

# Field Budding

## AND THE CARE OF THE BUDDED GRAPEVINE

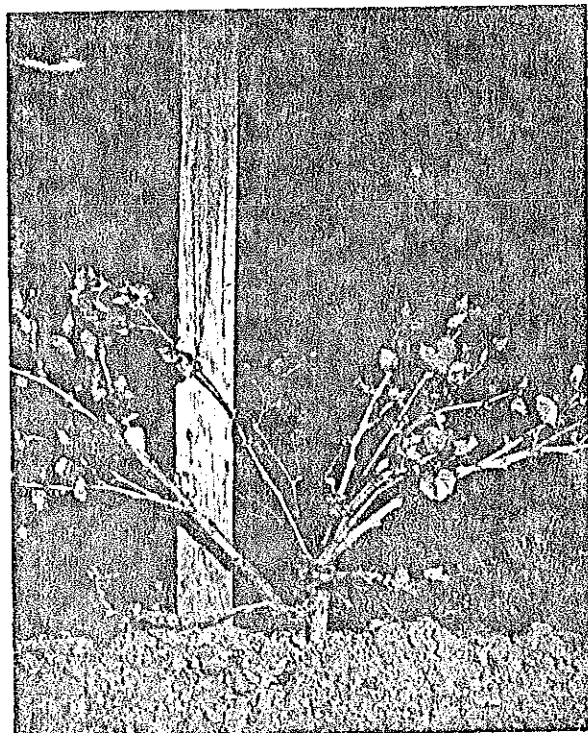
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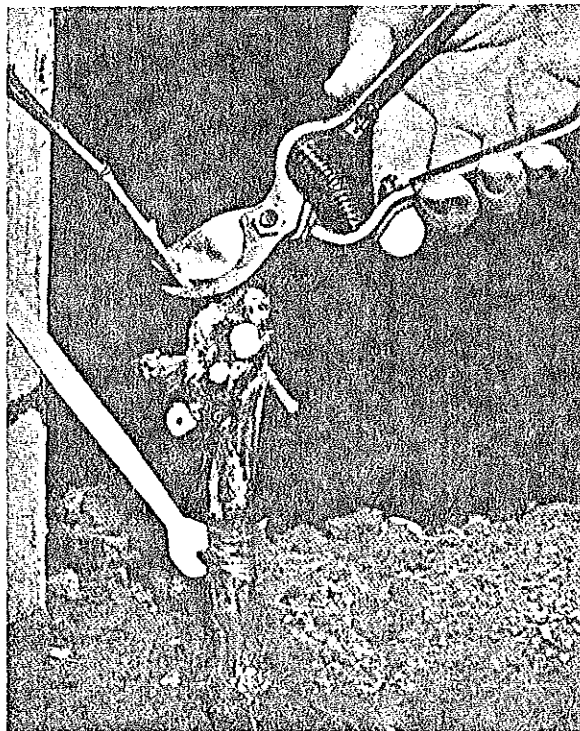
**I**N RECENT YEARS, California vine growers increasingly have been planting grape rootstocks resistant to root-infesting pests, principally the grape phylloxera (*Phylloxera vitifoliae* Fitch) and several strains and species of plant-parasitic nematodes of which the root-knot nematodes (*Meloidogyne* spp.) are the most serious on grape. Today, nearly 20 per cent—some 80,000 acres—of the state's vine acreage is on rootstocks. As the old, low-producing vineyards in the established districts are being replanted, the need increases for stocks resistant to soil pests common to the old plantings. As we learn more about the distribution and behavior of these pests in California vineyards, we are able to furnish interested growers with more information about techniques by which the scion varieties can be grafted onto resistant rootstocks.

### PROPAGATION METHODS

SEVERAL METHODS are available for establishing vineyards propagated onto rootstocks. Perhaps the easiest is planting one-year-old bench grafts, but they are expensive and you may not be able to get the variety you want. A second vine-propagation method is to graft the rootstock in the spring after it has been established in the vineyard. Depending upon the diameter of the trunk of the rootstock, you may use one of several types of springtime grafts. The long whip is perhaps best for small vines—up to  $\frac{3}{4}$  inch in diameter; and the cleft graft for larger vines. In either case, however, the top of the rootstock is removed at the time the scion is placed; if the graft is not successful, the rootstock itself is lost.



1. **THE SPRING CARE OF BUDS.**  
When buds on the rootstock top growth begin to burst, uncover and inspect the buds.



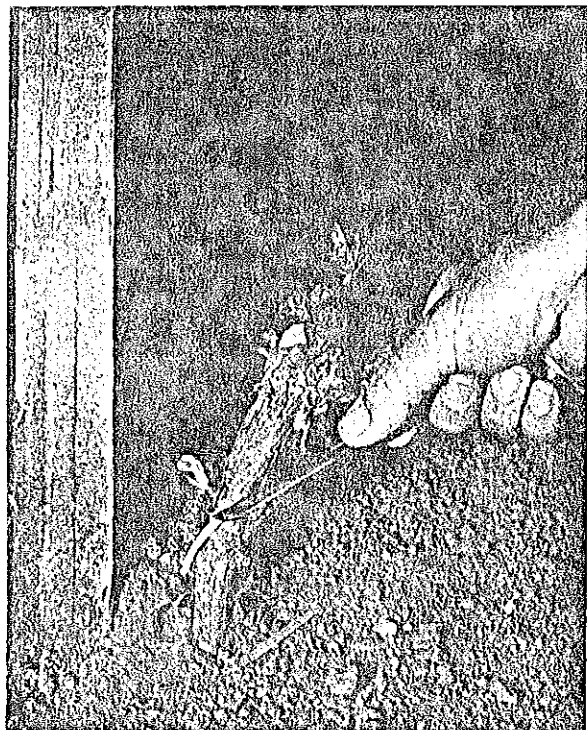
2. Cut all canes back to basal buds on the stock.

Field budding is presently the most popular method in California for joining the scion and rootstock. The scion bud can be put in place on the stock as early as mature scion buds can be obtained and must be placed before the stocks have gone dormant. Generally, budding is done during August in the cooler districts and on non-irrigated soils, and in September or even later in the warm, irrigated districts.

The budding is usually done by an experienced professional budder but it is your task to prepare the rootstock vine for budding. You must also see to it that the shoot developing from the scion bud is trained so that it will grow into a well formed, profitable grafted grapevine. Sufficient detailed care must be given to each vine to insure that the vineyard as a whole will be uniform and productive.

The essential steps in managing the young field-budded vineyard are as follows:

- Selection of planting stock, its planting and care before budding.
- The budding operation, and care of the vines during the fall.
- Spring care of the buds.
- Training and developing the young grafted vine.



3. About one week later, when the bud begins to develop noticeably, cut the budding rubber.

## SELECTION AND CARE OF THE PLANTING STOCK

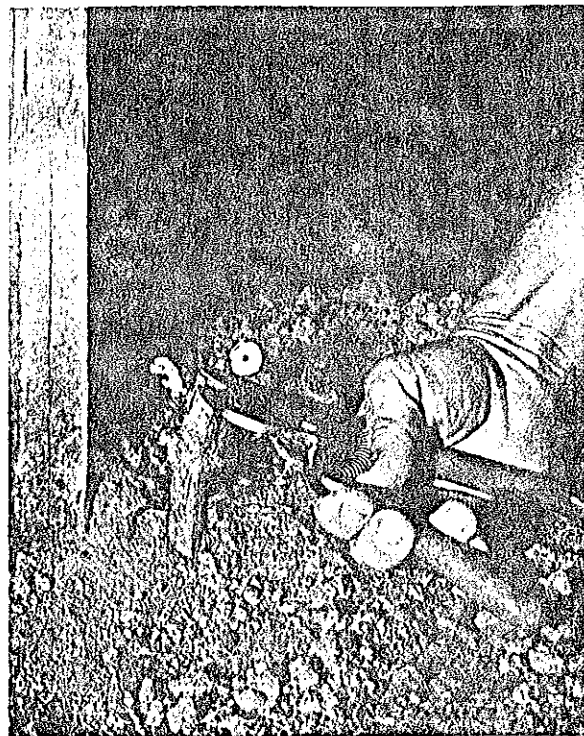
To produce a profitable, mature, grafted vineyard, you need strong, well developed rootings, of the rootstock variety proper for your soil type and root pests. With proper care these rootings will develop into sturdy vines, that will be most receptive to the scion buds at budding time.

Rootstock rootings should be made from cuttings 16 to 18 inches long, so the rooted stock can be planted in the vineyard with 3 or 4 inches of the trunk above ground. This makes it possible to place the bud below the rootstock top but above ground level.

The rootstocks should be *thoroughly disbudded* before planting. This is done most easily on the cuttings of the stock before rooting them in the nursery. *All buds except the top bud of the cutting should be carefully and completely removed.* Such disbudding is essential to avoid future growth of rootstock suckers and, contrary to common belief, does not reduce rooting ability of the rootstock.

Use only strong rootstock rootings for vineyard planting. Direct planting of cuttings is not advisable, as stock cuttings strike roots with greater difficulty than most fruiting varieties, and poor stands result if cuttings are set directly into the field.

Plant the stock rooting with its top 3 to 4 inches



4. Cut the stock back to 1 inch above the bud.

above the permanent surface of the soil. This permits placing the bud slightly above ground level to discourage development of scion roots at or above the graft union. Cover the entire plant to a depth of 3 or 4 inches with a mound of loose moist soil which, if maintained through the summer, will prevent drying or sunburning of the trunk in the graft area.

Stake the vineyard before planting the root-stocks. This will permit proper placement of the stock with respect to the stake and will avoid possible damage while driving stakes later. Trellising, if desired, can be done at any time between budding and the following spring.

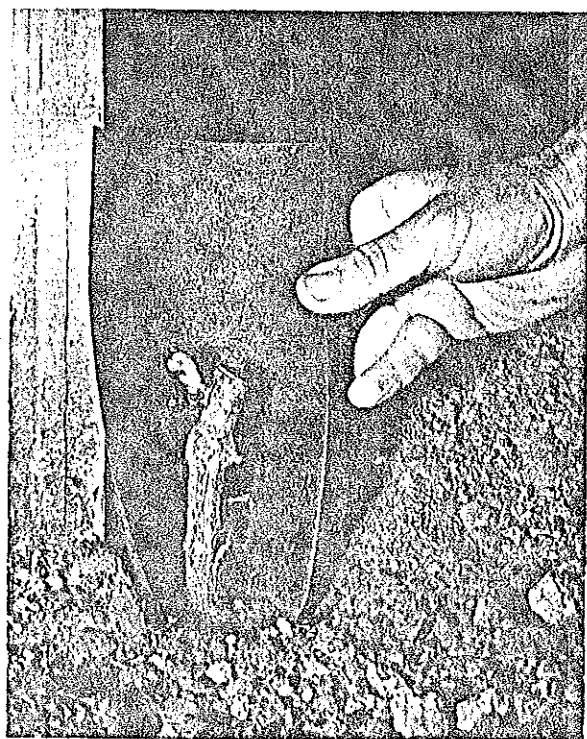
No special vine care need be given to the stocks during the first spring in the vineyard; just practice normal cultivation, and disease and pest control. Irrigate as needed, but not after budding; allow stocks to enter dormancy normally so their wood will be well matured.

## THE BUDDING OPERATION

BUDDING IS DONE in August or early September, generally as soon as you can obtain mature buds of the desired scion variety. In hot districts where high temperatures after budding might cause scions to start growth, delay budding until late September or even October. Under no circumstances allow the stocks to dry out or cease active growth before the budding operation is completed; a shallow irrigation late in August can effectively prevent this.

Usually the bud is placed by a professional budder, using a special form of chip bud. The scion bud is removed from the cane, or bud-stick, by making two cuts. One cut starts in the leaf scar just below the bud and slopes downward through the cane at an angle of about 45°. The second cut begins about  $\frac{3}{8}$  to  $\frac{1}{2}$  inch above the bud, and travels at a slight angle with the length of the bud-stick and beneath the bud until it meets the first cut; thus, a wedge-shaped chip of wood containing the scion bud is removed. A smooth place on the trunk of the stock above ground level and on the side facing the stake is then selected, and a notch, similar in dimensions to or slightly larger than the bud chip, is cut into the stock at this position. The angle made by the two cuts on the stock is slightly more acute than that made by the two cuts on the bud-stick. When the bud-chip is inserted into position in this notch on the stock, a close fit is obtained and the cambium of the scion will make intimate contact with that of the stock at the base of this notch. The bud is then tied securely by several wraps of budding rubber above and then below. Finally, it is covered with 6 to 8 inches of well-pulverized soil, preferably moist.

There should be sufficient soil moisture immediately following budding to keep the leaves of the stock functioning normally. During this time callus tissue will form and the union between the stock and the scion bud will be initiated. If the soil is dry, cut the green top of the stock back 25 to 50 per cent to help insure callusing of scion and stock.



5. Place paper sleeve around the vine.



6. Ten days later the scion shows vigorous growth and well developed union.

Mature or "ripe" scion buds are extremely important for a successful budding operation; buds from green canes or green portions of canes will not callus in. As summer progresses, the green shoot growth on the vines from which budwood is to be taken begins to harden and mature. When maturing canes become a light-brown bark color, and buds appear plump, the wood is ready for budding. At full maturity, bark over the nodes and on the tendrils opposite the buds will be uniformly brown. As you gather budsticks, remove their leaves and keep the sticks cool, fresh and moist in wet burlap or other suitable material.

Even though a professional budder is employed, you must still supervise his work and control the general budding program. This includes:

- Obtaining healthy, ripe buds of the proper scion variety, from carefully selected and marked vines chosen by personal inspection of vines in the spring and summer before gathering the scion buds. (Avoid blocks of mixed varieties, and varieties from areas having diseases.)
- Placing buds on the stocks at the proper level in relation to the ground, and on the proper side of the vine in relation to the stake.
- Designating the *time* of budding and depth to which the buds are to be covered, and achieving proper condition and moistness of the soil.
- Caring for the stocks after budding.

## SPRING CARE OF BUDS

WHEN THE FIRST buds on the budded rootstock vines burst in the spring, carefully remove the mound of soil around each plant and examine the scion buds. Do not delay the uncovering of the buds or they may have pushed out into the surrounding soil and be damaged. On this first trip through the vineyard, cut the cane growth on all rootstocks back to basal buds. Uncovering the scion buds (which allows them to warm) and cutting back of the stocks will tend to stimulate growth of scion buds. If you find that the buds at this time are green and turgid but not "pushing," cover them again carefully with 1 to 2 inches of loose, moist, pulverized soil. The budding rubber *can* be cut now, but it is best to leave it in place until active growth of bud begins.

When the bud starts to show active elongation or is pushing noticeably, cut the budding rubber below the bud. If the developing bud is well united with the stock, cut the stock back to about 1 inch above the bud. This removes all buds of the stock and confines future shoot growth of the vine to the scion bud.

At this time protect the developing scion shoot by covering with loose, moist soil up to or slightly above the point of union with the stock. Place a paper sleeve 2 or 3 inches in diameter and about 9 inches long over the end of the stock, enclosing the scion bud (sleeve can be of light-weight asphalt building paper or similar material). Set the sleeve into the ground 2 or 3 inches below the union; hold sleeve in place by banking loose soil firmly around the bottom to a height of 3 or 4 inches.

The use of this protective paper sleeve has several advantages. It directs the developing green shoot of the scion upward along the stake, causing it to form a uniform, vertical trunk for the new vine; it protects the young bud from early pest damage; it affords some early-frost protection for the portion of the shoot in the sleeve; and it prevents wind breakage of the tender scion shoot until the shoot has grown enough to be tied to the stake.

Visit the vines in the planting about once each week. Examine each individual scion bud for signs of growth, as bud push greatly varies in vineyards. Scion buds which fail to break dormancy can frequently be induced to grow by "suckering" the rootstock top (removing all new green growth) during successive visits to the vines.

If the scion bud fails to grow, or if a weak, imperfect union develops, cut the budding rubber and allow shoots on the stock to grow. These stocks can then be topworked by grafting or allowed to grow for rebudding the following summer. How to work these "misses" largely depends on the amount of growth expected from the stocks during the summer. In hot districts with long growing seasons, stock trunks will become too large for easy budding during this second season. In such cases, spring graft the stocks immediately after you note the bud failure. In cooler, nonirrigated areas, leave unbudded stocks for rebudding the following summer.

Considerable experience is needed to readily determine imperfect unions early in the spring. Properly disbudded rootstock rootings will grow only from their own top, or from the scion buds placed upon them. If the top of the stock is cut back prematurely and the scion bud fails, the root system of the stock is lost also, and it will be necessary to replant the stock and repeat the entire budding operation. To avoid this, examine the developing buds carefully once a week, and cut no stock back until you are certain of a strong union and the bud is actually pushing. Once the stock is cut back, carefully protect the scion by tying shoot growth securely to the stake at frequent intervals as it develops.

## TRAINING AND DEVELOPING THE YOUNG GRAFTED VINE

AS A RULE, more than one shoot will develop from the scion bud. As soon as green shoots have grown up through the paper sleeve, tie the most vigorous shoot securely to the stake. Then open the sleeve and remove other shoots by carefully *cutting* them at their bases; be extremely careful in this operation to avoid damage to the bud union. Make successive ties as the shoot grows up the stake. To assure a uniform, straight trunk for the new vine, space these ties close enough to fully support the weight of the developing top without bending of the limber shoot growth below—ties every 6 to 8 inches up the stake are usually sufficient. Repeated and secure tying will also reduce strain on the developing union when the top is moved or twisted by the wind.

During the second summer after budding, the permanent trunk of the vine can be formed and the proper height of the head established. Which training process you select during this period will depend upon the variety of grape and the permanent form of vine you desire. Open the paper sleeve once during the summer, examine the union, remove any scion roots that are present, and also any suckers that have grown from rootstocks that were not completely disbudded. If suckers arise from below the ground level, dig them out and cut them back flush with the trunk of the stock.

During the following 3 or 4 years, inspect the unions of the developing young vines annually (most conveniently at pruning time) and remove other scion roots or rootstock suckers which have grown.

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