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*Shaping Lives...
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LECTURE -13

PRODUCTION TECHNOLOGY OF CHRYSANTHEMUM



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- ✓ 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





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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



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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 in 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.





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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.



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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.



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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.



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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. plant will lose vigour and becomes weak.



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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



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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.



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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.



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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 caterpillars
- Nematodes

Diseases

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



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