The Chinese Jujube

P.M. Lyrene and T.E. Crocker

Scientific Name: *Zizyphus jujube* Lam.

Family: Rhamnaceae (Buckthorn family)

Origin: China

Distribution: Most predominant in China. Grown to a lesser extent in Russia, Western Europe and the southwestern United States. The Indian jujube (*Z. mauritana* L.), a related species, is grown mostly in India but is occasionally planted in South Florida.

Types: The Indian jujube is probably better known in Florida than the Chinese jujube. Indian jujubes are sensitive to frost, produce an inferior quality fruit, and seem to have much less potential in Florida than Chinese jujubes.

Chinese jujubes have been cultivated throughout China for more than 4000 years. Over 400 cultivars have been selected and wild jujubes grow in many parts of China. Chinese jujube seedlings, which are inferior to the Chinese cultivars, were introduced into Europe at the beginning of the Christian era and became widely distributed throughout the Mediterranean region. Seedlings were brought to the United States from Europe in 1837, but it was not until 1908 that some of the improved Chinese selections were introduced into the United States by the U.S. Department of Agriculture. The Chinese cultivars have been tested in California and in the drier areas of the southwestern U.S. where they have been used mainly in dooryard plantings. A few Chinese jujubes were planted in the southeastern U.S. and some of these are now over 50 years old. The information that follows pertains to the Chinese jujube.

### DESCRIPTION

**Tree.** A deciduous, tree reach 40 feet tall, with very hard and strong wood. The tree is graceful and ornamental in appearance.

**Leaves.** Leaves are ovate or oval, 1-2 inches long, and shiny green.

**Flowers.** Flowers are small, approximately, 1/5 inch diameter, white, somewhat fragrant, and produced in large numbers in leaf axils. Flowering period extends over several months from late spring into summer.

**Pollination.** Most jujube cultivars produce some fruit without cross pollination, but reports from California indicate that yields are much higher when two or more different cultivars are planted together. Pollination is done by bees and flies.

**Fruit.** A drupe, varying from round to elongate and from cherry-size to plum-size depending on cultivar. It has a thin, edible skin surrounding whitish flesh of sweet, agreeable flavor. The single hard
stone contains two seeds. The immature fruit is green in color, but mahogany-colored spots appear on the skin as the fruit ripens, and the fully mature fruit is entirely brown. Shortly after becoming fully brown, the crisp fruit begins to soften and wrinkle. The fruit can be eaten after it becomes wrinkled, but most people prefer them during the 3-5 day interval between the first appearance of the brown color and the time when wrinkling begins. The crop ripens non-simultaneously, and fruit can be picked for several weeks from a single tree. Tests in Russia indicate that jujubes are very high in Vitamin C.

PRODUCTION

Jujube trees are very precocious, often producing some fruit the second year from seed or grafting. Jujubes are potentially reliable producers of heavy crops. Older trees in the southwestern U.S. have yielded up to 100 pounds of fruit per year, and an orchard in Oklahoma did not miss a crop in 30 years. Production problems have been reported in several areas, however. In the cooler areas of coastal California and in the northeastern U.S., cropping failures have been due to cool or short summers. Low production may also result from lack of cross pollination or from use of cultivars with low yield potential.

CULTIVARS

China has more than 400 selected jujube cultivars. Eighty-three Chinese jujube varieties were introduced into the U.S. by the U.S. Department of Agriculture by 1914. Several other cultivars were developed in a breeding program in California. Few of these varieties have ever been tested in the eastern U.S., and most are no longer readily available because of the closing of the Plant Introduction Station at Chico, California. Two varieties that have done well in the West and are available from nurseries in California are ‘Li’ and ‘Lang’. A variety known locally as ‘Tigertooth’ has been propagated in Southwest Alabama where it has fruited reliably for many years, and a variety called ‘Leon Burk’ is popular with jujube enthusiasts in South Georgia. Neither ‘Tigertooth’ nor ‘Leon Burk’ is commercially available, but if further tests show them successful, they will probably be propagated and sold by nurseries in North Florida.

RIPENING AND STORAGE

If picked green, jujubes will not ripen. Ripe fruit may be eaten fresh, stored under refrigeration, dried, or candied. Ripe fruit store poorly on the tree, and this, along with the variation in ripening time of various fruits on the same tree and the inability of green fruit to ripen after picking limits the potential of the jujube as a commercial shipping fruit. In North Florida, jujubes usually ripen in late August and September.

CLIMATE

Chinese jujubes are quite cold-hardy and survive winter temperatures below 0°F without apparent injury. They also appear to have a low chilling requirement, at least low enough to do well in North Florida. There could be a problem with inadequate chilling in South Florida, but this has not been determined. Long, hot summers appear necessary for good fruiting.

PROPAGATION

Most Chinese jujube cultivars in the U.S. are grafted or budded onto a thorny rootstock which produces many suckers from the roots. Reports from the Soviet Union indicate that many jujube cultivars root readily by softwood cuttings. Root suckers can be an annoyance with grafted trees and cuttings may be preferable. Little is known, however, about the relative performance of rooted and grafted jujubes. Jujubes also can be propagated from seed if the flowers have been cross pollinated. Seeds from self-pollinations are usually inviable. Jujubes do not come true from seed.

SOILS

Jujubes prefer sandy, well-drained soils. They do poorly in heavy, poorly-drained soil. An outstanding quality of the jujube tree is its tolerance of drought conditions which frequently prevail in soils with low moisture-holding capacity such as Florida sands.

FERTILIZER

Requirements have not been studied, but jujubes appear to do well with little or no fertilization. Light broadcast applications of a balanced fertilizer such as 8-8-8 at 2-month intervals during the growing season would probably speed growth. Do not put fertilizer in the hole when planting trees and do not fertilize
until the roots have had several months to get established.

**SPACING AND PRUNING**

Jujube cultivars vary in size and conformation. After 30 years of growth in an average site, trees of most cultivars will be 40-50 feet tall with a crown diameter of 15-20 feet. For dooryard plantings jujubes should be set 15-20 feet apart. Jujubes require high light intensities for good production and should be planted, if possible, where they will not be heavily shaded by other trees. The effects of pruning have not been studied but unpruned trees seem to do well.

**PESTS**

The Chinese jujube appears to have no serious disease, insect, or nematode pests in the U.S. and no spraying is necessary.

**ASSESSMENT OF POTENTIAL**

Jujubes appear to have considerable potential for dooryard plantings in North and Central Florida for the following reasons: freedom from pests, good adaptation, tolerance for poor soils, ornamental growth habit, precocity of fruiting, ease of propagation and avoidance of spring frost damage by late flowering. Disadvantages of the tree include limited availability of plants, lack of information on cultivar performance and the fact that planting a tree whose fruit one has never tasted necessarily entails some risk of disappointment.