

Blossom End Rot

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WHAT IS BLOSSOM END ROT?

Blossom end rot is a disease which affects some types of fruit. It can be noticed as a circular area of dead tissue, centred on the blossom end of the fruit. It is most commonly seen on tomatoes, watermelons and capsicums. It may occur less commonly on other types of fruit. In tomatoes and capsicums, the first sign of the disease is a somewhat water-soaked area at the blossom end which eventually becomes dry, sunken and leathery in texture (see picture below). The colour of the affected area tends to vary between straw and brown. In watermelons a dry, brown to black area develops at the blossom end. Secondary mould growth may appear on the surface of the affected area after the tissue has died. Such mould is sometimes mistakenly blamed for the condition.



WHAT CAUSES IT?

This is a physiological disease, distinct from parasitic diseases. Physiological diseases occur when one or more environmental factors affect the normal functioning of the plant. The immediate cause of blossom end rot is inadequate supply of calcium to the developing fruit. This does not necessarily mean that there is a deficiency of calcium in the soil; in fact that is possibly the least likely reason. It is more likely that prevailing conditions are limiting the availability of soil calcium to the plant or are interfering with the uptake of calcium by the plant roots. It is also possible that calcium that is already in the plant system is for some reason unavailable to the developing fruit where it is needed.

WHAT IS THE ROLE OF CALCIUM IN DEVELOPING FRUIT?

Before considering the predisposing factors for blossom end rot, it may be worthwhile to look at the role of calcium in the plant and in the developing fruit in particular. Calcium is an element which is essential for plant growth. It plays a role in enzyme activity and affects the permeability of cell membranes. Calcium is also a constituent of calcium pectate which is one of the cementing substances that hold plant cells together. In parts of the plant where rapid growth of new cells is taking place, such as the developing fruit, there is a special demand for calcium. Unlike certain other essential elements, calcium cannot be stored in older plant tissues and then transported to newly developing tissues when needed. An inadequate supply of calcium can disrupt the functions described above, resulting in death of cells and breakdown of plant tissues. This is what happens in blossom end rot, where the blossom end of the fruit is the furthest from the source of calcium supply and therefore the last to be served.

WHAT CIRCUMSTANCES CAN BRING ABOUT AN INADEQUATE CALCIUM SUPPLY?

It is important to know the various circumstances that can interfere with the supply calcium to the fruit so that the cause or causes in any particular case can be identified and corrected. Possible predisposing factors include:

- **Insufficient water:** Water is necessary for dissolving calcium in the soil to allow it to be taken up by the roots. The supply of water must be adequate overall and consistent enough to avoid periods of temporary water stress which may interrupt the supply of calcium to the fruit.
- **Dry, hot windy weather:** Apart from the water lost due to evaporation from the soil during hot windy conditions, it is also lost through increased transpiration from the leaves. This has the effect of diverting water, and hence dissolved calcium, away from the fruit.
- **Low calcium content in the soil:** This may occur in light sandy or lateritic soils. In such cases, calcium may need to be added as lime or fertiliser containing calcium.
- **Excessively low soil pH:** If soil pH is too low, the availability of calcium may be reduced. This may be corrected by the application of lime or other soil conditioner which raises pH. Take care not to raise pH too much or other problems may occur.
- **Excessive use of nitrogen fertiliser:** Nitrogen tends to favour lush vegetative growth which will compete with the fruit for limited calcium.

- **Excessive amounts of other salts in the soil:** Certain ions in the soil may interfere with absorption of calcium. They include ammonium, sodium, potassium, magnesium and possibly aluminium. Salts containing these ions may accumulate at the surface of the soil during dry periods. Rain or irrigation after a prolonged dry period can dissolve the accumulated salts and dump them in high concentration into the root zone inhibiting calcium absorption. Adequate and regular irrigation can overcome this problem.
- **Waterlogging:** Apart from the obvious effect of waterlogging on root aeration, it can also lead to a build-up of ammonium which, as described above, can interfere with calcium uptake.

If you notice blossom end rot, consider each of the above possible causes and correct appropriately.

For help in the diagnosis of blossom end rot and to obtain further details on control measures, contact your DPIFM horticultural extension officer or plant pathologist.

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