

Economic Viability and Livelihood Implications of Polyhouse Anthurium Cultivation in the Malnad Region

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Abstract

The backbone of the Indian economy continues to be agriculture, with horticulture and floriculture developing as important growth sectors that greatly contribute to exports, income, and job creation. Because of the growing demand for flowers and decorative plants both domestically and abroad, horticulture's specialized branch, floriculture, has become more well-known. The economic analysis of floriculture in Karnataka's Malnad region, with a concentration on Anthurium growing, is the main topic of this study. The study looks at the marketing channels, financing patterns, cost and return, and socioeconomic trends of floriculture growers. According to information gathered from 280 farmers, medium-sized farms predominate in the area, and most of them rely on cooperative banks for funding. Results show that net revenue from Anthurium production is highly influenced by variables like farming experience and educational background. Moreover, despite government subsidies, the high establishment costs of polyhouses pose difficulties. The findings demonstrate the potential and limitations of floriculture as a viable source of income in Karnataka.

Keywords: Agriculture, Horticulture, Floriculture, Anthurium, Karnataka, Economic Analysis

Introduction:

Agriculture is the linchpin of any economy. The primary sector is what creates jobs, ensuring that the entire economic cycle continues. When we discuss the Indian economy, we only include those who are of legal age was severely impacted by the coronavirus outbreak and the subsequent economic lockdowns in India. The International Monetary Fund projects that in 2020, the world's output will fall by 4.9%, while India's GDP is expected to drop by as much as 4.5%. But, according to the department of economic affairs' July monthly economic report, the agriculture industry will be the bright spot in 2020–21.

Agriculture production can be divided into three categories: horticulture, commercial/cash crops, and food-grain crops. The science and practice of growing decorative plants, flowers, turf, vegetables, fruits, and nuts is known as horticulture. It is derived from the Latin terms hortus, which means "garden," and cultura, which means "cultivation." A significant portion of the nation's income is being contributed by the expanding importance of commercial gardening. Crops for vegetables, fruits, and flowers are all part of horticulture. India is one country where both flower production and consumption are rising. Compared to the development of conventional crops, the production of flowers generates greater revenue per unit area. In the horticultural sector, farmers and business owners have put all of their focus on flower crops. Farmers prominently placed the production of diverse flowers in organised floriculture.

In terms of floriculture, India has a long history. In recent years, many new agricultural entrepreneurs have become interested in floriculture, which has developed as an economically feasible diversification option in Indian agribusiness. India has always engaged in the cultivation of flowers, but it has only been in recent years that floriculture has developed into a thriving industry. The activity of flower cultivation has evolved into a booming sector as a result of an expanding market brought on by an improvement in the nation's overall standard of living and an increase in wealth, particularly among the middle class. All of the main flowers can be grown all year long because there are different agroclimatic conditions in different parts of the country.

Horticulture has emerged as one of India's key development areas, accounting for 30% of the country's agricultural GDP and 50% of all agri-exports with just 14% of the land. Additionally, this sector creates three to four times as many jobs as other agricultural products. Policymakers and experts have shifted their attention to horticulture crops that are more lucrative and have export potential after the nation achieved self-sufficiency in food crops. The Indian government put a lot of effort into horticulture research and development because the sector is so important to the fast growth of the economy.

Since the beginning of time, ornamental plants and flowers have been linked to our culture. The seal of Mohen-jodaro contains the earliest indication of the pipal as an ornamental plant. The seals of Harappa provide another instance from the same time period that illustrates the use of a decorative plant that resembles a weeping willow. Gardens and flowers have been mentioned in our earliest classic writings as well. Although loose flowers were grown for domestic purposes like making veni, gajra, garlands, etc., as well as for different celebrations like weddings, birthdays, religious offerings, and other social gatherings, the commercial cultivation of cut flowers for domestic and international use is a more recent development in our nation. It deals with cut or loose flowers, ornamental plants such as trees, shrubs, climbers, palms, bamboo, cactus, and succulents, dried flowers, essential oils, and landscape gardening. Floriculture is a significant subfield of horticulture. Gardening is a part of the floriculture industry. It looks nice and is becoming more and more important for clean air in cities.

Floriculture: Meaning and Definition:

The cultivation, processing, and sale of decorative plants in relation to the landscaping of small or large areas and the upkeep of gardens in order to make the surroundings appear aesthetically pleasing are all aspects of the branch of horticulture known as floriculture. Annual (seasonal), biennial, and perennial ornamentals such as cacti, other succulents, bromeliads, trees, shrubs, climbers, bulbous plants, lawn and ornamental grasses, bamboos, orchids, palms, cycads, cut and loose flowers, fillers, ferns, ornamental seed and bulb production, dried flowers or plant parts, and other value-added products such as essential oil extraction, edible pigments, and their derivatives are all India's floriculture industry includes the production and sale of flowers, nursery and potted plants, seeds and bulbs, plant rental services, tissue culture propagation, and the extraction of essential oils.

Floriculture has a long history in India. Because it is both an advanced science and an ancient creative ability, it has played a significant part in the evolution of human civilization

and its social structure. The majority of the nation's flower-growing is done on small farms, and commercial floriculture has only recently begun to gain importance. Flowers have historically been grown in open fields in India, subjecting them to biotic and abiotic stresses. As a result, the quality is below par. However, due to the high demand for various floricultural items on the export market in the age of globalization, the produce must be of an international standard and globally competitive. The aforesaid needs of today's consumers will be met by modern floriculture.

Definition:

Floriculture can be defined as "a specialized branch of horticulture which deals not only with the cultivation of flowers, foliage, climbers, trees, shrubs, cacti, succulents, etc., but also with their marketing and production of value-added products from them" Floriculture can also be defined as "a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and floristry, comprising the floral industry Floriculture includes bedding plants, flowering plants, foliage plants or houseplants. cut greens and cut flowers"

Statement of the problem:

There are several occasions when flowers are needed. For religious, social, and decorative purposes, flowers are necessary. Karnataka's domestic flower supply, nevertheless, is insufficient to meet the state's expanding demand. Flowers must therefore be brought from other regions of India. By paying close attention to the floriculture industry, it is possible to close this imbalance between the supply and demand for flowers. State-based agriculture dominates Karnataka. The floriculture industry in Karnataka has a tonne of room for growth. This industry has the ability to create jobs in addition to bringing in money for the state coffers.

The Malnad region of Karnataka's floriculture is the subject of the current study. The Cost and Returns, Issues, and Prospects of Selected Flowers in Different Districts in Malnad Region of Karnataka have been studied. The current issue is therefore referred to as an Economic Analysis of Floriculture in the Malnad region of Karnataka.

Profile of the Anthurium Flower:

Herbaceous plants known as anthurium are semi-terrestrial, perennial, and have stems that can grow up trees. The plant often grows as an epiphyte (on trees), though it can also grow terrestrially or as a lithophyte. Epiphytic anthuriums use trees as a base but are not tree parasites. Aerial roots develop around the moss-covered trunks or branches. Air moisture is absorbed by the roots. It is a plant that grows slowly, giving off around eight leaves a year.

One of the most eye-catching and well-known indoor plants is the Anthurium Andraeanum, often known as the flamingo flower or lace leaf. Glossy, vibrant flowers that can occasionally be mistaken for plastic are surrounded by leaves that resemble spades. Depending on the variety or hybrid of Anthurium, the recognizable "flowers" are frequently cut and used in floral arrangements and come in a variety of hues. The "flowers" are actually inflorescences, which have two components termed the spathe and spadix. Anthurium andraeanum is a member of the Araceae family, which is distinguished by this kind of

inflorescence. Similar inflorescences can be found on related plants like calla lilies (*Zantedeschia aethiopica*) and peace lilies (*Spathiphyllum wallisii*)! The surface of the spike-shaped spadix, which is often yellow but can also be red or pink, is heavily covered in tiny flowers. Many people think that the bright spathe is a petal, but it is actually a bract or a leaf that has been changed.

Anthuriums come in a variety of species, many of which have flowers that are similar to one another, but the adraeanum is the one that is most frequently grown for domestic use. The fact that it comes from the jungles of Colombia and Ecuador can give you a general idea of the conditions it needs. Anthurium require lots of indirect light, humidity, and warmth and won't thrive if they're placed in a dark or dry spot. Continue reading to learn how to care for this unusual tropical plant.

Lighting: Anthurium andraeanum prefers bright, filtered light. A window facing south or west is ideal for plants throughout the growing and flowering season (spring to late summer). Just be careful to keep the Anthurium out of the scorching summer sun! I've had luck maintaining my home in more moderate light from an east-facing window over the winter. In moderate light, they won't blossom, but they'll still be able to grow normally. Anthuriums, like the majority of plants, require strong light in order to bloom.

Anthuriums need continually moist soil when being watered. Water during the growing season when the potting medium's surface feels dry to the touch. For me, this usually means every few days, but individual needs will vary according to environmental conditions like light, temperature, and humidity. Water the plant less over the winter, but make sure it never dries out totally. Ensure that the container you're using has great drainage as well. "Wet feet" are not tolerated by anthuriums.

Objective of the Study:

To study the Socio-Economic trend of Anthurium flower in Malnad region of Karnataka.

Table: 1.1 Distribution of sample according to age and sex:

Size group	Sample														
	Below 25 years			25 to 35 years			35 to 45 years			Above 45 years			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Marginal	08 (13.5 5)	03 (5.08)	11 (18.6 4)	08 (13.5 5)	04 (6.77)	12 (20.3 3)	13 (22.0 3)	08 (13.5 5)	21 (35.5 9)	11 (18.6 4)	04 (6.77)	15 (25.4 2)	40 (67.7 9)	19 (32.2 0)	59 (100)
Small	06 (6.81)	04 (4.54)	10 (11.3 6)	14 (15.9 0)	18 (20.4 5)	32 (36.3 6)	20 (22.7 2)	14 (15.9 0)	34 (38.6 3)	08 (9.09)	04 (4.54)	12 (13.6 3)	48 (54.5 5)	40 (45.4 5)	88 (100)
Medium	18 (13.5 3)	14 (10.5 2)	32 (24.0 6)	25 (18.7 9)	16 (12.0 3)	41 (30.8 2)	18 (13.5 3)	14 (10.5 2)	32 (24.0 6)	17 (12.7 8)	11 (8.27)	28 (21.0 5)	78 (58.6 5)	55 (41.3 5)	133 (100)
Total	32 (11.4 2)	21 (7.5)	53 (18.9 2)	47 (16.7 8)	38 (13.5 7)	85 (30.3 5)	51 (18.2 1)	36 (12.8 5)	87 (30)	36 (12.8 5)	19 (6.78)	55 (19.6 4)	166 (59.2 9)	114 (40.7 1)	280 (100)

Source: Primary data

The results from Table 1.1 reveal that 59.29 percent of the total sampled population was male and 40.71 percent was female. The highest male population was found in the marginal size group of farms, which was 67.80 percent and the highest female population was found in the small-size group of farms which was 45.45 percent. Out of the total population, 18.92 percent were in the age group below 25 years, 30.35 percent were in the age group 25 to 35 years and 19.64 percent were in the age group 45 years and above. The sample population below 25 years was found to be the highest in the medium-size group (24.60percent) and the lowest in the small-size group (11.36 percent). The population between 25 to 35 years was the highest in the small-size farms (36.36percent) and lowest in the marginal size group (20.33 percent). In case of the population of 45 years and above, the highest was in the marginal size group (25.42 percent) and the lowest was in the small-size group (13.63percent).

From the above analysis it is clear that the age group 35 to 45 years formed the largest group in all the size group of the farms. This group formed the most potential labour force in agriculture in all the categories in the study area.

Table: 1.2 Categorization of Farmers according to forming size:

Farming Size	Land Holdings (In acre)	Sample
Marginal	Below 1 acre	59 (21.07)
Small	2 to 4 acres	88 (31.42)
Medium	Above 5 acres	133 (47.5)
Total		280

Source: Primary data

The above table 1.2 reveals that farmers having below 1 acre of land were considered as marginal farmers and the farmers having 2-4 acres of land were considered as small farmers and farmers have more than 5 acres of land were considered as medium farmers. Therefore, 21.07% were classified as marginal farmers, 31.42% were small farmers, and 47.5% were medium farmers in the study area.

Table:1.3 Religion of the Farmers in the Study Area:

Religion	Marginal	Small	Medium	Total
Hindu	48 (81.36)	78 (88.64)	103 (77.44)	229 (81.79)
Christian	3 (5.08)	4 (4.55)	11 (8.27)	18 (6.43)
Muslim	8 (13.56)	6 (6.82)	19 (14.29)	33 (11.79)
Total	59 (21.07)	88 (31.42)	133 (47.5)	280 (100)

Source: Primary data

As shown in table 1.3, it is understood that 81.36 % of marginal farmers were Hindus, 5.08 % were Christians, and 13.56 % of respondents were classified in the study region as Muslims. Among the small-sized farmers growing flowers, 88.64% of the small-sized farmers were Hindus, 4.55% were Christians and 6.82% were Muslims. Similarly, among the medium farmers, 77.44 % of the farmers were Hindus, 8.27 % of the Christian religion identified farmers, and 14.29 % of the Muslim religion identified farmers. Therefore, it can be concluded that 81.79 % of the farmers in the study region were Hindus.

Table: 1.4 Source of Finance for Respondents:

Source of Finance	Marginal	Small	Medium	Total
Commercial Bank	16 (27.12)	20 (22.73)	31 (23.31)	67 (23.92)
Co-operative Bank	29 (49.15)	46 (52.27)	78 (58.65)	153 (54.64)
Other sources	14 (23.73)	22 (25)	24 (18.04)	60 (21.43)
Total	59 (21.07)	88 (31.42)	133 (47.5)	280 (100)

Source: Primary data

Real financial assistance for the sample region flower growers, as shown in Table

1.4. The above table depicts that among the marginal farmers; percentage took loans from Co-operative Bank and 23.73% took loans from other sources. 27.12% of farmers borrowed money from Commercial Bank. 52.27% of small-sized farmers borrowed money from co-operative banks, followed by 22.73% from commercial banks and 25% from farmers who borrowed money from other sources. Nearly 58.65% of them had borrowed money from cooperative banks relative to the medium farmers, followed by 23.31% of them borrowing from commercial banks, and just 18.04% of the medium farmers were getting credit from other sources. It can therefore be inferred that, nearly 23.92% and 54.64% of farmers borrowed money from commercial banks and cooperative banks.

Table: 1.5 Marketing of Flowers by the Respondent:

Marketing of Flowers	Marginal	Small	Medium	Total
Local Traders	12 (20.34)	29 (32.95)	20 (15.04)	61 (21.79)
Whole Sellers	15 (25.43)	22 (25)	34 (25.56)	71 (25.35)
Auction Agents	08 (13.56)	13 (14.77)	12 (9.02)	33 (11.79)
Regulate Market	17 (28.81)	14 (15.91)	55 (41.35)	86 (30.71)
Distant Markets	07 (11.86)	10 (11.36)	12 (9.02)	29 (10.36)
Total	59 (21.07)	88 (31.42)	133 (47.5)	280 (100)

Source: Primary data

In table 1.5, the marketing of flowers by respondents is shown. Among marginal farmers, selling their products to local traders is 20.34%, selling their products to entire whole seller is 25.43%. 28.81% sell their goods in regulate markets. Just 13.56% and 11.86% send their goods to auction shops and distant markets. 25% of small farmers sell their products to whole sellers and 32.95% sell their products to local traders. 15.91% sell their goods in regulate markets. Just 11.36% and 14.77% of farmers sell their goods to distant markets and auction shops. When 25.56% of the medium farmers sell their products to whole sellers, 15.04% sell their products to local traders, 41.35% sell their products in regulate markets, 9.02% sell their products in distant markets, and just 9.02% sell their products to auction shops. In total 30.71% farmers sell their goods to Regulate market.

Table: 1.6 Average establishment cost of polyhouse (1200 m2):

SI. No	Particulars	Cost	Percentage
1	Land development	54558	2.50
2	Red soil	1,50000	6.95
3	Green house structure	1346400	62.44
4	Store room/packaging units	256800	11.90
5	Irrigation system	294000	13.64
6	Sprayers and equipment's	54456	2.52
Total		21,56,214	100.0

As shown in Table 1.6, the average costs of construction of polyhouse were Rs.21.56 lakhs. The highest cost proportion of this cost is accounted for by polyhouse structure, which accounts for 62.44 percent (Rs.13.46 lakh) of the total establishment cost. Before transplanting land preparation cost share 2.50 per cent in the total. The other items of cost included irrigation systems, red soil for field preparation, equipment's, Packaging units etc. The average expected life of all the erected structures considered to be 15-20 years. Study by 'Waghmare and Shandage' also revealed similar results where the average costs of construction of polyhouses were more than 23.13 Lakhs. It is more than Rs. 9.84 Lakhs, Rs. 18.85 Lakhs and Rs.40.61 Lakhs, respectively for small (0.10 ha.) medium (0.19 ha.) and large (0.43 ha.) size groups. The Government has provided 25 per cent subsidy on total cost of erection of polyhouses. Thus, average cost of erection of polyhouse was worked to Rs. 17.32 lakhs. The figures for the small, medium and large size polyhouse were Rs.7.38, 14.14 and 30.45 lakhs, respectively.

Table: 1.7 Net Income of cultivation of Anthurium with Respect to Educational Background of the Farmers:

Education	N	Net Income Mean	Std. Deviation	F Value	Sig.
Not literal but unreadable	9	931342.7778	382030.78340	6.379	Sig. at 0.05 level
Primary education	18	1070771.6670	237569.85650		
SSLC	18	1155819.8890	280557.68950		
PUC	13	1296630.0000	175330.29050		
Graduation	11	1419271.8180	118800.48280		
Total	69	1172882.7970	285946.34160		

Source: Primary data

From the above table 1.7 shows that obtained F value is 6.379 which is significant at 0.05 level means that there is a difference in the mean scores of Net-incomes of cultivation of anthurium with respect to their education background. It means that educational background may influence on net income in cast of cultivation anthurium among farmers. It can be concluded that, those who are getting graduation and their mean score is (M=1419271.81) comparatively more than other educational background farmers.

Table: 1.8 Flower cultivation of anthurium with Respect to Experience of the Respondents:

Farming experience (In years)	N	Net Income Mean	Std. Deviation	F Value	Sig.
1 to 2 years	24	1085249.9170	253185.19150	5.860	Sig. at 0.05 level
3 to 4 years	25	1120211.4000	283810.14030		
Above 5 years	20	1343881.5000	262983.36980		
Total	69	1172882.7970	285946.34160		

Source: Primary data

From the above table 1.8 shows that obtained F value is 5.860 which is significant at 0.05 level means that there is a difference in the mean scores of Net-Incomes of cultivation of anthurium with respect to their forming experience. It means that forming experience may influence on net income in cast of cultivation anthurium among farmers. It can be concluded that, those who are experienced above 5 years and their mean score is (M=1343881.50) comparatively more than other forming experience background farmers.

Findings

- Male farmers constituted 59.29% and females 40.71% of the sample population.
- The most active age group was 35–45 years, forming the strongest agricultural labour force.
- Medium farmers (>5 acres) accounted for the largest group (47.5%), followed by small (31.42%) and marginal (21.07%).
- Majority of flower growers were Hindus (81.79%), followed by Muslims (11.79%) and Christians (6.43%).
- Cooperative banks were the primary source of finance (54.64%), followed by commercial banks (23.92%) and other sources (21.43%).
- Regulated markets were the most preferred outlet (30.71%), followed by wholesalers (25.35%) and local traders (21.79%).
- Establishment of polyhouses was capital intensive (₹21.56 lakhs), with greenhouse structures accounting for the highest share (62.44%).
- Despite government subsidies, high costs remain a barrier for marginal and small farmers.
- Farmers with higher education, especially graduates, earned significantly higher net incomes (₹14.19 lakh mean income).
- Similarly, farmers with over five years of experience reported the highest net incomes (₹13.43 lakh), compared to those with less experience.

Conclusion

In the Malnad region of Karnataka, floriculture—especially the production of Anthuriums—is a potential industry that supports rural development, employment, and income diversification, according to the study. However, its full potential is limited by issues including expensive establishment costs, reliance on cooperative banks, and marketing limitations. Profitability was found to be significantly influenced by education and farming experience, underscoring the necessity of capacity-building initiatives and technical assistance for farmers. Policies should prioritize expanding regulated markets, supporting export-oriented production, and providing subsidized infrastructure support in order to fortify the industry. Floriculture may become a viable and sustainable business with the right institutional and financial support, making Karnataka one of India's top centres for ornamental horticulture.

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