



Home Fruit Production - Avocado

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Introduction

Avocado is a medium to large evergreen tree with large, leathery, deep green leaves. It has limited commercial value in the lower Rio Grande Valley and is often found in landscapes across South Texas. The popularity of its fruit, particularly in Mexican food dishes, and its tropical appearance have spurred considerable interest in growing avocados at home.

Climate

The most limiting factor to success with avocado trees is severe cold. Avocado is a tropical to subtropical tree that, with some exceptions, is best adapted to relatively frost-free areas. Some types are killed outright by moderate freezes and others have regenerated after sustaining complete death of all aboveground parts in severe freezes.

Soil and Site Selection

Avocado trees are adapted to most soil types found in South Texas, provided the soil has good internal drainage. The tree will not perform well in poorly drained soils, nor will it tolerate flooding. The planting site should be chosen with cold protection in mind, especially in areas where annual winter frosts or freezes are common. Generally, the south or southeast side of the house is the warmest location in a residential site. Because it can become a large tree, it should be planted no closer than 8 to 10 feet from the house.

Varieties

There are three distinct horticultural races of avocado -- West Indian, Guatemalan and Mexican -- plus hybrids between them. West Indian types are the least cold tolerant and somewhat watery in flavor, but they have the greatest tolerance to salinity and some diseases. For our purposes, West Indian avocados are useful primarily as rootstocks because of their high salt tolerance.

The Mexican race is the most cold tolerant but the least salt tolerant. Its fruit ripens in the summer and is usually of good flavor. The fruit is rarely larger than 8 to 12 ounces, is green to purple or black, and has very thin skin. Because the skin is so thin, the fruit are very susceptible to disease. The crushed leaves of the Mexican race of avocados have a distinct odor of anise (licorice), which is lacking in the other races.

The Guatemalan race of avocados is essentially intermediate between the other two, and its hybrids with the other two races include many of the more important varieties in commerce.

Describing varieties is difficult, inasmuch as there exist several so-called varieties that originated as seedling trees in home plantings across South Texas. Most are Mexican race seedlings, but they have not been described in the horticultural literature, so information about them is lacking. One such variety is Holland, a Mexican race seedling tree that grew and survived several hard winters in Uvalde. R-1, Pancho, Capri and numerous others have appeared and apparently been lost. Most are lacking in truly good quality. There are varieties having higher than usual cold tolerance -- Gainesville, Winter Mexican and others -- but they are not of notable fruit quality. Sadly, they are not readily available.

'Lula' is the variety of commerce in the lower Rio Grande Valley, with fruits nearing a pound in size and having a green, thick peel which resists disease quite well. It matures in October and stores well on-tree into January or February. 'Lula' sustains severe freeze damage below 27 degrees, although it commonly regrows from below ground. Seeds from 'Lula' are the preferred rootstock for all avocados in South Texas, as it is fairly tolerant to existing soil salinity.

The flowering habit of avocados is unique in that the flowers are perfect, having both male and female organs, but the parts do not function together. Flowers of type A varieties open in the morning as receptive females, then close in the afternoon until the following afternoon when they reopen for pollen shed. On the other hand, flowers of type B avocados open in the afternoon as receptive females, close overnight and reopen the following morning to shed pollen. In important avocado-producing areas, orchards are interplanted with varieties of both types to assure good pollination. However, under South Texas conditions, there is sufficient overlap between the phases of a flower type that pollination and fruit set are rarely a problem.

Propagation and Planting

Avocados do not come true from seed, and seedlings may take up to 10 to 15 years to fruit. Most avocado fruit in Texas supermarkets are from California, whose varieties are principally Mexican race or Mexican-Guatemalan hybrids. As such, seedlings grown from such seeds will normally exhibit moderate to severe leaf tip burn and marginal necrosis from salt injury. Consequently, they should not be grown as seedlings for rootstock use. Propagation in Texas is mostly by cleft (tip) grafting, but other types of graftage work. Some Mexican-race avocados can be rooted or air-layered, although the lack of salinity tolerance remains a problem for such own-rooted plants. Avocado grafts are commonly inserted quite close to the soil line of the rootstock. It is common practice to plant the tree deeper than normal so that the graft

is at or below ground level. In addition, soil is mounded around the trunk as the tree grows to assure that the graft union is below ground. Thus, trees killed to the ground by severe cold will regenerate from varietal wood rather than from rootstock. Because most avocado trees are produced in containers of soilless media, much of the outer layer of media should be washed off the sides and top of the root ball just before placing the tree in the planting hole. When backfilling is completed, plus the extra soil above the plant's prior soil line, the outer root system is in contact with the soil in which it must grow, so the plant is more likely to survive transplanting and begin to grow. Newly-planted trees should be staked for support and most require shading during the first several months. A burlap-covered cage about a foot higher than the tree is commonly placed around the tree in the Valley for both shading and wind protection. In multiple plantings, avocados should be spaced 15 to 25 feet from each other and from other large trees.

Culture

The elimination of weed and grass competition is critical during the first two or three years after planting. Once competition is eliminated, organic mulches can effectively prevent further problems. Avocado irrigation is no different from citrus or other fruit and nut trees--water slowly, deeply and thoroughly. Avoid wasting water to runoff and do not allow water to stand around the tree for more than a few hours. Fertilization of avocados is essentially the same as for other fruit and nut trees in South Texas: ammonium sulfate (21-0-0) at the rate of one half cup per month in the first year, one cup per month in the second year and two cups per month in the third year. Fertilization should be applied monthly from February to September. Thereafter, apply one to two cups per year per inch of trunk diameter, split into equal applications in February, May and September. Pruning is unnecessary for growing trees, but freeze-damaged wood should be cut out in the spring. If only limb damage occurs, wait until regrowth commences and cut back to live tissue. If the tree is killed to the ground, cut it off at ground level--the regenerated tree will be naturally multi-trunked or the excess sprouts can be removed to permit only one to reform the tree.

Cold Protection

Deep planting and subsequent soil mounding around the trunk are the best assurances that the avocado will survive a severe freeze, even if the top is completely killed. When a severe freeze is being forecast, mound additional soil around the trunk for extra protection, then water thoroughly two or three days before the cold weather is expected. Young trees can be draped (not wrapped) with a blanket, quilt, tarp or even plastic during the freeze event. The corners of the covering should be pulled outward and anchored to the ground--it is not necessary that the covering reach to the ground. Any additional practical heat source under the tented tree will probably save even the leaves. Examples include incandescent lights, decorative lights, electric heaters and camp lanterns or stoves.

Production, Maturity and Use

Grafted varieties will produce a few fruit two years after establishment (which is defined as the tree having made significant growth after planting). Mature trees can produce two to three or more bushels of avocados with good management, depending upon variety. Mexican-race seedlings and varieties typically mature during the summer; 'Lula' and most other hybrids mature in September or October. Storage on-tree is common, and 'Lula' will store on-tree into January because of cooler temperatures. Avocado fruits do not ripen on the tree--they must be harvested and held for several days. The optimum temperature range for ripening includes the cooler range of most home air conditioning settings. Avocado maturity, if unknown, can be easily determined, as the fruit is mature when it will soften to good eating quality. Pick a couple of fruit and set them on the kitchen counter (out of direct sun). A mature fruit will soften within three to eight days. If the fruit don't soften, try again every week or so with new fruit until you achieve softening. When fruit softens, check it for eating quality. Summer-maturing avocados will begin to drop heavily because of disease as they mature. Some types do not always soften well under Texas conditions. For the most part, avocados are consumed fresh, alone or in salads, dips, appetizers, guacamole and pico de gallo. Overripe fruit can be pureed and frozen for later use, particularly for avocado cream soup and dips.

Problems, Disease and Insect Pests

The most common problem of avocados in Texas is tip burn and marginal necrosis caused by water stress and salinity, which is most prevalent during hot, dry weather. This problem is most acute on Mexican-race seedlings and rootstocks; it can be tempered somewhat by more uniform and regular watering. Some avocados are prone to complete defoliation at the time of flowering. New leaves will develop almost immediately, so there is no cause for concern. The most serious disease of avocados is anthracnose, which is primarily a disease of fruit nearing maturity. It starts as circular, sunken brown to black spots that are quite small. With time, the spots can enlarge to half an inch or more and are prone to cause the fruit to crack horizontally and vertically across the spot. Anthracnose is particularly severe on thin-skinned types, but rarely causes significant losses on 'Lula' and other thick-skinned fruits. Other fungal diseases such as cercospora spot, powdery mildew and scab are rarely encountered in Texas, but are serious problems in the humid tropics. Few insects have been documented on Texas avocados, although mites sometimes occur on the foliage. None has been severe enough to warrant control measures. Possums apparently thrive on mature avocado fruit and will climb the tree to feed in the absence of fruit on the ground.

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