Yard and Garden – 07-27-2013- Ted Griess / Extension Horticulture Assistant

As we all know, weather conditions affect the performance of most plants in either a positive manner or in a negative manner. Tomatoes are greatly influenced by Mother Nature and the assorted weather conditions she can deliver. Rarely do outdoor weather conditions remain stable or perfect for one successfully to grow tomatoes. All too often it is too hot, too cold, too wet or too dry. Of late, I have been frequently asked the question, "Why aren't my tomatoes ripening?" My usual response to that question is, "The weather." As lame as that answer may sound, the lack of ripening may be directly related to the weather and particularly to temperature.

Tomato fruits go through several stages of development during their maturation process. It takes roughly 40 to 50 days for a tomato fruit to develop fully and reach what is called the 'mature green stage.' Once mature, changes in pigment take place causing the fruit to fade from dark green to light green, then to the appropriate color for the particular cultivar, such as red, pink, yellow, orange, or combinations thereof.

Color change and ripening in tomatoes is governed by two factors: temperature and the presence of a naturally occurring hormone called ethylene. An optimum daytime temperature range of 70°F to 85°F is needed for tomatoes to grow best and for green tomatoes to begin ripening. When temperatures fluctuate outside that range for any extended period of time, the ripening process is slowed or comes to a halt.

During the ripening process, two pigments that give the tomato its color are produced. They are lycopene and carotene. Production of these two pigments is hindered during extended periods of extreme heat above 85°F. Fruits that mature during hot weather are still edible but usually less flavorful than those that ripen under milder temperatures. Green tomatoes that have already formed on the vines will continue to ripen during a heat wave. Not only does extreme heat affect the ripening of tomatoes, it also affects blossom set critical for new fruits to develop.

An extended heat wave is also likely to cause heat-related ripening disorders in tomatoes. When green tomatoes ripen unevenly, a frequent condition called yellow shoulders occurs where the top end of the

tomato stays yellow or green while the lower half turns red. Sometimes referred to as solar yellowing, this disorder occurs when surface tissue temperatures exceed 86 °F, inhibiting the development of lycopene and carotene. Since the top part of a tomato is directly exposed to sunlight, that tissue gets hotter and fails to turn red.

A more severe form of heat injury is sunscald, where exposed surface tissues are burned by the sun. These areas, which develop on the sides of fruits exposed to direct sunlight, turn white or tan and appear leathery and sunken. Fruits shaded or covered by leaves are protected from sunscald. Maintaining dense foliage and not over pruning is the best way to prevent this type of injury.

To minimize most heat-related problems in tomatoes, one should keep the plants well watered and shaded.

The fact is when temperatures go up for any extended period of time, tomatoes either start to ripen unevenly, slow ripening or stop ripening all together; and little can be done to prevent it. The good news is, eventually, temperatures will become more favorable, and the ripening process will resume. When Mother Nature delivers such an event, all one can do is to wait. Wait out the weather that is─ assuming other weather-related stresses don't take their toll.