Bartlett Tree Research Laboratories

PLANT HEALTH CARE REPORT

Citrus in Arizona

Citrus have attractive, glossy, evergreen leaves; fragrant flowers; and decorative, edible fruit. In Phoenix and other areas of Arizona that have minimum winter temperatures above 20°F, citrus are ideally suited for use as ornamental trees or shrubs. Fruit quality depends on the duration of summer heat and variety selected.

Many of the mature citrus trees throughout Phoenix are the remnants of old production orchards. During new home construction, extensive root damage and soil compaction are common. In these cases, recovery may be slow or decline irreversible.

Citrus' dense crown and glossy leaves

When choosing a site to plant citrus, soil drainage must be given primary consideration. Citrus require well-drained, preferably loam, or sandy loam soil. Where internal soil drainage is poor, a drainage system or raised beds must be installed. Citrus are short-lived in wet soils. They grow in soils with a pH between 5.5 and 7.5, but are healthiest at a pH between 5.5 and 6.5.

Citrus need year-round soil moisture, so in a desert climate irrigation will be required. Irrigate until the entire soil area within the dripline is moist to a minimum depth of eight inches. Frequent, shallow watering is undesirable since it encourages shallow roots and may cause a salt build-up in the upper root zone. Instead, irrigate for longer periods of time, less frequently, to promote a deeper root system. While

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watering frequency is soil- and site-specific, do not allow the soil to dry out. Generally, in the hot summer months, irrigate established trees every 7 to 10 days. Extend the watering interval to every two weeks in the spring and fall, and irrigate only about once a month in the winter. Newly planted trees are the exception—they may need watering as often as two to three times a week in the summer. To reduce evaporation from the soil and provide a more favorable rooting environment, a 2 to 4" layer of wood-based mulch should be applied from near the stem to the dripline.

Citrus are salt-sensitive. They tend to accumulate chlorides, sodium, and boron in the leaves causing burned leaf edges, leaf bronzing, and reduced leaf and twig growth (leaf symptoms of boron toxicity pictured at right). If irrigation water is salty, deep watering will help wash salt residue from the root zone. Irrigation water can be tested for total salts prior to use if this is a concern.

For optimum growth and fruit production, fertilize regularly using a low salt, low chloride, slow-release product. Because of the nutrient demands of heavy fruit production and the long growing season, fertilize three times a year (late winter, mid-spring, and late summer/fall) using 1/3 of the annual amount of fertilizer at each application. Alkaline soils, common in the Phoenix area, lead to nutrient deficiencies of the microelements iron, manganese, zinc, and copper in citrus. Deficiency symptoms, seen in the youngest leaves as yellowing between the veins, can be treated by reducing soil pH and applying micronutrient supplements.

Phytophthora root rot is the most common and devastating disease of residential citrus in Arizona. This disease is most often incited by improper irrigation practices. Trees are predisposed to infection by excess soil water or moisture held next to the root collar. If the disease is detected early, treatments and soil care programs can reduce the severity.

Because citrus is an important commodity industry in Arizona, it should be carefully monitored for diseases and pests. Currently, two federally-regulated pests/diseases, the Asian citrus psyllid (*Diaphorina citri* Kuwayama) (adults pictured at left) and sweet orange scab (*Elisnoe australis*), have been detected in Arizona. Citrus greening,

which has devastated the citrus industry in other parts of the country, has not been detected in Arizona yet (as of 2021). The Asian citrus psyllid that vectors citrus greening, however, was detected in Arizona in 2009. Other pests that damage citrus include: citrus leafminer, spider mites, rust mites, mealybugs, scale, and aphids. Regular monitoring of the plant should identify these arthropods (insects and mites) so that they may be managed before serious damage occurs.

Nematodes, microscopic worms that feed on roots, will attack citrus occasionally. Infestations and severity are usually higher in sandy soils. Symptoms include sparse growth, yellowing of foliage, and stunted growth. While these symptoms are similar to those of a nutrient deficiency, they are not remedied by fertilization. The addition of organic matter can reduce the severity and quantities of nematodes.

Monitoring and Treatment Considerations for Citrus in Arizona

Early to mid-winter

Apply dormant treatment to suppress overwintering insects. Monitor for arthropod pests; treat as needed. Inspect soil drainage and improve as needed. Sample soil for nutrient and pH levels. Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Late winter

Fertilize and adjust pH according to analysis (1st application).

Early to mid-spring

Apply soil treatment to prevent Phytophthora root and foot rot as needed. Monitor for arthropod pests; treat as needed.

Late spring

Monitor irrigation and soil moisture to minimize water stress and prevent root disease. Fertilize and adjust pH according to analysis (2nd application).

Summer

Monitor for arthropod pests; treat as needed. Monitor irrigation and soil moisture to minimize water stress and prevent root disease.

Fall

Monitor for arthropod pests; treat as needed. Reduce irrigation levels (from the summer) and monitor soil moisture to minimize water stress and prevent root disease. Fertilize and adjust pH according to analysis (3rd application).