



## Texas Fruit and Nut Production

# Pomegranates

Larry Stein, Jim Kamas, and Monte Nesbitt,  
 Extension Fruit Specialists, The Texas A&M University System

Interest in growing pomegranates has increased in recent years because their pulp and juice contain high levels of antioxidants, which are thought to improve health. The shrub also has orange-red flowers and colorful fruit that make it an attractive ornamental.

In ancient days, pomegranates were carried in desert caravans for their thirst-quenching juice. The plant has been grown for thousands of years throughout the Mediterranean regions of Africa, Asia, and Europe. Spanish missionaries introduced it to the Americas in the 1500s.

Like crape myrtles, the pomegranate (*Punica granatum*) is a member of the Lythraceae family, which includes about 620 species. Although the plant can be trained as a small tree, it is more commonly grown as a bushy shrub (Fig. 1).

The fruit is yellow to bright red and up to about 4 inches in diameter, about the size of a large orange (Fig. 2). On the blossom end, it has a cuplike organ called a *calyx*. The rind is smooth and leathery.

Pomegranates have many seeds that are surrounded by crimson, pink, purplish, or white covers called *arils*. The arils are the edible parts of the fruit (Fig. 3). They are sweet, juicy, and variable in acidity; some varieties can be quite tart.

The leaves are deciduous, dark green, and usually glossy. The plant often has thorns along its branches.

Pomegranates grow well in areas with hot, dry summers. Some varieties can tolerate temperatures as low



Figure 1. A pomegranate shrub.



Figure 2. Bright red pomegranates and the sweet, red, juicy, edible arils.



Figure 3. Fruit and arils of the 'Wonderful' pomegranate variety.

as 10°F; others are damaged at 18°F. They are grown as far north as Zone 7b of the U.S. Department of Agriculture Hardiness Zone Map (Fig. 4).

Many fruiting types should survive most winters throughout the central, southern, and southeastern parts of Texas. Studies are under way on varieties that survive typical winters in north central Texas and produce fruit; these include Al-sirin-nar, Salavatski, and Russian 18.

### Soil

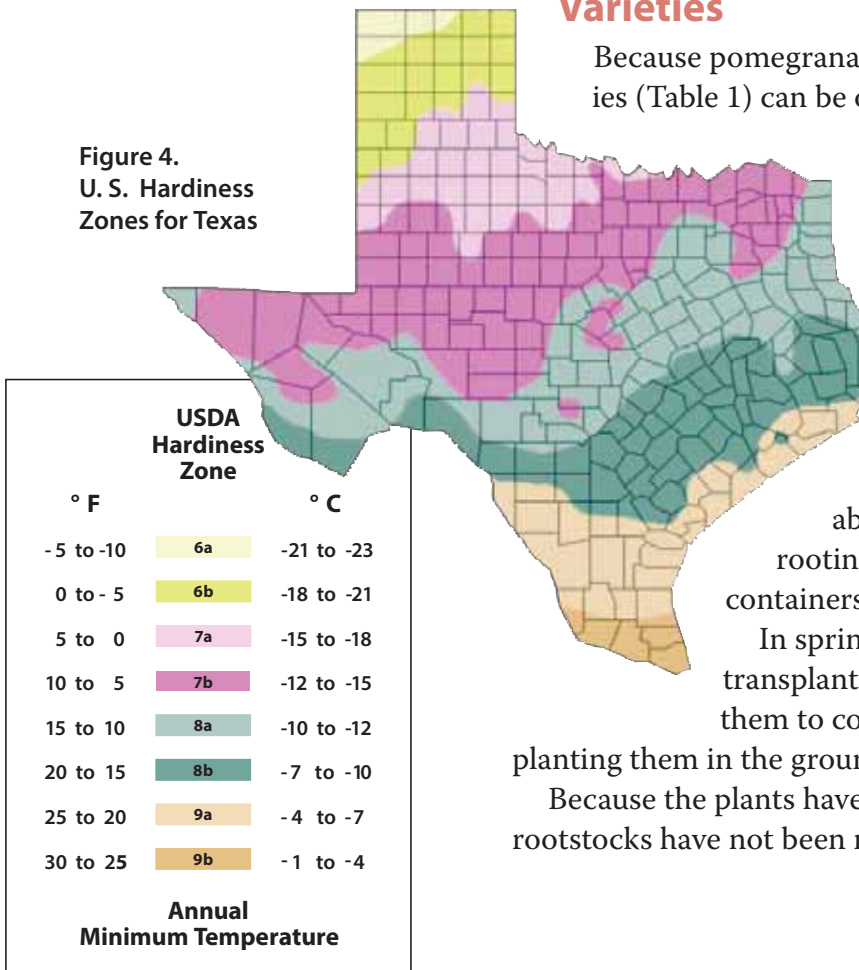
Pomegranates can grow in almost any soil that has good internal drainage. They grow very well on the moderately alkaline soils of South Texas and northern Mexico, as well as the slightly acidic soils in East Texas.

Some pomegranates tolerate salt better than do other commercial fruit crops. On new sites, have the soil tested for nutrients and salinity to help determine how much to water and fertilize.

### Varieties

Because pomegranates are not quarantined, named varieties (Table 1) can be ordered from out-of-state nurseries if they are unavailable locally.

Figure 4. U. S. Hardiness Zones for Texas



### Propagation

Pomegranates root readily from hardwood cuttings taken in winter during pruning. Although the size of the wood does not seem to affect rooting, pencil-sized cuttings are easiest to work with. Cut sections about 6 to 14 inches long, dip them in rooting hormone, and stick them upright in containers of well-drained potting soil.

In spring after the cuttings begin growing, transplant them into gallon containers and allow them to continue growing for 4 to 6 weeks before planting them in the ground.

Because the plants have performed well on their own roots, rootstocks have not been needed.

**Table 1. Pomegranate varieties suitable for growing in Texas**

Variety	Description	Notes
<i>Al-sirin-nar</i>	A vigorous plant; fruit are glossy red with rosy-pink arils; sweet-tart taste	Has produced some of the best yields to date; ripens in late October
<i>Russian 18</i>	Medium to large fruit with bright red skin; very good sweet-tart taste	Cold hardy; adapted over a wide area of Texas; bears at an early age
<i>Salavatski</i>	Large red fruit with reddish arils; tastes typically sweet with a hint of tartness	Good cold hardiness; ripens in mid-October
<i>Spanish Sweet</i>	Produces large red fruit and arils with hard seeds; tastes sweet but very tart	Cold tolerant; very productive; ripens in mid-October
<i>Sumbar</i>	Sweet fruit; soft seeds	Ripens early; has survived very cold winters in Fredericksburg area; potential cold injury problems if planted too far north
<i>Surh Anor</i>	Large fruit with high sugar content; arils are usually alternately clear and red speckled	Consistently productive; ripens in mid-October
<i>Wonderful</i>	Vigorous plant; consistently produces many large fruit	The main commercial variety to date; fruit process well; splitting of the fruit near maturity and lack of cold hardiness have been ongoing problems in Texas

## Site preparation

Well before planting, prepare the ground by killing perennial weeds and grasses and breaking up the soil to reduce compaction.

To enable the plant to establish quickly, remove all other vegetation within a 1- to 2-foot circle of the young tree. Turf-grass can be killed initially with a systemic contact herbicide

## Planting

For best flower and fruit formation, plant pomegranates where they can receive full sun (Fig. 5). Space the plants 12 to 15 feet apart in rows that are 15 to 20 feet apart. Do not overcrowd the plants because the lack of light will reduce growth and production.

If the plants are sold in potting media without soil, rinse most of the media from the root ball so the roots can contact the soil.

Organic mulch or weed barrier fabric can be used to conserve soil moisture and to prevent weed and grass competition.



**Figure 5. A pomegranate planted in full sun.**

## Irrigation

Thoroughly water the plants at planting and again 2 to 4 weeks after planting. Begin a once-a-week schedule when the plants leaf out.

Once the trees are established, water them about every 7 to 10 days. To make watering easier, build up a ring of soil several inches thick and high, a couple of feet in diameter, around the newly planted tree. Then just fill the ring with water as necessary. The ring will settle into the surrounding soil within a few months, by which time the young plant will have become established.

If you use drip irrigation, use one 1-gallon-per-hour emitter per tree for the first year or two; gradually increase to at least four emitters per tree when the plants are 4 to 5 years old.



**Figure 6.** Heart rot.

## Fertilization

After the plant begins growing, fertilize it lightly with nitrogen. Generally, 1 to 2 cups of ammonium sulfate should provide enough nitrogen, especially if it is split into three to four applications.

Use about twice as much fertilizer in the second year and three times as much in the third year. The applications can be split among February, May, and September.

Fertilize established plants as needed to maintain 12 to 18 inches of terminal (end of the stem) growth. For most plantings, the only nutrient you'll need to apply every year is nitrogen. If the plant does not respond to fertilizer and good management—such as watering regularly and controlling weeds well—have the soil tested.

## Pruning

Pomegranates are best grown as bushes. As the plant begins growing, choose three to five suckers or trunks, and remove all the other shoots. You'll need to remove suckers often.

Once the pomegranate tree begins bearing, prune it annually to maintain the major branches, thin out the growth, and remove dead or damaged shoots. Concentrate on removing interior shoots to maintain the major scaffold limbs, which are the primary branches growing from the trunk.

## Weed control

Prevent weeds and grasses from competing with pomegranates by adding mulch made of fabrics or organic material.

## Insects and other pests

Pomegranate leaves can be damaged by whiteflies, thrips, mealybugs, stink bugs, and scale insects. The tree can be defoliated by moth larvae *Euproctis* spp. and *Archyophora dentula*. Termites may infest the trunk.

In some countries, the fruit are covered with paper or plastic bags to protect them from birds, borers, and rodents.

## Diseases

The most serious problem with pomegranate is a fungus that affects the leaves and the fruit, causing the fruit to split and the leaves to drop prematurely. Although the leaf loss may be tolerated, fruit splitting cannot, because it usually occurs just as the fruit begins to mature.

To alleviate the problem, you might try applying copper fungicide in late spring through summer. However, control of the disease is not fully understood.

Another disease, soft rot or heart rot (Fig. 6), is caused by the fungus *Rhizopus arrhizus* and induced by too much rain during bloom and the ripening season. Minor problems are leaf spot and fruit spot, which are also caused by fungi.

## Sun damage

Appearance is important for pomegranates, especially if they are bought primarily for fall decorations such as table arrangements. If the fruit receives too much sun, it can develop sunscald (Fig. 7), roughened rinds, and brown, russeted blemishes. To prevent sun damage, you may need to apply a sunburn material such as kaolinite clay.



**Figure 7.** Pomegranate fruit discolored by sunscald.

## Harvest

The trees produce fruit 3 to 4 years after planting. The fruit ripens about 6 months after bloom, with the best fruit development during hot weather. The fruits mature

in September for early-ripening varieties and continue through October for later ripening ones.

Because the fruit does not ripen after being picked, harvest it only after it has reached full maturity. Fruit that is ready to pick may make a metallic sound when tapped lightly.

To harvest, cut—don't pull—off the fruit as close as possible to the branch to avoid leaving a stem, which could rub and injure other fruit.

As the plant matures, it should produce more fruit. About the fourth year, each tree may produce a crop of 20 to 25 fruits (10 pounds). In the tenth year, production rises to 100 to 150 fruits (50 pounds). In well-managed orchards, the average annual yield may be as much as 200 to 250 fruits, or about 75 pounds, per tree.

Pomegranates are commonly eaten fresh. Some of the new varieties have soft seeds that can be eaten with the fleshy pulp. The fruit juice can be made into a beverage or syrup and can be blended with other juices. An emerging trend in the commercial industry is to sell bags of arils to be eaten fresh.

Pomegranates store best at 40 to 45°F with a relative humidity of 85 percent. They can be stored for up to 3 months.

## For more information

- *Fruit and Nut Disease Control Products for Use in Texas*, Texas A&M AgriLife Extension Bookstore: <https://agrilifebookstore.org/>
- Fruit and Nut Resources, Aggie Horticulture®: <http://aggie-horticulture.tamu.edu/fruit-nut>
- Insect Answers, Texas A&M AgriLife Extension Service: <http://insects.tamu.edu/extension/insctans/>
- *Texas Plant Disease Handbook*, Texas A&M AgriLife Extension Service: <http://plantdiseasehandbook.tamu.edu/>

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