

# Unique Uses of Single *Cymbidium* Flowers

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*Front* : Oriental style flower arrangement with single *Cymbidium* flowers.

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## Foreword

Orchids are admired for their charismatic beauty, elegant look, vibrant colours, long shelf-life and for unique ways of adaptations. The scientific interventions like development of tissue culture techniques and modern methods in plant breeding have brought them within the reach of common men. The burgeoning urban population, increasing income and exposition to different cultures of the world through electronic media have led to changing life style of the people in the country. The changing life style coupled with high income has created a huge demand for exotic flowers. The orchids are emerging as the prominent segment of Indian floriculture. The presence of orchids is being noted in different official and social functions, hotels, offices and sitting rooms.

*Cymbidiums* enjoy aristocracy among all orchids sold in world floriculture markets. They are also one of the costliest flowers sold in the market. Hilly regions of the country possess congenial climate to grow these orchids. Some Indian states like Sikkim, Darjeeling district of West Bengal, Arunachal Pradesh, Meghalaya are growing these orchids at commercial scale. The growers are earning huge profits through the sale of cut flowers and potted flowering plants. However, during preparation of flowers for the market some flower spikes are graded down due to not meeting quality standards. The farmers always admire



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for using these rejected flower spikes to enhance their income. I am happy that our scientists have come up with a unique technology of using single *Cymbidium* flowers, which have been used in the form of single or multiple flower packs. These flower packs can be sold as gifts or souvenirs and likely to fetch higher price than the whole flower spike. In addition to single flower packaging technology, the authors have also explored, discussed and presented various ways of using *Cymbidium* single flowers in different types of flower arrangements. I believe this technical bulletin would be very useful for *Cymbidium* growers, florists and young entrepreneurs who are willing to make their career in floribusiness.

Dr. D.R. Singh  
Director

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## Introduction

Man has an immense attraction and curiosity for orchids, posed by their beauty, rarity and mystic habitats. Though at the beginning, it was the botanical quest that drove European explorers and scientists in search of these plants, but with success in hybridization, and micro-propagation, it has become one of the leading flower crop. Flowers were traditionally used for worship and adornment during religious and social celebrations. But in modern days they have become a part of our daily life. They have found a regular place in hotels, offices and even in our sitting rooms. Possession of an orchid was earlier associated with the affluent and royals only, but large scale commercial cultivation along with socio-economic uplift, has brought them within reach of common men. However, they still symbolize richness and elegance.



*Cymbidium* is one of the finest orchids grown commercially. It tops the orchid cut flowers list, both in terms of volume traded and revenue earned, in the world market. *Cymbidium* is an important commercial crop in several North-eastern hilly states of the country. The flowers are produced on long spikes and sold



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as cut stems. They are used in bouquets and floral decorations. But there are lot many ways, these flowers can be utilized. The individual flowers of *Cymbidium* are large (7-12cm diameter) and attractive. Over and above, they have long vase life lending a fair opportunity for utilization of single blooms as cut flowers. In a flower arrangement, these flowers can create emphasis on the focal point. Similarly, they can be used in wreaths, bouquets, boutonniere and many other floral ornaments. The National Research Centre for Orchids have come up with a unique value added packaging or decorative packaging system for single flowers of *Cymbidiums* that can be marketed as ready to use floral product. Till now various ways of exploiting these magnificent flowers has not been explored thoroughly. With the expansion of scope of utility, the cultivation of the crop is certain to get a boost, as it will increase the demand and reduce yield loss. The technology of single flower packaging would be helpful in promoting small scale industries and creating employment opportunities in urban areas.

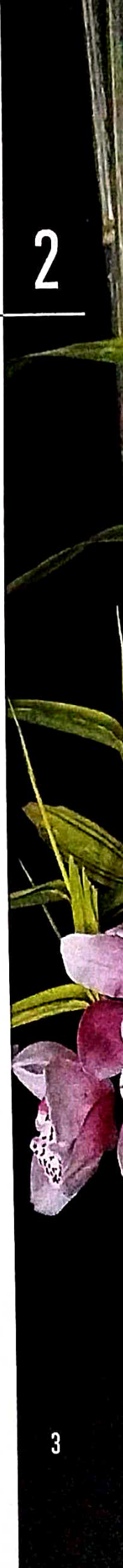
The flowers of *Cymbidium* are sensitive to ethylene exposure, mechanical damage owing to harvesting at full open stage, and require wet storage. All these issues need to be addressed. This bulletin highlights the techniques involved scientific management and utilization of single *cymbidium* flowers. Overall, the aim and objective of this technical bulletin is to disseminate these technologies to promote cultivation, value-addition and marketing of *Cymbidiums* in the country.

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## Factors affecting profitability of *Cymbidium* cultivation

The *Cymbidiums* are high value flowers. They are essentially grown under protected condition and in soilless media. Higher cost of planting material, feeding with liquid nutrition and long juvenile phase (3 to 4years) also add up to the expenditure. In Indian, as well as international market, *Cymbidiums* are generally sold as cut spikes. The price of the cut spikes, eventually, depends on their quality. There are several quality parameters for *Cymbidium* cut spikes like - length of spike, length of stem covered with flowers, number of flowers per stem, orientation of flowers, freshness of flowers, freedom from blemishes, retention of pollen-cap and pollinia etc. The cut stems of *Cymbidium* often become unmarketable for not meeting prescribed minimum quality requirements. The reasons can be:

1. Crooked or untrained spikes
2. Shorter spike length
3. Less number of flowers per spike.
4. Missing flowers in between
5. Mal orientation of flowers along the rachis
6. Damage on few flowers
7. Loss of pollen cap or fertilization in more than 5% of flowers per spike, etc.



## Unique Uses of Single *Cymbidium* Flowers

The *Cymbidiums* are harvested at full bloom stage, because the spikes harvested at bud stage or half bloom stage do not open in the vase and also fail to attend the expected vase life. But, harvesting at full open stage makes the flowers vulnerable to mechanical bruises and dislodging of pollinia and pollen cap. On the other hand, *Cymbidiums* are highly sensitive to ethylene exposure causing dramatic senescence. Dislodging of pollinia



Un-trained spike

Shorter spike

Fertilized flower

### *Cymbidium* plants with inferior grade flower spikes

or pollen cap drastically triggers the ethylene production of the flowers. Consequently, if a single flower on a spike has dislodged pollinia, it is likely to affect the entire spike or bunch during storage or transport. Hence, the spikes with defected flowers are discarded. Usually, these are not sold in the market and rejected at farm level that causes loss in yield as well as profitability.

Higher cost of production coupled with yield loss often leads to higher selling price in the local market where it is substituted by other cheaper flowers like rose, carnation or gerberas. All these factors lower the profitability of *Cymbidium* cultivation. In order to scale up the profit of these orchid farms, measures need to be developed to increase the saleability of the rejected spikes. In the present context we will discuss on exploring unique avenues for utilization of these flowers out of their conventional way. But before that, a brief account on the crop itself is presented for ready reference.

## *Cymbidiums* in world market

Orchids are one of the most preferred cut flowers in the international flower trade and account for around 10% share. The average trade value of fresh orchids during 2012 was US\$ 504 million which involved nearly 60 countries. Most of the world's *Cymbidiums* are produced in New Zealand, Australia, The Netherlands and the United State of America. They are the preferred cut flowers among orchids and fetch the highest price in markets. Comparative average price of top five cut flowers are presented in Table-1. *Cymbidiums* imported from the Netherlands can cost as much as 11.18 US\$ per stem in Singapore market. In domestic market cut stems of *Cymbidiums* fetches between Rs.125 to 250 per spike.

**Table 1. Comparative average prices of cut flowers at Alsmere Auction (July, 2013)**

Cut flowers	Average price (Euro cents /stem)
Rose (large buds)	0.28
Lilium	0.75
Chrysanthemum spray	0.30
<i>Cymbidium</i>	2.73
Chrysanthemum (single bud)	0.46

Source: Periodic Price Information 15.7.2013- Flora Holland, Alsmere

## Present status and future prospect of *Cymbidium* cultivation in India

*Cymbidium* is an important commercial flower crop in the hilly region of the country, due to agro-climatic suitability, high per stem price realization compared to other crops. In India *Cymbidiums* are cultivated in Sikkim, West Bengal, Assam and other North Eastern states. East Sikkim has been declared the Agri-Export Zone specially, for *Cymbidiums*. Around 250 *Cymbidium* hybrids are being commercially cultivated in the state in an approximate area of 40ha producing about 250 MT spikes per year. In Darjeeling hills the crop is being grown in Mirik, Mongpo and Kalimpong areas. It has also been successfully introduced in Utrakhand, Himachal Pradesh and hilly regions of Tamil Nadu. However, much of the country's demand is met through imports from the Netherlands and the New Zealand. During 2013 -14, the total import of orchids in India was 2985 lakh, of which the *Cymbidium* accounted the second position. This indicates the demand of the crop in the domestic market. India has potential to grow as a global player considering the congenial climate, low cost of labour and energy and its positional advantage.

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## Cultivation requirements

*Cymbidiums* require cool and humid climate accompanied with bright sunlight for their optimum growth and flowering. It can be cultivated where the temperature ranges from 10 to 32°C. A temperature difference of 10-15°C, between day and night from late summer to early winter is essential for initiation of flower spikes. Although *cymbidiums* can tolerate low temperature but flower development is affected if temperature remains below 8°C for a long period. They require plenty of light (3000 – 4500 foot candle), insufficient light conditions affect flowering. In North-East Himalayas, areas lying at an elevation between 1500-2000 meters from mean sea level offer congenial climate for growing of these orchids.



## Commercial cultivars

Hybridization of *Cymbidium* was initiated by late nineteenth century. The numbers of registered hybrids have surpassed 14,000 by now and nearly 250 hybrids are added to the list every year. These hybrids are generally classified into two groups - standard and miniature, based on their growth habit. The standard *Cymbidiums* have longer spike (90 to 120cm) with larger flowers and require cool climate. The miniatures, on the other hand, possess shorter spikes (30 to 60cm) and smaller flowers. Warm weather is congenial for their normal growth and flowering. One more group, the intermediates, have been developed by crossing the standard and the miniatures. Some of the commercial cultivars grown in India are listed below according to blooming time and colour of flowers.

### List of Commercial Cultivars according to blooming time

**Early:** Sleeping lamp 'Tetra Green', Vanguard 'Christmas Beauty', Rose Armstrong 'First choice', Lisa Rose 'Fire Glow', Red Beauty 'Brilliance' and Pine Clash 'Moon Venus'.

**Mid:** Valley Gem 'Mayfair', 'Forest King', Fortyniner 'Alice Anderson', Tracy Reddaway 'Green Haze', Elliot Rogers 'C 290', Winter Royale 'Pink Peach' and Narella 'Jennifer Gail'.

**Late:** Levis Duke 'Bella Vista', San Francisco 'Dos Pueblos Special', San Francisco 'St. Marie', Featherhill 'Heritage', Jung Frau 'Dos Pueblos', Poetic Moon 'Ba' and Princes Elizabeth 'Thunder'.

## List of Commercial Cultivars according to colour of blooms

**White:** Jungfrau 'Snow Queen', Jungfrau 'Dos Pueblos', Camalex, Showgirl 'Cooksbridge', Showgirl 'Marion Miller', Swallow var. 'Takarazuki'.

**Pink:** Lilian Stewart 'Coronation', Lilian Stewart 'Party Dress', Orkney 'Pink Heather', Ensikhan, 'Alpha Orient', Pacific Rose 'Swansea', SoulhuntSeris, Valley Paradise 'Shangriila', Rievaulx 'Cooksbridge', Rincon Fairy 'Pink Perfection'.

**Yellow:** Angelica 'December Gold', Highland Sunset 'Plumpton', Mini Sarah 'Artisan', Hawtescens, Gwen Sherman, 'Arthur Fetzer', San Francisco 'Mona Lisa', Valya Craig 'Sutherland', Luana 'Imperial', 'Pine Clash Moon Venus', 'Valley Legend Steff'.

**Green:** Joyce Duncan 'Susan Hughes', 'R.D. Hughes', Miretta 'Mcbean', Lucense, Tricia Allen 'The Globe', Sparkle 'Late Green', Levis Duke 'Belle Vista', Sparkle 'Late Green', Amsebury 'Frank Slattery', 'Valley Zenith 'Top Spot', 'Madrid Forest King', 'Winter Beach Sea Green'.

**Red:** Chief Joseph 'Pathfinder', Sensation 'Chianti' 4N, Terama 'Robin', Barushka 'Dos Pueblos', Khyber Pass 'Rowes Red', James Toya, 'Fire Storm Ruby', 'Fire Storm Blaze', 'Bob Marlin Lucky', 'Red Beauty Evening Star'.



### Cultivars



Fancy free



Vivacious 'Super White'



Evening Star



Eden Valley 'Bonanza'



Pine Clash 'Moon Venus'



Satin Doll



Eden Valley 'Bonanza'



Showgirl 'Cocksbridge'



Narella 'Genifer Gail'

Unique Uses of Single *Cymbidium* Flowers



**Amesbury 'Frank Slattery'**



**Levis Duke 'Bella Vista'**



**Ann Green**



**Christmas Beauty**



**Helley's Comet 'Aurora'**



**Red Beauty 'Carmen'**



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## Avenues for utilization of *Cymbidium* flowers

To augment the income of growers from *cymbidium* cultivation, exploiting new avenues for their utilization and development of value added products is compulsory. The flowers of these orchids are large, attractive and have long vase life hence these can be utilised individually as such or in value added form. Value added packaging or decorative packaging of single flowers or arrangements made out of them can be marketed as ready to use floral product. Likewise, these flowers can be used in making wreathes, placed in different arrangements and can be used in bouquets. The fresh or dry flowers of *Cymbidiums* can be arranged in different forms to be sold as souvenirs and gifts. Sikkim and Darjeeling Hills of West Bengal, where *Cymbidiums* are mostly grown, are visited by tourists from far and abroad and such type of gifts may have a good market demand. At the same time these ventures can increase the income from *Cymbidium* cultivation and create self-employment among the rural women and youth.

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## Post-harvest management of single flowers

Post-harvest longevity of *Cymbidium* flowers is governed by their inherent character (genotype), environmental condition and pre and post-harvest management. The cut spikes of *Cymbidiums* last nearly 30 days in vase. However, the post-harvest phenomena of the individual flowers are somewhat different from those of the entire spike. Individual flowers have less food reserves and eventually, less vase life as compared to entire spike.

### Post harvest physiology of individual flower

The flower buds of *Cymbidium* contain high level of sugar at initial stage, which decreases with age. This is because of gradual increase in peroxidase activity at different stages of their development. Once the flowers are detached from the mother plant, the water and food supply is cut off. But the flowers continue their metabolic processes with the reserve material stored in form of carbohydrate, proteins and fats. Transpiration is another process which also continues after harvest. Water loss through transpiration is the major cause of wilting or loss of turgidity in harvested flowers. However, in *Cymbidium*, it is not as high as other flowers due to the presence of a waxy layer.



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The carbohydrate content of the flowers depletes markedly after harvest and is reflected by decreasing rate of respiration. The other important factor, affecting keeping quality of the flowers, is ethylene that expedites senescence. Ethylene production is an autocatalytic process occurring in the flower tissue and is triggered with age, emasculation or pollination. The action of ethylene is exhibited by accumulation of anthocyanin in the lip



Dramatic expression of senescence in *Cymbidium* flowers with dislodged pollinia

and column.

Post-harvest handling of *Cymbidium* flowers assumes greater significance due to

- i. Vulnerability of flowers to mechanical damage as they are harvested at full open stage.
- ii. Susceptibility to ethylene
- iii. Climatic difference between growing and consumption points leading to premature flower wilting.

The effects of different post-harvest stresses are presented in Table-2.

Table -2: Effects of post-harvest stresses on orchid flowers

Causal agent	Detrimental effects	Source
Ethylene	Accumulation of anthocyanin in lip and column	Wounding
	Wilting of perianth	Decapping or dislodging of pollinia
	Premature wilting	Pollination
	Abscission	Emasculation
Loss of water	Forced unfolding of flower buds and reduced vase life	
	Upward folding of perianth	Transpiration and metabolic activity
	Wilting and shedding flowers	
Packaging material	Petal bruising	Faulty packaging technique
Low temperature in storage chamber	Darkening of column and labellum	

## Loss reduction technologies

Proper pre and post-harvest management can minimize these stresses and increase the durability of the flowers. Thirty to seventy percent of the keeping quality of *Cymbidium* flowers is pre-determined by the growing conditions. Precision in mineral nutrition, light and temperature regime and cultivation practices is important to achieve optimum vase life. *Cymbidium* flowers are recommended to be harvested at full open stage to ensure development of waxy layer on the tepals.

To determine the optimum stage of harvest of single *Cymbidium* flowers, we conducted an investigation on cultivar Margaret Thatcher 'Perfection'. The flowers were harvested at 0, 2, 4, 6, 8 and 10 days after full opening and the shelf life was studied.



### Unique Uses of Single Cymbidium Flowers

The results indicated significantly longer period of positive water balance in flowers harvested 4 days after full opening, compared to other treatments (Fig-1). The flowers gained weight in the initial stage of vase life, followed by a plateau regime and then started to decline. However, the rate of decline was significantly lower in flowers harvested at 2 to 4 days after full bloom. The visual signs of wilting of petals corroborated with the time, when the flower weight goes below initial weight. The prime beauty span of the flowers was noted to be more than 20 days when harvested 4 days after opening. Hence, it is recommended to harvest the flowers of *Cymbidium* cv. Margaret Thatcher 'Perfection' at 4 days after full opening.

During the study, three distinct stages in the post-harvest life, was identified with respect to transpiration water loss (TLr). In the first stage, a gradual decline in TLr was recorded, followed by a sudden rise in the second stage. The third stage is marked by high but steady rate of the process (Fig-2).

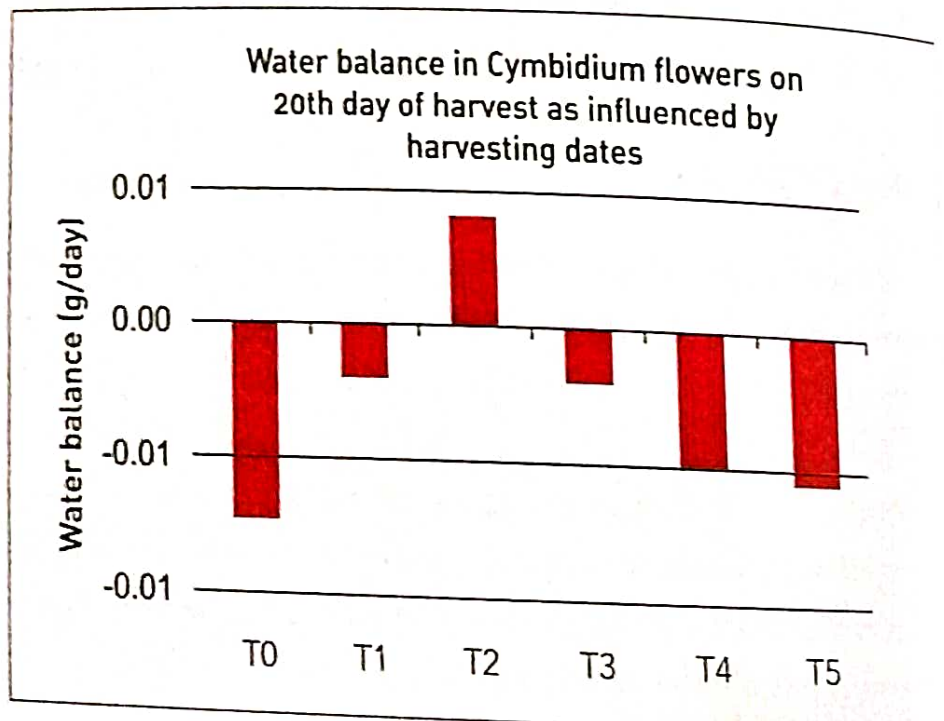
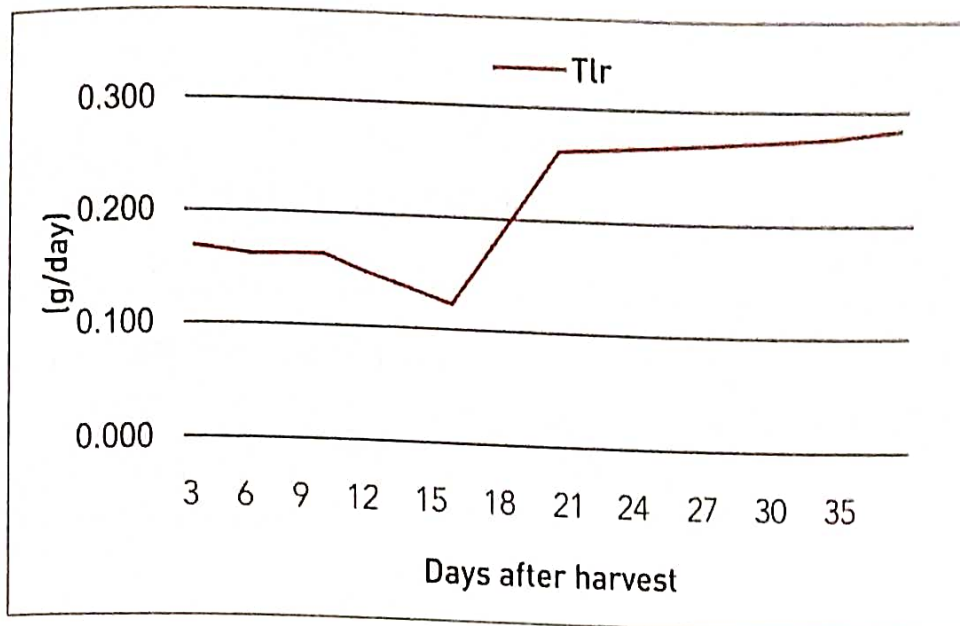


Fig:1- Post-harvest water balance in flowers of *Cymbidium* cv. Margaret Thatcher 'Perfection' as influenced by stage of harvest. \*T0, T1, T2, T3, T4, T5 = flowers harvested on 0, 2, 4, 6, 8, 10th day of full opening.

## Unique Uses of Single *Cymbidium* Flowers



**Fig:2-** Trend of post-harvest rate of transpiration water loss in flowers of *Cymbidium* cv. Margaret Thatcher 'Perfection'. \*TLr = daily rate of transpiration water loss

The flowers should be harvested at early morning and immediately, be placed in container with clean filtered water. The flowers should be handled with much care to avoid mechanical damage and dislodging of pollinia. When the flowers arrive from field, rapid cooling down to optimum storage temperature is crucial. This removes the field heat and reduces metabolism quickly. *Cymbidiums* can be cooled at near freezing temperature of 1°C. Pulsing the flowers with silver nitrate (4µ mol and sodium thiosulphate (16µ mol for 10 minutes can be done to delay senescence.

The flowers should be provided with wet cotton swabs or mini water vials before packaging. Ethylene scavengers containing  $\text{KMnO}_4$  or Purafil (activated ammonia pellets) can be added to the packages. Orchid flower are transported by road, rail, air or ship. For short distance transport, requiring less than 20 hours, insulated trucks can be used but for long distance, refrigeration is required. The flowers can be stored at 0.5 to 1°C, at 75-85% relative humidity.



## Value added products from *Cymbidium* flowers

### **I. Single flower Package- A ready to use floral product**

Single flowers of *Cymbidiums*, especially of standard type or intermediate type hybrids, are large and have a long vase life, hence can be used as cut flower. At NRC for Orchids we have developed value added packaging system for single flowers or small arrangements of few flowers to create attractive floral products, which can be used as souvenirs and gifts.

For developing such a product several aspects of pre and post-harvest handling and management were standardized. Packaging materials plays a great role in protecting the material from blemishes during transport and storage and extending vase life. A decorative package also adds to the display of the flowers and its value. The gaseous permeability, strength, clarity, eco-friendliness, colour, texture etc. are the parameters of the packaging materials to be considered for value added packaging. Similarly, the design of the package is also important for holding the flowers in best display along with providing them with required food and water supply. It is also important for maximizing cargo space utilization. Pre and post-harvest factors like the stage and time of harvest, pre-loading and pulsing, pre cooling, and holding solution composition and quantity are

also important in extending the vase life of the flowers in value added packages.

### **Design of packing boxes**

Two types of packages - i. *Package for single flower* and ii. *Package of multiple flowers* have been designed at NRC for Orchids with the purpose to display the loose flowers of *Cymbidiums* for the maximum period of time and requiring no further manoeuvre.

For packing of single flowers two types of designs are made

- a. Top facing clear boxes and
- b. Front facing clear boxes

The top facing box allows viewing of the flowers from above and is ideal for placing on a low coffee table. The front facing box, on the other hand, is designed to allow viewing from the front. These types of boxes are good for placing on higher shelves or table for display.

Both the packages comprise of two parts: (i) the base portion to accommodate the flower pedicel with water tube or wet cotton swab and also hold the flower in position in the package. This is made of thick paper or cardboard (ii) the display unit made of clear transparent material which allows display of the flower and also create a modified atmosphere within to longer the shelf life of the flower.

The boxes are made in varying dimensions depending on flower size. Normally the flowers of *Cymbidium* hybrids vary from 7 to 12cm in diameter. Hence, the boxes are designed to accommodate the flower along with some decorative foliage and other elements comfortably. The box should not be too big either, as it will leave more empty space all around the arrangement making the arrangement look small and incomplete. This will also allow more movement of the arrangement inside the box,



## Unique Uses of Single *Cymbidium* Flowers

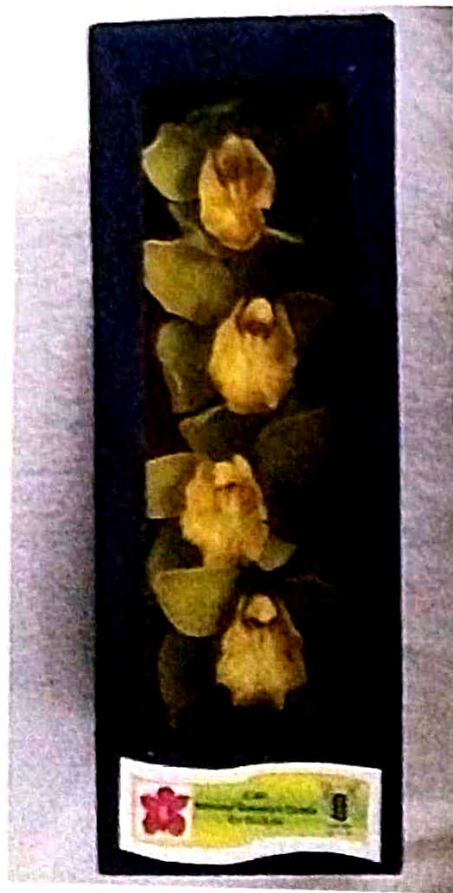
making it loose. The base is deep enough to accommodate the pedicel along with the water tube or wet cotton ball and the clear top to accommodate the flower perfectly.



Cymbidium packed in 'Top facing clear box'



Cymbidium hybrids packed in 'Front facing clear boxes'



Packaging of multiple flowers of *Cymbidium*

In multiple flower packing system, several individual flowers of *Cymbidium* can be packed in a single box. The flowers can be of one variety or a combination of several varieties based to colour. The box is made of cardboard of single ply and 2mm thickness, while the transparent window is clad with clear polyester. The background colour has to be in contrast to the flowers. Decorative elements like small bells, ribbons, little flags or gift cards relevant to the occasion can also be used in the decorations.

## Colour combination of the boxes

The background colour of the box over which the flowers are to be displayed play important role in making the entire arrangement attractive. So, the basal portion of the box has

been made in contrast with the flower colour for e. g.- a yellow flower can be placed on a navy blue or maroon background, a purple or dark maroon flower can be placed on a yellow or white background.



Different colour combination of boxes in contrast to the flower colour

## Selection of flowers

One should be little selective while choosing the *Cymbidium* varieties for single flower packaging. Though almost all the standard and intermediate type varieties can be used for packaging, the flowers with heavy substance perform better in the packages. Similarly, the flowers with round shaped petals overlapping one another, look better in single flower packages compared to flowers with loosely arranged petals having pointed tips.

## Harvesting and handling of flowers

The flowers should preferable be harvested at 4 days after full opening and at early morning. While harvesting, only the flowers with no mechanical damage or disease infestation should be selected. Also care should be taken to harvest the unfertilized flowers and flowers with intact pollen cap. They should be broken off from the spike with hand or cut with a sharp knife. Cutting tools must be dipped in biocide after cutting each flower to check spreading of diseases. While harvesting and handling, utmost care should be taken to avoid any mechanical injury and

dislodging of pollinia. The flowers should be taken to the packing shade as soon as possible, where they are placed in clean filtered water after giving a sharp cut at pedicel end, 1mm above.

## Preparing the flowers

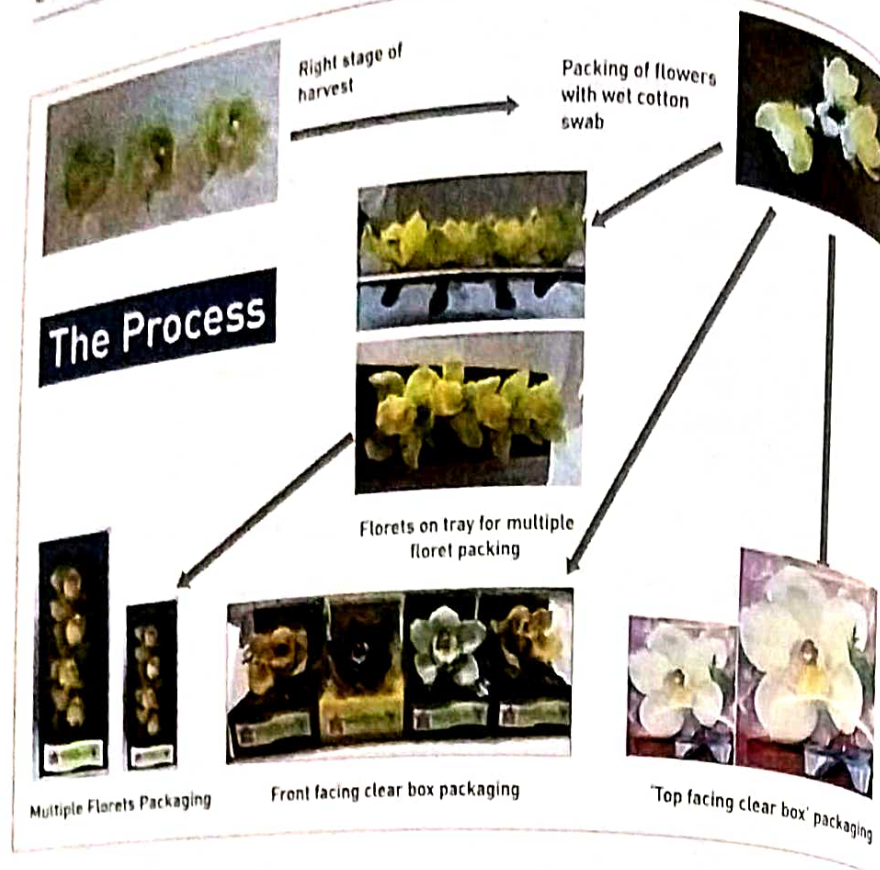
The prime beauty of single *Cymbidium* flowers may extend till 20 to 25 days depending on varieties, proper handling and ambient condition. To increase vase life, the flowers can be given pulsing treatments before packaging. Once flowers are ready to be packed one should give a fresh clean cut to the pedicel to expose fresh tissue and immediately insert the cut end in floral water tubes or water picks containing 10ml of water. Alternatively, the cut end can be wrapped in wet cotton swabs and covered with cellophane paper or aluminium foil. Clean, filtered water has to be used. Avoid tap water, as this may contain harmful microbes and chemicals like chlorine which adversely effect the vase life.

After preparing the flowers they have to be made into a small arrangement with some decorative foliage and/or filler flowers and decorative objects like printed cellophane papers, ribbons, sparkling decorative articles, cellophane balls etc. according to ones' choice. While choosing the foliage and filler flowers for the arrangements their vase life has to be taken into account. *Cymbidium* flowers have a very long vase life compared to other flowers and foliage. Hence, foliage or filler flowers with equivalent vase life have to be chosen as accompanying material. Otherwise, they may senesce early giving an unsightly look. Foliage like *Platyclus orientalis* (Oriental Thuja), *Hedera helix* (European Ivy), *Pothos*, *Camellia japonica*, *Scindapsus*, *Asparagus*, raspberry are suitable accompanied foliage for *Cymbidium* flowers. Similarly, *Gypsophila*, *Linum*, *Nigella* pods, cress, *Limonium* can be used as fillers to decorate *Cymbidium* arrangements. The filler flowers and foliage should also be inserted in the water tube or provided with separate wet cotton swabs to ensure long vase life. Finally the arrangement should be

wrapped with decorative cellophane paper to ensure any water leakage and also add neatness to the arrangement. When the arrangement is done the stalk end is inserted through the hole made at the centre of the base box and fixed firmly. Next, the clear top has to be placed carefully and secured with tapes. A label should be provided with the package to mention the name of the farm, date of harvesting and packaging, cultivar and other relevant information.

#### The Technology at a glance

<b>Name of Unique Packaging of Single <i>Cymbidium</i> Flowers technology</b>	
Harvesting	2-4 days after full-opening
Preparing florets	Wrap pedicel end in wet-cotton swab /insert water-tube with 10ml water. Add foliage of choice. Wrap in decorative transparent film.
Design of boxes	Two types - i. Single flower package ii. Multiple flowers Package
Packing Material	Clear transparent polyester film, Coloured chart paper/cardboard box single-ply
Process of making box	Cut out design using stencils and fold to make parts, secure flower in place, close using tapes. Use label.
<b>Economics</b>	
Cost of Flower	=Rs5.00 / each
Material Cost	=Rs.5.00 / box
Labour charge	=Rs.4.00/ box
Total cost	= Rs.14.00/unit
Sale price	= Rs.20.00/ unit
Net profit	= Rs.6.00/unit



## II. Floral ornaments

*Cymbidium* flowers are prized element in any flowers arrangement and decorations. The large blooms, with extraordinary colour combinations and markings, imparts a rich and exotic manifestation to the entire piece. *Cymbidium* are also used to mark certain events and ceremonies, like the 33 *Cymbidium* adorned winner wreath of Indianapolis 500 car race. They are very much preferred for the bridal bouquets and floral ornaments too. *Cymbidium* flowers can be used in floral arrangements and indoor decorations in any celebrations and events. They are available in a wide range of colour palate, from neutral to vibrant and from pastel to rich shades, which gives an excellent opportunity to the florists to choose from. The green *Cymbidium* have much demand in all floral markets, as no other cut flowers are available in that colour. Moreover, the striking contrasts in lips throw a drama to the look. In the following pages we will be illustrating the ways of using *Cymbidium* flowers in various floral ornaments and flower arrangements.

### a. Wreath

Wreaths are assortments of flowers, leaves, twigs, fruits and other decorative materials that are constructed to resemble a ring. Wreaths are used in different occasions and ceremonies. Traditionally they are used in Christmas for decorating the front door. They are also used in celebrations, as table top centre piece, as well as in burials and cremations. Apart for that, they are also worn as a head band by the brides. *Cymbidiums* are very suitable for making wreaths because they are very long lasting and the large attractive flowers serves as a focal point. White *Cymbidiums* are very popular in wreaths.

### Preparing a wreath with *Cymbidiums*

The first step for preparing a wreath is preparing the base. It can be made out of a wire frame or by twining dried vines or grasses or by wet foam or Styrofoam. For a wall hanging wreath a hook may be attached to the frame. The next step is to cover the base with foliage of choice. The twigs should be cut to 4 inch long and inserted into the frame in one direction and should cover the entire base. Now, for placing the *Cymbidium* flowers, one can use small water picks or can wire it. This secures the flower to the base. It is better to use a single type of *Cymbidium* for a wreath. The flowers should be placed uniformly along the entire wreath or one may create patterns according to one's desire. Other flowers like rose, carnation, lily etc. can be used in accompaniment. The filler flowers should be placed to fill in the gaps and give a complete look. Alternatively, one can even, make small bunches with *Cymbidium* flowers, foliages and filler flowers with wire and floral tapes and insert them in the base to create the wreath. Finally ribbons, bells, or other decorative can be added with hot glue or wire pins.





Wreath made of *Cymbidium* flowers.

### **b. Boutonniere**

A boutonniere is a small floral decoration, typically of one or two flowers, worn by men in the buttonhole of a coat lapel on different occasions. Boutonnieres are generally made of white roses or carnations. Orchid boutonnieres were first sported by Joseph Chamberlain the famous British politician. Single flower of *Cymbidiums* can be used beautifully in boutonnieres because of their elegant look, sturdiness and longer life. However, the small to medium sized varieties should be chosen for the purpose.

### **Preparing boutonniere with *Cymbidiums***

For making a *Cymbidium* boutonniere, first, the flower has to be wired using 18 gauge stem wire cut into 6 gauge long segment.

The wire has to be inserted through the pedicel at the base of the flower and twisted on both side of the pedicel, or it can be made into a small hook on one end and inserted in the base of the column down the side of the pedicel, so that, the hook sets firmly on the lip base. Now, the wire and the pedicel have to be wrapped with a floral tape to form one neat and firm stem of nearly 3 inches. The boutonniere can be made of one to three *Cymbidium* blooms depending on the size of the blooms and desired size of the bunch. Once all the flowers are wired and taped they have to be positioned adding some accompanying foliage and filler flowers like ivy, fern, asparagus or geranium leaves and baby's breath etc. When the arrangement is done, the entire ensemble has to be wrapped with floral tape to one neat stem. The stem has to be clipped to 2 to 2.5 inch length and wrapped with a decorative ribbon and finally provided with a pearl head pin for fixing on the buttonhole.



Joseph Chamberlain sports a three orchid Boutonniere



Boutonniere made of single *Cymbidium* flower

### c. Bouquet

Single flowers of *Cymbidium* can easily be made into a bouquet and are easier to handle than the long stems which are heavy and have a columnar appearance.

## Preparing a bouquet with *Cymbidium* flowers

To make a round dome shaped bouquet one needs as many as 20 to 30 *Cymbidium* flowers preferably of a single type. The other materials required are the accompanying foliage and filler flowers of choice, floral wire of 18 to 24 gauge, floral tape, and ribbon. To keep the orchids fresh for longer time, small wet cotton swabs can be wrapped at the pedicel of each bloom. To begin with, all the flowers have to be wired and wrapped with floral tape as mentioned while preparing boutonniere. The wired stems for bouquet, however, should be longer till 8 to 10 inches. The foliage and fillers can be wired if necessary. Once all the floral materials are ready, 3 to 4 flowers of *Cymbidium* should be arranged back to back to form a round central dome. Then the remaining flowers, foliage and filler should be added one by one, holding the stems in one hand firmly. A round convex shape has to be formed. As the flowers are wired they can be easily bended as desired. When the arrangement has been accomplished bigger foliage can be added at the bottom layer to act as a base for the entire bouquet. Finally all the stems should be tightly wrapped with a floral tape and decorative ribbon creating a smooth stem for holding. Decorative fabric, pearls, ribbons or dangles can be added to impart a more gorgeous look.

### III. Flower arrangement

Floral arrangement is the art of selecting and organizing flowers and foliage according to the elements and principles of design in order to attain a pleasing and interesting design. There are two fundamental schools of flower arrangement - the Oriental or Japanese style and the English or Western style. The Japanese style, also known as Ikebana, emphasize on symbolic depiction of spirituality and philosophy. In this style only a few flowers and branches are arranged following certain laid down norms. The western style, on contrary, is only an art form and emphasize on

a creating mass forms using different colour, texture and shapes of plant material. It does not carry any inner meaning or message.

## Japanese style or Ikebana

Ikebana originated in around 621 AD in Japan as offerings to Lord Buddha. The arrangers follow some laid down rules and blend their imagination to create these beautiful decorations. There are three basic lines in all Japanese arrangements. They are Shin, Soe and Hikae depicting heaven man and earth, respectively. These lines have fixed proportions and are placed at fixed angles according to the style followed. There are also different types of Ikebana based on the choice of materials used, placement of materials and even the containers, like- Moribana, Nageire, Jiyubana, Zeneika, Zeneibana and, Morimono.

Ikebana symbolizes the eternal relationship of man and nature. It uses simple yet bold materials which occur in nature at the same time. *Cymbidiums*, with their oriental origin, are favoured choice for Ikebana. To hold the flowers, in ikebana, a pin holder or split and cross bars are used, instead of wet foam. So, the single flowers of *Cymbidium*, after conditioning, have to be fixed with an additional stem of desired length by splitting the stem and inserting the pedicel. Then the flowers can be placed in desired position on the pin holder. *Cymbidium* is best suited in Moribana and Morimono styles.

## English or Western style

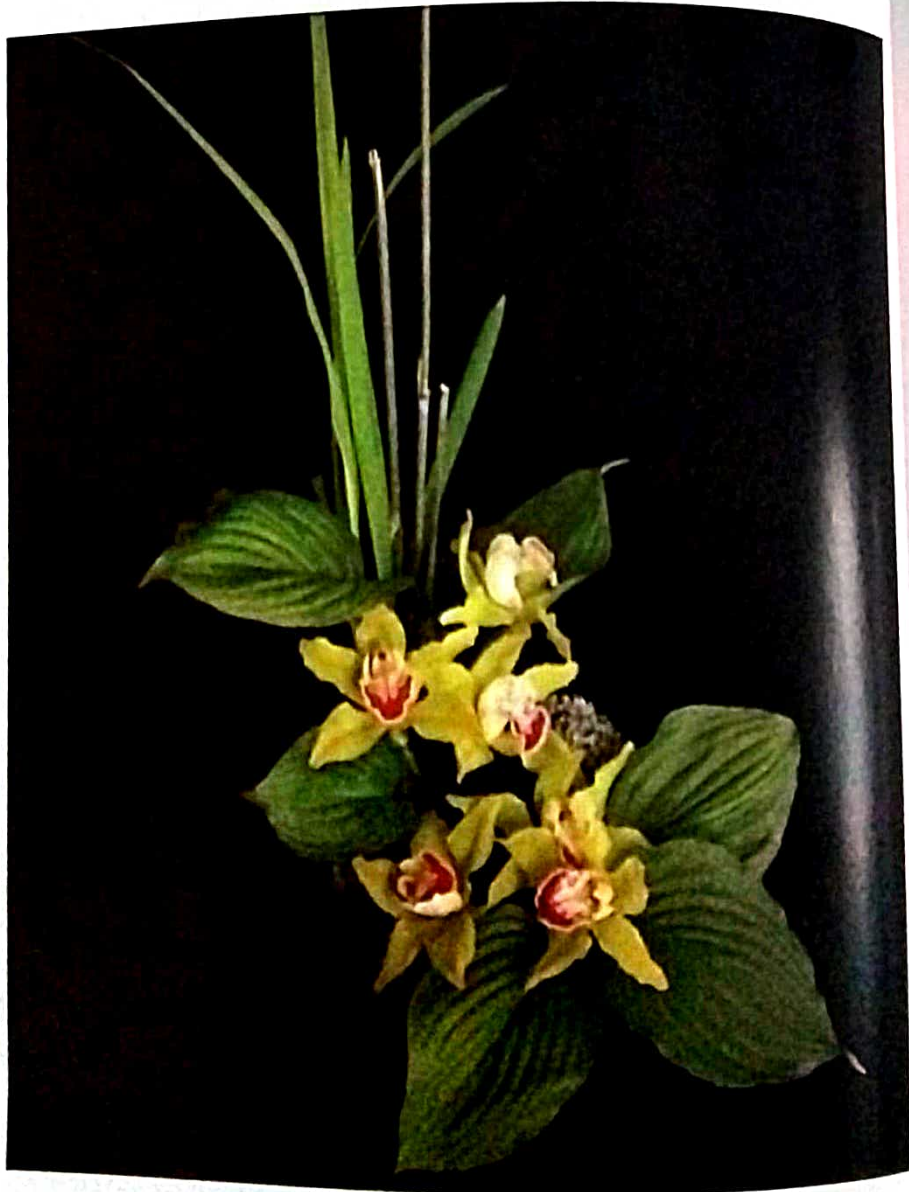
The Western style or English style is characterized by the mass of flowers and foliage arranged in different forms. The emphasis is on the whole colourful mass, rather than on individual components.

In modern flower arrangements three basic forms can be found- Line arrangements, Line-mass arrangements, and Mass arrangements. Line arrangements, adapted from the Japanese

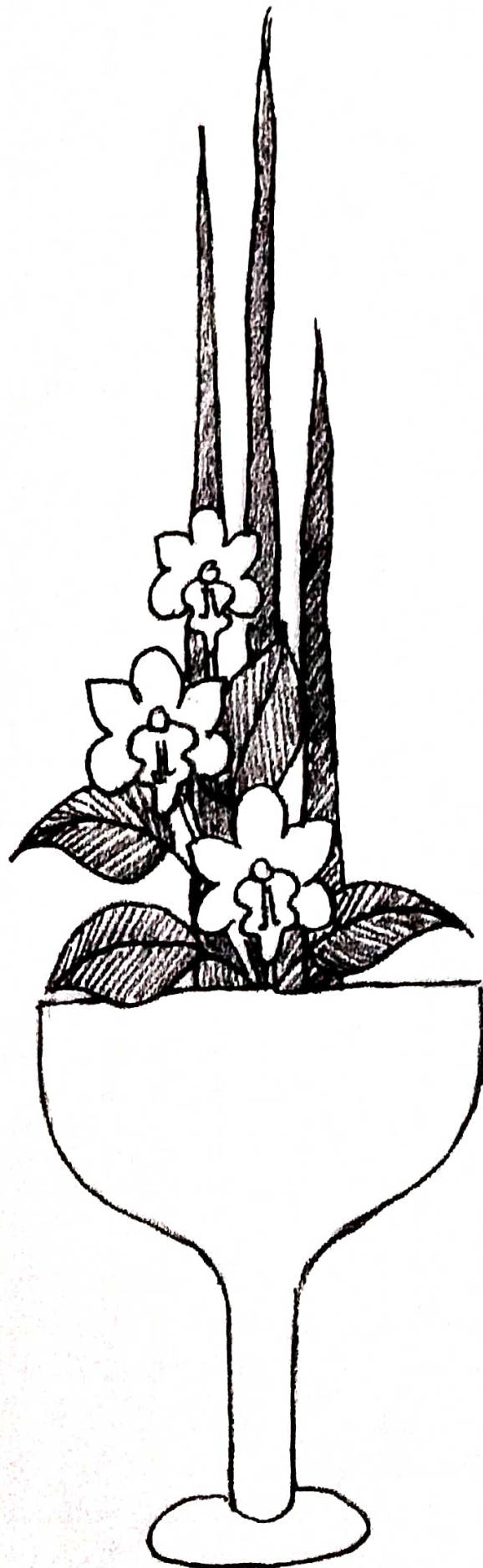


## Unique Uses of Single Cymbidium Flowers

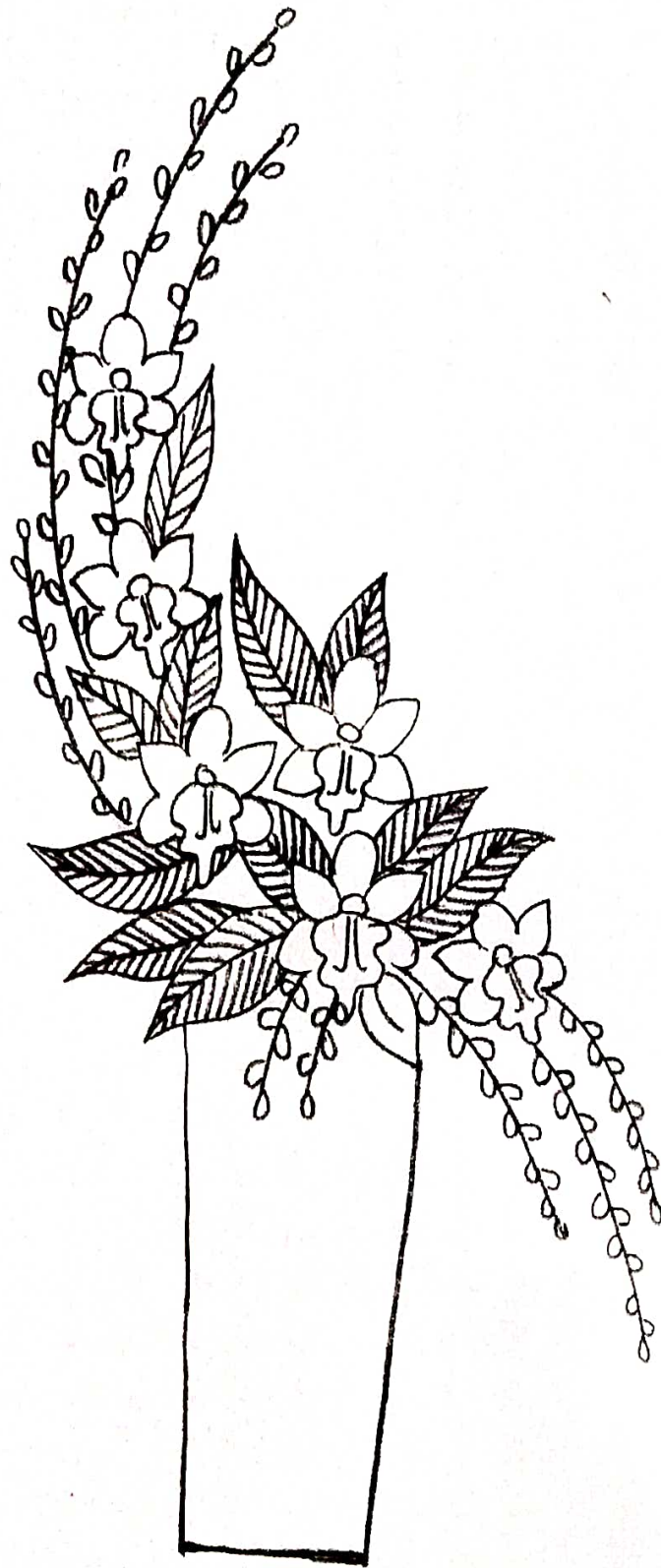
styles, have few plant material to create a bold and dramatic expression. Most line arrangements have asymmetric balance and are typically viewed from front. Line-mass arrangements merge the bold lines of Japanese styles with the massed effect of European designs. These arrangements have definite lines to create the structure and well-defined mass of floral material in the focal point. Mass arrangements are mainly followed in European designs. Colour is important feature in mass arrangements. The designs follow a few basic shapes like the circle, oval, triangle, vertical, crescent, diagonal or spiral. Though round shapes predominate the mass arrangement, spiky, linear forms are seen in triangular, vertical or diagonal arrangements.



A triangular design suitable for corner display



Line arrangement



Line and mass arrangement



Mass Arrangement

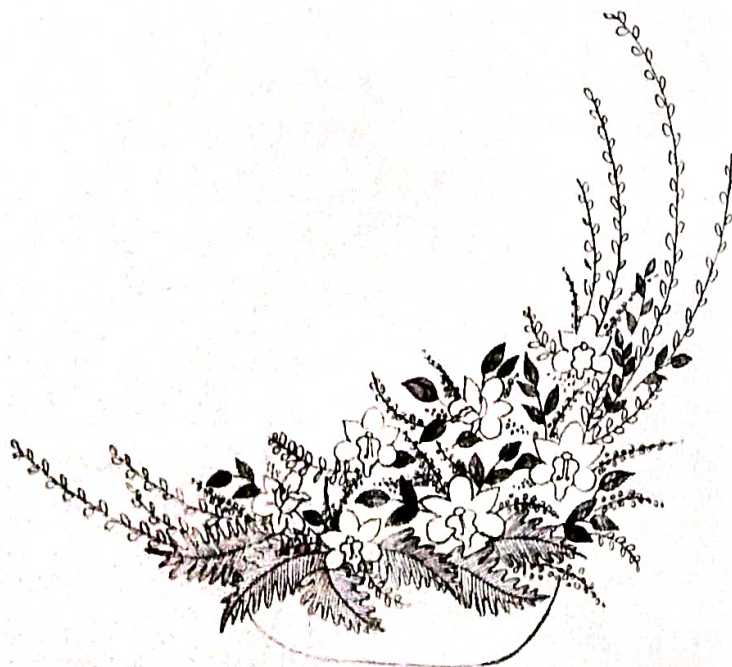


Triangular Arrangement





Circular arrangement



Crescent arrangement

The elements of design are colour, light, space, line, form, pattern, texture and size. For a successful flower arrangement certain principles like, harmony, simplicity, variety, balance, proportion, accent and scale are followed.

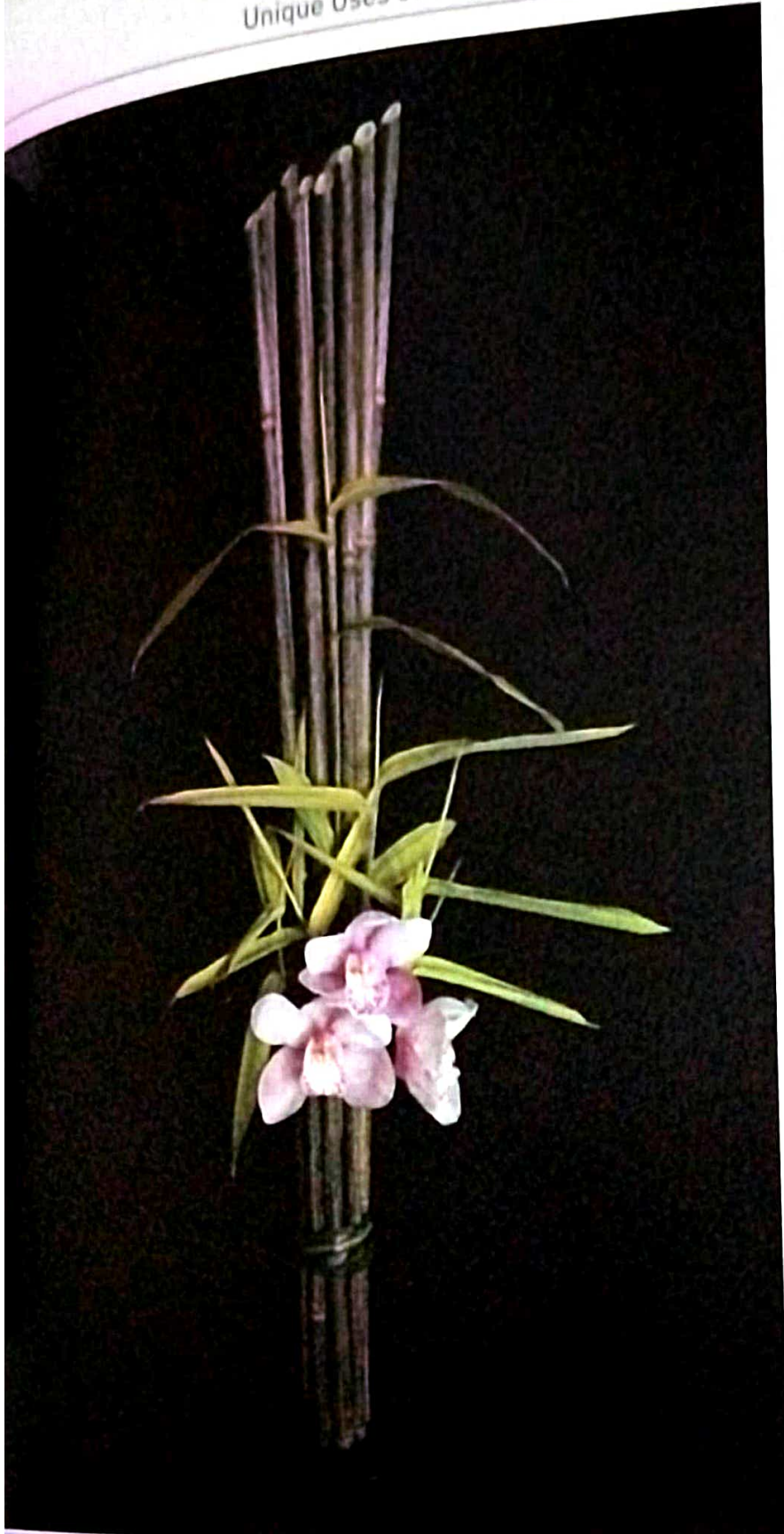
*Cymbidium* flowers can create an attractive focal point in both oriental and western style of arrangements. Balance can be achieved by placing the big size blooms in the centre. The contrasting lips also impart interest to the whole decoration. Before placing in an arrangement, the flowers first have to be conditioned by pulsing. Water pricks with long pointed stalks make placing *Cymbidium* blooms in the basal foam easy and the same time supply necessary water. Alternatively the flowers can be wired, wrapped with wet cotton swab concealed with floral tape. Thus desired length of the stalk can be achieved. Various interesting modern designs can also be created using only a few of *cymbidium* blooms. A tall bundle of cane tied with a *Cymbidium* decorated band can serve as simple yet eye-catching decoration at the entrance of a room. Two single *Cymbidium* blooms placed in a tall glass container along with some tropical leaves can lighten up an ethnic dinner. Similarly, a round arrangement, with the three blooms of *Cymbidium*, some fern leaves and delicate fillers carries the freshness note to a breakfast table.



A small round flower arrangement for breakfast table



A modern linear arrangement for dinner table



Tall linear flower arrangement of oriental style composed of bamboo and Cymbidiums





An asymmetrical design of *Cymbidium* and hosta

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## Conclusion

*Cymbidium* is a crop with immense potent, especially in the Himalayan region. However, the profit realization is often below the expectation and the major factors being - fraction of produce not attending marketable quality, higher price of spikes, cheaper substitutes available, etc. Technology for utilization of the single flowers in unique and unconventional ways is need of the hour to compensate the yield loss and increase the profit margin. Single flowers are cheaper and can have good market demand, once the uses are known. With the incredibly long vase life, single *Cymbidium* flowers have the potential to substitute many cut flowers in the floral industry. There is also a scope of development of ancillary industry, like packaging and logistics along with single flower packaging units. Research should be directed to explore other opportunities of using these flowers. Process for dry flower, preserved flowers and products like showpieces, decorative, paper-weight, floral ornaments made out of them, should be standardized to harness the maximum benefit of the crop.





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