

Boy! It Is Hot Out There

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Many of us know that cold weather can affect plants, such as a frost. Many people also know that hot temperatures can also affect plants, especially in the garden. I would like to take some time and discuss the effects of temperature on plants.

For example peas convert sugar to starch twice as fast at 58 degrees as at 40 degrees, which is why vegetables should be picked early in the morning versus in the evening. As temperatures rise this speeds up the blooming and ripening of fruit. Also the amount of water used by a plant is directly proportional to how hot the temperatures get.

We generally talk about the optimal temperature for growth of warm season vegetables (corn, tomatoes, peppers etc.) to be around 50 degrees up to say 90 degrees. These warm season crops are generally stop growing and may start to die when the temperature drops at night below 50 degrees that is why we recommend to plant later in the spring and cover the plants in September. In fact most of these crops will drop their blooms at temperatures below 60 degrees.

Most of our garden plants really show rapid shoot growth between 55 and 75 degrees. Photosynthesis is also optimized at this temperature range. Carrot roots as an example are affected by the soil temperature, when it is below 65 degrees they are more cylindrical and when the temperature is higher they tend to be more blockier, and the shape does have something to do with soil type. Also the sex of flowers are affected by temperature. Such as cucumbers produce more female flowers when the night time temperature is in the lower 60's and more male flowers when the temperature is in the 70's.

The overall optimum growth of garden plants is between 68 to 86 degrees, with the cooler season types preferring the lower end of this range and the warmer season crops preferring the upper end. When the temperature is above 85 to 95 degrees most growth stops, for most plants except desert type plants. When daytime temperatures are in this range for say tomatoes and night time temperatures are above 70 they really struggle and do not set fruit very well. When we provide adequate water to these plants they have enough transpiration taking place on the leaves to provide a cooling effect. One reason leaves curl is to conserve water when there is not adequate water available or the temperature is too hot.

Now what about buying those transplants from a nursery? It does not matter whether it is a tree, shrub or potted flower the air temperature is important as I have mentioned before, however the radiant sun temperature on those black containers can send the soil temperature above recommend levels even though the air temperature is fine. When the soil temperature is

above 90 to 100 degrees the roots start to die. Exposed roots start to die within minutes if exposed to direct sunlight and temperatures above 80 degrees, it is not only the heat but the drying out of the feeder roots. That is why we dig the holes first and keep the roots moist when planting.

The next thing to remember is when watering. What temperature is that water? If it is cold then that will affect the plants. Also if the garden hose has been sitting in the sun all day and has water in it that water could be over 100 degrees and when we water flowers or garden plants those first plants are not going to do well. Also by misting your outdoor plants during the heat of a 95 degree day will help cool them off and they will thank you for it, this includes grass, trees, shrubs, flowers and the garden.

* Adapted from an article by Dr. Bob Gough in Zone 4 magazine, summer 2014 #22.

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