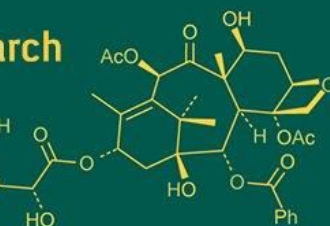
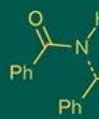
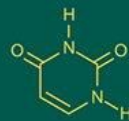
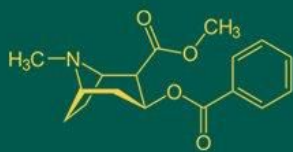


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Financial feasibility analysis of jasmine flower in Madurai district of Tamil Nadu

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Abstract

In India, floriculture is practiced in 0.31 million hectares, producing over 3.1 million tonnes of flowers. This study examines the financial feasibility of jasmine flower using multistage stratified random sampling technique and the results indicated that the total establishment cost of jasmine was Rs. 2,50,045.10 per acre in jasmine farmers category, while it was only Rs. 2,35,097.21 per acre in the FPO-jasmine farmers category. Consequently, the average cost of cultivation for the jasmine farmers was Rs. 2,68,806.57 per acre and for FPO farms, it was Rs. 2,52,624.85 per acre. Thus, it could be concluded that the cost of cultivation was comparatively lesser for FPO-jasmine farmers, which might be due to low per unit cost of materials as they purchase them in bulk, as members of FPO. It is evident that the Net Present Value of jasmine farms was Rs. 20,49,034.14 per acre at 10 percent discount rate and it was Rs. 33,11,436.43 per acre for FPO-jasmine farmers, which clearly indicates that farmers in FPO are getting a higher income than the jasmine farmers. This could be attributed to the fact that the initial investment itself was lower, along with a higher rate of returns. The benefit cost ratio was found to be 2.18 for the jasmine farmers and 3.02 for FPO-jasmine farmers, indicating that investment in jasmine cultivation was financially viable. The study concluded that there is a need to educate the jasmine cultivators to use the required level of these resources in order to increase the per unit production and quality of flowers. Jasmine cultivation is found to be more profitable hence the farmers may be advised to establish jasmine orchards by availing bank finance facilities.

Keywords: Floriculture, jasmine cultivators, financial feasibility

1. Introduction

In India, floriculture is practiced in 0.31 million hectares, producing over 3.1 million tonnes of flowers. Its contribution to the economy has also increased from Rs. 1740 billion in 2011-12 to Rs. 2660 billion in 2019-20. (NAAS, Trilochan Mohapatra, 2022). Flower cultivation in India has huge potential for generating income, employment and enhancing export earnings. Flowers occupy a significant place on the social culture of our country. The Agricultural and Processed Food Products Export Authority (APEDA) is the main agency for the growth of India's floriculture industry and export promotion.

Among the flower crops, jasmine is considered the ruler of blooms. It is also called the "Beauty of India" or the "Ruler of scent" because of its exquisite scent, which both calms and revitalizes *Jasminum multiflorum* (*kakada*), *Jasminum sambac* (*Gundumalligai*), *Jasminum grandiflorum* (*Jadhimalligai*) and *Jasminum auriculatum* (*Soojimmalligai*) are the four types of jasmine that are generally grown in India. (Ashoka *et al.*, 2017) [3].

Madurai District is the primary centre for the production of jasmine, which is then transported to Mumbai and exported abroad and has evolved as a major market for malligai, thus being postulated as the 'Jasmine capital' of India. Madurai Malli, the jasmine flower known for its fragrance and its distinctive petal colour that originates from the district of Madurai also takes pride of being the first flower in Tamil Nadu to be granted a Geographical Indication (GI) Mark by the Registrar of Geographical Indications on January 11, 2013. The Geographical Indication tag (GI tag) has helped the farmers prevent adulteration when exported. The jasmine flowers worth Rs. 11.84 crore were exported from Tamil Nadu. Therefore, the present study is made to estimate the cost and return structure of jasmine cultivation and the economic feasibility of jasmine enterprises in the study area.

2. Methodology

As one of the primary district of jasmine cultivation, Madurai in Tamil Nadu has been chosen for the study. A multistage stratified random sampling technique was adopted in this study. The sample consisted of 112 jasmine growers and 68 FPO jasmine growers. Primary data collection was carried out through personal interviews utilizing pre-tested, well-organized interview schedules.

Cost and return analysis were used to study the economics of jasmine cultivation. Project appraisal techniques, such as Net Present Value (NPV), Benefit Cost Ratio (BCR) and Internal Rate of Return (IRR) have also been estimated.

3. Results and Discussion

The results are presented under two categories namely jasmine farmers category and FPO-Jasmine farmers category.

3.1 Establishment Cost of Jasmine Farms

The sample farmers are adopting the prominent recommended jasmine (*Jasminum sambac*) variety called Ramanathapuram local or Gundumalli or Madurai Malli, which is only one variety available for farmers, and there is no need for growers to find some alternative variety as the growers are satisfied with the long thick petals and long keeping quality.

It could be inferred from Table 1 that the total labour cost for the jasmine farmers during the year of establishment was Rs. 1,28,736.44 per acre, which accounted for 51.49 percent of the total establishment cost. It is also noted that the total labour cost for the jasmine farms of FPO-jasmine farmers during the year of establishment was Rs. 1,27,871.77 per acre, which accounted for about 54.39 percent of the total establishment cost. Thus, it could be concluded that a similar pattern of labour utilization which has been seen in both categories of farms. However, it was comparatively less for the FPO-jasmine farmers, being as a member of FPO they could get the required labour at right time, which has been arranged by the organization.

It could also be seen that the material cost for the jasmine farmers during the year of establishment was Rs. 78,078.90 per acre, which accounted for 31.23 percent of the total cost of establishment. Whereas, it was only Rs. 65,697.43 per acre for the FPO-jasmine farmers, which accounted for 27.94 percent of the total cost of establishment.

It could also be observed that the total establishment cost of jasmine was Rs. 2,50,045.10 per acre in jasmine farmers category, while it was only Rs. 2,35,097.21 per acre in the FPO-jasmine farmers category. As being members of FPO, they purchased the raw materials in bulk and the unit cost of the material was also reduced to some extent. It was observed from the survey that the purchase price of planting material, fertilizers, manures, plant protection chemicals and fencing material s was low as compared to the jasmine farmers.

3.2 Cost of Cultivation of Different Ages of Jasmine Farms

The cost of cultivation of jasmine in the subsequent years after the establishment of the crop is presented in Table 2. It could be seen from the table that the cost of cultivation of jasmine increases with its age, it was Rs. 1,65,735.73 per acre for jasmine farmers and Rs. 1,60,674.05 per acre for FPO

-jasmine farmers in the second year and started increasing till the ninth year of establishment, i.e., Rs. 3,14,139.00 per acre in jasmine farms and Rs. 2,92,332.23 per acre in FPO-Jasmine Farms, then started decreasing from tenth year. For the second year, no pruning was done as the crop was just established.

It could be observed that the average of twelve year labour cost for the jasmine farmers category was estimated as Rs. 1,40,735.79 per acre, which constituted 52.36 percent of the total cost of cultivation. In the case of FPO-jasmine farmers, as could be seen from Table 3, the average labour cost was found to be Rs. 1,40,927.68 per acre, which accounted for 55.79 percent of the total cost of cultivation. Thus, it could be concluded there were no significant changes in the labour use pattern between the two categories of farmers.

With regard to material cost, the jasmine farmers category spent Rs. 66,413.93 per acre for the purchase of materials, which constituted 24.71 percent of the total cost of cultivation. In the case of the FPO-jasmine farmers category, the average material cost was estimated to be Rs. 52,594.90, contributed to 20.82 percent of the total cost, which was comparatively lesser than that of the jasmine farmers.

Consequently, the average cost of cultivation for the jasmine farmers was worked out to be Rs. 2,68,806.57 per acre and for FPO farms, it was Rs. 2,52,624.85 per acre. Thus, it could be concluded that the cost of cultivation was comparatively lesser for FPO-jasmine farmers, which might be due to low per unit cost of materials as they purchase them in bulk, as the members of FPO.

It is evident from the Table 2 and 3 that net returns of the farmers in FPO are getting a higher profit (Rs. 3,01,934.5 per acre) than the jasmine farmers (Rs. 1,40,746.59 per acre). This could be attributed to the fact that the initial investment itself was lower, along with a higher rate of returns. It could be concluded that the majority of the FPO-jasmine farmers followed the recommended cultivation practices of jasmine to double their income, unlike jasmine farmers category. The low level of adoption of the recommended practices of jasmine by the jasmine farmers might be reason for less income when compared to FPO-jasmine farmers.

3.3 Financial Feasibility of Jasmine Farms

The capital budgeting techniques such as, Net Present Value (NPV), Benefit Cost Ratio (BCR), Payback Period (PB) and Internal Rate of Return (IRR) were worked out to evaluate the financial feasibility of investment in jasmine and are presented in Table 4. It is evident that the Net Present Value of jasmine farms was Rs. 20,49,034.14 per acre at 10 percent discount rate and it was Rs. 33,11,436.43 per acre for FPO-jasmine farmers, which clearly indicates that farmers in FPO are getting a higher income than the jasmine farmers. This could be attributed to the fact that the initial investment itself was lower, along with a higher rate of returns. The benefit cost ratio was found to be 2.18 for the jasmine farmers and 3.02 for FPO-jasmine farmers, indicating that investment in jasmine cultivation was financially viable.

The payback period for the jasmine farmers was found to be one year and ten months, which clearly indicates that it would take a period of more than a year to recover the entire investment in jasmine farms, whereas in the case of FPO jasmine farms, it would take a lesser period as compared to

jasmine farmers. This might be due to the fact that FPO-jasmine farmers receive more needy help from the organizations in various aspects of production, marketing and post-harvest handling.

The higher magnitude of the net present value might be attributed to the fact that the initial investment and maintenance costs in jasmine cultivation were lower, when compared to the returns realized. However, this criterion neglects the net returns realized by the farmers in the subsequent years, which might be more significant in the case of a long-term enterprises like jasmine. The results are in accordance with Ashika and Shanmugam 2019, where they concluded that investment in Madurai Malli cultivation is economically feasible.

The internal rate of return was found to be very high, *i.e.*, 111 percent in the jasmine farmers category and 207 percent in FPO jasmine farmers category, indicating that the investment in jasmine cultivation was highly profitable, economically feasible and financially viable. Therefore, it

can be said that both types of farmers can profitably invest in jasmine production; nevertheless, the farmers in the FPO saw a better rate of return than the jasmine farmers.

In conclusion, the analysis of labour and material costs, as well as the overall establishment and cultivation expenses, reveals significant insights into the economic dynamics of jasmine farming. The study demonstrates that labour costs, particularly for weeding and harvesting, play a pivotal role in both jasmine and FPO-Jasmine Farms. FPO membership provides a cost advantage through timely access to labour, resulting in lower overall establishment costs. Additionally, material costs are lower for FPO-jasmine farmers due to bulk purchases. The comprehensive cost of cultivation analysis, coupled with capital budgeting techniques, underscores the financial viability of jasmine cultivation. Notably, FPO-jasmine farmers enjoy higher returns, affirming the economic benefits of collective farming initiatives.

Table 1: Average Establishment Cost of Jasmine Farms

S. No	Particulars	Jasmine Farmers Category Amount (Rs./ac/Year)	FPO - Jasmine Farmers Category Amount (Rs./ac/Year)
I	Total Labour Cost	1,28,736.44 (51.49)	1,27,871.77 (54.39)
II	Total Material Cost	78,078.90 (31.23)	65,697.43 (27.94)
III	Total Establishment Cost	2,50,045.10 (100.00)	2,35,097.21 (100.00)

Note: Figures in the parentheses indicate percentage to the respective total

Table 2: Cost of Cultivation of Jasmine in Jasmine Farmers Category (Rs./ac)

S. No	Particulars	Age of the Farms (in Years)											Average
		2	3	4	5	6	7	8	9	10	11	12	
1.	Total Labour Cost	96990.15 (58.52)	124210.30 (61.47)	140132.09 (61.04)	146034.96 (56.51)	150558.70 (55.91)	149708.85 (52.17)	163655.53 (52.49)	155895.38 (49.63)	149194.87 (47.99)	140266.49 (46.04)	131446.37 (43.32)	140735.79 (52.36)
2.	Total Material cost	19674.64 (11.87)	24631.47 (12.19)	33314.86 (14.51)	52906.38 (20.47)	57939.23 (21.51)	74349.36 (25.91)	82733.51 (26.54)	91877.18 (29.25)	94222.79 (30.31)	96031.91 (31.52)	102871.94 (33.90)	66413.93 (24.71)
3.	Interest on working capital	8166.54 (6.54)	10418.92 (6.54)	12141.29 (6.54)	13925.89 (6.54)	14594.86 (6.54)	15684.07 (6.54)	17247.23 (6.54)	17344.08 (6.54)	17039.24 (6.54)	16540.89 (6.54)	16402.28 (6.54)	14500.48 (6.54)
I	Total Variable Cost	124831.33 (75.32)	159260.70 (78.82)	185588.23 (80.84)	212867.23 (82.38)	223092.78 (82.84)	239742.28 (83.55)	263636.27 (84.56)	265116.64 (84.39)	260456.89 (83.78)	252839.29 (82.99)	250720.58 (82.63)	221650.20 (82.46)
4.	Amortized Cost	26789.65 (65.49)	26789.65 (62.59)	26789.65 (60.91)	26789.65 (58.83)	26789.65 (57.96)	26789.65 (56.75)	26789.65 (53.67)	26789.65 (54.65)	26789.65 (53.13)	26789.65 (51.71)	26789.65 (50.84)	26789.65 (56.81)
5.	Rental value of own land	13069.21 (31.95)	14828.81 (34.64)	15918.71 (36.19)	17357.40 (38.12)	17988.64 (38.92)	18902.71 (40.04)	19752.27 (41.05)	20585.84 (41.99)	21879.52 (43.39)	23167.67 (44.72)	23987.91 (45.52)	18858.06 (39.99)
6.	Interest on fixed capital	1045.54 (2.56)	1186.31 (2.77)	1273.50 (2.90)	1388.59 (3.05)	1439.09 (3.11)	1512.22 (3.20)	1580.18 (3.28)	1646.87 (3.36)	1750.36 (3.47)	1853.41 (3.58)	1919.03 (3.64)	1508.65 (3.20)
II	Total Fixed Cost	40904.40 (24.68)	42804.77 (21.18)	43981.87 (19.16)	45535.65 (17.62)	46217.39 (17.16)	47204.59 (16.45)	48122.10 (15.44)	49022.36 (15.61)	50419.53 (16.22)	51810.74 (17.01)	52696.60 (17.37)	47156.36 (17.54)
III	Total Cost	165735.73 (100.00)	202065.47 (100.0)	229570.10 (100.00)	258402.88 (100.00)	269310.17 (100.00)	286946.86 (100.00)	311758.37 (100.0)	314139.00 (100.00)	310876.42 (100.00)	304650.03 (100.00)	303417.18 (100.0)	268806.57 (100.00)
	Yield (Kg/acre)	110.00	1056.95	1859.24	2246.46	2562.47	2720.93	2968.48	3083.78	2455.52	2189.38	1840.39	1593.58
	Gross Return	30360.00	287764.17	509321.00	650283.11	720233.70	778157.37	858811.31	872371.76	948346.77	609917.25	508977.41	444163.77
	Net Return	-219685.10	122028.45	307255.53	420713.01	461830.82	508847.20	571864.45	560613.39	634207.77	299040.83	204327.39	140746.59

Note: Figures in the parentheses indicate percentage to the respective totals

Table 3: Cost of Cultivation of Jasmine in the FPO - Jasmine Farmers Category (Rs./ac)

S. No	Particulars	Age of the Farms (in Years)											Average
		2	3	4	5	6	7	8	9	10	11	12	
1.	Total Labour Cost	97416.91 (60.63)	124667.54 (63.80)	140515.60 (63.68)	145724.71 (59.50)	149866.93 (59.06)	149588.49 (55.70)	164181.01 (56.18)	156572.97 (53.56)	149264.84 (51.65)	140819.62 (49.83)	131585.81 (47.21)	140927.68 (55.79)
2.	Total Material cost	16029.72 (9.98)	19382.65 (9.92)	26367.89 (11.95)	42020.16 (17.16)	45725.50 (18.02)	58856.91 (21.91)	65427.49 (22.39)	72260.29 (24.72)	74954.27 (25.93)	76440.56 (27.05)	81078.50 (29.09)	52594.90 (20.82)
3.	Interest on working capital	7956.71 (6.55)	10083.51 (6.54)	11681.84 (6.54)	13142.14 (6.54)	13691.47 (6.54)	14591.18 (6.54)	16072.60 (6.54)	16018.33 (6.54)	15695.34 (6.54)	15208.21 (6.54)	14886.50 (6.54)	13547.98 (6.54)
I	Total Variable Cost	121403.33 (75.56)	154133.71 (78.88)	178565.34 (80.92)	200887.00 (82.03)	209283.90 (82.47)	223036.57 (83.04)	245681.10 (84.07)	244851.59 (83.76)	239914.45 (83.01)	232468.39 (82.27)	227550.81 (81.64)	207070.56 (81.97)
4.	Amortized cost	25188.09 (64.14)	25188.09 (61.03)	25188.09 (59.82)	25188.09 (57.23)	25188.09 (56.63)	25188.09 (55.31)	25188.09 (54.11)	25188.09 (53.05)	25188.09 (51.29)	25188.09 (50.27)	25188.09 (49.22)	25188.09 (55.29)
5.	Rental value of own land	13039.47 (33.20)	14894.04 (36.09)	15664.31 (37.20)	17428.43 (39.60)	17862.26 (40.16)	18843.31 (41.38)	19782.04 (42.49)	20641.25 (43.47)	22146.44 (45.10)	23072.76 (46.05)	24059.13 (47.02)	18857.59 (41.40)
6.	Interest on fixed capital	1043.16 (2.66)	1191.52 (2.89)	1253.14 (2.98)	1394.27 (3.17)	1428.98 (3.21)	1507.46 (3.31)	1582.56 (3.40)	1651.30 (3.48)	1771.72 (3.61)	1845.82 (3.68)	1924.73 (3.76)	1508.61 (3.31)
II	Total Fixed Cost	39270.72 (24.44)	41273.66 (21.12)	42105.55 (19.08)	44010.79 (17.97)	44479.34 (17.53)	45538.87 (16.96)	46552.70 (15.93)	47480.64 (16.24)	49106.25 (16.99)	50106.68 (17.73)	51171.96 (18.36)	45554.29 (18.03)
III	Total Cost	160674.05 (100.00)	195407.37 (100.00)	220670.88 (100.00)	244897.80 (100.00)	253763.24 (100.00)	268575.43 (100.00)	292233.80 (100.00)	292332.23 (100.00)	289020.70 (100.00)	282575.07 (100.00)	278722.77 (100.00)	252624.85 (100.00)
	Yield (Kg/acre)	204.00	1,316.74	2,459.51	3,128.38	3,146.62	3,213.20	3,381.28	3,626.52	2,796.99	2,607.74	2,438.03	1,929.09
	Gross Return	60,214.27	3,94,884.58	7,64,223.74	9,87,744.40	9,71,647.98	9,85,321.93	10,42,042.67	10,94,480.18	8,54,932.82	7,89,494.40	7,46,075.20	5,80,657.28
	Net Return	-1,74,882.93	2,34,210.53	5,68,816.37	7,67,073.52	7,26,750.18	7,31,558.69	7,73,467.24	8,02,246.38	5,62,600.59	5,00,473.71	4,63,500.13	3,01,934.51

Note: Figures in the parentheses indicate percentage to the respective total

Table 4: Financial Analysis of Jasmine Farms

S. No	Particulars	Jasmine Farmers	FPO - Jasmine farmers
1.	Net Present Value	Rs. 20,49,034.14	Rs. 33,11,436.43
2.	BCR	2.18	3.02
3.	Internal Rate of Return	111%	207%
4.	Modified Internal Rate of Return	40%	49%

4. Conclusion

The study concluded that the cost of cultivation was comparatively lesser for FPO-jasmine farmers, which might be due to the fact that the majority of the FPO-jasmine farmers followed the recommended cultivation practices of jasmine to double their income, unlike jasmine farmers category. The low level of adoption of the recommended practices of jasmine by the jasmine farmers might be due to the lack of proper training on these aspects. The analysis of labour and material costs, as well as the overall establishment and cultivation expenses, reveals significant insights into the economic dynamics of jasmine farming. The internal rate of return was found to be very high, indicating that the investment in jasmine cultivation was highly profitable, economically feasible and financially viable. Hence the farmers may be advised to establish jasmine orchards by availing bank finance facilities. A proper marketing facility through cooperative network will go a long way in bringing better returns to the jasmine cultivators.

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