

## Heat Impacts on Vegetable Gardens

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Tomato and cucumbers not setting fruit. Bottoms of tomatoes turning brown. Bumpy or cracked carrots, and leaf edges turning brown. All of these can be related to hot weather.

Flowers, pollination and fruit ripening are affected by heat. While any plant can be affected, I'll mention vegetables we most commonly see problems with. Beans drop blossoms at temperatures over 95 degrees. Flowers form but then die and fall off before being pollinated.

Tomatoes are temperature touchy. If day temperatures remain above 85 degrees and night temperatures above 70, pollination is reduced. According to Minnesota Extension, tomato flowers have a 50 hour window to be pollinated. If it is too hot during that window, pollination does not occur and those flowers drop off. Tomatoes continue to set flowers and fruit is set once temperatures moderate.

Vine crops like cucumber, squash and melons have separate male and female flowers. Prolonged temperatures over 90 degrees during the day and above 70 at night leads to more male than female flowers and fewer fruit. Female flowers have what looks like a tiny cucumber at their base.

Pollinators are not as active during hot and windy days. Temperatures above 90 degrees slows bee activity. Plants that rely on insect pollination, like vine crops, will have less fruit during hot periods.

If plants have fruit that does not seem to be ripening, this is a result of hot weather. Tomatoes are most affected. They need night temperatures between 68 and 77 degrees for mature green tomatoes to form red pigments.

Rotting or deformed fruit is another heat issue. As heat affects pollination, a flower may only be partially pollinated. When this happens, a bean or cucumber may develop an odd shape. Squash or melon fruits may begin to develop but then rot. Sweet corn ears are not filled.

If the bottoms of tomatoes have a brown leathery rot, this is due to a lack of calcium in the fruit wall. While there is usually calcium in the soil and even in the plant, heat and dry conditions affect the uptake and movement of this nutrient into the fruit, leading to blossom end rot.

When soil temperatures are hot, root crops like carrots can become stubby, develop bumps, or crack. Uniform moisture and mulching is the best way to moderate soil temperatures.

With leaf scorch, leaf edges turn brown. When severe, browning may also be between leaf veins. Scorch occurs when leaves transpire and lose moisture faster than roots replace it. Plants with weak or unestablished roots are most susceptible. Scorch also occurs when above average temperatures and winds increase the rate of transpiration.

About all we can do is maintain a uniformly moist, not wet, soil to a depth of about six to eight inches. Add a two to four inch layer of mulch around plants and between rows to conserve soil moisture. Avoid excess nitrogen that leads to succulent growth that loses moisture quicker and can reduce flowering.

If some plants are more severely affected, make note of the variety name. In future years, select more heat resistant varieties to grow.