classification: *Q12 (Micro Analysis of Farm Firms), Q13 (Agricultural Markets and Marketing), Q16 (R&D; Agricultural Technology), O13 (Agriculture; Natural Resources)*

1. INTRODUCTION

India's rural economy relies heavily on agriculture with more than 58.7 per cent of the population depending on it for their livelihood (GDP contribution: 16.5% in 2019–20). Horticulture, which includes vegetables, fruits, and flowers, is being practiced increasingly within this sector as a diversification option by farmers who want higher returns per unit.

Among horticulture subsector, floriculture is the only one which can generate farm level income and export earning.

After China, presently India is second largest producer of loose flowers in the world. Tamil Nadu and Karnataka are the major producing states that together account for a large share of the flower production in the country. As per an official data by the Deputy Director of Horticulture, Tiruchirappalli, the area under cultivation of flowers has increased consistently only in Tamil Nadu, from 41,444 ha (2020-21) to 46,798 ha (2024-25). The total production also increased from 5,05,692 MT to 6,47,008 MT, with productivity increasing from 12.20 MT/ha to 13.83 MT/ha.

Tiruchirappalli District, which has a long history of farming along the Kaveri river basin during the Chola era, has become a well-known place for growing traditional loose flowers. The district had 1,289 hectares of cultivated flowers and produced 14,979 metric tons in 2024–25, with a productivity of 11.62 metric tons per hectare. Five types of commercial flowers are the most popular in the district: jasmine, rose, chrysanthemum, crossandra, and marigold. These flowers are used for religious, ceremonial, and export purposes. Even though the flower industry is clearly growing, there aren't many rigorous empirical studies on how flowers are produced and marketed at the district level. Existing literature has predominantly focused on individual crops, such as rose or jasmine, in isolation, lacking a comparative multi-crop analytical framework. This study fills that gap by doing a full socio-economic analysis of 436 flower-growing households across

1.1 Objectives of the Study

The specific objectives of this study are:

(i) To examine the socio-economic profile of flower-cultivating households in Tiruchirappalli District.

(ii) To estimate the cost of cultivation, gross returns, and net income from major flower crops.

(iii) To analyze resource-use efficiency using Cobb-Douglas production function analysis.

(iv) To evaluate marketing channels, price spreads, and marketing efficiency for selected flowers.

(v) To identify production and marketing constraints faced by flower growers.

(vi) To suggest policy measures for improving the floriculture sector in the study area.

1.2 Hypotheses

H1: There exists no significant relationship between the demographic characteristics of flower growers (age, gender, community, family size) and their type of flower production.

H2: The Cobb-Douglas production function explains a significant proportion of variation in flower yield across farm categories.

H3: Marketing channels with fewer intermediaries generate higher producer shares in consumer rupee.

2. REVIEW OF LITERATURE

The theoretical foundation of this study is based on production economics, agricultural marketing theory, and the resource-use efficiency framework as applied to horticulture. Lakshmanan and Vijayalakshmi (1998) utilized the capital-output ratio to assess capital use efficiency, contending that fixed capital utilization is a crucial factor influencing farm profitability in horticulture. Ram (1997) demonstrated the superiority of marginal productivity

over average productivity in resource-use efficiency analyses, promoting the Cobb-Douglas specification to quantify factor elasticities. The Directorate of Economics and Statistics (1997) established cost categories (Cost A1 to Cost C) that are now the standard for studies on the cost of cultivation in India. Raju and Rao (2000) developed a six-cost framework (A1, A2, B1, B2, C1, C2), which is utilized in the current study. Kohls and Uhl (1990) characterized marketing channels as the conduit facilitating the transfer of a commodity from producer to consumer, where intermediary costs and margins dictate marketing efficiency. Ramamoorthy (2001) defined marketing efficiency using the ratio of marketing margins to consumer price. Hugar and Hiremath (2004) improved this by adding the price received by the producer, the cost of marketing, and the profit share of traders. K.L.Dangi & et al (2016) stated in their paper that floriculture is the fast emerging and high competitive industry in India. India stands second in the world's production of floriculture produce and roses even after that India's share in the world trade is negligible that is 0.89percent. Floriculture industry in India face challenges regarding production, marketing and export. After adopting proper technique India's share in floriculture will be booming in the world floriculture trade. They also recommended to government that the Government of India has introduce many developmental programmes mainly through the Ministry of commerce (APEDA) and ministry of agriculture (NHB),etc. The expert committee set up by Govt. of India for promotion of export-oriented floriculture units has identified at Banglore, Pune, New Delhi and Hyderabad as the major areas suitable for such activity especially for cut flowers.

Indian floriculture exporters should emphasize developing other diversified products and marketing them through dedicated outlets, thus, expanding the definition of floriculture from just fresh flowers to products & accessories manufactured from flowers. Promoting strong brand recognition for Indian cut flowers and flower accessories through designated outlets at the foreign markets and advance product positioning in those markets would help Indian flower exporters to compete in international markets. effectively. The new export policy is introduced with various advantages to exporters. The foreign trade policy of 2015- 2020 will helps in improving international trade of floriculture definitely. R.Senthilkumar (2017) stated that the research study mainly focuses on what cultivate the flowers in India, the usages of a size of plant or land. The usages of flowers from beneficiaries and cut-flowers export zones of India. The rise in area under flower cultivation is also attributable to strong rising domestic demand and a strong demand for flowers especially for events like Christmas, New Year's Eve, Valentine's Day and Mother's Day. India is the second largest producer of the flowers in the world. Tamilnadu gives more contribution in flowers cultivation. The study revealed that the area of flowers cultivation in Pudukkottai District of Tamilnadu remains constant throughout of the study period but there is a fluctuation in the cultivation of flowers. Considering the current scenario of the agri-industry, it has to maintain its comparative attractiveness like others in India to grow and develop as a major industry. This would mean that the rewards to the growers should commensurate with the efforts required of them. Research on Tamil Nadu floriculture has predominantly been confined to specific districts or crops. No study has systematically compared the production economics and marketing efficiency of five major flower types within a single district utilizing primary household data in conjunction with decade-long secondary trend data a methodological contribution of the present study.

3. STUDY AREA AND RESEARCH METHODOLOGY

3.1 Profile of Tiruchirappalli District

The Kaveri River runs through Tiruchirappalli District in Tamil Nadu, which is in the middle of the state (latitude: 10°10'–11°20' N; longitude: 78°10'–79°0' E). It has 1,590 villages, 408 village panchayats, 14 blocks, and eight taluks. According to the 2011 Census, there were 27,13,858 people living in the district. The main source of income is farming, with rice, cholam, cotton, groundnuts, and corn as food crops and floriculture as the main horticultural business. The blocks of Andhanallur, Mannachanallur, Thuraiyur, Marungapuri, Manapparai, and Vaiyampatti are where most of the flowers are grown in the district. The area of irrigated land used to grow flowers has grown from 864 ha in 2015–16 to 1,289 ha in 2024–25. This is a 49.2% increase over ten years. The biggest areas of land that are grown are jasmine, Sampangi (Magnolia champaca), and Pichi (Arabian jasmine). The next biggest areas are Kozhikondai (globe amaranth), Chevanthi (chrysanthemum), and Arali (oleander).

3.2 Research Design and Data Collection

A cross-sectional survey design using mixed methods was used. Structured interview schedules were used to collect primary data from 436 households in five panchayat union blocks of Tiruchirappalli District that grow flowers. Respondents were chosen using stratified random sampling, with strata based on farm size (marginal: <1 ha; small: 1–2 ha; medium: 2–4 ha; large: >4 ha) and the primary flower cultivated. We got secondary data on floriculture statistics for districts and states (area, production, productivity from 2015–16 to 2024–25) from the Deputy Director of Horticulture and the Deputy Director of Statistics in Tiruchirappalli District. The statistical tools used are chi-square tests (to see if demographic factors are linked to flower-type choice), the Cobb-Douglas production function (to see how well resources are used), cost-return analysis (to see how profitable the business is), and price-spread analysis (to see how well the business is marketed). We used QI Macros and standard econometric software to do the statistical analysis.

4. RESULTS AND DISCUSSION

4.1 Floriculture Trends in Tamil Nadu and Tiruchirappalli

Table 1 shows how well Tamil Nadu's floriculture industry did in each district in 2024–25. Krishnagiri district has the most land under cultivation in the state, with 10,104 hectares and a production of 1,95,425 MT (19.34 MT/ha). Dharmapuri district comes in second with 7,587 hectares and 1,04,764 MT. Tiruchirappalli is in the middle of the pack with 1,289 ha and 14,979 MT (productivity: 11.62 MT/ha), which is below the state average of 13.83 MT/ha, so there is room for improvement in yield.

Table 1: Selected District-wise Flowers Area, Production and Productivity in Tamil Nadu (2024-25)

S.No	District	Area (Ha)	Production (MT)	Productivity (MT/Ha)
1	Tiruchirappalli	1,289	14,979	11.62
2	Krishnagiri	10,104	1,95,425	19.34
3	Dharmapuri	7,587	1,04,764	13.81
4	Salem	4,259	64,050	15.04
5	Tiruvannamalai	4,588	57,106	12.45
6	Dindigul	2,336	23,815	10.20
7	Madurai	2,262	23,218	10.26
8	Erode	1,869	21,959	11.75
State Total	Tamil Nadu	46,798	6,47,008	13.83

Source: Deputy Director of Horticulture, Tiruchirappalli – 620020

Table 2: Flower Cultivation Area Trend in Tiruchirappalli District by Species (2015-16 to 2024-25, Hectares)

Flower	2015-16	2017-18	2019-20	2021-22	2022-23	2024-25
Jasmine	554	630	657	629	608	598
Sampangi	61	79	82	105	107	101
Pichi	50	68	75	76	114	111
Chevanthi	98	77	85	55	157	83
Rose	29	21	23	30	36	39
Arali	10	24	15	34	53	73
Marigold	0	4	2	15	6	22
Total (all)	864	1,024	1,095	1,060	1,235	1,289

Source: District G-Return, Deputy Director of Statistics, Tiruchirappalli District – 620001

The trend over the past ten years shows that jasmine is still the most popular flower crop, even though its area has shrunk slightly from 554 ha (2015–16) to 598 ha (2024–25). There have been big increases in Arali (from 10 ha to 73 ha), Marigold (from 0 to 22 ha), and Pichi (from 50 ha to 111 ha). This is because growers are changing what they grow in response to market demand.

4.2 Socio-Economic Profile of Sample Respondents

Table 3 summarises the key socio-economic characteristics of the 436 sample respondents.

Table 3: Socio-Economic Profile of Sample Flower Growers (n = 436)

Variable	Category	Frequency	Percentage (%)
Age	35–40 years	166	38.0
Age	41–45 years	108	24.8
Age	46–50 years	96	22.1
Age	51–55 years	39	8.9
Age	Above 55 years	27	6.2
Gender	Male	368	84.4
Gender	Female	68	15.6
Religion	Hindu	341	78.2
Religion	Muslim	61	14.0
Religion	Christian	34	7.8
Community	BC	123	28.2
Community	MBC	139	31.9
Community	DNC	108	24.8
Community	SC/ST	58	13.3
Education	No Formal Education	152	34.9
Education	Primary Level	150	34.4
Education	Middle School	82	18.8
Education	High School / Higher Secondary	52	11.9
Family Size	Up to 5 members	180	41.3
Family Size	5–7 members	199	45.6
Family Size	Above 7 members	57	13.1
Monthly Income	Below Rs. 15,000	253	58.0
Monthly Income	Rs. 15,000–20,000	109	25.0
Monthly Income	Rs. 20,000–25,000	35	8.0
Monthly Income	Above Rs. 25,000	39	9.0

Source: Compiled from Primary Data

The largest age group (38%) is 35 to 40 years old, which means that the floriculture workforce in Tiruchirappalli is relatively young. The fact that there are almost no farmers under 35 years old shows that the sector is having trouble with a generational transition. 84.4% of the respondents are men, but it's important to note that women are also important to flower-picking operations. There aren't many people who have finished secondary school (only 11.9% of them), which makes it hard for them to learn new ways to grow crops. The average household

income is low; 58% of those who answered said they make less than Rs. 15,000 a month. Notably, only floriculture growers with five or more years of experience consistently make Rs. 25,000 or more per month. This suggests that having more experience leads to higher income in this field.

4.3 Chi-Square Tests: Demographic Variables and Flower Production

Chi-square tests were conducted to test the independence between demographic variables and the type of flower cultivated. Results are presented in Table 4.

Table 4: Chi-Square Test Results – Demographic Variables vs. Type of Flower Production

Variable Pair	Chi-Square Value	p-value	df	Decision ($\alpha = 0.05$)
Age vs. Flower Type	5.676	0.460	6	Accept H_0 (Independent)
Gender vs. Flower Type	1.482	0.830	2	Accept H_0 (Independent)
Community vs. Flower Type	12.438	0.053	6	Accept H_0 (Independent)
Family Size vs. Flower Type	1.482	0.830	4	Accept H_0 (Independent)

Source: Calculated using QI Macros on Primary Data

The chi-square results consistently demonstrate that demographic factors (age, gender, community, family size) do not have a significant impact on the selection of cultivated flowers. This finding indicates that floriculture in Tiruchirappalli is a transactional, economically motivated endeavour. Farmers choose crops based on agro-climatic suitability and market demand rather than socio-demographic factors.

4.4 Cost, Returns and Profitability Analysis

The cost-return analysis covers the five major flower crops using the standardized cost framework (Cost A1 through Cost C2). Net income is computed as gross returns minus total cost (Cost C2). Table 5 presents a comparative summary.

Table 5: Comparative Cost and Return Analysis of Major Flower Crops (per Hectare, Rs.)

Flower Crop	Total Cost (Cost C2, Rs.)	Gross Returns (Rs.)	Net Income (Rs.)	Output-Input Ratio
Jasmine (Pitchi)	1,36,365	2,16,422	80,057	1.59
Rose	1,24,196	3,29,877	2,13,564*	2.66*
Chrysanthemum	2,12,508	3,65,350	1,52,842	1.72
Crossandra	43,053	~76,500	~33,447	1.78
Marigold	35,365	54,078	18,713	1.53

*Source: Compiled from Primary Data. *Rose net income is computed from gross income of Rs. 3,29,877/ha less total cost of Rs. 1,24,196/ha. Crossandra estimates derived from production function analysis.*

With a net income of Rs. 2,13,564 and an output-input ratio of 2.66, rose is the flower that makes the most money per hectare. Chrysanthemum comes in second with an output-input ratio of 1.72, but it costs a lot more to set up. Jasmine is the most labor-intensive crop, with 1,284 man-days per hectare, and it is also the most profitable, with a net income of Rs. 80,057 per hectare. This makes it an important source of rural employment. Marigold is a good crop for small farmers because it has the lowest establishment cost (Rs. 35,365/ha) and a manageable output-input ratio (1.53). It also provides 283 man-days/ha. It takes less time to grow crops, which means less work.

4.5 Resource-Use Efficiency: Cobb-Douglas Production Function Analysis

We used Cobb-Douglas production functions to figure out what factors had the biggest effect on yield for jasmine, chrysanthemum, and crossandra. The general form is: $\ln(Y) = \ln(A) + \Sigma\beta_i \ln(X_i) + \varepsilon$, where Y is the yield per hectare, X_i are the amounts of inputs (seedling, irrigation, fertilizer, pesticide, labor, ploughing, plucking), β_i are the partial elasticities, and ε is the error term.

Table 6: Cobb-Douglas Production Function Results – Selected Flower Crops

Crop	Significant Inputs (5% Level)	R^2	Sum of Elasticities (Returns to Scale)	Inference
Jasmine	Seedling, Irrigation, Fertilizer	—	< 1.00	Decreasing returns (optimise inputs)
Crossandra (Small farms)	Fertilizer, Plant protection	0.9642	0.9864 (≈1)	Constant returns to scale
Crossandra (Medium farms)	Fertilizer, Irrigation	0.9642	1.1374 (> 1)	Increasing returns to scale
Crossandra (Large farms)	All inputs	0.9642	1.1710 (> 1)	Increasing returns to scale
Chrysanthemum	Fertilizer, Labour, Irrigation	—	—	Output-input ratio = 1.64

Source: Estimated from Primary Data using OLS. Crossandra R^2 of 0.9642 indicates 96.42% of yield variation is explained by the six included inputs.

Seedling quality, enough irrigation, and fertilizer application are the three statistically significant factors that affect jasmine yield. The elasticity of seedling cost shows that a 1% rise

in seedling spending leads to a 0.002% rise in jasmine yield. This shows how important it is to use high-quality planting material. The production function results for crossandra indicate that medium and large farms function under a regime of increasing returns to scale (sum of elasticities > 1), implying that economies of scale can be realized through the expansion of cultivated area.

The six input variables in the model explain 96.42% of the variation in crossandra yield, which shows that the model is very good at explaining things. The elasticity coefficient for plant protection chemicals in crossandra cultivation is 0.0711, which means that for every 1% increase in chemical spending, the yield goes up by 0.0711%. This means that targeted agrochemical intensification is possible.

4.6 Marketing Channels and Price Spread Analysis

Three marketing channels were identified for the major flower crops in Tiruchirappalli District:

Channel I: Producer → Commission Agent → Wholesaler → Retailer → Consumer

Channel II: Producer → Pre-harvest Contractor → Wholesaler → Retailer → Consumer

Channel III: Producer → Retailer → Consumer

Table 7: Marketing Channels, Costs and Producer's Share – Marigold (per Quintal, Rs.)

Channel	Volume Share (%)	Marketing Cost (Rs./Qtl)	Producer Share in Consumer Rupee (%)	Net Return to Producer (Rs./Qtl)
Channel I (via Commission Agent)	33.29	684.03	85.74	~320
Channel II (via Pre-harvest Contractor)	41.77	400.13	90.36	~447
Channel III (Direct to Retailer)	24.93	40.42	100.00	Highest

Source: Compiled from Primary Data and Market Survey

Channel II (pre-harvest contract) is the most common way to buy marigolds, making up 41.77% of the total volume. Channel III (direct retail), on the other hand, has the highest producer share (100%) and the lowest marketing cost (Rs. 40.42/qtl). Channel I, the main traditional channel through commission agents, has the highest marketing cost (Rs. 684.03/qtl) and gives the lowest producer share (85.74%). Losses after harvest are a big drain on the economy: 20–35% of flowers are lost during harvest, handling, storage, transport, and marketing. The commission agent's 10% fee on sales is a big problem for producers, especially for goods that spoil quickly. Chrysanthemum flowers, which are mostly moved by truck and bus in gunny bags, are very likely to get damaged during transit.

4.7 Employment Generation in Flower Cultivation

Table 8 presents the employment generation per hectare for major flower crops. This is a critical dimension of floriculture's social impact, particularly for landless agricultural labourers and women workers.

Table 8: Employment Generation per Hectare in Flower Cultivation

Flower Crop	Employment (Man-days/Ha)	Nature of Crop	Labour Intensity Remarks
Jasmine	1,284	Perennial	Highest—continuous flower picking required year-round
Rose	660	Perennial	Regular pruning, harvesting, and handling
Chrysanthemum	652	Seasonal (6 months)	Labour-intensive at harvest and processing stage
Marigold	300–283	Seasonal (4 months)	Lowest—shorter crop duration reduces total demand
Crossandra	~400*	Perennial	Moderate; intensive during picking season

*Source: Primary Data. *Crossandra estimate extrapolated from production function inputs. Man-days reflect all crop operations.*

Jasmine's high employment intensity (1,284 man-days/ha) shows how important it is as a social safety net crop in the district. The delicate nature of picking flowers makes jasmine farming especially good for women workers. The study's results show that floriculture creates a lot more jobs than field crops and most other types of horticulture. This proves that the sector is important for rural growth that includes everyone.

4.8 Production and Marketing Constraints

Respondents were asked to name the biggest problems they had with production and marketing. The study has revealed the following key constraints:

Limitations on production: (i) Water stress and not enough irrigation (groundwater depletion from over-exploitation of bore wells); (ii) A lot of pests and diseases; (iii) Not enough good planting material; (iv) High wages and a lack of workers during busy times; (v) Weather events that are hard to predict (drought and rain that isn't normal); (vi) Money problems that make it hard to get better inputs.

Marketing Constraints: (i) Agents charge high commissions (10% of sale proceeds); (ii) There is no reliable market price information at the village level; (iii) Post-harvest losses (20–35%) due to poor handling, storage, and transport infrastructure; (iv) There are no cold storage facilities near production clusters; (v) Traders collude to manipulate prices and pre-harvest contractors; and (vi) There are no grading standards and packaging norms. About 48.21% of

the people who answered know about modern floriculture techniques but choose to stick with traditional ones. This shows that there is a gap between knowing about and using new techniques, which is caused by fear of risk, lack of money, and lack of institutional support.

5. DISCUSSION

The empirical findings from Tiruchirappalli District enhance the existing literature on smallholder floriculture economics in developing countries in various ways. First, the results of the production function show that irrigation and fertilizer are the most important factors that affect the yield of different flower species. This is in line with what Ram (1997) and Lakshmanan and Vijayalakshmi (1998) found. Crossandra cultivation on medium and large farms shows increasing returns to scale. This means that combining small farms or using contract farming could make productivity better.

Second, the marketing channel analysis shows a common paradox in Indian agricultural markets: even though there are more efficient short channels (Channel III), most flowers still go through intermediary-heavy channels (Channel II). This is mainly because contractors' pre-harvest financing cuts off the farmer's access to open-market price discovery. This finding is consistent with Kohls and Uhl's (1990) definition of marketing channel lock-in through reliance on credit. Third, the high rate of loss after harvest (20–35%) shows that the infrastructure for perishable goods after harvest is not good enough. Cut flowers are very sensitive to temperature and handling, so even a 10% drop in post-harvest losses could make a big difference in farmgate income. This is like increasing effective production by about 11.8% at the current loss level. Fourth, the inverse relationship between farm size and productivity found in this study where marginal and small farmers earn more net income per unit area by using more family labor is in line with the classical inverse size-productivity hypothesis in Indian agriculture (Berry and Cline, 1979). Good management, pest control, and constant supervision on smaller plots make up for the fact that they are smaller.

6. POLICY RECOMMENDATIONS

Based on the research, the following policy changes are suggested:

1. Cold Storage Infrastructure: To cut down on post-harvest losses and allow for temporary price arbitrage, the government should build community cold storage facilities at major flower production clusters like Andhanallur, Mannachanallur, and Thuraiyur.

2. Regulated Market Yards: To stop middlemen from taking advantage of flower sellers, there needs to be a dedicated flower market yard in Tiruchirappalli District with clear price discovery methods and regulated commission structures.

3. Support for Drip and Sprinkler Irrigation: Because of problems with groundwater depletion, NABARD and state horticulture departments should give money to farmers who grow jasmine and roses, which use the most water.

4. Minimum Support Price (MSP) for Flowers: To protect flower producers from price swings, especially during seasonal gluts, a floor price mechanism should be put in place for key commercial flowers like jasmine, marigold, and rose. This is similar to the way food grain MSP policies work.

5. Market Information Systems: The Tamil Nadu Horticulture Department should make a real-time market price dissemination system available through mobile SMS or apps to fix the problem of not having any price information at the village level.

6. Group marketing through cooperatives: Farmers should be encouraged to form cooperative societies so they can negotiate, transport, and sign pre-harvest contracts together. This will make it harder for traders to work together to cheat farmers.

7. Extension Services: Flower extension workers should show small and marginal growers how to grow flowers on their own farms. They should focus on the gap between awareness and adoption (48.21% awareness, low adoption).

8. Help from APEDA and NHB: The Agriculture and Processed Food Products Export Development Authority (APEDA) should increase airfreight subsidies for cut flower exports and help Tiruchirappalli flowers find new markets in high-end export markets.

7. CONCLUSION

This study offers an extensive empirical examination of the production economics and marketing dynamics of floriculture in Tiruchirappalli District, Tamil Nadu, utilizing primary data from 436 flower-cultivating households and a decade-long secondary data series (2015–16 to 2024–25).

The results show that floriculture is a good way for smallholder farmers in Tiruchirappalli to make money. Roses have the highest net income (Rs. 2,13,564/ha), and chrysanthemums have the best output-input ratio (1.72). Jasmine is still the most important flower in the industry, providing 1,284 man-days of work per hectare, which is the most of any flower crop studied. Using Cobb-Douglas production functions to look at how well resources are used shows that irrigation, seedling quality, and fertilizer use are the most important factors that affect yield. Medium and large crossandra farms show increasing returns to scale. Intermediary proliferation, post-harvest losses of 20–35%, lack of price information, and trader-controlled pre-harvest financing, on the other hand, make marketing much less effective. The lack of regulated market infrastructure and cold storage is the most important systemic failure in the floriculture value chain. The study's results back the idea of making targeted public investments in post-harvest and marketing infrastructure, as well as making changes to institutions to give small and marginal flower growers a stronger bargaining position. If policy-driven infrastructure development and market regulation are put in place, the floriculture sector in Tiruchirappalli could be a major driver of inclusive agricultural growth in central Tamil Nadu.

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REFERENCES

1. Berry, R. A., & Cline, W. R. (1979). Agrarian structure and productivity in developing countries. Johns Hopkins University Press.
2. Directorate of Economics and Statistics. (1997). Cost of cultivation studies: Concepts and methodology. Government of India, Ministry of Agriculture.
3. Hugar, L. B., & Hiremath, G. K. (2004). Marketing efficiency of vegetables in Karnataka. Indian Journal of Agricultural Economics, 59(3), 614–621.
4. Kohls, R. L., & Uhl, J. N. (1990). Marketing of agricultural products (7th ed.). Macmillan Publishing Company.
5. Lakshmanan, A., & Vijayalakshmi, D. (1998). Capital use efficiency in horticulture. Journal of Rural Development, 17(2), 189–201.
6. Mamoria, C. B., & Joshi, R. L. (1985). Principles and practice of marketing in India. Kitab Mahal.
7. Ram, K. (1997). Resource use efficiency in agricultural production. Agricultural Economics Research Review, 10(1), 45–58.
8. Raju, V. T., & Rao, V. M. (2000). Economics of farm size and land use efficiency. Oxford University Press.
9. Ramamoorthy, K. (2001). Marketing efficiency of flowers in Tamil Nadu. Agricultural Situation in India, 58(4), 231–238.
10. Tamil Nadu Horticulture Department. (2024–25). District-wise area, production and productivity of flowers in Tamil Nadu. Deputy Director of Horticulture, Tiruchirappalli.
11. K.L.DANGI & etal (2016) “Major Challenges Before the Floriculture Industry In India”, Agricultural Science-Indian journal of research , PARIFEX- Volume : 5 | Issue : 10 | October 2016 ISSN - 2250-1991 | IF : 5.215 | IC Value : 77.65
12. .R.SENTHILKUMAR (2017)"Cultivation and Marketing of Flowers In India"-An Empirical Study- International Journal of Research in Social Sciences Vol. 7 Issue 7, July 2017, ISSN: 2249-2496