

Cold Damage in the Landscape

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Florida has a relatively mild climate, but occasionally most of the state does experience below freezing temperatures. The lowest temperature on record in Florida occurred in Tallahassee on February 13, 1899 when the temperature dropped to - 2° F (two degrees below zero). Fortunately, temperatures haven't fallen that low since. Recently, on January 29, 2022, Tallahassee's temperature dropped to 19° F. It was the first time in 3,678 days that Tallahassee experienced temperatures in the teens.

The USDA Plant Hardiness Zone Map has for decades placed Tallahassee in zone 8b, meaning that the reasonably expected low temperatures in an average winter will fall to somewhere between 15° and 19° F. However, for at least the last decade, we actually have been in zone 9a (20°- 24° F). For gardeners that means that more and more plants suited for zone 9 have been planted in our zone 8 areas. That's what gardeners do – push the zone limits.

In practical terms, the recent low temperatures mean that many plants experienced potentially damaging conditions. Plants are damaged by cold temperatures in various ways. Water expands when it freezes, and this may result in rupturing the individual cells in plant tissue. Some plants that are resistant to freezing damage often survive by reducing their water content so that when freezing water does occur, the cell can accommodate the increase in volume. Other plants survive freezing temperatures by increasing sugars and other solutes in their internal water which act as a form of antifreeze, allowing the water to drop below freezing without ice forming. Some plants go into a dormant phase, and may even drop their leaves. These dormant plants are waiting for the proper conditions to return to active growth.

Susceptibility to cold damage varies from plant species to plant species and from organ to organ within individual species. Flowers and unexpanded buds often experience damage when leaves do not. A freeze preceded by a period of extended warm temperatures often causes more damage than when temperatures have gradually lowered as the season progressed prior to the freeze. Plants in active growth are more prone to cold damage than those that are dormant.

Many gardeners try to protect their plants from cold damage by covering plants with blankets or frost-cloth. This covering can prevent frost damage and may prevent damage from wind-chill temperatures which may be well below the ambient temperature. However, it is important to remove the protective material during warm days, so as not to overheat the plants.

The question is what to do if below average temperatures occur and some damage is evident. The inclination of many is to quickly get out the pruners and clear away any damaged foliage and tissue. The key is to be patient.

Carefully inspect your plants before heading out with pruners in hand. Leaves should not be removed if they still contain viable green tissue. The green portions of leaves are important for production of sugars from photosynthesis needed for new growth. Allowing the leaves to die naturally allows the nutrients remaining in the leaf to be translocated back into to other areas where they are needed.

Soft, dead tissue will quickly decay and is prone to fungal and/or bacterial invasion. Totally dead leaves can be removed, but check and see if the stem to which the leaves are attached is viable. A fingernail or knife blade can be used to gently scrape the bark

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to see if live, green tissue is present. Cold damaged stems will be black or brown. If the stem is viable, leave it alone. The stem can be checked again later in the spring to see if it is still viable and should be kept. A young, viable stem should be flexible and not brittle.

Herbaceous plants, such as Impatiens or Begonias, which are damaged by the cold may collapse. When this happens, it's best to remove the entire plant, including fleshy roots, to prevent fungal or bacterial problems from arising as they decay.

In some cases, it may be advisable to spray the plant with a fungicide after pruning away dead tissue. Copper-containing fungicides often are recommended, but for the most up-to-date information, contact your local county extension office. A fungicide application will reduce the level of potentially pathogenic pathogens. Repeat the fungicide spray as recommended by the fungicide label or about 10 days after the first treatment. Make sure that these sprays cover the damaged tissue and the bud thoroughly. If the fungicide contains copper, do not repeat the sprays more than twice so as to avoid possible copper toxicity. In the unlikely event that the soil has frozen, a soil drench of a combination of a broad-spectrum and a water-mold-specific fungicide may suppress root diseases.

Freeze damage to the plant's vascular tissue in the trunk may limit the ability of the plant to supply water to the canopy. A wilting of some (or all) of the leaves during the first periods of high temperatures in the spring or summer following a damaging winter freeze may indicate this type of trunk damage. Supplemental irrigation may be needed to ensure that the plant does not dry out during the recovery period.

Resist the urge to fertilize plants in an attempt to speed their recovery. Fertilizing too early can encourage new growth which might be damaged by another cold event. Once the danger of frost has passed, you then can resume your regular fertilization schedule.

An additional concern not met with the general application of fertilizer involves micronutrients. Most gardeners are aware of the 'big three' - nitrogen, phosphorus and potassium (N,P,K) - whose amounts are prominently listed on the fertilizer label. What they might not be as aware of is the need for micronutrients. Micronutrients like iron, manganese and others, are essential. They just are needed in very small (micro) amounts.

While the soil most likely will not freeze during our infrequent Florida cold spells, it does get colder than normal. Because of the colder root zone, the uptake of nutrients is reduced. This is especially true for plant species adapted to climates warmer than those in which enthusiastic gardeners have planted them. Micronutrients can take weeks or months to move from the root system to the tops of the plants. These cold impacted plants might not show immediate signs of problems, but week or months later may show micronutrient deficiency symptoms. Because of this, an application of a micronutrient-containing fertilizer can be helpful. Be careful to follow the fertilizer recommendations because over application of most micronutrients can be toxic to the plants.



Infrequent cold periods are an inevitable part of gardening in subtropical Florida. Understanding how to prevent, reduce or recover from cold damage can aid in the success of your garden.