

## Blossom End Rot Disorder of Tomato

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### INTRODUCTION

Tomato (*Solanum lycopersicum*) is flowering plant which belongs to the family solanaceae. It is the second most important crop in the world. China, India, USA, Turkey, Egypt, Iran, Italy, Spain, and Brazil are the leading tomato producing countries in the world. Tomato can be eaten raw or can be cooked as a vegetable. It also carries a high nutritional value and is a good source of vitamin A, C, fibres, potassium and minerals. Tomatoes are also used for making ketchups, sauces, chutneys, soups etc. Ideal temperature for cultivating tomatoes is 20-25 °C. It is a warm season crop. Tomato can be cultivated on a wide range of soils from sandy to heavy clay. Well-drained, sandy or red loam soils rich in organic matter with a pH range of 6.0-7.0 are considered as ideal for growing tomatoes.

Tomato plant is also susceptible to many disease and pests but is also affected by certain physiological disorders or stress. Blossom-end rot is also a physiological disorder. This disorder degrades the quality as well as quantity of fruits.



### **Causes of blossom end rot in tomato**

- Blossom-end rot is caused by deficiency of calcium in the tissue of the tomato. Roots uptake the Calcium into the plant it settles in one part of the plant. This shows that the rot can occur even when there is an adequate supply of calcium in the soil, stems or leaves. These spots development can be prevented if vigorously growing parts of the plant such as developing tomatoes must have uninterrupted supply of calcium.
- Insufficient soil moisture can also lead to blossom end rot in tomatoes throughout the growing season. Calcium present in the soil solution is utilized by plant roots by the process of diffusion and mass flow. Sufficient moisture supply is important for the movement of calcium in the plant, when drought occurs the fruit continues to develop but will be affected by a calcium deficiency. Decrease in calcium availability affect soil pH as it starts trending below 6.0. Using black plastic mulch raises the root zone temperature which also limits root growth and calcium uptake in tomato plant.

### **Symptoms of Blossom end rot**

- First symptom of blossom end rot starts appearing as water- soaked spots on the blossom end, or bottom of the tomato.
- The part affected starts to show rapidly breaks down of tissues and the affected area becomes sunken, dark brown or black, and leathery.
- The disorder initiates with a dry, dime sized brown lesion and generally increases in diameter.
- Excessive nitrogen fertilizers also lead to vigorous vegetative growth which is utilized by the cell wall and it increases the demand of calcium for different parts of plants and makes the condition much worse.
- Rapid early growth of the plants uptake more calcium and this can also cause rotting in the plant as plant cannot take sufficient amount of calcium quickly through its roots. There is also a condition called internal blossom-end rot in which symptoms develop on the sides of the fruit or internally and it can only be seen if we cut the fruit.



**Management of Blossom end rot**

- Organic matter rich and well drained soil should be used for growing tomatoes.
- Soil pH should range in between 6.5 and 7.5.
- Soils having low concentration of calcium can be treated by applying additional soluble calcium through irrigation which will help to reduce blossom end rot.
- Use fertilizers low in nitrogen, but high in superphosphate.
- Continuous supply of soil moisture should be maintained in the growing season, especially during the fruit development stage.
- Organic mulches should be used to retain the moisture in the soil.
- Affected fruits should be removed from the field as it will have the chance to be attacked by different pathogens.