

# Center for Smart Agriculture Floriculturist



**Module 3:** Cultivation practices of important flower crops

**Session 13:** Cultivation practices of chrysanthemum





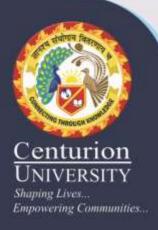
 $\checkmark$  It occupies a place of pride both as a commercial crop and as a popular exhibition flower.

✓ It has a wide range of type, size and colour and also 'forms'.

- ✓ Short day plant 'Photo sensitive' (10 hours day light).
  - Suitable asCut flowersLoose flowerPot cultureGarland making & hair decorationEssential oilSources of pyrethrum.Background planting in borders







## Cultivars

✓ National Botanical Research Institute: Snowball,
Potomac, M-24, Agnishikha, Navneet yellow etc

✓ *Indian Institute of Horticulture Research*: Indira, Neelima, Chandrakant, Chandrika, Pankaj, Rakhee etc

✓ *Spray types:* Super white, Sunbeam, Blue Marble, Red Nero, Tuneful, Apricot Marble, Flamenco, Coral Marble

✓ *Standard types:* Snow Ball, Chandrama, Cassandra, Red Anne, Alfred Wilson, Gay Anne

 ✓ Small-flowered for pot culture: Honeycomb, Aparajita, Megami

✓ *Small-flowered for cut-culture*: Sujata, Nilima

✓ Small-flowered for garland: Birbal Sahni, Sharad
Shobha, Basanti

## Suckers

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✓ Suckers arise from the underground stem and these are separated and planted in prepared nursery beds during January for stock plants.

**Propagation** 

 $\checkmark$  Regular pinching is performed in these plants for vigorous and profuse branching.

#### **Terminal cuttings**

✓ Cuttings of 5-7 cm in length are taken form healthy stock plants in June-July.

 ✓ The basal portions of cuttings are dipped rooting hormone (1000 ppm solution of IBA) for better rooting.

 $\checkmark$  Sometimes the lower portion of cuttings is treated with some copper fungicide to avoid fungal growth.

 $\checkmark$  One month old well rooted cuttings are ready for planting in the field.



## Soil requirement

✓ Chrysanthemum with a shallow but fibrous root system is sensitive to water-logging.

- $\checkmark$  Sandy loam soils are ideal for chrysanthemum growing.
- ✓ pH ranging between 6.2 to 6.7 is ideal.

## **Climatic requirement**

- ✓ Light (Intensity 1.2-1.6 MJ /m2/day, Quality: 600-800 nm, Photoperiod: less than 9.5 hours).
- ✓ Temperature (night: 10-16 0C, day: 18-21 0C).
- ✓ CO2 : 500-1000 ppm
- ✓ Planting during April-May is recommended as it initiates and flowers during September to December under South Indian conditions.



#### Spacing

- ✓ Standards: 20 x 20 cm
- ✓ Sprays: 30 x 30 cm
- ✓ Pot mums: 3-5 cuttings/pot (15 cm)

# Irrigation

✓ Chrysanthemum are to be irrigated twice a week in the first two weeks and subsequent by at weekly intervals.

## Weed control

✓ Weeding and hoeing are generally done manually as and when required, normally 8-10 times yearly.

 $\checkmark$  Besides, control of weeds the soil is made loose porous to provide aeration.



## **Manures and fertilizers**

 ✓ Chrysanthemums are heavy feeders and hence they are to be adequately manured.

✓ They are applied with 25 t of FYM along with 250,120, 125 kg NPK/ha.

✓ Half of the N and the entire quantity of P and K are to be applied basal by just before planting.

 $\checkmark$  The other half of N is to be applied 30 days after planting the suckers.

## **Staking of plants**

 $\checkmark$  Staking is necessary to keep plants erect and to maintain proper shape of plants and bloom.

 $\checkmark$  Stakes are prepared mostly from bamboo sticks.

✓ Staking of plants is required for vertical support of the plants. $_7$ 



## Pinching

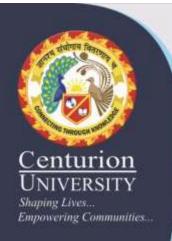
✓ The operation of removal of terminal growing portion of stem as it reduces plant height and promotes axillary branches.

- ✓ First pinching is done when the plants reach a height of 15-20 cm with 3-4 pairs of leaves.
- $\checkmark$  Two types of pinching are performed
- (a) Soft pinching
- (b) Hard pinching

# **Disbudding and De-shooting**

 $\checkmark$  Many of the standard type varieties are disbudded in which the largest terminal bud is reserved and all auxiliary buds are removed.

✓ De-shooting is practiced to reduce the number of branches for improving the size and form of the flower.  $plant_8$  will loose vigour and becomes weak.

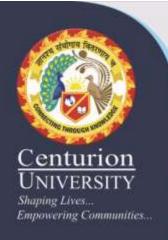


## **De-suckering**

- ✓ During the vegetative growth phase, plants grow upward.
- $\checkmark$  New suckers continue to develop from base of plants.
- $\checkmark$  For proper and vigorous growth of plants, suckers are removed from time to time.

## **Growth regulators**

- ✓ GA3 50 ppm can be sprayed at 30, 45 and 60 days after planting to increase the yield.
- ✓ Alar 50 150 gm/100 lit water and B 9 at 8 25 ml/lit of water is used twice at the growing stage



#### **Physiological disorders**

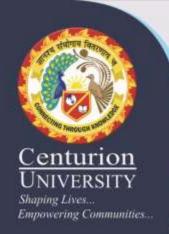
#### **Premature Budding**

 $\checkmark$  More specifically, crop exposure to low night temperatures, short days, drought or nutrient stress can lead to premature budding.

 $\checkmark$  If premature budding occurs, buds should be pinched off immediately, and adequate moisture and fertilizer supplied

#### Heat delay

✓ Once short days begin, exposure to temperatures of around 85° F or higher delays flowering, which is a phenomenon known as heat delay.

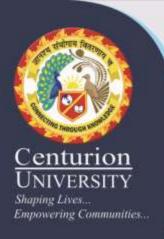


#### **Petal burn/Sunscald**

 $\checkmark$  Is prevalent on standards in flower in very warm weather. The petals turn brown and dry up.

## Blindness

✓ Continued growth of shoots and failure to form flower buds when short days are started the mean night temperature was too low.



# Harvesting

\* *Standards:* When outer row of florets start unfurling for distant market and for local market half opened flowers.

✤ Sprays: Harvested for local market when two flowers have opened and others have shown colour, while for distant market when 50% flowers have shown colour.

- \* *Loose flowers*: Fully open flowers
- ✤ Pot mums: 50% buds have developed colour.

#### Yield

- 1. Main crop: 9-10 t/ha.
- 2. Ratoon crop: 4-5 t/ha.
- 3. Sprays- 1, 00,000 stems can be obtained from one ha.



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#### Pests

- Aphids
- Thrips
- Leaf miners
- Red spider mites
- Hair caterphillars
- Nematodes

#### Diseases

- Wilt
- Root rot,
- Bacterial rot,
- Gray mould,
- Cercospora leaf spot
- Alternaria leaf spot
- Fusarium stem rot
- Powdery mildew
- White Rust



