LECTURE -13
PRODUCTION TECHNOLOGY OF CHRYSANTHEMUM
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 as Cut flowers
  Loose flower
  Pot culture
  Garland making & hair decoration
  Essential oil
  Sources 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
Propagation

Suckers
✓ Suckers arise from the underground stem and these are separated and planted in prepared nursery beds during January for stock plants.
✓ Regular pinching is performed in these plants for vigorous and profuse branching.

Terminal cuttings
✓ Cuttings of 5-7 cm in length are taken from healthy stock plants in June-July.
✓ The basal portions of cuttings are dipped rooting hormone (1000 ppm solution of IBA) for better rooting.
✓ Sometimes the lower portion of cuttings is treated with some copper fungicide to avoid fungal growth.
✓ 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.
✓ 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 °C, day: 18-21 °C).
✓ 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.
✓ 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.
✓ The other half of N is to be applied 30 days after planting the suckers.

Staking of plants

✓ Staking is necessary to keep plants erect and to maintain proper shape of plants and bloom.
✓ Stakes are prepared mostly from bamboo sticks.
✓ Staking of plants is required for vertical support of the plants.
**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.
- Two types of pinching are performed
  (a) Soft pinching
  (b) Hard pinching

**Disbudding and De-shooting**

- 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. The plant will lose vigour and becomes weak.
De-suckering

✓ During the vegetative growth phase, plants grow upward.
✓ New suckers continue to develop from base of plants.
✓ 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

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

✓ 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

✓ 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.
Pests
• Aphids
• Thrips
• Leaf miners
• Red spider mites
• Hair caterpillars
• Nematodes

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