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Center for Smart Agriculture

Protected floriculture



Module 3: Production technologies followed for
Protected cultivation of different flowers
Session 19: Protected cultivation of
chrysanthemum



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INTRODUCTION

- Chrysanthemum are herbaceous perennial subshrubs.
- The compound inflorescence is an array of several flower heads or sometimes solitary head.
- The simple row of ray florets is white, yellow or red.
- Wild varieties are yellow in colour.





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Types

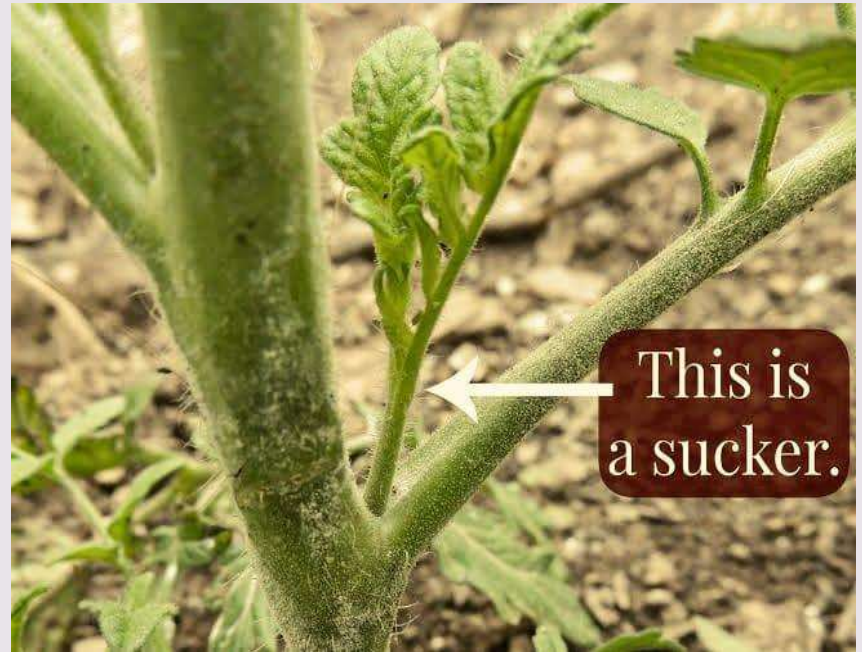
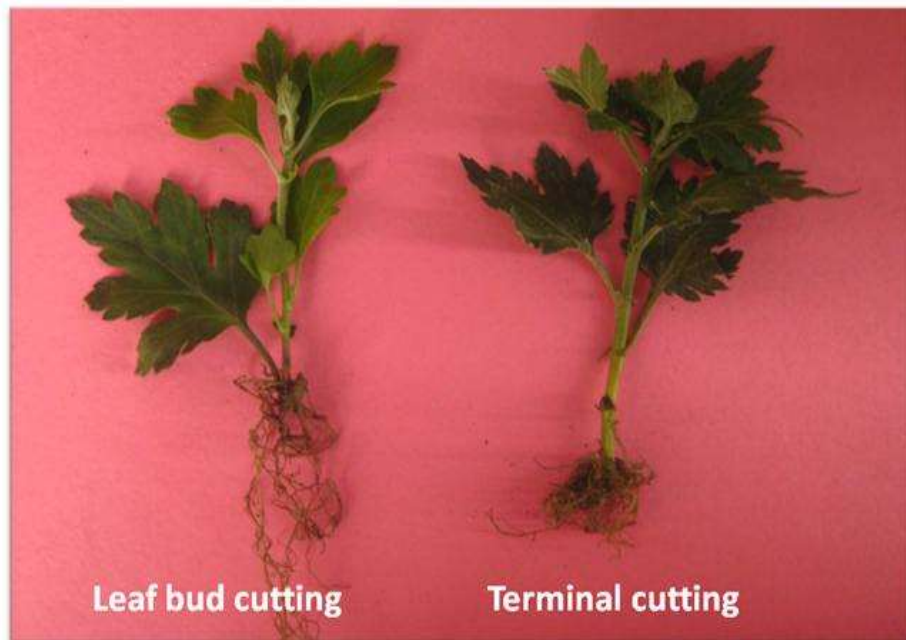




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Methods of Propagation

- Terminal stem cuttings (4-5 cm) during June-July
- Suckers during February to April





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Soil & climate

• Sandy loam soil having pH 6.2-6.7 is ideal.

- Light (Intensity: 1.2-1.6 MJ/m²/day)
- Photoperiod: < 9.5 hours
- Temperature: (night: 10-16°C, day: 18-21°C)
- CO₂: 500-1000 ppm



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Plant density and spacing

- ❖ Greenhouse cut flowers: 40-54 plants/m².
- Loose flowers: 30 x 20 cm or 20-25 plants/m²
- Standards: 20 x 20 cm
- Sprays: 30 x 30 cm
- Pot mums: 3-5 cuttings/pot (15 cm)



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Intercultural operations



Pinching



Disbudding



Staking



Weeding



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Irrigation

Soil should have 60-70 per cent moisture. Depending upon weather 8-10 irrigations of 2.5-5 cm depth are required.



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Nutrient management

- FYM: 3-5 kg/m²
- N:P:K::30:10:15g/m² at monthly interval
- Loose flowers: FYM: 10-15 ton, N: 150 kg, P: 100 kg, K:120 kg/ ha)
- Spray of light solution of cake + SSP at bud developing stage.
- Apply nitrogen through CAN source as urea causes phyto-toxicity.



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Diseases

- Wilt (*Fusarium oxysporum f. sp. chrysanthemi*)
- Stem and foot rot (*Rhizoctonia solani*)
- Root rot (*Pythium, Phytophthora spp.*)
- Bacterial rot (*Erwinia chrysanthemi*)
- Powdery mildew (*Oidium chrysanthemi*)
- Leaf spot and flower blight (*Alternaria, Septoria spp.*)
- Gray mould (*Botrytis cinerea*)
- Viral diseases (chrysanthemum stunt, tomato spotted wilt, tomato aspermy, flower distortion, chrysanthemum mosaic and chrysanthemum rosette).



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Insect-pests

- Aphids
- Red spider mites
- Hairy caterpillars
- Thrips
- Grubs
- Leaf miners
- Nematodes



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Disorders

- Premature budding
- Quilling of florets
- Crown bud formation
- Heat delay, and Petal burn



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Harvesting

Harvesting Stages:

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



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Yield

- Standard: 2.5 to 4.5 lakh/ha
- Spray: 1.5-1.75 lakh/ha
- Yield in Greenhouse: 150-250 flower stems/m²/year



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Post-Harvest Handling

Packing

In bunches of 10, 20 or 25 in corrugated card board boxes of 91 x 43 x 15 cm (L x W x H) accommodates about 80-100 cut flowers of chrysanthemum. Wrap flower bunches in Cellophane sleeves.





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Thank you