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## How Past Weather Affects Today's Garden

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Gardeners may notice the effects of last year's unusual weather on your plants now. We experienced many very hot days, a hard freeze, an inordinate number of windy days, heavy rain over a short amount of time and then a rather dry winter.

Very high temperatures and dry air late last summer produced heat stress, with hot temperatures during the day and night for long enough to cause irreversible damage to plant function and development. Oak trees showed the effects of heat stress with their survival mechanism of browning, leaf shedding and going dormant earlier than normal. In extensive heat, a plant's small air holes under the leaf, called stomata, close and that causes damage to the components of leaf photosynthesis. High temperatures can increase soil temperature resulting in decreased seed emergence.

Much of our area also had a hard freeze, when the temperature was at or below 28 degrees for several hours. Ice crystals form in the plant cells, and that disrupts the movement of fluids making water unavailable to plant tissues. (Frost occurs at a temperature of 36 degrees and lower, and a freeze is 32 degrees and lower for three to 30 hours.) A hard freeze can cause plant damage such as dark brown or black leaves and twigs. It can kill citrus fruit: lime and lemon are most susceptible, orange and grapefruit not as much and mandarins the least; however all citrus are susceptible if the tree is stressed due to drought or disease. New growth on citrus will die around the dead wood, and the bark highlights how much damage occurred. Mediterranean plants such as bougainvillea, fuchsia, succulents, plumeria, palm and gardenia are tender and susceptible to frost. Their damage appears on new growth at the base or in shriveled and dark brown/black leaves and twigs; prune damage away after the danger of frost is past and new growth begins.

Wind reduces the boundary layer of tree leaves, which increases the rate of cooling and can be damaging, especially in cold weather. Wind increases moisture loss and winter burn if plant tissues are dry. The strong and long-term winds we experienced this spring may have transported fungal spores and insects.

Fifteen to twenty inches of rain over five days in November may have caused flooding that result in no oxygen uptake. Flooding causes different types of damage such as yellow and browning leaves, leaf curl, leaf wilt and drop, a decrease in the size of new leaves, early fall color, root rot and branch die back. Flooding can make plants susceptible to secondary organisms, fungi and insects. Additionally, it can change the pH of soil. Damage caused by flooding will be lessened if the plant is dormant, in sandy or well-drained soil and healthy, or if the flooding lasts less than one week. To help flooded plants, pay attention to the roots, remove physically damaged or dead twigs, shoots and leaves, lightly fertilize and lessen future stresses if possible.

After that extraordinary amount of rain, the region experienced much less precipitation than seasonable during winter. That brings out wood eating insects and can cause leaves to wilt, scorch and leaf tips and margins to turn brown. Older leaves will be small and rigid while the oldest may turn brown and fall off. Trees drop leaves to conserve water. Trees that will be affected first will be those most exposed to afternoon sun and prevailing winds. Dogwood, maple, and horse chestnut trees are most susceptible to a short-term winter.

We can't control the weather, but recognizing plant weather stress signs helps the gardener make adjustments and keep your yard and garden healthy.

There will not be a Master Gardener class this Saturday, June 15, 2013. Master Gardeners will be at the county fair and area Farmers Markets to address your gardening questions.

Master Gardeners are available to answer home gardening questions Tuesday through Friday, 9 a.m. to noon, by calling (530) 621-5512. Walk-ins are welcome. The office is located at 311 Fair Lane in Placerville. For more information about our public education classes and activities, go to our Master Gardener website at [http://cecentralssierra.ucanr.org/Master\\_Gardeners/](http://cecentralssierra.ucanr.org/Master_Gardeners/). Sign up to receive our online notices and e-newsletter at <http://ucanr.edu/mgenews/>. You can also find us on Facebook.