

## Bottlenecks in Commercializing Cymbidium Orchids in Darjeeling

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### ABSTRACT

*Growing of orchids (Cymbidiums) in Darjeeling district of West Bengal started as hobby a few decades ago and it is now a subsidiary income generation activity of many farmers in the district. The district has immense potential in terms of favorable climatic conditions and skilled man power for converting it to a full time commercial venture to meet ever expanding demand of cut flowers in domestic and export markets. The paper provides background information on current status of Cymbidium orchid cultivation in the district and problems facing growers. The major problems confronted by the growers were lack of knowledge about management of disease and pests, post harvest handling of cut flowers, lack of infrastructural facilities, high cost of planting material and marketing outlets. Majority of farmers suggested that quality planting material of orchids should be made available at subsidized rate, trainings for identification and management of diseases and pests should be organised, credit through banks and infrastructure should be developed for proper development of orchid industry in the region.*

**Key words:** *Cymbidium; Darjeeling; Orchid;*

The district of Darjeeling lies between 26° 31' and 27° 13' north latitude and between 87° 59' and 88° 53' east longitude. It consists of valleys in the elevation above the sea may not more than 1000 feet and hill ranges which rise to a height 10,000 to 12,000 feet. Such an altitudinal variation has bestowed unique diversity in climate ranging from subtropical to alpine. The subtropical to temperate climate coupled with high humidity and sufficient sunlight offers good scope for orchid cultivation. *Cymbidium* orchids possess long lasting waxy cut flowers that can stand in flower vase up to one month. These are available in various colours, shapes and sizes. Owing to these qualities these are known as monarch of orchid world. They are among top ten cut flowers sold in Dutch flower auctions and each flower spike fetches approximately 2.00€. In this hill district, the cultivars of *Cymbidium* orchids were introduced in sixties and seventies by orchid enthusiasts and nurserymen and in later years new cultivars were added through gifts and from visiting foreigners and trips made by plant lovers to abroad (*Pradhan et. al., 1995*). Subsequently development of meristem culture

technique in France and its introduction in Kalimpong by leading nurserymen added an advantage to *Cymbidium* culture in the hill district. Thus variety and planting material appears not to be a constraint in expanding cultivation in the region. Conversely, this hill district with long history of introduction and cultivation failed to make any dent on cut flower market. Hence, the present study was carried out to explore the reasons of the stagnation of orchid cultivation in the district Darjeeling.

### METHODOLOGY

The survey was conducted in four community development blocks (Sukhia-Pokhari, Kurseong, Mirik and Bijanbari) of Darjeeling district of West Bengal. From each block, the 12 farmers having not less than 50 flowering size plants were randomly selected for collecting the information. The data was collected through personal interview using questionnaire covering the contents a) infrastructure and its availability; b) planting material (stage at which purchased, availability and cost); c) number of hybrids/cultivar grown; d) availability of inputs; e) problems encountered

(production, plant protection and marketing related); f) stage at which the crop is generally sold g) stage of harvesting ; h) major marketing outlets ; i) question related to processing of produce for the market (grading, pre-cooling, chemical treatment, plugging and losses during preparation); j) packaging (material used, dimension, capacity, packaging losses); k) mode of transport (road, rail, air or combination of these); l) storage requirement and availability; m) further expansion plan; n) need and availability of literature and also farmers' suggestions were obtained for enhancing the adoption of recommended production technology. Apart from providing information of their own these growers were treated as key informant for whole administrative block for gathering village level information in the district.

## RESULTS AND DISCUSSION

Among four developmental blocks under study, Sukhia – Pokhari was found to have highest number of villages engaged in *Cymbidium* orchid cultivation followed by Mirik and Bijanbari and Kurseong. However, highest number (67.8) of *Cymbidium* orchid growers were located in Mirik followed by Sukhia – Pokhari (42.36) and Kurseong (30.63). The average number of flowering size plants per farmer were highest in Mirik (712.5) followed by Sukhia – Pokhari (366.06)

and Kurseong (132.5) (Table 1). It appears that future *Cymbidium* orchid industry is taking place its shape in and around these two blocks possibly due to congenial microclimatic conditions for growing of *Cymbidium* orchid and also awareness of growers. It is estimated that approximately 2, 11000 *Cymbidium* cut flowers were produced annually in these developmental blocks of which only 30,000 – 40,000 were sold in the markets to fetch income of Rs. 2, 40,000 – 3, 20,000. The low performance on this front was attributed to three reasons. Firstly, *Cymbidium* cultivators grow many cultivars in small number that flowers at different time intervals making collection of flowers expensive (Table 1). Secondly, farmers grow the varieties unsuitable for cut flower production. Thirdly, the distance of collection centre is too far from the production centers that renders collection and marketing of cut flowers less profitable. The land and water was not found to be constraint in cultivation of orchids. The 72.9 percent of respondents were possessed very low cost protective structures of which only the top was covered with plastic sheets to protect from the rain and the rest cultivated their plants in open conditions without any kind of protection. No other kind of infrastructure like pack-house, cool store, refrigerated van etc were available either individual or community basis. (Table 2). There is need for standardization of design of polyhouse with required

**Table 1. Villages under different development block**

**Table 1. Status of *Cymbidium* orchid cultivation in Darjeeling district of West Bengal**

Developmental blocks	Av. no. of growers	Av. no. of plants per cultivator	Mean no. of cultivars grown by each farmer	Expected cut flower production	Expected return from cut flowers
Mirik	67.18	712.50	83.67	1,43,601.14	71,80,050
Sukhia-Pokhari	42.36	366.06	53.91	46,652.95	23,32,600
Kurseong	30.63	132.50	43.25	12,177.95	6,88,050
Bijanbari	26.54	107.04	36.25	8,554.27	4,27,700

**Table 2. Farmers' response to availability of infrastructure related to production and post harvest management of orchids in Darjeeling district of West Bengal**

Infrastructure	Mirik		Sukhia-Pokhari		Kurseong		Bijanbari		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Is there enough land to cultivate <i>Cymbidiums</i> ?	12	100	11	91.7	10	83.3	10	83.3	43	89.6
Is there enough water to irrigate plants?	12	100	10	83.3	12	100	11	91.7	45	93.8
Do you have polyhouse/hothouse	11	91.7	10	83.3	8	66.7	6	50.0	35	72.9
Do you have access to packaging shed?	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Do you have refer van facility?	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Do you have access to cool store?	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

degree of control for production of quality cut flowers. The construction of two pack houses along with cool store facility at Mirik and at Sukhia – Pokhari would help to proper handle the produce in the region.

The required inputs like potting media, bamboos for construction of shade house or polyhouse were available locally but for other inputs like fertilizers, plant protection chemicals, earthen/plastic pots, cladding material silpaulin/polyethylene etc. were procured from Siliguri, neighboring sub-division in Darjeeling. A large number of (80%) grower felt that the quality planting material is unavailable and costly. The farmers purchased planting material from the nurseries based in Kalimpong/ Sikkim and rest propagated through backbulbs (Table 3). In Thailand, the cost of planting material was reduced by adopting tissue culture technique in which the costly chemicals were replaced with coconut water, banana pulp, and Erlenmeyer flasks with low cost bottles (Thanomchit, 1995). In flask seedlings cost less 33 per cent than hardened plants but require technical know-how for hardening (Pradhan et. al, 1995). Providing technical know-how to farmers for hardening would again reduce the cost of planting material. Most of the farmers (70 to 80 %) found to have good knowledge about potting compost and planting of orchids. However, very less farmers were found to know about fertilization, diseases and pests identification and post harvest management (Table 4). The outbreak of epidemic in 1997 severely affected budding Cymbidium enterprise

in the region. All most all the farmers were affected by outbreak of a disease but most affected were Pokhariabong, Dhajjia, Soureni, Nigalay, the constellations of Mirik block. The occurrence of disease from Kurseong was reported by Sharma et. al., 1998. The Black rot disease still causes damage in the various parts of the district. The growers revealed that they neither sterilized cutting tools during division of mother plants, nor sterilized potting media. It is probable that non-sterilized potting media served as primary source of inoculum and wounded portion of the freshly divided plant as port for entry of causal organism. The disease was further spread to healthy plants by using non-sterilized cutting tools. The other common diseases were found as Anthracnose and Cymbidium Mosaic Virus. Anamthawat and Vajrabhaya, 1979 recommended sterilization of cutting tools while cutting flowers and dividing plants since mechanical transmission is likely to be the common means of spreading disease. Mites, scales, sludge and snails were major pest causing damage to the Cymbidiums. Nagrare, 2001 also reported similar pests causing damage in neighboring state Sikkim

The farmers either sold flowering size plants to local hobbyist or cut flowers to the middlemen who acts as an intermediary between florists and grower. There were three middlemen in the district. All of them settled in the Mirik sub-division. All the post harvest operations after harvesting the cut-flowers were generally

**Table 3. Farmers’ response to requirement and availability of farm inputs for the production of Cymbidium orchids in Darjeeling district of West Bengal**

Required inputs	Mirik		Sukhia-Pokhari		Kurseong		Bijanbari		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Are bamboos are available locally?	12	100.0	12	91.7	12	100.0	11	100	47	97.9
Is cladding material available?	02	16.7	01	08.3	02	16.2	03	25.0	08	16.7
Are plastic or earthen pots available?	09	75.0	08	66.7	08	66.7	06	50.0	31	64.6
Is potting mix available locally?	12	100.0	11	91.7	10	83.3	11	91.7	44	91.7
Are the fertilizers available locally?	05	41.7	03	25.0	05	41.7	04	33.4	17	35.4
Are plant protection chemicals available?	02	16.7	02	16.7	03	25.7	01	8.3	08	16.7
Is sufficient quality planting material available?	02	16.7	01	08.3	03	25.0	03	25.5	09	18.8
Is cost of planting material reasonable	03	25.0	02	16.7	03	25.0	01	8.3	09	18.8
Do you avail finance/loan from bank?	04	33.3	03	25.0	01	25.0	02	16.7	10	25.0
Is technical know – how available?	04	16.7	03	8.3	03	25.0	02	8.3	12	18.8
Do you find sufficient literature to consult?	02	25.0	03	16.7	05	25.0	02	8.3	12	18.8

**Table 4. farmers' response to various unit operations related to plant/ cut flower production, plant protection and post harvest management of *Cymbidium* orchids**

Unit operations	Mirik		Sukhia-Pokhari		Kurseong		Bijan bari		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Do you know what kind of potting mix is required for the <i>Cymbidium</i> ?	11	91.7	10	83.3	09	25.0	08	66.7	38	09.1
Do you know correct method of planting?	10	83.3	09	75.0	08	66.7	07	58.3	34	70.8
Do you know when to fertilize your plants?	04	33.3	04	33.3	03	25.0	02	16.7	13	27.1
Do you know when and how to stake flower spikes?	08	66.7	08	66.7	06	50.0	05	41.6	27	56.2
Do you know how to divide and repot your <i>Cymbidiums</i> ?	04	33.3	05	41.7	03	25.0	02	16.7	14	29.2
Can you identify major diseases and take control measures?	05	41.6	03	25.0	02	16.6	01	8.33	11	22.92
Can you identify major pests of <i>Cymbidiums</i> and take control measures?	03	25.0	03	25.0	02	16.67	01	8.33	09	18.75
Do you know when to harvest your flower spikes?	03	25.0	02	25.0	01	8.33	02	16.7	08	16.7
Do you know how the flower spikes are harvested, packed, and transported?	03	25.0	02	16.7	01	8.33	03	25.0	09	18.75
Are you able to sale your produce?	08	66.7	06	50.0	03	25.0	01	8.33	18	37.5

**Table 5. Suggestions perceived by the farmers for enhancing the production and quality of *Cymbidium* orchid in the region**

Suggestions	Mirik		Sukhia-Pokhari		Kurseong		Bijan bari		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Initially govt. should help in setting up orchid farms	8	66.6	7	58.3	10	83.3	9	75.0	34	70.8
Credit should be made available through banks	9	75.0	6	50.0	5	41.7	4	33.3	24	50.0
Quality planting material should be made available at cheaper rate	10	83.3	11	91.7	11	91.7	10	83.3	42	87.5
Training on management of disease and pests	8	66.6	9	75.0	8	66.6	9	75.0	34	70.8
Training on post harvest management	9	75.0	8	66.6	4	33.3	6	50.0	27	56.2
Grading and packing facility	10	83.3	8	66.6	8	66.6	6	50.0	32	66.7
Facility of storage of cut flowers	7	58.3	5	41.7	6	50.0	4	33.3	22	45.8
Refrigerated van for transportation of flowers	9	75.0	8	66.6	7	58.3	6	50.0	30	62.5
Subsidies of airfreight	8	66.6	6	50.0	5	41.7	4	33.3	23	47.9

performed by the middlemen. They collected the flowers from hamlets in Mirik, but no flowers were collected from Bijanbari, and Kurseong and Sukhia Pokhari blocks. These places are located far away from their centre of activity and cut flowers in these areas remain uncollected as it would increase the cost of collection and reduced the profit the profit of collector.

The majority of farmers suggested that quality planting material of orchids should be made available

and training on disease and pest management of orchids should be imparted for proper management of orchid farms (Table 5). The farmers also suggested that initially government should help the farmers in setting up orchid farms and post harvest infrastructure like pack houses, cool stores, refrigerated vans etc for proper development of orchid industry in the region.

## CONCLUSION

*Cymbidium* orchids are among top ten cut flowers

in international trade and fast gaining popularity in national market. Since, region offers good potential in terms of climate and manpower for cultivation of these exotic flowers, the government interventions are required through various ongoing schemes like Horticulture Mission etc. in setting up of orchid farms and post harvest infrastructure like pack houses, cool stores, refrigerated vans etc for proper development of orchid industry in the region. This region lies in north eastern Himalaya and climate, topography, landforms are very similar to other north eastern Himalayan states, the

region may be included various other centrally sponsored government schemes. The National Research Centre for Orchids should take a lead in development of location specific technology and also in providing the technical know-how required in growing of orchids. The NRC should also made available quality planting material of orchids to the farmers and specific training programmes on Insect pest and Disease management of orchids should be organized the NRC Orchid and also by State Deptt. of Hort. for proper management of orchid farms.

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