

rich loam, containing a considerable percentage of lime, in order to produce superior figs. A moderate proportion of gravel tends to keep the soil warm and is desirable, but the soil must be rich.

#### PROPAGATION.

The fig tree is easily propagated by the methods commonly practiced with fruit trees. It may be budded or grafted, but is most readily grown from cuttings. These may be planted where the trees are to stand or rooted in the nursery rows and transplanted later to the orchard site. Which method is advisable for any particular site depends upon the conditions there. If the soil and climatic conditions of the proposed location are favorable to the uninterrupted growth of cuttings, it is better and cheaper to plant them directly in the field. If there is any doubt on these points, or if the proper care and attention can not be given them, the better plan is to plant trees with good roots and well-formed heads, grown under favorable conditions by a nurseryman. The best time for making cuttings is after the leaves have fallen, when the fig tree is comparatively dormant. Cuttings may be made of either one year or two year old wood. If the cuttings are to be planted where they can remain, 2-year-old wood is preferable, as longer cuttings can be secured, but if they are to be planted in nursery, yearling wood is best. In either case the wood when freshly cut should disclose a moist surface, covered with small, whitish, milky drops. If dry when cut, it should be discarded. The length of the cutting must be regulated by the condition of the soil. If this is moist and likely to remain so the cuttings may be 12 to 18 inches long. If the surface soil is dry, the cutting should be sufficiently long to have its lower end in moist soil. On very dry soils this may require a cutting 3 or 4 feet in length, though such long cuttings are rarely needed, and in no case except when they are to be planted directly in the orchard. In making the cuttings care should be observed that the lower cut be made just below a joint or node and the upper one just above a joint. The best cutting is one which terminates in a bud and has a smooth, clean cut just below a joint at its base. No matter what the length of the cutting, it should always be planted so deeply that but one joint protrudes above the surface of the soil. This will prevent the drying out of the cutting by the action of sun and wind. It is better to have the top bud covered with earth than to leave a high stump projecting above the surface.

Fig trees may be grown from single eyes or short tips, in boxes filled with moist sand, set in frames and covered with cloth to keep the soil moist and cool. These will make fine trees in time, but they generally require to be a year older than those grown from large cuttings before they are suitable for planting in orchard. Great care should be exercised in removing fig cuttings or plants from one place to another. They dry out readily and a few moments' exposure to the sun or hot, dry wind will seriously damage them. They should never be allowed

to become dry, and should be wrapped in wet sacks or cloths as soon as taken from the trees or from the propagating bed. Cuttings partially dry may be revived by soaking in water, but fig roots once dry are dead and incapable of restoration to life.

#### SEEDLINGS.

Seedling figs are easily grown from seeds of imported Smyrna figs. These Smyrna figs always possess germinable seeds, as they have been pollinated. It is quite safe to say that any seedling fig so far recorded in this country has originated from seeds of Smyrna figs imported from Asia Minor. The seeds of our common figs are mere shells without germs, and will of course fail to grow. The percentage of trees producing fruit of high quality among seedlings grown from Smyrna figs is very small, however, and a commercial orchard planted with such seedlings would be a failure. The grower may now and then produce a variety which will repay his efforts, and such variety can be propagated for general planting.

#### BUDDING AND GRAFTING.

The fig may be propagated by shield budding, provided the work is done at the proper time. That time is winter, when the tree is as near dormant as it can be found. Budding is rarely resorted to, however, as it is an uncertain method when done by persons without skill. Grafting the fig is successfully practiced in California by a method invented by Mr. John Rock. It is the only method of fig grafting that has proved reliable, practical, and of real value there. By means of it, new varieties are brought into heavy bearing within three years after grafting on old trees. In addition to this saving of time, the usual advantages resulting from grafting, such as better and stronger stock, more vigorous growth, etc., may also be attained.

The best time for grafting the fig is autumn or winter, when the sap is most sluggish. Late spring grafting is less successful. The best scions are made of 2-year-old wood. The sloping end of the scion must be wedge-shape, tapering from front to back as well as from the top of the cut to the bottom. But one surface of the wedge should show the pith, and this surface should face toward the center of the stock when the scion is set. Incipient fruit buds should be cut away without injuring the scion. The scion should be so placed that the broad side of the wedge will be outside and the narrow edge toward the center of the stock.

For the stock, any limb from 2 to 4 inches in diameter may be used. This should be cut off squarely at the point to be grafted. A downward cut should then be made with a chisel, in such a way that it shall be tangential to the circular stub. It must not pass through the pith of the stub. The cut should run somewhat obliquely downward and outward, in order that the stock may not be split. The scion, which is

about 3 or 4 inches long, must, when inserted, form an angle with the long diameter [pith] of the stock branch on which it is grafted.

It is best to place two scions on each branch grafted. These should be on opposite sides of the stub and they should lean slightly toward each other. The exposed surfaces of the stock and scion should then be heavily waxed and the scions should be held in place by binding with cord or other material. It is best to place a large number of scions on one tree. Four or five branches may be cut off and grafted, but one or two should be left uncut for a year to draw the sap. A large stake should be driven into the ground near each branch grafted, and when the scions have started the new growth should be secured to the stakes to prevent them from breaking off. The trunk and main limbs of the fig tree should be covered with bundles of straw to prevent sunburn. The after-treatment of the new growth is similar to that required in the grafting of other fruit trees. The new growth is strong and rapid and the connection with the stock perfect. Ninety per cent of the grafts may be readily made to grow.

#### PLANTING.

The proper distance to be given fig trees in the orchard depends upon the size and habit of the variety to be planted. The smaller kinds require 25 feet; the larger ones should be 50 feet apart in every direction. Sometimes other fruit trees are planted between the figs and allowed to remain until the latter become so large that they require the entire space. The fig tree requires an abundance of air and sunshine to mature its fruit, and it is therefore absolutely necessary that the trees be so arranged that they shall not shade one another. After the distance is decided, the laying out and planting require the same general skill, labor, and methods used in planting other permanent orchards. A few points in planting are peculiar to the fig, however, and require special consideration.

#### DOUBLE TREES.

Trees may be set singly, as standards, in the way commonly practiced with other fruit trees, or they may be set "double"—that is, two trees planted together in one hole and allowed to remain. The latter method has not heretofore been advocated in this country but is worthy of thorough trial. The method consists in planting two long cuttings, about 12 inches apart, in the same hole, allowing them to protrude from the ground a few inches. Both are allowed to grow and the two are treated as a single tree with two stems or standards. The object sought is to produce two distinct stems or trunks, in order that the splitting down of branches may be prevented. In this way trees with low, sloping branches, having their main trunks leaning outward, will be formed and it will be impossible for the trunks, the main branches, or the