AN OVERVIEW OF UPCOUNTRY CUT FLOWER INDUSTRY, INDIA
(With Special reference to Tamil Nadu)

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ABSTRACT

Floricultural products exports bring a considerable amount of income to Indian economy and there is a huge development potential. Upcountry is a main cut flower production area in the country. This study's focus is to identify the general information on cut flower production, marketing, problems and suggestions for the improvement. This is a descriptive study where field survey was conducted in three districts in India. Primary data were collected through face to face and telephonic interviews with 58 flower growers by using a pre-tested structured questionnaire. Discussions were held with flower exporters, flower sellers and personnel from Department of (National Botanical Gardens and Export Development Board) NATIONAL HORTICULTURAL BOARD. Snowball sampling methods were used to select the flower growers. Secondary data were collected from the books, research articles, institutional publications and internet. Data was analyzed using Statistical Package for Social Sciences (SPSS version 17). Majority (79.2%) of the respondents were females and mean age of the respondents was 51 years. Cultivation of food crops and flowers was the main source of income of the majority (74.5%). *Gerbera, Chrysanthemum, Rose* and *Lilie*s were the main flowers cultivated and the average monthly income received from flowers was 28,250.96. Selling to the wholesalers visiting the village is the most prominent local marketing method for the growers. A continuous demand exists in the international market for cut flowers. Even though flower exporters are willing to buy flowers from the area, continuous and quality supply of flowers is a problem. Unavailability of proper market alone was identified as the main problem by 42.3% of respondents. It is recommended to motivate farmers for production planning. Export quality flower production at the village level, more tailor made trainings to growers, integrated approach to provide inputs, market and information in one package will provide solutions for the issues encountered in the sector.

***Key Words*:** *Cutflower, Production Planning.*

INTRODUCTION

Cutflower has played a main role in lots of cultures around the world. People cultivated flowers as a hobby due to its aesthetic value and gradually it has developed as an industry. It is reported that penetration of cutflower into the farming system in many Asian countries has slowly converted subsistence cropping into profitable and viable farming enterprises. Looking to the future, the Asian flower industry could rival, if not surpass, the size and scope of the European flower industry which presently dominates global commercial cutflower. Besides resulting in higher income generation, the cutflower sector has also shown tremendous potential for generating employment opportunities for rural populations, particularly women and youth in many countries. The cutflower industry in India has grown in the past twenty five years and provides direct employment to around 4,000 people from semi-urban and rural areas.

Global floral production value is estimated at USD 55bn. Despite over three decades of supplying quality cutflower products to the global markets, the cutflower industry in India is still a small and medium category enterprise. The country's cutflower exports for the year 2018 were nearly US$ 16 million while Netherlands, Japan, Saudi Arabia and UAE were the main export Some have arranged out-grower systems on their own, under the supply development assistance schemes and other provincial development programmes organized by the and other government institutions.

India is home to an enormous botanical diversity and has a wide range of floricultural species. Western province North Western Province and Central Province are the major production regions in the country. Especially Upcountry is the most suitable region for cultivation of varieties of cut flowers such as *Gerbera, Roses, Madonna, Lily, Chrysanthemum, Aster, Dhalia, Baby's breath* etc. Around 350-450 ha of land is under floricultural crops in the Upcountry region and this is a minute fraction of the total cultivable land available in the region. Primary cut flower production in Upcountry is from small scale individual farmers. Regarding the institutional support for the industry, is the apex state body dealing with cutflower products exports while Department of National Botanical Gardens (NHB) is providing technical knowledge and information to the flower growers. India's export-oriented cutflower industry was established during 1970-80 and has emerged as a reliable supplier of a wide- range of quality cutflower products across the world. India's cutflower products includes ornamental foliage plants, cut decorative foliage, cut flowers, aquarium plants, landscaping plants, tissue cultured plants and flower seeds.

In cutflower products exports, contribution of foliage (55.4%) is higher than the live plants (55.4%) and cut flower (0.6%).

Even though contribution of cut flowers into cutflower products export is lower than other products, it is revealed that the international demand for cut flowers is ever increasing. However, despite the fact that cutflower industry in India has been established long period ago, so far, a proper local market has not been developed for floricultural products. In addition, no integrated approach to provide inputs, knowledge, information and technology to farmers in one package**.** The production and marketing chain has been scattered. There are no adequate studies available to understand the grass root level situation in cut flower production.

Therefore, the main aim of the study was to identify/ collect the information on cut flower production, marketing, problems and suggestions for the improvement of the sector.

METHODOLOGY

This study was carried as a field survey in *Nuwaraeliya*, *Kandy* and *Badulla* districts which belonged to Central and *NHB* India respectively. Database of registered flower grower associations maintained by the NHB and the register of *Nuwareliya* flower growers' cooperative society were used to select the sample. Since most of the people appeared in the above registers were not involved with flower cultivation when the study was carried out, snowball sampling methods were used to select the sample.

Primary data was collected through face to face and telephonic interviews with 58 flower growers by using a pre-tested structured questionnaire. Additionally, primary data was collected from flower exporters and flower sellers followed by informal discussions with the personnel from NHB and HDB. Secondary data was collected from the books, research articles, institutional publications and internet. Data were analyzed using Statistical Package for Social Sciences (SPSS version 17) which is commonly used for social science researches. Descriptive analysis tools such as bar charts, mean, frequencies, co-relations etc. were used to explain the data.

ANALYSIS AND DISCUSSION

General Information of respondents

Table 1

Background information of respondents

Table 1: Background information of respondents				
Variable	**Categories**		**Frequency**	**Valid %**
Sex	Male		12	20.7
	Female		46	79.3
Age (Years)	<40		14	24.1
	41-50		14	24.1
	51-60		21	36.2
	>61		9	15.5
Education level	<G.C.E.O/L*		9	15.5
	G.C.E.O/L		24	41.4
	G.C.E.A/L**		22	37.9
	Above G.C.E.A/L		3	5.2
Occupation	Farming		41	74.5
	Business		3	5.5
	Farming and Business		1	1.8
	Other		4	7.3
	Self employed		6	10.9

Source: Field Data Survey, 2017

*The Indian Ordinary Level (O-level) is a educational (GCE) qualification in India, conducted by the Department of Examinations of the Ministry of Education. It is usually taken by students during the usually ages 15–16 years.

The Indian Advanced Level (A-level), is a General Certificate of Education (GCE) qualification exam in India, similar to the British Advanced Level, conducted annually by the Department of Examinations of the Ministry of Education. It is usually taken by students after they have completed Ordinary Level exams.

The majority (79.2%) of the respondents were females. The discussions with respondents revealed that flower cultivation has become an income source especially for

the women in the area. Most of the household heads were males. By earning an extra income through flower cultivation which demands only little amount of labour, has enabled these women to support household income. The mean age of the respondents was 51 years. About 41.4% of the respondents have studied up to Basic Educational Level examination. Interestingly, there were graduates and diploma holders among the respondents. However, there was no significant relationship between the age and the education level ($p=0.359$ $p>0.05$). Cultivation of food crops and flowers was the main source of income of the majority (74.5%). Other category includes retired government officers, private sector employees etc.

Production and Economic Information of respondents

The average family size of the respondents was 4 and the monthly family income varies as in Figure 2. The mean monthly family income was INE56,304.

Earning an income was the reason for growing flowers for 76.8% of respondents while 10.7% of respondents were growing flowers as a hobby and to obtain an income. There was a significant relationship between the monthly family income and income received from flowers ($P=0.004$, $P<0.01$).

Asetermaria, Tubrose , Gerbera, Chrysanthemum, Rose and *Lilies* were the main flowers cultivated by the respondents. In addition, flower plants and some foliage were also produced. Only *Gerbera*, *Chrysanthemum* and *Rose* were cultivated in poly tunnels and others have grown in the open field.In addition to flowers, vegetables, potatoes, and fruits are also cultivated in the area. The area itself is very famous for Upcountry vegetable cultivation. The majority (88.2%) have cultivated in their own lands. Regarding the field crops cultivation, 58.8% have grown those crops as a monocrop while 41.2% have followed mixed cropping.

Table 2

Cultivating years of flowers

Number of years of cultivating flowers	Number of respondents	Valid %
<5 years	17	29.3
6-10years	19	32.8
>11years	22	37.9
Total	58	100

Source: Field Survey, 2017

Average years of cultivating flowers was 11 years.

Table 3

Land area under flower cultivation

Area (In Perches) cultivated with flowers	Number of respondents	Valid %
<10	23	44.2
11 to 21	7	13.5
22 to 32	3	5.8
>33	19	36.5
Missing	6	
Total	58	

Source: Field Survey, 2017

Average land area under flower cultivation was 36 perches.

Table 4

Monthly Income received from flowers

Monthly income from flowers (INC)	Number of respondents	Valid %
<10,000	14	26.9
10,001-20,000	14	26.9
20,001-30,000	14	26.9
30,001-40,000	3	5.8
>40,001	7	13.5
Missing	6	
Total	58	

Source: Field Survey, 2016

Average monthly income received from flowers was INC 28,250.96.

There were 35 respondents (56.8%) who cultivate flowers and other crops, mainly, vegetables. Their income from each crop category was obtained. Their average income received from vegetables was INC 32,851 while it was INC 24,753 for flowers.

The average years of vegetable cultivation was 20 years. Higher income from vegetables may be due to various factors such as long term farmer experience in vegetable cultivation, favourable environment conditions, favourable economic factors, Tubrose rable market behaviour etc.

Monthly flower production per 100 plants for each flower variety was calculated by using the average values of no. of plants and quantity of flowers produced per month (**Table**

5). Buying price varied with the type of buyer. According to the respondents, from January-June there is a high demand for flowers where they can receive high price for their flowers. Depending on the environmental and other conditions, if farmers are planning their production to harvest at the high demand period, they can bargain for a maximum price. Therefore, maximum unit selling price was considered in calculations done in **Table 5**.

Table 5

Monthly flower production and potential income per 100 plants for main flower varieties

Flower Variety	Flowers per 100 plants	Maximum Unit selling price INC	Potential Monthly Income per 100 plants INC
Bird of Paradise	172	7	1204
Tubrose	276	5	1380
Gerbera	82	20	1640
Chrysanthemum	34	35	1190
Rose	107	100	10700
Lilies	70	7	490

Source: Author's analysis based on field data, 201

The data presented in Table 5 can be used for production planning which brings mutual benefits to farmers and buyers. Farmers can project their harvest and income in advance and plan accordingly. Bangalore, buyers can develop forward contracts with farmers and they can expect continuous flower supply.

Information on other Production Inputs for Flower Cultivation Labour

According to Table 6, the majority have obtained the support from family members. Since most of the cultivating lands are located close to their homes, it is convenient for them to get the family support.

Flower cultivation does not demand the labour throughout the production period. But, for land preparation and removal of weeds, some respondents have obtained the service of 2-3 casual labourers with the wage rate of INC 1200 per person per day.

Table 6

Variation of Labour source for Flower Cultivation

Labour source	Frequency	Valid %
Family members	31	53.4
Family members+ Permanent workers	23	39.7
Family members + Casual and Permanent workers	3	5.2
Casual workers only	1	1.7

Source: Field Data Survey, 2017

Capital

The initial capital for flower cultivation has derived for various sources.

Table 7

Variation of Source of Capital

Source of Capital	Frequency	Valid %
Own money	26	51.0
Bank Loan	12	23.5
Own money + Bank Loan	10	19.6
Bank loan + Loan from the cooperative	2	3.9
Own money + Bank loan from the cooperative	1	2.0

According to **Table 7,** the main source of capital was own money and the main portion of cost had been incurred for the construction of the poly tunnels.

Institutional Support

The majority (82%) of the respondents have received technical training on flower cultivation. They have received trainings from NHB, Department of Agriculture, Regional Economic Development Authority (REDA), Divisional Secretariat office and other private institutions. The majority (56%) of the respondents were satisfied with the trainings and other support they received from the above mentioned organizations while 44% of the respondents were not satisfied with the service and benefits they receive.

Local Marketing Channels of Flowers

There was no main buyer for most of the respondents. Sending flowers to the florists through direct contacts, selling to the identified buyers established in the village, selling at home, fairs, sales centers and selling to the wholesalers visiting the village,

were main marketing methods. Among them, selling to the wholesalers visiting the village is more prominent. Selling price vary with the type of buyer.

Flower Exports

Most of the flower exporting companies have their own farms to produce flowers of required quality. According to the information obtained from the HDB, informal discussions were done with 7 flower exporters. It was revealed that 3 of them are willing to accept flowers from individual farmers from *Nuwaraeliya* to send for export market.

Issues related to Flower Exports

There are certain issues raised by the flower exporters.

Some of the exporters are not satisfied with the pricing mechanism in the local flower industry. In some instances, irrespective of the quality of the flower, they have to pay the same price of a quality flower to the low quality flowers. Transport and handling cost is high if they have to collect flowers from individual farmers in *Nuwaraeliya*. And also it does not ensure continuous supply of flowers with equal quality. Field management is also practically difficult. Due to these issues, they believe it is very much convenient and cost effective for them to maintain their own flower farms.

The discussions with the HDB personnel revealed that the export portion of the cut flowers from India is not at a satisfactory level.

There is a high competitiveness in the international flower market. Generally, the demand for flowers varied and the demand for certain flower types such as *Roses, Carnations, Lilies* never becomes flat. The demand also increases with the availability of certain occasions such as Valentine's Day, Mothers' day etc. Therefore, there is huge potential to earn more if India can provide continuous good quality flower supply to cater international demand. But, lack of supply is current problem in the industry. The supply base of certain flower varieties like *Victory, Sandriana, Sancervaria, Cordiana* etc. is very much poor even though they have a good international demand.

Price fluctuation is also another issue which prevents sustained financial returns from flower exports. In order to make this venture profitable, selling price should be increased with the increase of cost of production. It has become practically difficult to our exporters to increase their prices after they have entered into the international market. If they do so, automatically they would become isolated or thrown away from the international market because there are many competitors who would supply flowers at low prices.

Lack of direct flights to main market destinations is another constraint pointed out by the HDB personnel. It hinders the efficiency of the marketing process and opportunities to explore new markets.

High cost of production and low unit land productivity are the other problems affecting favourable economic returns from exports.

According to HDB, continuous and bulk supply of flowers with uniform quality is extremely important to get the advantages in the export market.

Problems and Constraints faced by the respondents

Unavailability of proper market alone was identified as the main problem by 42.3% of respondents. In addition, not receiving fixed price, seasonal demand, unavailability of tunnel even required, lack of water supply, lack of access to new technologies, high input cost and competition from the artificial flowers in the market were other problems pointed out by the respondents.

Grass-roots level Suggestions

Suggestions raised by the respondents varied from production to value addition and those are as follows:

- Establishing proper local and export market for flowers
- Establishing a good pricing mechanism
- Providing improved varieties and new plants to the growers eg. *Lady Jane*
- Conducting training programmes on watering patterns, world market trends, sustainable flower production, flower packaging etc. for flower growers
- Establishing a market to buy inputs such as fertilizers, quality planting materials, equipments etc. at low prices
- Organising promotion programmes to encourage other crops growers for flower cultivation.
- Promoting other value added products and related enterprises (eg. Perfumes, Soap) in the area in order to get use of low quality and wasting flowers.

Conclusions

Blessed with favourable climatic and environmental conditions for flower cultivation, Upcountry can be considered as the center of cutflower industry in India. It brings considerable amount of income to the farmers with comparatively lesser production inputs and effort. Anyway, unavailability of proper market and proper pricing mechanism have prevented them receiving full financial benefits from this venture. Therefore, it is very important to develop proper flower market in the area.

India earns a favourable income from flower exports. The international demand for flowers is increasing and if India can fill the gap between the demand and the supply with good quality flowers, it can enjoy tremendous financial benefits. It is required to develop the industry through a national holistic plan by considering both production and marketing aspects in cutflower industry. Potential benefits gained by the individual farmers as well as by the country itself should be taken into account in developing such strategy.

Motivating farmers for quality concern flower production will lead them to connect with international market. It was observed that postharvest handling of flowers is quite poor in some the respondents. Poor handling affects the flower quality. Measures should be taken to set a target to local farmers to produce "export quality flowers" at the regional level.

HDB should consider about contract farming with successful individual farmers or farmer groups in these areas. Even though large scale exporters are willing to buy flowers from *Nuwarealiya*, low quality and unstable supply were the main constraints. Therefore, production planning is recommended to enable both farmers and exporters receive stable financial benefits and to minimize the flower wastage.

Knowledge and skills needed by farmers for good quality flower production should be improved. Conducting more 'tailor made' technical trainings on every aspects (from selecting planting materials to value addition), conducting more research and development activities, maintaining close contacts between growers and supporting institutions, and developing public-private partnership model to technology transfer and extension activities will be important. Integrated approach is needed to provide inputs, information and market in one package to grass- roots level farmers. Already available flower growers' cooperative society in the area can be developed as such place. Not only reducing cost of production, but also it will provide opportunities to village level farmers to enter into the international market as well.

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