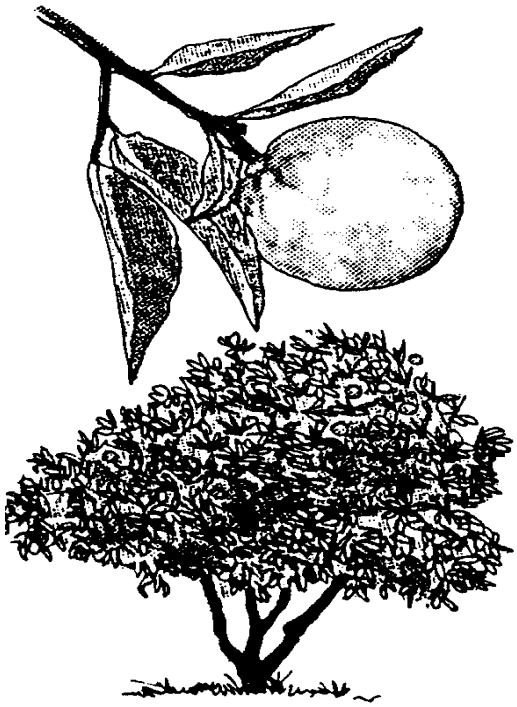
BARTLETT TREE RESEARCH LABORATORIES
CHARLOTTE, NC

Plant Health Care Program

Citrus

Citrus are ideally suited for use as ornamental trees or shrubs. They have attractive evergreen glossy green leaves, fragrant flowers and decorative edible fruit. In areas that have minimum winter temperature no less than 20°F they may be grown outdoors. In cooler areas, dwarf varieties may be grown in containers so that they can be moved to protected areas or indoors in the winter. Fruit quality is highly dependent on the duration of summer heat and variety selected.



When selecting a site to plant citrus, soil drainage must be given first consideration. Citrus requires well drained, preferably loam or sandy loam soil. On sites which are not well drained a drainage system must be installed, a raised bed developed or the soil must be amended. If there is free standing water on the site, the plant will be short lived. Soil pH should be between 6.0 and 7.5

In areas with infrequent rainfall, irrigation will be required. Citrus needs moist, not wet soil. To avoid wetting the trunk, drip or soaker systems are preferable to sprinklers. Irrigation water needs to be low in salts and boron. A tensiometer is useful in monitoring soil moisture levels.

To reduce evaporation from the soil and provide a more favorable rooting environment, a 2-4" layer of mulch should be applied from near the trunk to the dripline. Avoid placing mulch against the trunk.

For optimum growth and fruit development citrus should be fertilized annually. Mature standard varieties should be fertilized with Boost during the winter or early spring at the high rate. Fertilizer should be applied from near the trunk to beyond the dripline.

Citrus is susceptible to deficiencies in the microelements, iron, manganese, zinc and copper. Symptoms of microelement deficiency are seen in the youngest leaves as yellowing between the veins. Deficiencies can be treated with supplemental fertilization with the proper element.

There are four insects which commonly attack and damage citrus: mites, mealybugs, scale and aphids. Regular monitoring of the plant should identify these insects so that they may be treated before damage occurs.

There are numerous diseases of citrus leaves and stems. None are very common. When leafspots or branch cankers are discovered, they should be identified so that treatment plans can be developed. The more common diseases are of the root system and root collar. The most common of these diseases is caused by the fungus *Phytophthora*. It may cause either a root rot or root collar rot. Trees are predisposed to infection by excess soil water or moisture held next to the root collar. Monitoring irrigation quantity and location, and keeping the root collar clear of soil, mulch and water will go a long way towards preventing this fatal disease.

Nematodes are microscopic worms which feed on root systems. When they attack citrus symptoms include sparse growth, yellowing of the foliage and stunting of growth. These symptoms are similar to those of a nutrient deficiency however, they are not remedied by fertilization

Recommended Monitoring of Citrus*

Timing	**Inspection / Treatment**
Winter	Inspect for foliar feeding insects, treat as needed. Check drainage, if water accumulation is present improve drainage.
Spring	Inspect for foliar feeding insects, treat as needed. Treat foliar diseases, three or more treatments may be required.
Summer	Inspect for foliar feeding insects, treat as needed. Monitor soil moisture level, apply irrigation as needed.
Fall	Inspect for foliar feeding insects, treat as needed. Monitor soil moisture level, apply irrigation as needed. Fertilize with macro and micro elements as needed.

* This is the basic PHC program. Numbers and timing of inspections and treatments may vary depending on local conditions.