

BLOSSOM END ROT – A COMMON PROBLEM FOR TOMATO PRODUCERS

One of the common questions I have received over the years on gardening has been about tomatoes. People call in and say their tomatoes were rotting or turning black on the bottom or blossom end of the tomato. Actually last week we had a client come in to our office that had this problem and I saw some tomatoes in another garden that had the bottom of some of the tomatoes rotting. This problem is caused by a calcium (Ca) deficiency in the fruit of the tomato plant. This condition is called blossom-end rot.

Blossom-end rot occurs because there is a problem of calcium transport, getting enough calcium to the tomato fruit. The reason they rot is because of low calcium in the cell walls. Some popular tomato varieties are also more susceptible to blossom-end rot. These include the popular varieties Better Boy and Big Beef. There have been some varieties developed that are more tolerant or resistant to this problem. These include Mountain Delight, Mountain Fresh and Mountain Spring. I don't know the availability or adaptability of these varieties for this region though.

If you have no other problems with tomato production except blossom-end rot, what can you do to alleviate this problem besides plant a tolerant or resistant variety? Maybe you particularly like some of the susceptible varieties and want to continue to plant them. If you haven't had your garden's soil tested for several years, it would be a good idea to take a soil sample and determine the level of nutrients in your soil. Low soil calcium levels and an improper pH level may cause blossom-end rot if environmental conditions are favorable. Soil calcium levels should be 500 lbs/acre or greater for tomato production. Ideally soil pH should be 6.5 – 6.7. Another factor that promotes blossom-end rot is erratic soil moisture conditions. The use of irrigation and mulches to avoid drought stress and wide fluctuations in soil water will reduce the risk of blossom-end rot and help in the proper growth and development of the tomato plants.

Our current environmental conditions definitely may contribute to the development of blossom-end rot. Contributing factors include: high temperatures, high humidity, root pruning, and excessive fertilization with ammonium (NH_4^+), potassium (K^+) and Magnesium (Mg^{++}). When there are high temperatures, fruits are growing rapidly and cell growth is rapid. The tomato plant cannot get enough calcium and blossom-end rot develops. Under conditions of high humidity, transpiration is reduced, transport of calcium in the xylem will be reduced and consequently uptake of calcium is lower. Tomatoes go through a vine growth stage prior to fruit set. If roots are cut off (pruned) from cultivating or hoeing, this will stress the plant, limit root growth and increase the plant's susceptibility to blossom-end rot. Finally it is important to avoid using fertilizers that will compete with Ca for uptake by the plant. For nitrogen fertilizer, instead of using NH_4 , use nitrate (NO_3) fertilizer.

If blossom-end rot develops on your tomatoes, apply calcium fertilizers like calcium nitrate (17% Ca) with irrigation around the base of the tomato plant so the roots can take it up. This condition is usually worse in early season. There is competition for Ca between the leaves and the fruit and the leaves win. Many times the first tomatoes of

the summer will be affected by blossom-end rot, but tomatoes later in the season will be fine. With the fluctuations in temperature we have had earlier this spring and summer and the hot and humid conditions, we can expect more environmental challenges in our gardens, yards and crops in 2013. If you have questions, feel free to contact me at the University of Nebraska Extension Office in Nemaha County at 1824 'N' St in Auburn (402) 274-4755.

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