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Center for Smart Agriculture

Floriculturist



Module 3: Cultivation practices of important flower crops

Session 9: Cultivation practices of gladiolus



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- ✓ Commonly known as ‘Queen of bulbous flower crops’, ‘Sword Lily’ or ‘Corn flag.’
- ✓ Most popular as cut flower in the domestic and International market.
- ✓ It is relatively easy to grow and also suitable for bedding and exhibition.
- ✓ The fascinating spikes bear a large number of florets which exhibit varying sizes and forms; with smooth tepals.
- ✓ The flower spikes are used in flower arrangements, in bouquets and for indoor decoration.





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Varieties

Colour

Pink

Orange

Red

Yellow

White

Purple, Violets

Variety

America, Friendship, My love

Autumn Gold, Coral Seas,

Black Prince, Hunting Song, Oscar,
Victoria

Folk Song, Golden Harvest,

Amsterdam, Cotton Blossom, White
Friendship

Her Majesty, Mayur, Pusa Sarang,
Pusa Shingarika

IIHR Varieties: Amar, Arka Naveen, Arka Kesar, Shobha



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Climatic requirement

- ✓ Temperature (Day- 18-25 °C, Night- not less than 10⁰C)
- ✓ RH: 60-70%
- ✓ The long day conditions of 12 to 14 h photoperiod increase number of florets, spike length and percentage of flowering.

Soil requirement

- ✓ Gladioli can be grown in a wide range of soils.
- ✓ The soil should have proper drainage facilities.
- ✓ It should also contain sufficient organic matter.
- ✓ The soil should be sandy-loam and slightly acidic with pH 5.5 to 6.5.



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Propagation

- ✓ Propagation of gladiolus through corms is a commercially used method.
- ✓ The requirement of the corms per hectare is roughly 1, 50,000-2, 00,000.
- ✓ 10-50 cormels can be obtained from a single corm.
- ✓ Planting is carried out during October in plains and March-April in hills.
- ✓ The row to row distance is normally 40 cm while plant-to-plant is 15 cm.





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Dormancy in corms of gladiolus

- ✓ Dormancy in gladiolus corms can be checked by Tetrazolium test
- ✓ Swollen buds and root primordia in corms

Methods to break dormancy

- ✓ Low temperature storage for 2-3 months at 4-7 °C
- ✓ Ethylene chlorohydrin (4-5 drops/litre container for a week)
- ✓ Dip corms in thiourea 500 ppm solution for 24 hours
- ✓ Dip corms in GA3 50 ppm solution for 30 min
- ✓ Dip corms in BA 25-50 ppm solution or 10 % H₂S for 30 min
- ✓ Dip corms in garlic paste for 30 min



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Irrigation

- ✓ Normally in sandy soils, the crop should be irrigated at 7-10 day intervals, whereas in heavy soils, at less frequent intervals.
- ✓ Stage immediately after sprouting and 4-6 leaf age are very sensitive to water deficit

Earthing up

- ✓ Earthing up to 10-15 cm height is done when plants are at 4-6 leaf stage or when plants are 15-20 cm high
- ✓ Hoeing should not be done at swelling of flower spikes.

Staking

- ✓ Staking with bamboo or wooden sticks is done in beds.
- ✓ String or rope may be tied in three rows along the plant-rows to avoid lodging of plants.





Weed control

- Pro-emergence herbicides reported for gladiolus are diuron (0.9 kg/ha) (or) linuron (3.0 kg/ha)
- Post-emergence herbicides, 2, 4-D @ 1.5-3.0 kg/ha has been found to reduce weed population.

Growth regulators

- GA can be used as substitute for long day requirement in some species.
- They also overcome the inductive cold period to flowering.
- GA stimulates extensive growth of intact plant.
- MH, cycocel, ancymidal, phosphon used to reduce height of plant mainly for pot plant.



Nutrition

- 120 kg N, 150 kg P₂O₅ and 150 kg K₂O per hectare is recommended, of which 60 kg N and entire dose of P₂O₅ and K₂O is applied as basal dose.
- The remaining N is given in two split doses, 30 and 60 days after planting.

Top dressing

- N alone is given @ 30 kg/ha during 4 leaf stage as foliar spray and 30 kg/ha during bud stage as soil application.



Harvesting of Spikes

- Gladiolus takes 60-120 days to produce spikes.
- Local market: lower most 1-2 florets are open
- Distant market: lower most 1-2 florets are coloured

Yield

Spikes: 2.0-3.0 lakhs (1-2 spikes per plant)

Corms: 2.5 to 3.0 lakhs (2 corms per plant)

Cormels: 15-20 lakhs (10-20 cormels per plant)



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Harvesting and storage of corms

- ✓ It generally takes 6-8 weeks after harvesting of spikes for the corms to become mature and ready for lifting.
- ✓ Plant growth stops at this stage and foliage starts yellowing.
- ✓ Irrigations should normally be withheld at least 2-3 weeks before harvesting of corms.
- ✓ Corms are then packed in crates or in net bags and cold-stored at low temperature (4-5°C) is an established commercial practice.





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Important Disease & Pests

- ✓ Fusarium wilt and corm rot
- ✓ Grey mould
- ✓ Corm rot
- ✓ Blue/gray mould
- ✓ Leaf spots



Viral disease

- ✓ Bean yellow mosaic virus
- ✓ Cucumber mosaic virus
- ✓ Tobacco ring spot virus
- ✓ Tobacco rattle virus

Insect and pests

- ✓ Thrips
- ✓ Aphids
- ✓ Nematodes
- ✓ Helicoverpa caterpillars





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Physiological disorders

Blindness (It is due to unfavourable climate)

- ✓ There will be no flower production

Topple and bud rot

- ✓ Ca deficiency, Spray CaCO_3 @ 0.2-0.3%)

Negative geotropism

- ✓ It is due to uneven distribution of auxins and transport vertically

Fluoride injury

- ✓ The symptoms of leaf scorching appear drying of tip of leaves and drying descends downwards.
- ✓ Associated with heavy application of sulphur phosphate.
- ✓ Its injury can be reduced by spraying of 5% lime or magnesium sulphate.



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