

Cultivation of Gladiolus in Gwalior Chambal Sambhag

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Introduction-

Botanical name- *Gladiolus* spp.

Family – Iridaceae

Origin- Mediterranean region & tropical South Asia.

- The name gladiolus was originated from the Latin word Gladiolus , meaning a sword, on account of the sword-like shape of the foliage.
- The common name of gladiolus is ‘sword lily’ because of its sword shaped foliage.
- Gladiolus is popularly known as green of bulbous ornamental plants and is native
- Gladiolus is grown in all parts of the world.
- In temperate countries the most important period is summer, in tropical and subtropical climate; it is grown in winter and spring.

Importance and Use

- Gladiolus is a very popular flowering plant in international cut flower trade.
- Its magnificent inflorescence with a variety of colours has made it attractive for use in herbaceous borders, beddings, pots and for cut flowers.
- For cut flowers, primulinus types are better as more spikes often come out from a corm and they may be planted in isolated borders.
- Grandiflorus and primulinus types look very attractive in mixed flower borders, but primulinus types are preferred as these do not need staking, and so, are also good for bedding.

Soil and Climate-

Soil –

- Gladiolus can be grown wide range of soils from a light sandy to a clay loam but deep, well drained, friable, and rich in organic matter and nutrients are preferable.

- For best result they require a slightly acidic soil of ph 5.5 to 6.5 where most of the nutrients become available to plants.

Climate-

- For successful cultivation of this crop, mid climate is ideal while very hot and too cold atmospheric conditions are harmful.
- The day temperature should range between 15 ° and 20 ° C. Temperature falling below 6 °C may cause frost injury to the plant.
- At the time of planting, the soil temperature should not be less than 10 °C.

Propagation-

- Commercially gladiolus is vegetative propagated through corm and caramels.
- For cut flower production gladiolus is propagated by corms however for generation of the planting materials it is propagated by cormels.
- Gladiolus is propagated by corms of at least 4-5 cm diameter.
- It should be healthy and disease free.
- Conical shaped corms preferred over flat one as it gives better flowers.
- Cold storage of corms at 3 to 7°C for 3 months or treatment with Ethrel (1000ppm) or GA3 (100ppm) or Thiourea (500 ppm) is adopted for breaking corm dormancy.

Time of planting and spacing-

- Under North Indian condition the gladiolus is planted in the month of oct- nov.
- For flower production and for any corm sizes a spacing of 30-45 cm from row to row and 15-20 cm corm to corm is maintained.
- Depending upon the soil condition & size of the corm the spacing may vary.
- The corm should not be planted too dip nor too shallow.
- The depth of planting should be 2-5 cm from the ground level.
- Corms are to be planted in staggered manner at an interval of 7-15 days to get continuous flower for a long period.

Nutritional Requirements:

- 5 kg of FYM/ square meter should be will incorporated at the time of land preparation.
- NPK@ 1:2:2 should be applied 56 gm/ square meter.
- Half of these nitrogen in the entire dose of P and K should be applied at the time of land preparation.
- The remaining half N should be applied 30-35 days after planting because at that stage the plant use to produce the spike.

Types and Classification

A total 23 species have so far been used in the development of modern gladiolus cultivars.

Classification:

1. Grandiflorus or large flower hybrids:

- These are large or exhibition type gladioli.
- The plants are vigorous bearing long spikes with large flowers.
- Florets are 10-20 cm wide, arranged closely and symmetrically on 90-150 cm spikes.

2. Primulinus hybrids:

- They are also vigorous.
- The stem grow up to a height of 70-105 cm, flowers 5-10 cm across and are well spaced on 40-45 cm long spikes.
- The upper most inner petals are attractive; anthers& stigma appear above the petals.

3. Butterfly hybrids:

- The plants grow to a height of 75-120 cm. Spikes are shorter than 45 cm. The florets are 7.5 -10 cm across.
- Having some markings or blotches on the petals. Florets are arranged symmetrically & closely of the spikes.

4. Miniature hybrids:

- These hybrids are of relatively recent origin.
- The plant height varies from 75-105 cm.
- The florets are 2.5-5 cm across born on about 40 cm spike.

- Many of these hybrids have ruffled sepals, they produce very small corms and multiply very slowly

5. Face up:

- The stem is dwarf, usually 60-90 cm tall.
- Florets are nearly 5-6 cm wide and face upward.

6. Colville Hybrids:

- The plants grow hardly more than 60 cm tall.
- Flowers are 5-7 cm across and star shape.
- These are early flowering hybrids and are more suitable for growing under Greenhouse.

7. Orchideala hybrids:

The new growth of gladiolus is dup in Israel. Spikes are light in weight with smaller florets on shorter stem

8. Double gladiolus:

- Normal gladiolus floret consists of 6 tepals.
- Any gladiolus > 6 tepals are known as double gladiolus.

9 Dragons:

These groups have long twisted tepals with attractive colours.

10. Fragrant : Some South African sp. Of gladiolus have fragrance and the quality of fragrance varies from apple blossom to rose smell.

Field preparation and planting:

- Beds of size 6 x 2 m are prepared and corms are planted at a depth of 5 cm adopting a spacing of 40 x 25 cm (88,888 plants/ha) or 25 x 25 cm (1,60,000 plants/ha).
- **Planting-season:**
October for plains and March-April for hills.
- **Planting-system**
Ridges and furrows system is adopted.

Intercultural Operations-

Irrigation: The frequency of irrigation depends largely on the type of soil and prevailing weather conditions

- During warm weather, watering should be done twice a week sufficiently to wet the roots.
- Regular irrigation at the intervals of 7 to 10 days depending upon weather is necessary.
- Over watering should be avoided.

Mulching

- Mulching is important for conserving the moisture and reducing the weed populations.
- Mulching is done between and across the rows.
- Fresh manure, chopped straw, dried grass, clippings, saw dust, peat, husk, bark and strips of black polythene may effectively be used as mulching materials.

Earthing up:

- Usually gladiolus corm need 12-15 days for sprouting .
- Initial few days the corm should not be disturbed except the removal of the initial weeds.
- Once the plant attain to a height of about 15-20 cm a light earthing up should be provided from both side of the row.
- When the plant will be a 5-6 leaf stage the second earthing up should be done.

Staking:

- At 5-6 leaf stage, the plant should be stake with the help of a bamboo stick.
- During staking care should be taken to avoid any damage to the underground corm and cormels.

Diseases and Their management-

Fusarium rot and yellow:-

- **Control Measures:** 1.Treat the corms by dipping in carbendazim (1 g/L water) or captan (2 g/L water) for 60minutes after harvesting and before storage.
- Use disease free corm stock.

Grey mould (Botrytis chinerea) :-

- **Control Measures:** Remove old flowers spikes and destroy.
- Hot water treatment (52 °C) of corms with carbendazim (1 g/L water) added to the water is effective in eradicating the pathogen from planting stock.

Leaf

spot-

Spray Carbendazim or Mancozeb 2 g/lit to control leaf spot.

Wilt-

Drenching of Bavistin (0.2%) at fortnight intervals controls the wilt disease.

Blight

disease-

Blight disease can be controlled by spraying Mancozeb @ 0.2 %

Insects Pest and Their management-

1. **Thrips** : This insect can be controlled with malathion 0.1% spray
2. **Aphids**: Aphid suck the sap from tender leaves and emerging spikes as well as florets. This can be controlled by spraying with monocrotophos at 0.05% can effectively controlled.
3. **Mites**- Mites can be controlled by application of kathane 0.5%.
4. **Semi looper and Helicoverpa** - Methyl Demeton 25 EC or Monocrotophos @ 2ml/l or Dimethoate 30 EC @ 2ml/l

Harvesting and Yield-

A- Harvesting of flower spikes:

- For local market gladiolus is harvested when the lower most pair of floret is fully opened.
- For distant market harvesting is usually done when the lower most pair of floret has just shown the colour.
- For local market harvesting is usually done in morning hours.
- Immediately after harvesting the spike should be kept in a bucket of a plain water.
- For local market it is advisable to sent the flower in the bucket of water itself.
- However for distant market these are packed gently in some suitable card board boxes wrapping with a loose papers.
- It is advisable to provide some cotton ball soaked in water at the base of the spikes.

Yield of flowers:

- The flower spike yield in gladiolus is very according to the cultivar, corm size , planting density and management practices etc.
- Approximate yield of flower spike would be around 2,00,000 per hectare.

B- Harvesting of the corms and cormels-

- Generally, the corms and cormels required 30-35 more days after harvest to get properly matured.
- After harvesting of the spikes water should be withheld and allow the plants to remain in the field itself.
- When the lower leaves starts turning yellow the corm should be harvested.
- With the help of a hoe the entire plant along with corm and cormels should be turned upside down.
- Then with the help of secateurs the plant should be detach from the corms.
- These materials are dried under shed.
- After that they are completely cleaned, graded at the size and packed in marketing bags after mixed with bavistin powder.

Yield of corm and cormals:

- The yield of gladiolus corm and cormals is influenced by cultivars, corm size and other factors.
- Approximately 41.3 t/ha.

Storage of corm-

- Proper storage of corm and cormels are very important , as otherwise storage rot of corm may occur due to fungal infection.
- Corms are stored in single layers in wooden trays having a wire bottom.
- The scales over the corms are not removed during storage.
- Before storage corm/cormals should be treated with fungicides, than air dried and stored.
- For gladiolus 4-10 °C cold temperature are required.