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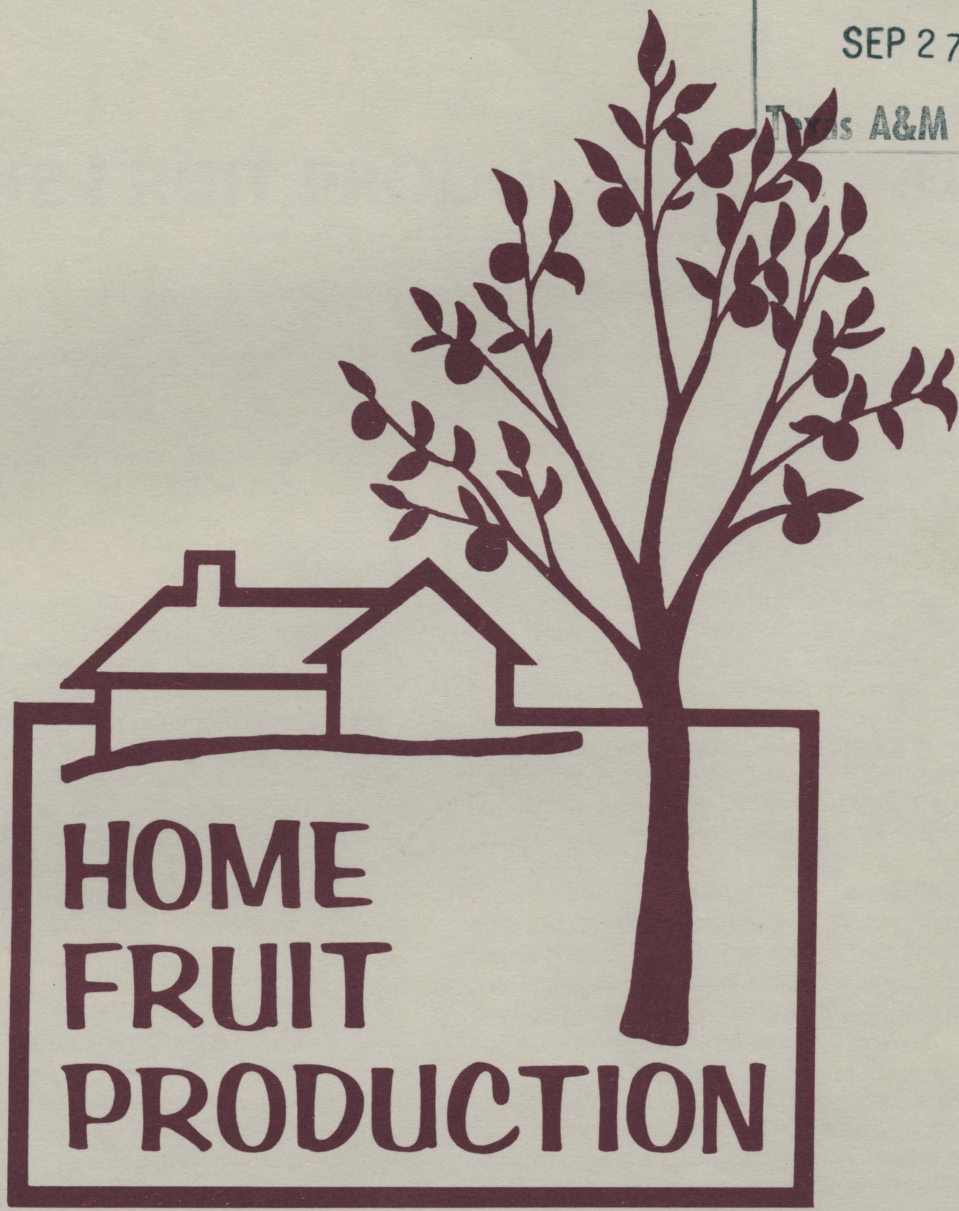
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HOME FRUIT PRODUCTION — FIGS

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Figs have been a part of Texas homesteads since the early development of the state. Dooryard trees can be grown in any section of Texas. Figs grow extremely well along the Texas Gulf Coast. However, trees require cold protection in the far northern and western areas and supplemental irrigation in the state's drier areas.

The fig fruit is unique. Unlike most fruit, in which the edible structure is matured ovary tissue, the fig's edible structure is actually stem tissue. The fig fruit is an inverted flower with both the male and female flower parts enclosed in stem tissue. This structure is known botanically as a syconium. At maturity the interior of the fig contains only the remains of these flower structures, including the small gritty structures commonly called seeds. Actually, these so-called seeds are usually nothing more than unfertilized ovaries that failed to develop, and they impart the resin-like flavor associated with figs.

SITE AND SOIL REQUIREMENTS

Plentiful sunlight is a key to maximizing fruit production. Choose an area that is in the sun most or all of the day. Otherwise, expect reduced performance from the trees. Early morning sun is particularly important to dry dew from the plants, thereby reducing the incidence of diseases.

Good drainage is a more important consideration than soil fertility. Avoid soils and sites where water stands for more than 24 hours after a rain. In areas of poor drainage, roots receive insufficient oxygen and will die, resulting in stunted growth and eventual death of the tree.

FIG TYPES

Four distinct horticultural types of figs are described in this publication.

Caprifig. The Caprifig produces a small non-edible fruit; however, the flowers inside the Caprifig fruit produce pollen. This pollen is essential for fertilizing fruit of the Smyrna and San Pedro types. The pollen is transported from the Caprifig to the pollen-sterile types by a Blastophaga wasp. Commercial growers hang baskets of Blastophaga-infested Caprifigs so that the wasps can effectively fertilize the fruit. Caprifigs were grown successfully at Del Rio before 1901.

Smyrna. The Smyrna fig varieties produce large edible fruit with true seeds. The Blastophaga wasp and Caprifigs are required for normal fruit development. If this fertilization process does not occur, fruit will not develop properly and will fall from the tree. Smyrna-type figs are commonly sold as dried figs.

San Pedro. These figs can bear two crops of fruit in one season—one crop on last season's growth and a second crop on current growth. The first crop, called the Breba crop, is parthenocarpic and does not require pollination. Fruit of the second crop is the Smyrna type and requires pollination from the Caprifig. Breba produces early in the spring on last season's wood. However, the second crop of the Smyrna type may fail to set because of lack of pollination from Blastophaga and Caprifig. This second crop fruit drop discourages homeowners.

Common Fig. These figs develop parthenocarpically without pollination and are by far the most prevalent fig grown in Texas. The fruit does not have true seeds and is primarily produced on current season wood. Varieties recommended for Texas are of Common Fig type.

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VARIETIES

Celeste (Malta). The Celeste fig is small, brown to purple colored and adapted to all areas of Texas. Celeste is the most cold-hardy of all Texas fig varieties. The tree is large, vigorous and very productive. Celeste usually does not have a Breba crop; the main crop ripens in mid-June before the main crop of other Texas fig varieties. Celeste fruit has a tight closed eye which inhibits the entry of the dried fruit beetle. The fruit does not have excessive souring on the tree. Celeste has excellent fresh dessert quality with a rich sweet flavor. It is an excellent processing fig, either frozen or processed as fig preserves. Do not prune mature Celeste trees heavily since this can reduce the crop.

Texas Everbearing (Brown Turkey). Texas Everbearing is a medium sized fig adapted to Central and East Texas. It is the most common variety in Central Texas. The tree is vigorous, very large and productive. The early crop ripens in May; the main crops ripens in late June and continues to ripen into August. The fruit has a short, plump stem and moderately closed eye which reduces fruit souring on the tree. The fruit is nearly seedless and has a mild sweet flavor. Early crop fruit is very large, sometimes 2 inches in diameter.

Alma. Alma is a new common fig variety released by the Texas Agricultural Experiment Station in 1974. Alma resulted from a cross between the female Allison and the male Hamma Caprifig. It is a late season variety with very high fruit quality. The fruit skin is rather unattractive; however, the flesh has an excellent rich, sweet flavor. The tree is moderately vigorous, very productive and comes into production at a very early age. The eye of Alma fruit is sealed with a drop of thick resin that inhibits the entry of the dried fruit beetle, thus reducing on-the-tree fruit souring. Alma is very frost sensitive, especially as a young tree and should be grown no more than 200 miles from the Gulf of Mexico.

Brown Turkey. This variety (Lee's Perpetual, Eastern Brown Turkey, Brunswick, Ramsey, Harrison, Texas Everbearing, Everbearing) has the longest ripening season of the recommended varieties. Although it is not quite as cold hardy as Celeste, it will, if injured by a freeze, produce fair-to-good crops on sucker wood the next season. This is an advantage in areas troubled by late spring frosts. The fruit is medium to large, with a reddish-brown skin tinged with purple. The pulp is reddish-pink and of good quality. It is subject to cracking in wet weather and has a larger eye than Celeste and hence will sour more quickly. The fruit is excellent for making home preserves.

Magnolia. This variety (Madonna, Dalmatia, Brunswick) is the most popular commercial canning fig in the South. It is a weak growing tree with fruit that sours and splits badly during wet weather. Splitting and

souring can be reduced, however, if its fruit is picked just before full maturity and used as preserves. This variety also produces fair-to-good crop on sucker wood the season after freeze injury. The fruit is medium to large with brown skin and light amber pulp. It is prominently swollen at the fruit base with a *very open eye*. Fruiting is spread over a long period if the tree is pruned heavily. Figs will appear on both current and last year's wood, although its fruit crop is usually small. This variety is widely used as a dooryard variety in Texas but because of its splitting and souring problems, it is no longer recommended.

Kodota. This variety (Gentile, White Endich, Dottato) is the commercial fig of California. Varietal trials show it also does well in Texas, particularly in South Texas. The fruit becomes rubbery in drier and hotter areas. The eye is open but it is characteristically filled with a honey-like substance which prevents entry of insects and subsequent souring. Fruiting characteristics are similar to those of Magnolia and Everbearing. It will produce on sucker wood the year after cold injury. The fruit is yellow to green with seeds and amber pulp. The fruit is excellent canned or preserved. Do not plant this variety in drier areas of Texas.

PLANTING

Do not apply fertilizer at planting time. Fig trees survive better if set 2 to 4 inches deeper than they were grown in the nursery. Cut them back when transplanting. This "heading back" develops lateral branches and reduces water loss from the above ground portion. Since the root system may be damaged during transplanting operations, water uptake may be reduced greatly for a short time.

Fig trees planted at the beginning of the dormant season often develop root systems before leafing out in the spring. This can be advantageous; however, young trees are more susceptible to cold injury, and in areas where such damage may occur, it is often advisable to delay transplanting until just before dormancy is broken in late winter.

Young trees to be transplanted should be dug with care to prevent root damage. Inspect trees bought from nurseries to insure that roots are healthy and are not damaged. Remove any broken or dried roots. Dig a hole deeper and wider than necessary for the root system. Place the tree upright at the proper depth. Crumble the soil around the roots, and pack it down several times during the filling operation to bring all roots into contact with moist soil. After planting, water the tree to settle the soil firmly around the roots. If conditions are extremely dry, watering before the hole is completely filled is beneficial.

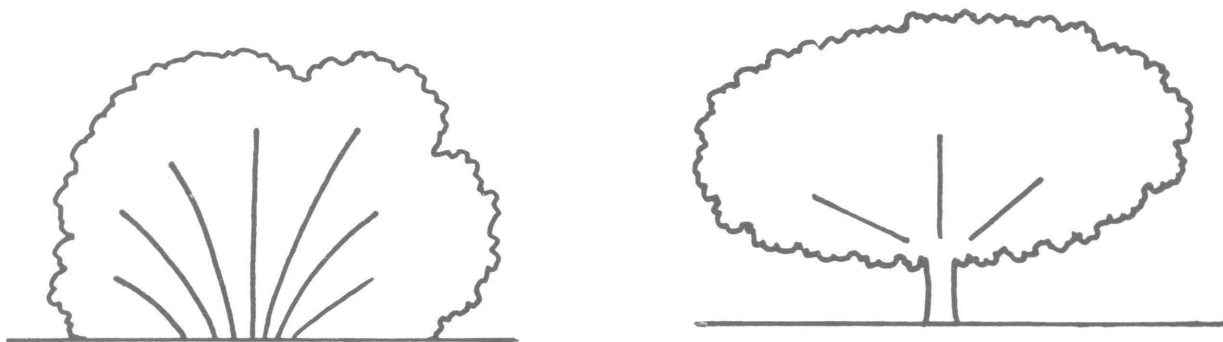


Figure 1. Mature fig trees trained to multi-trunk stool type and a single trunk, open vase type.

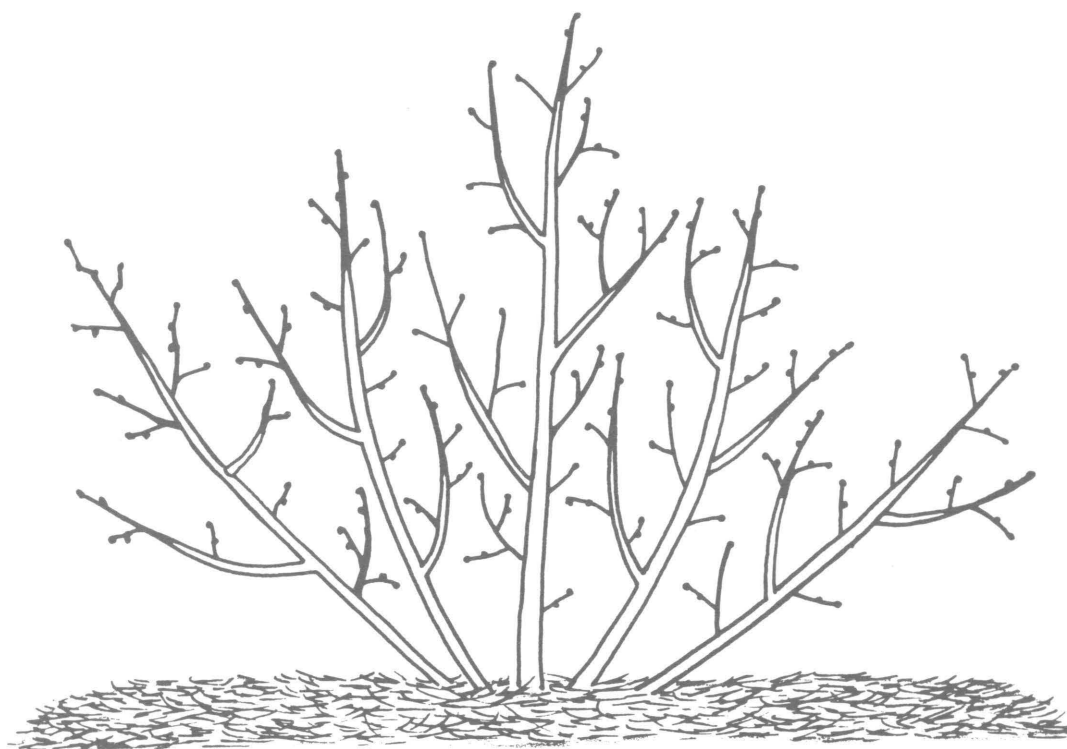


Figure 2. A well-mulched, dormant, mature fig tree. Never apply nitrogen to fig trees after May as this can stimulate late season growth.

TRAINING

Where winters are mild, train fig trees to a single trunk, open vase-type tree. The stool multi-trunk system is by far the most frequently used in Texas. The stool system is common where freezes occasionally kill the upper part of the tree. Figure 1 illustrates the two types of trees.

PRUNING

Normally figs are pruned very little. Do not prune mature Celeste and Alma trees because this reduces the crop size. Texas Everbearing produces a fair crop following heavy winter pruning.

To stimulate new growth thin out older trees which grow very little each year. Thinning also increases fruit size. Prune the trees enough to stimulate approximately 1 foot of growth each year. Remove all weak, diseased or dead limbs each dormant season.

IRRIGATION

Give special attention to soil moisture management in fig culture. Most fig tree roots are close to the soil surface and can easily dry out. Figs are very susceptible to soilborne nematodes that feed on small roots and reduce water movement into the tree. For these reasons, apply water to the trees as drought develops. Slight leaf wilting in the afternoon is a good indication of water stress. Mulching with straw or grass clippings helps maintain uniform soil moisture and reduces weed competition for available soil water.

Water stress frequently causes premature fruit drop of Texas fig varieties which do not have true seeds. This problem is very common in hot, dry areas when the fig tree is grown in shallow soil and roots are nematode infested.

Do not overwater in areas of poor drainage. This forces oxygen out of the soil and the tree is injured or killed.

Good water management, including regular irrigation and mulching, helps maintain tree health and vigor and reduces fruit drop.

Factors influencing a fig tree's susceptibility to cold injury are related to the tree's entrance into dormancy. A mature tree which has lost all of its leaves and becomes totally dormant can withstand much cooler temperatures than a rapidly growing tree at the time of first frost. Reduce irrigations in the fall of the year to reduce growth and encourage the onset of dormancy. A fully dormant fig tree can withstand temperatures as low as 10° F. In North Texas, plant figs along the south side of a building to help reduce freeze damage.

Place straw mulches well over the base of the tree to insulate warm soil temperature during freezes and

prevent killing the crown of the tree. This is illustrated in figure 2.

When trees or limbs freeze, give the tree ample time to grow before removing the frozen limbs; then new wood can be produced.

HARVESTING

For top quality, allow figs to ripen fully on the tree. But, they *must* be picked as they ripen; otherwise, spoilage from the dried fruit beetle can occur. On-the-tree spoilage or souring is caused by microorganisms in the fully ripe fruit. These organisms are usually carried into the open eye of the fig by insects, particularly the dried fruit beetle. Daily harvests and the removal of overripe, spoiled figs can greatly reduce spoilage problems. This is particularly true of varieties which have an open eye.

Use gloves and long sleeves when harvesting figs to prevent skin irritation from the fig latex.

DISEASE CONTROL

Figs in Texas are affected by three major disease problems. The most important is probably the root-knot nematode which is not readily noticed by the average person.

Root-knot nematodes, *Meloidogyne sp.*, are microscopic soil-inhabiting worms which attack the plant's root system. They attack and feed on roots, causing them to swell or gall, thus interfering with normal uptake of water and nutrients. These galls are easily seen if root samples are observed.

Nematode problems may go unnoticed for several years. As a heavy population builds up, the tree loses vigor and declines gradually. Nematodes, in any case, contribute to premature fruit drop. To prevent root-knot nematodes in figs, obtain nematode-free plants and plant in nematode-free soil.

Fig rust is an important fungus disease that attacks the leaves of figs. It is caused by *Physopella fici*. Fig rust first appears as small, yellowish-orange spots on the leaves. These enlarge slightly and may become very numerous as the season progresses.

Rust causes complete defoliation of many trees in the state each year, resulting in ragged-looking trees. In addition, trees defoliated early in the season may initiate new growth which is often susceptible to cold injury. Defoliation usually does not occur early enough to cause fruit loss except in late ripening varieties.

Rust is controlled with neutral copper sprays. One or two applications made in May or early June usually keep trees in fairly good condition until after fruit ripens. In very wet seasons one or two additional applications may be necessary. A good index for spraying is when the first leaves on the tree have reached full size. The second spray should follow in 3 to 4 weeks. It is extreme-

ly important to get good leaf coverage with the spray material.

Fig souring is a constant problem in Texas. The first step in preventing losses attributed to souring is to grow recommended varieties, which have a closed eye, a drooping fruit characteristic and fruit-splitting resistance. Controlling insects and using resistant varieties restrain most fruit souring problems most of the season. Late season infestations may be impracticable to control. *Phymatotrichum omnivorum* is the number one killer of figs in Texas. This organism is a fungus

primarily associated with alkaline soils. This organism kills the roots causing the plant to wither and die in a short time. There is no resistant variety or rootstock. The only control, which is impracticable at best, is to completely recondition the soil before planting. This means completely altering the soil pH in the area with a soil acidifier. This type of control is not permanent however.

Several other minor diseases associated with figs can be found but are a problem only in more humid areas.

COMMON CAUSES OF FRUIT FAILURE

Condition	Probable cause	Suggested remedies
All fruit drops when one-third to two-third full size.	Wrong variety for area (requires pollination)	Destroy tree and replant with recommended variety.
Leaves drop when mature; fruit withers and fails to mature.	Fig rust or other leaf-spot diseases, or a twig blight	Use neutral copper spray. Rake up and burn old leaves.
Fruiting is poor; tree growth is retarded. Roots have knots or galls and are distorted.	Nematode damage, poor soil conditions or excess water	Mulch and keep moisture level adequate.
Fruit fails to mature; leaves are small. Vigorous new wood arises from the base.	Low temperatures have killed some stem tissue.	Cut tree back to ground level and develop a new top from suckers.
Fruit sours and many split.	Unsuitable variety or unusually wet year	If unsuitable variety, replant or pick fruit before maturity and preserve.
Fruit is tough and falls prematurely during hot, dry weather. (Celeste only).	Excessive heat	No control

Other pests - Birds, such as blue jays, mockingbirds and grackles, cause fruit losses each year. There is no suitable control method; however, early morning harvests prevent loss to some extent. Also, there are a number of synthetic nettings available which may be used to cover trees during the ripening season.

Educational programs conducted by the Texas Agricultural Extension Service serve people of all ages regardless of socioeconomic level, race, color, sex, religion, handicap or national origin.

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