International Journal of Research in Agricultural Sciences
Volume 1, Issue 2, ISSN (Online) : 2348 – 3997)

Strategies for Enhancing the Area Production and Productivity of Jasmine in Tamil Nadu – A Paradigm to the Farmers' Organizations of India

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***Abstract* – the demand for flowers and ornamental plants for different needs like religious, official ceremonies, parties, house decorations, weddings, funerals etc is on the rise. This demand for fresh flowers and plants is increasing worldwide over the coming years. Tamil Nadu is a leading state in area and production of flowers in the country. Jasmine is one of the commercial flower crops grown in Tamil Nadu and India. Many intermediaries and traders are involved in Jasmine trade and the producers were getting very low price during lean and peak seasons of jasmine. Sathyamanagalam Farmers Flower Growers' Head Association (SaFGA) is one of the organization who have entered into this and streamlined the distribution of Jasmine to the local, regional and national markets. This study has addressed the success story of a farmers' organization in Erode District with regard to enhancing the area production and productivity of Jasmine and the constraints associated with production and distribution of jasmine.**

***Keywords* – Area Production and Productivity, Case Study, Cost of Production, Farmers Organization, Jasmine.**

INTRODUCTION

Flowers have their own importance since ancient times and are being used for decoration worshiping as well as in satisfying the aesthetic feelings. A language of flowers were nurtured and developed in England during 18th and 19th centuries. Flower speaks a language, which could be universally understood by the people across the world and are provided as the best ambassadors of good will. In recent years, the floriculture is emerging as a market demand driven activity throughout the world and considered as a potential money spinner. Under WTO regime, the floricultural activities are being recognized as a lucrative profession with much higher margin of returns per unit area when compared to the field and other horticultural crops.

Among horticultural crops, cut flowers and ornamentals perhaps do fetch higher value. The words of John Kaetes, "*A thing of beauty is a joy forever*", connotes fresh flowers have been one of the best medium of expression of greetings, regards, love and care and respect in enhancing aesthetics of daily décor in human habitations. It is being rightly said "*flowers speak a millions of unspoken words…*" They be fit all occasions, be it at birth, marriage or death ceremonies. Hence, floriculture is fast emerging activity as a major commercial venture in the world scene. (Vanishree, 2007)

The social and economic aspects of flower growing were, however, recognized much later. The offering and exchange of flowers on all social occasions, in places of worship and their use for adornment of hair by women and for home decoration have become an integral part of human living. With changing life styles and increased urban affluence, floriculture has assumed a definite commercial status in recent times and during the past 2 to 3 decades particularly. Appreciation of the potential of commercial floriculture has resulted in the blossoming of this field into a viable agri-business option. Availability of natural resources like diverse agro-climatic conditions helped in producing wide range of temperate and tropical flowers, almost all through the year in some part of the country or other. Improved communication facilities have increased their availability in every part of the country. The commercial activity of production and marketing of floriculture products is also a source of gainful and quality employment to section of people.

The demand for flowers and ornamental plants for different needs like religious, official ceremonies, parties, house decoration, weddings, funerals, etc, is on the rise. This demand for fresh flowers and plants is increasing world-wide over the coming years. The recent liberalization policy of the Government of India has given Phillip to commercialized agriculture particularly horticultural crops. Growing of flowers is in vogue in India since long time. Nevertheless, growing of cut-flowers has emerged as an important industry mainly to cater to the needs of the demand in the overseas market. It is being viewed as a high growth industry in our economy. There is a tremendous transformation in our floriculture sector mainly due to the entry of corporate who are producing cut-flowers to meet the emerging demand in the developed countries for floricultural products. The

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Government of India has also identified floriculture as a niche area with vast potential for export. There are many incentives given by the Government for setting up of floricultural units as Export Oriented Units (EOUs).

Tamil Nadu is a leading state in area and production of flowers in the country. A large number of flowers like jasmine, tuberose, rose, chrysanthemum, marigold, crossandra, barleria, lily, limonium, alstroemeria, liatris, freesia, iris, lisianthus, calla, carnation, gerbera and anthurium are commercially cultivated in the state. Many hi-tech units with export tie-ups are there in the state. There are several commercial tissue culture laboratories. The daily average trade of cut flower is over Rs. 2 lakh and loose flower over Rs. 5 lakh in Tamil Nadu itself (Sudhagar, 2013 Web Reference).

Jasmine is one of the major commercial flower crops of India. It has its special place in South Indian flower crops. It is mainly used for extraction of scented oil. India exports this oil mainly to England, United States of America, Holland, Sweden, Japan, Norway and European Union.

Flower and concrete yield in jasmines vary considerably according to the species and cultivars and management practices. The flower yield and concrete recovery in three important species of jasmine are ranging between 4.33 tonnes to 10.14 tonnes per ha. It is a wide variation in the yield stressed the need for undertaking a study on assessing the production and marketing of Jasmine in Tamil Nadu.

II. Problem Focus

In Sathyamangalam of Erode District, the Jasmine is cultivated in around 40000 acres and the marketing of Jasmine is taken over by the Sathyamangalam Farmers Flower Growers' Association (SaFGA) which is not prevalent in any part of Tamil Nadu or even in South India. The Farmers have themselves established an association to protect their produce getting offered with low price by the traders during 2007 and the practice of marketing and distribution of jasmine is taken up by the association. In this context, to document the practice of production and marketing of jasmine by the farmers flowers growers' association, an effort has been taken to assess the same by adopting a case study approach with the specific objective of assessing the area, production and productivity of flowers with special reference to jasmine in the case farms of Tamil Nadu in comparison with India need a detailed discussion and hence this study.

III. Design of the Study

The main objective of this paper is to document the area, production, productivity and export of Flowers with special reference to Jasmine. To document the same, the data were collected from the secondary sources of both Central and State Government reports. The reports taken into account for collecting the details on area, production, productivity and export of Flowers are furnished as follows.

- Agricultural Statistics at a Glance 2012 of Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, New Delhi
- Food and Agriculture Organization Web Site
- Indian Horticulture Data Base 2011 of National Horticulture Board, Government of India, New Delhi
- Hort-Stat – 2008 of Government of Tamil Nadu, Chennai

The data gathered for different periods with respect to the area production and productivity of Flowers, were gathered from the above reports and the data were analyzed using Descriptive Statistics like Mean and the current change in the data in respect of area, production and productivity of Flowers over the base period was also documented to assess the technological and extension impact due to the Government Intervention through its planned programs in horticulture. The results of this analysis will be better utilized by the policy makers and the planners in horticulture and agriculture for further development of these sectors.

The productivity of Flowers in the State was found to be marginally low when compared to the National Average Productivity and hence a comparison made with the intensely managed Jasmine Gardens of Sathyamangalam Farmers Flower Growers' Head Association (SaFGA) of Erode district which was established during the year 2007 and their experiences were also incorporated in this study as a case study approach as an illustration for easy implementation by other Jasmine garden owners.

IV. Primary Data

In Tamil Nadu, though there were higher area under flowers, Sathyamangalam Taluk was purposively chosen as it had the Farmers' Flower Growers Head Association (SaFGA) established during the year 2007 which is taking care of marketing and distribution arrangements of Jasmine and hence a case study approach was adopted to document the production and trading practices prevalent with SaFGA. The intention of conducting the survey among the Flower growing farmers have been conveyed to the President and Secretary of the Sathyamangalam Farmers Flower Growers' Head Association for the project work on production and marketing of flowers. The President of the society has arranged the contact with the farmers from the selected villages. The number of farmers and the list of villages selected are presented in Table I.

Table I revealed that for the study, 20 sample farmers from 11 villages were selected for documenting the routine functions of SaFGA. From the sample farmers, the details of land use, crop management for its production and productivity, marketing of Flowers, cost of production and the constraints involved in production are assessed using the structured and pretested questionnaire exclusively designed for the purpose and the same were analyzed and documented with respect to the objectives enshrined in the study by adopting a descriptive statistics like mean and percentage analysis.

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V. RESULTS AND DISCUSSION

The Project Work on production, marketing and trade aspects of flowers with special reference to Jasmine in Tamil Nadu is an important topic today as most of the farmers have become knowledgeable and established farmers' organization themselves and took the practice of marketing of their own produce produced in the farm. The aspects of involvement of farmers' organization in direct marketing of their farm produce have not been much explored at national and regional level and hence a special effort has been taken to assess the production potentials, marketing and distribution made by the producers at micro level and the details are analyzed and discussed under the following major heads

- Area Production and Productivity of Flowers
- Area Production and Productivity of Jasmine
- The Production Potentials of Flowers in the Sample Farms of SaFGA

Table I: Number of Villages Selected for the Study

S.No.	Name of the Village	Area under Flowers in Ha	Percentage to Total	Number of Farmers Selected	Percentage to Total
01	Nanjappakavundan Pudhur	023.00	05.87	01	05.00
02	Kenjanoor	028.00	07.14	02	10.00
03	Kembanaickenpalayam	030.00	07.65	02	10.00
04	Phandampalayam	026.00	06.63	01	05.00
05	Akkarai Negamum	032.00	08.16	02	10.00
06	Chickarasampalayam	102.00	26.02	03	15.00
07	Bahuthampalayam	052.00	13.27	03	15.00
08	Badhramangalam	038.00	09.69	02	10.00
09	Chenbagapudhur	014.00	03.58	01	05.00
10	Kothamangalam	019.00	04.85	01	05.00
11	Raj Nagar	028.00	07.14	02	10.00
	Total Area under Flowers	392.00	100.00	20	100.00

1. Area Production and Productivity of Flowers

The state wise area production and productivity is analyzed with respect to flowers at national and regional level and the same is analyzed and discussed under the following heads for providing clear picture for further decisions

1.1 Area Production and Productivity of Flowers in India

The details on area production and productivity of Flowers in India over the years are analyzed and the results are discussed in Table II. It provides an overall understanding on whether the area is increasing or decreasing at macro level and the magnitude of production over years provide the information to the policy makers on the extent of adoption of technology and its efficacy and the need based efforts to enhance the productivity of flowers to meet the requirements of both domestic and international markets.

Table II revealed the details of state wise area under flowers, production and productivity in India. Total area under flowers in India is arrived at 1.95 lakh ha. Of which, Tamil Nadu is the front runner had an area of 0.32 lakh ha which is accounted for 16.40 per cent to the total area under flowers in India. The second highest area under flowers in India is with Karnataka state which had 13.84 per cent to the total area. The absolute area under flowers with Karnataka is 0.27 lakh ha. Third place goes to West Bengal in respect of area under flowers which had 0.23 lakh ha. Among the four constituent states of South India, the Andhra Pradesh, Karnataka and Tamil Nadu put together had the share of 41.41 per cent to the total area under flowers in India revealed that the south India is the leader in area and production of flowers in India.

In respect of production of flowers in India, the South Indian States had the highest share in flower production which is accounted for 61 per cent to the total production of flowers in India. Tamil Nadu is the front runner in production of flowers followed by Karnataka and Andhra Pradesh which are respectively accounted for 25 per cent, 21 per cent and 14 per cent to the total out turn of flowers in the country. It might be due to the adoption of technology, conducive climate and higher returns from flowers motivated them to involve actively in establishing flower crops in their holding. In respect of cut flower production, West Bengal is the front runner followed by Maharashtra. West Bengal alone accounted for 34 per cent of total cut flower production in the country revealed that potentially sound state in delivering the requirements of cut flower needs of the nation.

In respect of productivity of flowers, the scenario is totally different. Jharkhand is the state in India capable of realizing around 14 tonnes per ha followed by Bihar achieved the productivity of 11.50 tonnes of flowers. Tamil Nadu is the State capable of realizing the productivity to the level of only 7.73 tonnes per ha.

To sum up, in respect of area and production of flowers, South India is the leader particularly the Tamil Nadu state is the leader. When one could compare the productivity of flowers, Jharkhand state is capable of achieving the highest productivity in India. In respect of cut flower production, West Bengal is leading the nation to the tune of 34 per cent to the total cut flower production and hence Tamil Nadu should learn the lessons of Jharkhand and West Bengal and should examine the ways and means of increasing the productivity of cut flowers.

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1.2 Area Production and Productivity of Horticultural Crops in Tamil Nadu

The horticultural crops are contributing higher returns to the farmer and hence increased production and productivity will definitely contribute to the upliftment of rural economy. In this context, the area production and productivity of horticultural crops in Tamil Nadu is analyzed and the results are presented in Table III.

Table II: State wise Area Production and Productivity of Flowers in India during 2010-11

S.No.	States	Area in Thousand Ha	Production of Loose Flowers in Thousand Tonnes	Production of Cut Flowers in Lakhs	Productivity in Tonnes per Ha
01	Andaman and Nicobar	04.20	004.70	000.00	01.12
02	Andhra Pradesh	21.80	133.70	6202.00	06.13
03	Arunachal Pradesh	01.20	00.00	2860.00	00.00
04	Assam	00.00	00.00	000.00	00.00
05	Bihar	00.20	02.30	011.00	11.50
06	Chandigarh	00.00	00.00	000.00	00.00
07	Chhattisgarh	06.90	27.10	000.00	03.93
08	Dadra and Nagar Haveli	00.00	00.00	000.00	00.00
09	Daman and Diu	00.00	00.00	000.00	00.00
10	Delhi	05.50	05.70	1038.00	01.04
11	Goa	00.00	00.00	000.00	00.00
12	Gujarat	12.50	49.50	5063.00	03.96
13	Haryana	06.20	60.30	1084.00	09.73
14	Himachal Pradesh	00.70	00.60	0605.00	00.86
15	Jammu and Kashmir	00.10	00.20	0066.30	02.00
16	Jharkhand	01.60	22.00	1711.30	13.75
17	Karnataka	27.00	203.90	5860.00	07.55
18	Kerala	00.00	00.00	000.00	00.00
19	Lakshadweep	00.00	00.00	000.00	00.00
20	Madhya Pradesh	07.70	06.00	000.00	00.78
21	Maharashtra	17.50	91.10	7914.00	05.21
22	Manipur	00.00	00.00	000.00	00.00
23	Meghalaya	00.00	00.00	000.00	00.00
24	Mizoram	00.10	00.00	162.00	00.00
25	Nagaland	00.08	00.00	017.00	00.00
26	Odhisha	07.40	03.70	5911.00	00.50
27	Pondicherry	00.30	02.40	000.00	08.00
28	Punjab	01.70	08.20	000.00	04.82
29	Rajasthan	05.40	09.60	000.00	01.78
30	Sikkim	00.20	00.00	0230.00	00.00
31	Tamil Nadu	32.00	247.30	000.00	07.73
32	Tripura	00.00	00.00	000.00	00.00
33	Uttar Pradesh	10.40	17.60	2958.00	01.69
34	Uttaranchal	01.30	02.30	3416.00	01.77
35	West Bengal	23.10	59.20	23919.00	02.56
	Total	195.08	957.40	69027.60	04.91

(Source: Agricultural Statistics at a Glance 2012)

Table III: Area Production and Productivity of Horticultural Crops in Tamil Nadu during 2012-13 (Estimated)

S.No	Name of the Crops	Area in Lakh Ha	Production in Lakh Tonnes	Productivity in Tonnes / Ha	Percentage to Total
01	Fruits	03.32	85.35	25.71	29.96
02	Vegetables	02.84	90.52	31.87	25.63
03	Spices and Condiments	01.73	10.87	06.28	15.61
04	Plantation Crops	02.75	11.99	04.36	24.82
05	Flowers	00.32	03.23	10.09	02.89
06	Medicinal & Aromatic Plants	00.12	00.68	05.67	01.09
	Total	11.08	202.64	18.29	100.00

(Source: agritech.tnau.ac.in/govt_schemes_services/pdf/tn_horti1213.pdf

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Table III revealed that the area under horticultural crops in Tamil Nadu is arrived at 11.08 lakh ha which is capable of producing the horticultural output to the tune of 202.64 lakh tonnes leaving the average productivity of 18.29 tonnes per ha. Among the horticultural outputs, the share of flowers is found to be only marginal which is arrived at Three lakh tonnes with a productivity of 10.09 tonnes per ha which is accounted for only around 3 per cent to the total and hence a detailed analysis was made to highlight the area production and productivity of flowers in Tamil Nadu.

Table IV: Area Production and Productivity of Flowers in Tamil Nadu During 2011-2012

S.No.	States	Area in Ha	Production of Flowers in Tonnes	Productivity in Tonnes per Ha
01	Coimbatore	1394	11821	08.48
02	Cuddalore	1018	7565	07.43
03	Dharmapuri	2389	17671	07.40
04	Dindigul	4795	38598	08.05
05	Erode	1763	14015	07.95
06	Kancheepuram	0430	3286	07.63
07	Kanyakumari	0253	1734	06.86
08	Karur	0747	6756	09.04
09	Krishnagiri	3222	25891	08.03
10	Madurai	2135	17025	07.97
11	Nagapattinam	0360	2782	07.73
12	Namakkal	0162	1297	07.99
13	Perambalur	0188	1650	08.76
14	Pudukkottai	0375	2895	07.71
15	Ramanathapuram	0124	0961	07.75
16	Salem	2382	19627	08.24
17	Sivagangai	0020	0160	08.02
18	Thanjavur	0352	2719	07.72
19	The Nilgiris	0052	0504	09.68
20	Theni	0470	3772	08.03
21	Thiruchirappalli	1447	11575	08.00
22	Tirunelveli	2466	20247	08.21
23	Thiruvallur	1876	14460	07.71
24	Thiruvannamalai	3175	27321	08.61
25	Thiruvarur	0034	0230	06.76
26	Thoothukkudi	0665	5104	07.68
27	Vellore	3879	31172	08.04
28	Villuppuram	0623	4350	06.98
29	Virudhunagar	0943	7386	07.83
	State Total	**37739**	**302574**	**08.02**

1.3 Area Production and Productivity of Flowers in Tamil Nadu

In the preceding section, we have seen the area under horticultural crops. The ensuing section deals with area production and productivity of flowers district wise specifically to have clear information on the districts that has rich potential to cultivate and harvest flowers in a large scale. The details are analyzed and the results are presented in Table IV.

Table IV revealed that the area under flowers in the state of Tamil Nadu is arrived at 37739 ha. Among the 29 Districts, the Dindigul district is the front runner in augmenting higher area under flowers which is arrived at 4795 ha followed by the Vellore district in possession of 3879 ha which are respectively accounted for 12.71 per cent and 10.28 per cent to the total area under flowers in the state of Tamil Nadu. Krishnagiri and Thiruvannamalai districts are having almost similar area under flowers which are accounted for around 8.50 per cent of total flower growing areas of Tamil Nadu.

In respect of production of flowers in Tamil Nadu, Dindigul district found to produce higher output of flowers which is arrived at 38598 tonnes followed by Vellore District is capable of producing 31172 tonnes of flowers which are respectively accounted for 12.76 per cent and 10.30 per cent to the total output of different variety of flowers in Tamil Nadu. The Third place is shared by Thiruvannamalai and Krishnagiri districts and their production is hovering around 26 thousand tonnes to 27 thousand tonnes. The percentage share of production of flowers to the total output of flowers is almost same as prevailed in the area under flowers.

In respect of productivity of flowers in Tamil Nadu, the overall productivity is arrived at 8.02 tonnes per ha. When we analyze the productivity across the state of Tamil Nadu, the Nilgiris district found to be the topper and she had attained the productivity of 9.68 tonnes per ha followed by this, Karur district has achieved the

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productivity to the tune of 9.04 tonnes per ha. Third highest achiever in productivity is found to be the Perambalur District and the fourth place goes to Coimbatore District which are respectively achieved the productivity level of 8.76 and 8.48 tonnes per ha.

Table V: Area Production and Productivity of Jasmine in Tamil Nadu During 2011-2012

S.No.	States	Area in Ha	Production of Flowers in Tonnes	Productivity per Ha
01	Coimbatore	0296	2291	07.73
02	Cuddalore	0207	1602	07.73
03	Dharmapuri	0659	5104	07.74
04	Dindigul	0902	6991	07.50
05	Erode	1346	10433	07.75
06	Kancheepuram	0195	1507	07.72
07	Kanyakumari	0116	0902	07.77
08	Karur	0196	1519	07.75
09	Krishnagiri	1141	8843	07.75
10	Madurai	1610	12475	07.74
11	Nagapattinam	0357	2766	07.74
12	Namakkal	0083	0641	07.72
13	Perambalur	0086	0665	07.73
14	Pudukkottai	0253	1958	07.73
15	Ramanathapuram	0124	0961	07.75
16	Salem	0850	6588	07.75
17	Sivagangai	0017	0131	07.70
18	Thanjavur	0066	0510	07.72
19	The Nilgiris	0000	0000	00.00
20	Theni	0253	1958	07.73
21	Thiruchirappalli	0637	4938	07.75
22	Tirunelveli	1625	12594	07.75
23	Thiruvallur	1412	10944	07.75
24	Thiruvannamalai	0666	5163	07.75
25	Thiruvarur	0011	0083	07.54
26	Thoothukkudi	0383	2967	07.74
27	Vellore	1118	8665	07.75
28	Villuppuram	0279	2160	07.74
29	Virudhunagar	0695	5389	07.75
	State Total	15583	120748	08.18

(Source: Hort - Stat 2008)

To sum up, when we compare the area production and productivity of flowers in Tamil Nadu, area and production trend of flowers is almost same. In both the cases, Dindigul District found to be the topper. But when we see the productivity, the Nilgiris District is found to produce higher productivity of flowers followed by Karur District. These details revealed that there exists potential to increase the area under flowers and to achieve higher productivity per unit area through sustained technological infusion among the target farmers.

1.4 Area Production and Productivity of Jasmine in Tamil Nadu

So far the study had focused on the area production and productivity of flowers in India and Tamil Nadu which will be of immensely useful to the researchers and the policy makers. However, our study is focusing especially on the production and marketing aspects of Jasmine, the details of area production and productivity of jasmine in Tamil Nadu is analyzed and the results are presented in Table V.

Table V revealed the details of area under jasmine and its production district wise. Among the 29 districts, Thirunelveli district is found to have higher area under jasmine followed by the Madurai district. Both the districts had almost equal area. The difference is only marginal and the fourth place in respect of area under jasmine goes to Thiruvallur District which is very near to the Capital of Tamil Nadu might be the only reason to augment higher area under Jasmine as most of the garland users demand it. The extraction and supply of jasmine is very timely to the city because of its proximity to Chennai. The total area under jasmine in the state of Tamil Nadu is arrived at 15583 ha. Still the area under jasmine is very low when comparing the demand for the produce during the festive occasions and holy days.

With regard to the Production of Jasmine flowers in Tamil Nadu, Thirunelveli and Madurai districts are on par almost and they have produced the jasmine flowers to the tune of 12594 tonnes and 12475 tonnes respectively sharing 10.43 per cent and 10.33 per cent to the total jasmine production in the state of Tamil Nadu. The third

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place goes to Thiruvallur District and the Erode District is coming under fourth place in Jasmine production. As the study is focusing on Erode District, its productivity is hovering around 7.75 tonnes per ha. The productivity of jasmine in almost all the districts is found to be unique and it is hovering around 7.72 to 7.75 tonnes per ha advocating the Department of Horticulture and Plantation Crops of Tamil Nadu that the Department should have the support of officials of Directorate of Economics and Statistics, Government of Tamil Nadu in arriving the estimated figures for future planning and forecasting the crop area and its production.

2.1 Area Expansion Program in Jasmine

The area expansion is carried out through National Horticulture Mission in each and every state of India. In respect of jasmine, the details of area expansion planned and implemented in potential districts of Tamil Nadu are analyzed and the details are presented in Table VI.

Table VI: Area Expansion Programs for Jasmine in Tamil Nadu

S. No.	Name of the District	Area Expansion In Jasmine and Cut Flowers	Percentage to Total
1.	Coimbatore	120.00	14.12
2.	Dindigul	205.00	24.12
3.	Dharmapuri	150.00	17.65
4.	Erode	170.00	20.00
5.	Krishnagiri	190.00	22.35
6.	Salem	015.00	01.76
	Total	850.00	100.00

(Source: nhm.xic.in/action plan/action plan Tamil Nadu. pdf.)

Table VI revealed that in Tamil Nadu, the action plan has identified six important districts for expanding the area under Jasmine. During the year 2012-2013, Dindigul District is blessed with higher area expansion followed by Krishnagiri District which are respectively accounted for 24.12 and 22.35 per cent. Erode District is positioned in the third place in respect of area expansion in jasmine which is approximately 170 ha. In total, for the year 2012-2013, Tamil Nadu had an area of 850 ha under the area expansion of jasmine under NHM.

The Production Potentials of Flowers in the Sample Farms of Tamil Nadu

In respect of area production and productivity of flowers, the Erode District holds the fourth place. The sample farms selected for the study is belonged to Sathyamangalam Tehsil of Erode District. The farmers who are cultivating flowers have organized themselves and established a Society for promoting the concept of Direct Marketing so as to gain higher share in the consumers' money. The society is titled as "Sathyamangalam Farmers Flower Growers' Head Association" which was registered during 2007 and functioning at Sathyamanagalam. Currently its strength raised to somewhere around 1500 members. The society has appointed the President and Secretary to govern the society through the process of election if there exists competition and the society is paying a lump sum amount as salary every month for their untiring service to the society. Before listening to the society and its routine functions, it is important how the farmers are being benefitted from cultivation and marketing of jasmine because of the society and hence the results are analyzed and the details are discussed as follows.

3.1. Details of Size of Holding Available with the Sample Farms

3.2. Cropping Pattern in Vogue with the Sample Farms

3.3. Area under Flowers in Erode District

3.4. Area Production and Productivity of Jasmine in the Sample Farms

3.5. Quantity of Jasmine Produced and Distributed to Different Parts of India and other Places

3.1 Area Production and Productivity of Jasmine in Tamil Nadu

The size of holding available with the farmers is a measure to call them as marginal, small, medium and big farmer's category to know who are actively participating in the production and marketing aspects of Jasmine in Erode District particularly among the members of the Society. The details of size of holding are analyzed and the results are presented in Table VII.

Table VII: Details of Size of Holding Available in the Sample Farms

S. No	Particulars of Holding	Average Size of Holding in Acres	Percentage to Total
01	Owned Land under Cultivation	06.73	85.41
02	Land under Non Agricultural Uses	00.42	05.33
03	Owned Land (1+2)	07.15	90.74
04	Leased – in Land	00.73	09.26
05	Total Size of Holding	07.88	100.00

Table VII revealed that the size of holding available with the sample farms was arrived at 7.88 acres (3.15 Ha) which is categorized as Medium size of holding. Normally the farmers of Coimbatore and Erode belt are having higher size of holding in their farms and are dynamic in establishing mostly annual horticultural crops. The owned land under cultivation is arrived at 6.73 acres which is accounted for 85 per cent to the total size of holding per farm. Wherever possible, the farmers are also utilizing others land on lease which is accounted for nine per cent to the total size of holding. In this circumstance, it is important to analyze the cropping pattern prevalent among the farmers of flower growers association at Sathyamangalam.

3.2 Cropping Pattern in Vogue with the Sample Farms

The details of horticultural and agricultural crops cultivated by the farmers of Sathyamangalam are analyzed and the details are presented in Table VIII as it assumes greater importance that how much area is dedicated exclusively for the jasmine cultivation by the farmers.

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Table VIII: Cropping Pattern in Vogue with the Sample Farms during 2012-13

S.No.	Name of the Crops Cultivated	Area in Acres	Percentage to Total
01	Jasmine	00.92	11.22
02	Mullai	00.25	03.05
03	Mysore Malli	00.45	05.49
04	Sambangi	00.44	05.37
05	Banana	02.10	25.61
06	Turmeric	00.74	09.02
07	Sugarcane	02.46	30.00
08	Cholam	00.32	03.90
09	Other Crops	00.52	06.34
Total Area under Crops		08.20	100.00
Cropping Intensity		104.06	

Table VIII revealed that the total area under crops is at 8.20 acres per farm leading to the cropping intensity of 104.60 per cent in Sathyamangalam Taluk. Among the horticultural crops, the area under jasmine crop is arrived at 0.92 acres which is accounted for 11.22 per cent to the total area under crops. The Highest area is allocated to Banana and Sugarcane being the commercial crop which has ready market at all the times.

Around 25 per cent of the size of holding available with the farmers was cultivating various flower crops which included Sambangi, Jasmine, Mullai and Mysore Malli. Mysore Malli is the crop which will flower abundantly during the winter season and hence the farmers are cultivating Mysore Malli to reap higher income during the winter season.

3.3 Area under Flowers in Erode District

Floriculture is picking up in Sathyamangalam and Bhavanisagar blocks in Erode district with more farmers coming forward to cultivate flower plants. The total acreage under floriculture in the district is growing at the rate of 10 to 15 per cent every year. Over 1,100 hectares are covered under floriculture in these two blocks this year so far. The two blocks have good water sources and suitable conditions for planting flower bushes. Besides, farmers in these two blocks could easily access the two major flower markets – Coimbatore and Mysore. These factors have motivated more farmers to go in for the cultivation of flower plants in these blocks. The details of flower crops cultivated are analyzed and the results are presented in Table IX.

Table IX: Area under Flowers Crops in Erode District during 2010 - 11

S.No.	Name of the Flower Crops Cultivated	Area in Ha	Production in Tonnes	Productivity in Tonnes per Ha	Percentage to State Total Production
01	Jasmine	1061	9284	08.75	09.99
02	Mullai	0067	0570	08.51	02.42
03	Rose	0013	0094	07.23	00.67
04	Tuberose*	0091	1138	12.51	NA
05	Marigold*	0050	0730	14.60	NA
06	Total	1282	11816	09.22	05.20

Source: tnhorticulture-tn.gov.in/flowers; *The Hindu Dt. 26.10.2010

Table IX revealed that the total area under flower crops in Erode District is arrived at 1282 ha which has yielded 11816 tonnes of flowers per annum with an average productivity of 14.60 tonnes per ha. Out of the total area under floriculture, jasmine bushes are grown in over 1061 hectares, tuberoses in 91 hectares, Mullai 67 ha, Marigold in 50 ha and the Rose is cultivated in 13 ha.

The Horticulture Department has taken up a series of efforts to promote flower cultivation as the Government had identified floriculture as one of the thrust areas under the National Horticulture Mission. The department of horticultural crops is providing up to 50 per cent subsidy for taking up jasmine and tuberose cultivation. Subsidies are also being extended to the farmers under few other programmes.

3.4 Area Production and Productivity of Jasmine in the Sample Farms

Jasmine, Mullai, Kanagambaram and Marigold were grown in vast tracts of land in Sathyamangalam and its surroundings. Jasmine and Mullai alone were raised in over 4,000 and odd acres of land in Sathyamangalam, Rajan Nagar, Kothamangalam, Puliamptty, Bhavanisagar and nearby areas. Over 40,000 farmers depend on flower cultivation. Every day at 5 a.m., the flowers were plucked, kept in a place and transported to the market, situated near the Municipal Bus stand, Sathyamangalam.

The area production and productivity of Jasmine in Sathyamangalam area are analyzed and the details are presented in Table X

Table X: Area Production and Productivity of Jasmine Flowers in the Sample Farms

S.No.	Name of the Village	Area under Flowers in Ha	Production in Tonnes	Productivity in Tonnes /Ha	Percentage to Total
01	Nanjappakavundan Pudhur	023.00	106.72	04.64	05.87
02	Kenjanoor	028.00	145.88	05.21	07.14
03	Kembanaickenpalayam	030.00	159.60	05.32	07.65
04	Phandampalayam	026.00	153.92	05.92	06.63

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05	Akkarai Negamum	032.00	192.32	06.01	08.16
06	Chickarasampalayam	120.00	592.80	04.94	30.61
07	Bahuthampalayam	062.00	327.98	05.29	15.82
08	Badhramangalam	038.00	235.60	06.20	09.69
09	Chenbagapudhur	014.00	081.20	05.80	03.57
10	Kothamangalam	019.00	097.28	05.12	04.86
11	Raj Nagar				
	Total Area under Flowers	392.00	2093.30	05.45	100.00

Table X revealed that the sample villages in which the jasmine cultivated are arrived at 392 ha which has realized an output level of 2093 tonnes leaving the average productivity of jasmine at 5.45 tonnes per ha. Chickarasampalayam is the village has higher area and production which is accounted for 31 per cent to the total area in the sample villages followed by Bahuthampalayam had higher area under jasmine which had a share of around 16 per cent to the total area. Highest productivity of jasmine is visible in Badhramanagalam village of Erode District.

3.5 Details of Quantity of Jasmine Produced and Distributed by the SaFGA

The Farmers of Sathyamangalam farmers flower growers head association at Sathyamangalam produces different variety of flowers. Among this, jasmine is found to be have higher share. The harvested flowers are brought to the market around 6 am and the auction is being conducted from 6.30 am onwards. No commission was collected from the farmers for the flower marketed in the farmers market. But a nominal fee for occupying the place was levied. The president said the association was functioning for the benefit of the flower growers and the annual flower sale turnover touched Rs. 10 crore and hence the details are analyzed and the results are presented in Table XI.

Table XI: Quantity of Jasmine Flowers Produced and Distributed to Different Parts of India and Other Places per Day during 2012-13

S.No.	Place	Quantity of Flowers Exported in Tonnes During		Total Quantity in Tonnes	Percentage to Total
		Summer Months	Winter Months		
01	Georgia	03.000	01.200	04.200	05.83
02	Simoka	02.000	00.600	02.600	03.61
03	Mumbai	02.000	01.200	03.200	04.44
04	Bangalore	12.000	03.500	15.500	21.50
05	Hyderabad	03.000	00.600	03.600	04.99
06	Mysore	13.500	04.000	17.500	24.27
07	Delhi	02.500	01.000	03.500	04.85
08	Kerala	06.000	02.500	08.500	11.79
09	Coimbatore	07.500	02.000	09.500	13.18
10	Erode	01.000	00.500	01.500	02.08
11	Thiruppur	01.300	00.600	01.900	02.63
12	Sathy Local	00.400	00.200	00.600	00.83
Total Quantity of Flowers		54.200	17.900	72.100	100.00

Table XI revealed that the flowers are distributed to around 12 places regularly. During the summer months, around 54 tonnes of jasmine is distributed to different markets every day and during the winter months; the same is reduced to less than one third distributed during the summer months which is arrived at around 18 tonnes per day. Among the different destinations, Bangalore, Mysore, Coimbatore and Kerala are the potential markets which had respectively consumed 21.50 per cent, 24.27 per cent, 13.18 per cent and 11.79 per cent. It is reported that an amount of Rs 10 crore per annum is able to be achieved through the marketing of flowers.

Georgia, Mumbai and Delhi are the other important markets for which regular supply from Sathyamangalam farmers' flower market is practiced and the traders are actively involved in procuring the same and distributing to the different consuming segments and keeping the consumer segments satisfied with quality produce from Sathyamangalam. Export of flowers to Singapore is also in the offing. In this context, it is important to analyze the price prevailed in the farmers market for flowers during the study period and the same is documented in the following section.

3.6 Price of Jasmine Prevailed in the Farmers' Flower Market

Jasmine grown in the Sathyamangalam area had more number of petals and pleasant fragrance than those from other areas. So the demand in Gulf countries was very high. The wholesale traders collect the flowers and transport them to Mumbai, from where it was airlifted. The President of Sathyamangalam Farmers' Flower Growers Association said that every day the flowers were collected from flower growers and dispatched to Mysore and Kochi specifically. From Kochi they were transported

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to Mumbai. He said if flight service to Mumbai from Coimbatore was introduced, more quantity of flowers may be sent to Mumbai. Such quality flowers are traded and daily price varied significantly and hence the price prevailed on the day of survey was analyzed and the results are presented in Table XII.

Table XII: Price of Jasmine Prevailed in the Farmers' Flower Market during the Study Period

S.No.	Time of Auction AM	Price per Kg of Jasmine		Percentage Change
		08.11.2013	09.11.2013	
01	07.00	250.00	235.00	(-) 06.00
02	07.30	225.00	225.00	00.00
03	07.45	201.00	201.00	00.00
04	08.00	190.00	190.00	00.00
05	08.30	165.00	165.00	00.00
06	08.45	153.00	144.00	(-) 05.88
07	09.00	135.00	135.00	00.00
Average Price per Kg		188.43	185.00	(-) 01.82

On plucking from the farm, if the flowers reach the market at very early hours, it attracts higher price. If flower reached the farmers' market prior to 7 AM, the flower is priced at Rs 250 per kg on 8th November 2013 and the same was little reduced to Rs 235 per kg on the very next day. Table 12 revealed that the average price for the day on 8th November and 9th November 2013 is hovering around 185 to Rs 188 per kg. If time exceeds 9 Am, the price is gradually reducing. Occasionally it rose to higher price when number of traders visited the market.

The only advantage in the farmers' market is the traders are visiting the farmers market and participating in the open auction of flowers and get their share to meet their own consuming ends. Normally, the farmers take their produce to the retailers or wholesalers and they get the money what they pay for the produce. Here, the society is attracting the traders and fixing the minimum price after assessing the price in the other markets of capital cities. Learning on the market information to the president and secretary of the society force the traders against bargaining and participated in the open auction conducted by the society and the produce gets higher price per unit because of competition between the traders.

The adverse climatic conditions like heavy mist have resulted in a sharp decline in jasmine production in Sathyamangalam and nearby areas and prices touching a peak of Rs 1,200 per kg. The price, which touched Rs 1,200 per kg on Saturday and Sunday, came down to Rs 200 on the week days. Similar is the situation in Nilakottai flower market of Dindigul District.

3.6.1. Price of Jasmine Prevailed in Other Markets of Tamil Nadu

Price of Jasmine has shoot up during the festive occasions and during the holidays and holy days in different markets of Tamil Nadu. The details of prices prevailed in different flower markets have been enquired and the details are presented in Table XIII.

Table XIII revealed that the price of jasmine is found to be increased during this week of reporting. The increase in the price of jasmine was arrived at 109.71 per cent when compared to the first week of January 2014. It is mainly due to the Pongal festival demand and the arrival of flowers to the various markets found to be reduced due to the mist prevailed in different places. Among the markets, Thirunelveli, Thovalai and Chennai had offered highest price of Rs 1200 per kg of jasmine on 12th January 2014. From that one could understand that the festive occasions and holy days the flower price had reached the peak of Rs 1200 per kg called for technological improvement to induce the plants to flower even during the offseason to meet the demand.

Table XIII: Price of Jasmine Prevailed in Other Markets of Tamil Nadu

S.No.	Name of the Markets	Name of the District	Price Prevailed per Kg of Jasmine During	
			05.01.2014	12.01.2014
01	Madurai	Madurai	600.00	1000.00
02	Chennai	Chennai	350.00	1200.00
03	Nilakkottai	Dindigul	600.00	1000.00
04	Coimbatore	Coimbatore	500.00	1000.00
05	Thiruppur	Thiruppur	600.00	1100.00
06	Sathyamangalam	Erode	450.00	1000.00
07	Dindigul	Dindigul	500.00	1100.00
08	Tanjore	Thanjavoor	500.00	1000.00
09	Thirunelveli	Thirunelveli	450.00	1200.00
10	Thovalai	Kanyakumari	600.00	1200.00
Average Price Per Kg			515.00	1080.00

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Thovalai flower market in Kanayakumari district is one of the biggest flower markets in the state. The market used to transact nearly 20 tonnes of flowers in a single day on Onam festival eve and nearly 5000 traders from Kerala visits the market. The market receives flowers from across the state as far as from Hosur in Krishnagiri District and Sathyamangalam in Erode District of Tamil Nadu and from more than 50 villages surrounding the market. More than 60 flower merchants and hundreds of flower farmers depend on the market and Onam is significant for them. But the farmers are keeping their fingers crossed as the region is yet to get sufficient rains favoring flower growth.

3.7. Cost of Production of Jasmine in Erode District

Highly priced jasmine on one day and on another day it goes to Rs 40 or 45 per kg in another season called for arriving the cost of production of jasmine so as to assess whether the farmer producers are able to get a profit even on the lowest price received by them. In this circumstance, the cost of production of jasmine is discussed under the following sub heads viz.,

1) Cost of Cultivation of Jasmine in the Sample Farms
2) The Cost of Production and Returns Realized out of Jasmine and
3) The Production Constraints Prevalent in the Study Environment

3.7.1. Cost of Cultivation of Jasmine in the Sample Farms

The cost of cultivation of Jasmine takes the items such as the apportioned cost of establishment cost, the average maintenance cost and the harvesting costs. The details are analyzed and the results are presented in Table XIV.

Table XIV revealed that the total cost of cultivation of jasmine is arrived at Rs 71386 per acre per annum. Among the total cost, the annual fixed cost was arrived at Rs 23267 per acre, the annual maintenance cost and the variable cost is arrived at Rs 45543 per acre and the post-harvest charges amounted to Rs 2576 per acre respectively accounted for 32.59 per cent, 63.80 per cent and 3.61 per cent to the total cost of cultivation incurred for establishing and maintaining jasmine garden per acre.

Table XIV: Cost of Cultivation of Jasmine Flowers in the Sample Farms

S. No	Details of Expenditure	Number of Units	Price Per Unit	Expenditure / Acre
I.	**Fixed Cost**			
I.1	Rental Value of Owned Land per Acre	One Acre	17680.00	17680.00
1.2	Interest on Fixed Capital	12 Per cent	2121.60	2121.60
1.3	Land Cess and Taxes		0010.00	0010.00
1.4	Apportioned Establishment Cost	1:10	3456.00	3456.00
	Annual Fixed Cost		23267.60	23267.60
II.	**Production Cost**			
2.1	Weeding	12	200.00	2460
2.2	Pruning	02 + 03	400 +200	1465
2.3	Earthing Up	04	400.00	1543
2.4	Manures and Fertilizers	06 Bags	900.00	5780
2.5	Spraying of Chemicals	00	00	4570
2.6	Irrigation	00	00	1950
2.7	Harvesting	128	200	25750
2.8	Miscellaneous	00	00	2025
2.0	Production (Variable) Cost (II)			45543.00
III.	**Post-Harvest Expenses**			
3.1	Commission Charges	00	00	1376.00
3.2	Transportation Charges to Farmers Flower Market	00	00	1200.00
3.3	Sub Total Cost (III)			2576.00
IV.	**Total Cost**			
4.1	Annual Fixed Cost (I)			23267.60
4.2	Variable Cost (II)			45543.00
4.3	Post-Harvest Expenses			2576.00
4.0	Total Cost			71386.60
V.	**Cost of Production of Jasmine**			
5.1	Output Realized per Acre in Tonnes		130.00	369200.00
5.2	Cost of Production per Kg of Jasmine			25.14

3.7.2. Cost of Production and Returns Realized from Jasmine Garden

Estimation on cost of production of jasmine per unit will be the right indicator to the farmers at what price the commodity should be priced or the minimum price should be declared. In this respect, the cost of production and the returns realized from the sale of jasmine per acre is analyzed and the results are presented in Table XV.

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Table XV: Cost of Production and Revenue Realized in Jasmine Flower Per Acre

S.No.	Particulars of Cost and Return	Units	Price per Unit	Total
01	Output Realized per Acre of Jasmine in Kgs	2840	130.00	369200.00
02	Total Cost incurred in Jasmine Cultivation			71386.00
03	Cost of Production per Kg of Jasmine			25.14
04	Net Return Realized per Annum			297814.00
05	Output - Input Ratio			05.17

Table XV revealed that the yield realized per acre from the cultivation of jasmine is arrived at 2840 kg which had generated gross revenue of 3.69 lakhs. For realizing this out turn, the farmer in Sathyamangalam belt should be in a position to invest Rs 71386 per acre. The net return realized by the farmer through the cultivation of jasmine was arrived at Rs. 2.98 lakhs. The cost of production of jasmine per kg is arrived at Rs 25.14 which is also considered to be marginally high. Sometimes the flower is priced even between Rs 30 to Rs 40 which will not add many returns to the farming community. In this context, the society should have the price declaration in the capital city markets to the incoming traders and accordingly the traders should be fixed with the minimum price per kg of jasmine above Rs 50 so that the farmer producer will get benefitted. In addition, the society itself can explore the possibilities of running the Floral Concrete Extraction Unit at Sathyamangalam to benefit further due to abundant resource availability.

3.7.3. Production Constraints Faced by the Jasmine Growers

Any production activity will normally attract certain constraints. Timely identification and removal of the constraints will smoothen the process of production of any commodity. It is true with jasmine producers and they also experienced certain constraints which are analyzed and the results are delineated in Table XVI.

Table XVI: Production Constraints Faced by the Jasmine Growing Farmers in the Study Area

S.No.	Production Constraints	Rank
01	Insufficient Labor for Harvesting and Weeding Operations in the Farm	I
02	Lack of Technology to induce flowers during the Offseason	II
03	Pest and Disease Outbreak in Jasmine	III
04	Water Scarcity to the Tail Ends and Certain Pockets	IV
05	Non Availability of Plant Protection Chemicals	V
06	Absence of Collection Points near to the Villages	VI

Table XVI revealed that the first and foremost constraint is the insufficient labor for harvesting or extraction of flowers and for the weeding operations in the farm and it is ranked as number one constraint. Lack of Technology to induce flowers during the off season is found to be the second important constraints, the farmers have reported. However, the scientific institutions like the Horticultural College and Research Institute, Periyakulam, Tamil Nadu Agricultural University can explore this problem and do the needful in this respect. Third important problem reported were found to be the pest and disease outbreak in the season and hence this problem is wide spread and the farmers are adopting the practice of spray in an uncontrolled manner. To alleviate this problem, the society can explore the possibility of recruiting a horticultural graduate as manager who will coordinate the technology related problems and the higher productivity can be able to realize by the society.

Among the constraints, the last one is found to be the absence of collection points near to the production site. The society can explore the ways and means of collecting the produce from the distant places through the pickup vans so that the produce will be reachable in the early hours and the produce can fetch higher price per unit.

VI. CONCLUSIONS AND RECOMMENDATIONS

Pest and disease outbreak in the season found to be the biggest problem and hence the farmers are adopting the practice of spray in an uncontrolled manner. To alleviate this problem, the Sathyamangalam Farmers Flower Growers' Head Association (SaFGA) can explore the possibility of recruiting a horticultural graduate as Manager who will coordinate the technology related problems and the higher productivity can be able to realize by the society.

Among the production constraints, the absence of collection points near to the production site is recognized. The Sathyamangalam Farmers Flower Growers' Head Association can explore the ways and means of collecting the produce from the distant places through the pickup vans so that the produce will be reachable in the early hours and the produce can fetch higher price per unit.

Currently, the SaFGA has rented a vacant land of farmer backside of the municipal bus stand on rental basis and the marketing of jasmine is being practiced by the society. In this regard, the government through the Public Works Department or Revenue Department or The Town Panchayat should come forward to identify a land suitable to the Sathyamangalam Farmers' Flower Growers' Head Association (SaFGA) for their efficient functioning.

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Around 3000 farmers are depending on the society for their livelihood and they are involved in direct marketing of flowers through SaFGA. This novel effort should be supported by the Government at the earliest by providing place and erecting an integrated market yard for the flower procurement and trade including parking and storage facilities.

Fluctuation in price of jasmine flower buds called uncertainty in the income of the jasmine producers. Since the Government of Tamil Nadu is poised for enhancing the income of the farmers by following a phrase **"Doubling the Production and Tripling the Income of the Farmers".** To fulfill this goal, the Government should come forward to erect an integrated farmers flower market at Sathyamangalam, Nilakottai, Thovalai, Madurai and Thirunelveli following the pattern of Koyambedu market at Chennai by getting some share from the farmers association and the rest borne by the Government for enhancing further trade development and if need be a Special Economic Zone of flowers may be announced.

Another important constraint is Transportation infrastructure. Here what is needed is providing a direct flight service from Coimbatore to Mumbai will readily enhance the transportation of flower buds on time which will in turn facilitate the producer traders to explore new markets keeping Mumbai as the base.

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