# PRUNING THE VINEYARD

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## Success in Commercial Grape Production Depends Almost Entirely on the Careful Training and Pruning of the Young Vineyard

Because of the large acreage of grapes, especially the early varieties, that has recently been planted in Arizona, it is of great importance that the vineyards should be properly cared for. Careful pruning is of first importance where heavy production and fine quality of grapes are to be produced.

Methods of pruning grape vines differ according to the variety, the climatic and soil conditions, and the purpose for which the fruit is grown. The long growing season in Arizona, under favorable conditions, causes a vigorous vine growth which must be considered in pruning.

In Arizona the biggest percentage of the crop is marketed as fresh fruit, and this necessitates pruning methods which will allow the bunches to develope without obstruction or too much exposure to the sun. The fruit must be kept off of the ground, and in such a position to be easily harvested.

FIG. 1.—VIGOROUS THOMPSON'S SEEDLESS VINE THE SECOND WINTER AFTER PLANTING, BEFORE PRUNING.

Pruning must be done both winter and summer. Most of the pruning is done during the dormant period. This is considered to extend from the time the leaves fall until growth starts in the spring. Sufficient time should be allowed, after the vine enters the dormant period, for plant food in the canes to be accumulated in the roots as reserve food. Early pruning also causes vines to begin growth earlier in the spring. A good time to prune is from the middle of December to the middle of February. Where there is danger of late frosts pruning should be delayed to a later date.

Summer pruning consists chiefly of directing vine growth the first years by disbudding, thinning small shoots, pinching, topping, removing suckers and water sprouts. Mature leaves should not be removed from the vine when it can be avoided as they elaborate plant food which is used by other parts of the plant. Suckers and side shoots rob the plant of this food. Pruning should not be done immediately before or at blossoming time.

The quality and quantity of the crop and the vigor of the vine is greatly influenced by the amount of fruit wood left after pruning. Leaving fewer fruit buds will increase the size of the bunches and berries, but if carried too far the yield will be reduced and excessive wood growth results. Too many fruit buds left on a vine will result in inferior fruit. Weak vines must be pruned heavily in order to direct their energy into vine growth. The pruner should observe the character of the vine in order to get the proper balance between fruit production and wood growth.

It is important to have the vines high headed, and in long pruning they must be supported for several years. For some forms of half-long pruning the support must be permanent. All young vines require staking. For this purpose building lath is satisfactory. For permanent stakes, split redwood, 2x2-inch is good. The stakes should be two or three inches higher than the head of the vine. They should be driven into the ground deep enough to make a good strong support. Four foot stakes are commonly used for such varieties as the Malaga. For trellising two or three wires are stretched along the row and held at either end with heavy, well braced posts. The intermediate posts may be lighter. Heavy wire, not less than No. 10 or No. 11 should be used for the first wire, and not less than No. 12 should be used for the second and third. It is best to leave the staples slightly loose so that the wire can work back and forth and distribute the weight of the vines along the trellis. Two, or possibly three, vines should grow between the posts. The first wire is to support the fruit and the second to support the shoots.

In pruning young vines the first year is given to securing a vigorous root system, and the second year the aim should be to produce a strong, straight trunk. During the first growing season no pruning should be done, and the young vine should be allowed to sprawl over the ground. Some of the vines may be strong enough to train them the first growing season, but it is usually not well to do so for the vine will be held back in its growth, and a cane that has begun to grow in a horizontal position cannot be brought up to a stake without danger of injury. There will also be a lack of uniformity since all vines will not be vigorous enough to be trained the first season. During the second growing season the young vines will require frequent attention,

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for if vines are neglected at this stage it is difficult to shape them properly later. Early in the season a number of shoots will start from each vine; when these have grown from four to six inches all except one which will make a straight trunk and not be easily broken off, are removed. When this shoot is about twelve inches high it should be tied to the stake. Let the shoot grow about twelve to fifteen inches above the point where head is to be formed, then cut back to the desired height. Make this cut through the node above the top bud. The vine can then be tied securely to the stake above the bud without danger of injury. All suckers must be kept rubbed off. Thompson's Seedless is cut back to about twenty-four to twenty-six inches and the Malaga twenty-four to twenty-eight inches. After topping the shoot selected for a permanent trunk, side shoots will be forced out at practically every bud. Keep the laterals on the lower half of the trunk pinched back to about eight or ten inches. The laterals on the upper half of the stem are allowed to grow without tipping.

Fig. 1 shows a Thompson's Seedless vine at the end of the second growing season before any pruning has been done. Fig. 2 shows this vine correctly pruned for fruit production. Fig. 3 shows the resulting crop. The fruiting shoots of Thompson's Seedless are on the other shoots of the canes beyond the first two or three buds. For this reason it is necessary to leave the fruit canes long, as there must be from twelve to eighteen buds. Canes of this length require the support of a trellis. The first wire should be about thirty inches from the ground and forty-eight inches from the second. The second winter pruning should consist of removing all laterals on the trunk except four near the top. For vigorous vines, the two upper laterals are left as fruit canes, and the lower two are left as renewal spurs. This is shown very clearly in Fig. 2, where both the fruit canes and renewal spurs are plainly shown. Weaker vines should be pruned more closely, and very weak vines should be cut back to two buds near the ground and retrained the following summer. During the third summer all shoots and suckers on the lower half of the trunk should be kept removed. No other pruning is necessary. Vines at this age, if properly cared for, should produce from fifteen to twenty pounds of grapes.

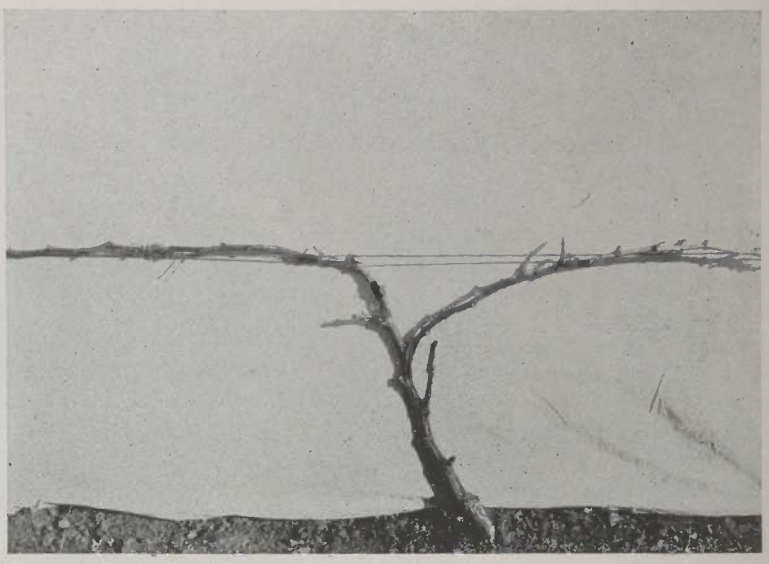

FIG. 2.—THE SAME VINE SHOWN IN FIG. 1 AFTER PRUNING. FRUITING CANES ALONG WIRE WITH SHORT RENEWAL SPURS BELOW.

The third winter pruning consists of removing the old fruit canes which bore the last summer's crop, and replacing with renewal spurs left the previous winter. The selected fruit canes are cut back to two and one-half to four feet, depending upon the vigor of the vine. All of the remaining canes are removed except four to six, which are cut back to one or two buds for renewal spurs. Renewal spurs form permanent arms and should be selected with care. Whenever possible, the renewal spurs should be below the fruit canes. With the older vines the spurs are selected near the trunk to prevent a wide, spreading head.

The Malaga variety requires different methods of pruning from the Thompson's Seedless. It produces its fruiting shoots near the base of the canes, and is well adapted to the "half-long" method of pruning. This means that the fruit canes are shortened to four or five buds; each fruit cane is accompanied by a renewal spur. In training to the high-head vase form, it must have a high trunk with arms evenly and symetrically distributed on all sides of the vine. Pruning consists of removing all laterials except three or four near the top, and shortening these to three or four buds. An internode should be left near the top in order that the vine may be tied to the stake. Two additional ties are needed along the trunk. During the summer, lateral shoots and suckers should be removed. Go over the vineyard two or three times. The succeeding winter prun-

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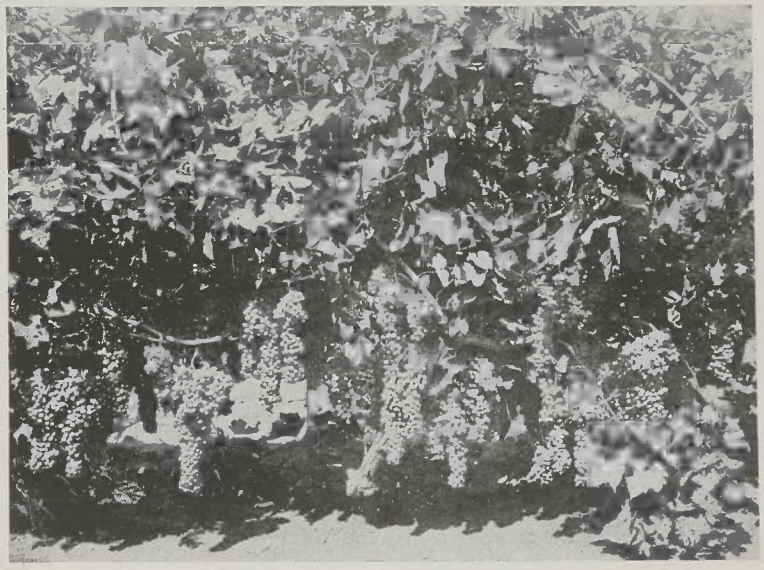

FIG. 3.—THE SAME VINE SHOWN IN FIG. 2 AFTER FRUIT HAS DEVELOPED.

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ing should consist of removing all canes excepting six to twelve canes which are divided between fruiting canes with four or five buds, and renewal spurs shortened to one or two buds. These should be symmetrically located to preserve the shape of the head.

The unilateral cordon method of pruning consists of training a single shoot along the lower wire of the trellis to form a permanent trunk from which arms are developed. The shoot selected for the permanent trunk is tied to the stake and headed in a manner previously described for young vines. Only one lateral is allowed to develop. This lateral should be located four to six inches below the bottom wire. Pinch back all other laterals forcing this to rapid growth; when long enough tie to the wire. If secondary laterals are too vigorous they should be tipped. This is the most sucessful method of forming the trunk. At the end of the second summer the vine should consist of a single trunk following along the lower wire to the next vine, and having a number of laterals. Pruning consists of removing all laterals below the end of the trunk, and shortening those beyond the curve to one or two buds. The next spring those shoots suitably placed for permanent arms should be allowed to develop. It is best to have them twelve to fifteen inches apart on the upper side of the cane. They should be tied to the wire above to prevent bending of the cane. Keep all other shoots rubbed off as they appear. Tip any extra vigorous shoots.

Later pruning consists of cutting back the canes developed the previous summer to four or five buds, and shortening the secondary laterals to one or two buds. Keep one or two shortened fruit canes tied to the second wire. By the forth winter the cordon should be completely formed and a permanent system adopted. This consists of leaving as many fruit canes as the vigor of the vine will allow, and shortening these to four or five buds, each accompanied by a renewal spur. A similar system of pruning as that which applies to Malaga is also satisfactory for the following common varieties: Tokay, Mission, Zinfandel, Black Morocco, White Muscat, and Black Muscat.

There are a number of systems which are used in pruning the Concord but all require a trellis. The Kniffin system is recommended. This consists of forming a double head on a trellis, one on the first wire and the other on the second wire. The young vine is headed in a manner previously described. Pruning in the second winter, all laterals except three near the top, which are cut back to two buds, are removed. Two of these spurs are used to form permanent arms along the first wire from which fruit canes are developed. The third spur produces a strong cane which is carried to the top wire the following winter and shortened to form the second head. The treatment of the bearing vine is practically the same as that for the Thompson's Seedless in which the fruit canes are renewed every year. The usual practice is to leave four fruit canes, two on the first wire and two on the second wire each accompanied by a renewal spur. This system of pruning is well adapted to all American grapes, including the Concord, Worden, Niagara, and Catawba.