

PHYSIOLOGICAL DISORDERS IN TOMATO

Shivali Dhiman, Anuj Sohi*, Nishchala and Rahul Pathania

Ph.D. Scholar, Dr Yashwant Singh Parmar University of Horticulture and Forestry, College of Horticulture and Forestry, Neri, Hamirpur, HP-177 001, India.

*Corresponding Author Mail ID: anujssohi@gmail.com

BLOSSOM END ROT

This is the most prevalent and damaging disorder affecting tomatoes. Brown lesions emerge at the blossom end while the fruits are still green. Water-soaked spots form at the attachment point of aging petals, which then expand. This disorder causes the affected part of the fruit to become sunken, leathery, and dark in color.



Cause

- Elevated soil moisture and temperature.
- Conditions of moisture stress.
- Excessive application of nitrogen.
- Calcium deficiency.

Control

- Provide light and frequent irrigation to maintain optimal soil moisture.
- Apply the recommended amount of nitrogen.
- Spray the crop with 0.5% calcium chloride during the fruit development stage.

FRUIT CRACKING

The surface of mature green and ripe fruits cracks at the stem end, a common disorder during the rainy season. There are two types of cracking:

A. Radial cracking: This starts at the stem end and develops in ripe fruits, making it more severe.

B. Concentric cracking: This appears around the shoulder of fruits.



Cause

- Extended dry periods during the rainy season.
- Moisture stress due to irregular irrigation and sudden temperature fluctuations between day and night.
- Fruit exposure to sunlight.
- Boron deficiency in the soil.

Control

- Maintain optimal soil moisture with light irrigation.
- Avoid pruning and staking plants during the summer.

- Cultivate resistant varieties such as Sioux, Punjab Chuhara, Pusa Ruby, Roma, Pant T-1, and Arka Saurabh.
- Spray borax at 0.3% to 0.4% two to three times.
- Harvest the fruits before they are fully ripe.



PUFFINESS

When the fruit reaches about two-thirds of its normal size, the growth of the internal tissue slows down while the outer wall develops normally. The affected fruit is light in weight, lacks firmness, and is partially filled. This disorder is more common in the winter season.



Cause

- Insufficient fertilization.
- Embryo abortion post-fertilization.
- Necrosis of the fruit's vascular and placental tissues.
- Elevated temperature and soil moisture levels.

Control

- Avoid over-watering the crop.
- Cultivate resistant varieties.
- Apply the recommended dose of nitrogen

CATE FACE

The affected fruits exhibit distortion at the blossom end, along with the development of ridges, furrows, indentations, and blotches.

Cause

Unfavorable climatic conditions during the flowering cause distortion of growth of pistil cells.

Control

- Grow varieties free from this disorder.
- Cultivation condition makes favorable as much as possible by adopting appropriate and timely management.

UNFRUITFULNESS

Poor fruit setting is a problem in tomato cultivation during summer in Eastern India and during both winter and summer in North India.

Cause

- Both high and low temperature affects pollen viability and pollen germination and ultimately fruits set.
- Specially, night temperature greatly influences the fruit setting.
- Day temperature above 32°C and night temperature above 20°C and below 12°C adversely affect the fruit setting in tomato.

Control

- Grow high temperature tolerant varieties e.g. Hot Set, Saladette, HS-102, Pusa Hybrid-1, Punjab Keasri, Punjab Chuhara etc.
- Use low temperature tolerant varieties e.g. cold set, Pusa Sheetal etc. 3. Spray

crop with Parachlorophenoxy acetic acid (PCPA) @ 50 ppm at full blossom stage 2,4-d @1-2 ppm before anthesis and days after first spray.

SUN SCALD

The fruit exposed to intense sunlight developed yellow or brown burn patches. The affected tissue has blistered water-soaked areas. The rapid desiccation of water produces sunken areas, which has white or grey and yellow colour in green and red coloured fruit, respectively.



Protection measures

- Grow abandoned foliage varieties.
- Rise the crop with high density.
- Control defoliating diseases and pest timely.
- During picking or fruit avoid turning of plants.
- Avoid training and pruning during summer months.

FROST INJURY

Tomato is highly sensitive to low temperature injury. The affected plant becomes darkened, wither and desiccated. Flower drop result in poor fruit setting. The affected should become soft water soaked and dull coloured.



Protection measures

- Grow low temperature tolerant varieties e.g. Pusa Sheetal.
- Cover the nursery bed with thatches.
- Rice soil temperature through light and frequent irrigation during winter season.

ZIPPERING (ZIPPER SCAR/ANTHER SCAR)

Zippering appears as the one or more thin brown necrotic scars starting at the stem scar and extending downward toward the blossom end of the fruit. Small transverse scars along the longitudinal scars give the entire scars a zipper like appearance. Occasionally a hole in the locule will form along the scar.



Cause

Zippering is caused by anther striking to the wall of the newly formed fruit. It can be caused by low temperature and slow fruit development. It is also caused by genetic reasons.

Control

- Adopt proper management to facilitate proper growth and development of root.
- Grow low-temperature tolerant varieties.

YELLOW/GREEN SHOULDER

Symptoms of yellow shoulder appears as area of yellow tissue on the shoulders of ripening fruit. The discoloration may affect the entire shoulder of fruit or only small, irregular patches. Discoloration usually develops on areas that have been directly exposed to the sun.

**Cause**

- First disorder is favored by periods of high light.
- High temperature.
- Nutrient imbalance.

Control

- Grow high temperature tolerant varieties.
- Avoid excessive pruning that exposed fruit to sun.
- Manage foliage diseases and defoliating insect.
- Provide proper nutrition.