

Physiological Disorders of Cut Flowers

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Rose

Blind Shoots

Symptoms



- Failure to develop a flower on the apical end of the stem and the sepals and petals are present, but the reproductive parts are absent or aborted.

Causes

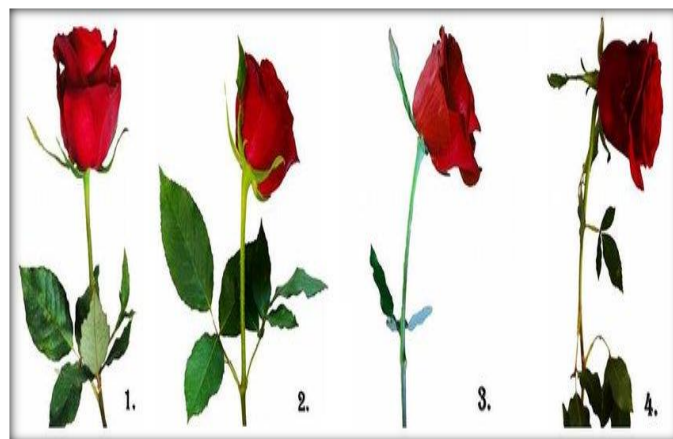
- Low temperature, Insufficient light, Chemical residues, Insect pests and other factors.

Remedies

- Provide optimum temperature and light.
- Can be reduced by bending over technique.
- Compared with vase shaped rose plants, trellised roses are found to reduce percentage of blind shoots.
- These blind shoots pinched back hard by 1 or 2 nodes in November resulted in production of flowering stems.
- Lighting with sodium lamps is also found to decrease the number of blind shoots significantly.
- CO₂ enrichment (1000 v.p.m) from Nov-Feb is helpful in reducing blind shoots.

- Foliar spray of ascorbic acid at 1000 ppm also reduces blind shoots production.

Bent Neck



The Rose Back Neck Symptoms, causes and remedies is given in table 1.

Petal Blackening

Symptoms



- Accumulation of anthocyanin in petals of roses and most red roses suffer from this problem blackening of external petals.

Causes

- Low temperature and high anthocyanin content.

Remedies

- Provide optimum temperature.
- If it is not possible to put different covers for different cultivars grown in the same

greenhouse, growers should use nylon bud nets to block the UV rays

Bull Heads



Symptoms

The center petals of the bud remain only partly developed and the bud appears flat

Causes

- Observe mainly in low temperature during night.
- It occurs due to abnormal production of cytokinin's and gibberellins, the hormones responsible for cell elongation and stem elongation.
- Lack of carbohydrates.
- May be due to thrips infestation

Remedies

- Provide optimum temperature and control thrips infestation.

Balling

Symptoms

- The inability of a bud to open into a bloom due to excess moisture causing the petals to stick together is called balling.

Causes

- Usually occurs in areas with cool, damp nights.
- Roses with many petals are more susceptible to balling

Black Flower edges

This phenomenon is observed in some rose cultivars, especially red colored ones.

Colour fading

Symptoms

- Yellow varieties develop petals of green or dirty white.
- Pink or red varieties develop bluish colored flowers.

Causes

- Organic phosphate and various other kinds of insecticides.

Remedies

- Reduce use of chemicals, raising the night temperature.

Gerbera



Bent-neck

- Insufficient floral stem tissue hardening or maturation
- below harvested flower resulting into stem collapse.

- Loss of turgidity and Ca deficiency are responsible for the neck bending.
- It is the problem where the flowerheads at neck bent from where it may break easily.
- Bent neck occurs due to poor winter growing conditions.
- Harvesting of flowers at lower temperature or when their stems are immature should be avoided.
- Sometimes leaf yellowing similar to mineral deficiency occurs due to poor drainage or because of root infection with some insect-pests or diseases which should be rectified after ascertaining the cause.

Preharvest stem break

- Preharvest stem break occurs when plants are allowed to wilt during the day or when temperature increases rapidly during bright sunny weather.
- Under such conditions, the flower stem is subjected to stress and wilts.
- After watering of cooler growing conditions, the water to the stem is rapidly replenished and the stem becomes turgid again.
- During rehydration, extreme conditions are imposed on cells in the stem where rapid elongation is occurring.
- This part of stem accumulates the highest water content.
- Keeping soil moist during the heat of the day or reducing air temperatures can minimize preharvest stem break.
- If wilting still occurs the plant should be rewatered, not during the hottest part of the day but early morning or evening to prevent rapid surges of water into the wilted stems.

- It is a result of high root pressure and high atmospheric humidity.

Premature flower wilt

- Premature wilting of the flowers occurs while stems are still attached to the plants and often develops just as petals are in full expansion.
- The cause of problem is suspected to be a lack of storage carbohydrates needed to attain the integrity of the rapidly developing flower.
- It occurs mostly after the period of cloudy days with low intensities followed by a clear sunny day.
- If possible, screening of the varieties should be done and planting of cultivars lesser effective to this disorder is advisable.

Double stemmed flowers, double faced flowers, flower heads with calyx like growth at the centre

- Caused by imbalance of nutrients, usually observed when plant shifts from vegetative phase to generative phase.

Bushiness

- An abnormality characterized by numerous leaves, short petioles and small laminae, which give some cultivars of gerbera a bushy appearance known as bushiness.
- Nodes are not clearly distinguished and no internode elongation is seen.

Carnation

Calyx splitting

- It is a major problem in carnation as the flower buds open and petals reach to their full size, the calyx may split down either half or completely. The petals are deprived of their support, which results in bending down

of petals. Thus, the regularity of shape and structure of the flower get destroyed.

- A number of factors like genetic, environmental, nutritional and other cultural practices and boron deficiency are responsible.
- Besides these, low nitrate, high ammoniacal nitrogen or low boron levels also enhance calyx splitting.
- High nitrate to ammoniacal nitrogen ratio during low light periods are recommended to reduce splitting.
- Cultivars greatly differ in their susceptibility to splitting.
- Cultivars with short and broad calyxes are less likely to split than those with long and narrow ones.
- Selection of cultivars that are less prone to splitting, regulation of temperature and maintenance of optimum fertility levels can minimize this disorder.
- Several devices are used or repair splitting. Rubber bands, ties, plastic collars or pints are placed on calyx to hold it tighter
- Cultivars like Espana, Carburet, Red Corso, Pamir, Raggio-di-sole are less prone to this problem.
- Spray borax @ 1g/l at fortnightly intervals till flower bud appearance and after that at weekly intervals.

Slabside

This disorder may arise during cooler period and buds do not open evenly, so that petals protrude on one side only giving an asymmetrical and lopsided shape to the flower.

- This can be overcome by gradual increasing of temperature to the optimum.

Grassiness

- Grassiness refers to failure of plants to produce flowers.
- This is genetic disorder which varies from variety to variety.
- Removal and destruction of affected plants should be done.

Sleepiness

- Sleepiness causes huge post-harvest losses in cut carnation.
- Flower petals cup upwards and do not open.
- It occurs due to exposure of flowers to ethylene or water stress.
- Also, the incidence of sleepiness has been found to be higher when the flowers are stored for a longer period or when they are exposed to high temperature.
- Spraying of STS 0.4 Mm before harvesting will correct this disorder.
- Keep ethylene absorbent tablet (purafil pad) during transport.

Gladiolus



Tip burn(scorching)

- This physiological disorder occurs due to high levels of aerial fluorides as it is a fluoride pollution indicator(1part/billion) in the atmosphere as well as in irrigation water.
- Fluoride accumulates at the leaf tips and it results in discoloration and drying up of tips of leaves of gladiolus.

- Some of the saprophytic fungi also start invading the necrotized tissue.
- Crop should be grown away from the polluted area, especially the industries to avoid fluoride toxicity.
- Use of irrigation water and phosphate fertilizers containing high fluoride, especially rock phosphate, should be avoided.
- To overcome this problem, spraying with 5% lime or magnesium sulphate as well as a spray of blitox 50 WP (0.3%) should be given at initiation of symptoms and repeated once more if required.

Geotropic bending of spikes



- The tips of gladiolus spikes show tendency to bend against gravity if placed horizontally for longer periods.
- This is primary due to the lateral downward movement of auxin, IAA and its accumulation on the lower portion of the spike.
- IAA causes asymmetrical elongation of cells in this region, thereby causing the upward bending of the spike tips.
- The bending of the tip does not affect the vase life of the spike but reduces its market value considerably, as the spikes do not fit well in the flower arrangements.

- It is suggested that the tip of the spike should be clipped if it shows bending.
- To prevent bending of tips, the spikes should be held vertically in storage as well as during transportation.

Blindness and floral blasting

- It is observed in crops receiving less than minimum of 10 hours of sunlight.
- Hence season should be adjusted or light substitution should be given. **Spike topple:**
- Spike topple and bud rot of spikes due to low calcium content in stalk tissues when spikes are kept in vase solution.
- In this case CaCO_3 @ 0.2 – 0.3 %spraying is recommended.

Anthurium



Flower abortion, flower deformation, rosette formation

- The flower spadix aborts and growth of the spathe is stunted and the stem of the flower is also short.

- This occurs under conditions in which the plant builds up a strong root pressure that cannot be processed by the above ground.
- This problem is mainly genetic dependent, but can be prevented by restricting root pressure and promoting plant activity.
- Excessive root pressure can be restricted by growing plants drier and by raising the EC.
- A small substrate volume also has a positive effect.
- The plant activity can be promoted by encouraging and by doing away with extremes of climates.
- That will result in maximum use of possibilities such as reduction in temperature, rapid ventilation, plant cooling and humidification.

Folder ears



The basal lobes of the flowers are not fully unfolded in this disorder.

- The problem

probably occurs during the early stage.

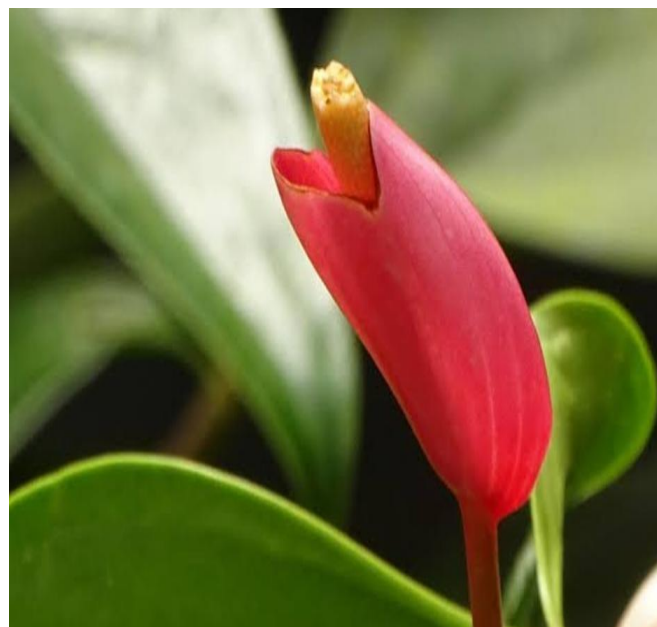
- There is no known solution.
- This physiological disorder is mainly dependent on variety and not observed in all the cultivars of anthurium.

Sticking

- The flower does not open because the spathe is stuck as a result of sticking.

- It is a variety dependent disorder and occurs especially during periods in which the growth is rapid.
- A low RH seems to have a negative effect.
- During an early stage, the flowers can be loosened carefully by hand.

Jamming



- It is a very strong dependent characteristic but more frequently occurs under arid conditions.
- It occurs more frequently in cultivars with long sheaths.
- The flower jams in the sheath, since this leaf is wound very tightly around the flower.
- Flowers that let loose of their own accord often seem to have damage in the shape of cracks on the underside of the spathe.
- Humidifying at top layer of the substrate can provide a more favourable microclimate, whereby the phenomenon would appear less frequently.

Cracks

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| <ul style="list-style-type: none"> • This disorder occurs at the sides of the spathe. • In their most serious form, both sides could be damaged. | <ul style="list-style-type: none"> • This has to do work with active growth during a period with a (temporarily) higher RH. • Lower humidity during the night is effective to reduce the cracks in anthuriums. |
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Table 1: Rose Back Neck Symptoms, causes and remedies

Symptoms	Causes	Remedies
<p>1. Bending of stems of cut rose flowers after harvesting and is an important factor in determining post-harvest quality.</p> <p>2. Bent neck or rose neck droop is a very problem among cut roses in greenhouse cultivation.</p> <p>3. It is a typical bending of rose bud to one side of the flower pedicel.</p> <p>4. The pedicel shows swelling and is quite flat in the bending point, the sepal is deformed and much bigger, seems to be pulling the floral bud towards itself.</p>	<p>Insufficient water absorption.</p> <p>1. Too soft growth, premature bud harvest and excessive water loss during handling.</p> <p>2. Exposure to high temperature, Low humidity, Ethylene, High microbial growth and incorrect use of floral preservatives.</p> <p>3. The cells in the neck area loose turgidity due to lack of mechanical strengthening tissues, such as lignified water conducting vessels or collenchymatous tissue present within the stem at that point.</p> <p>4. Air blockages of the water conducting tissues, physiological plugging or direct or indirect microbial plugging affect the water balance problem in which the rate of water lose from the rose exceeds the rate of water uptake.</p>	<p>1. As the water is lost through stomatas, therefore lower 1/3rd of the leaves should be removed from the cut flower stems.</p> <p>2. Should be recut under water and submerged in warm water for few hours.</p> <p>3. Use of 200 ppm cobalt nitrate along with 10% sucrose in floral preservative at pH-6.0.</p> <p>4.Changes in K/Ca ratio have no differential effect on incidence of bent neck.</p> <p>5.Fumigation with methyl bromide at 50°C reduces the incidence of bent neck.</p>

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