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how to grow
grapes
in the home garden



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how to grow **GRAPES** in the home garden

GRAPES are one of our most popular fruits, are reasonably easy to grow, and are adapted to good sites in every part of the state.

Since Colonial times grapes have been a part of the home garden. The fruit itself is a favorite for jams, jellies, and juice as well as for fresh fruit. The grape arbor, too, is valuable for its ornamental value. Grapes make excellent shade and are useful as a screen to shut off unsightly landscapes.

The prospective grower must provide adequate space for the development of the vine. He must keep in mind that the life span of a grape vine is probably 30 years or more. He also must be prepared among other things to control adequately insects and diseases, practice annual pruning, and give attention to good soil management and fertilizer practices.

Selecting Varieties

Varieties of grapes have not changed greatly through the years. Many of the old stand-bys are still the best adapted varieties to Ohio conditions. Since most grapes are self-fruitful, no provision need be made for cross-pollination.

The following list of grape varieties and a brief description of each may be helpful in selecting the varieties to grow.

Fredonia (Blue)—Fruit is similar to Concord but ripens a week or so earlier. Vines are hardy, relatively easy to grow, and highly productive with large compact clusters.

Niagara (White)—This is the leading white grape in Ohio. Bunches are large, berries are of good size and excellent quality; and the vines are vigorous and hardy.

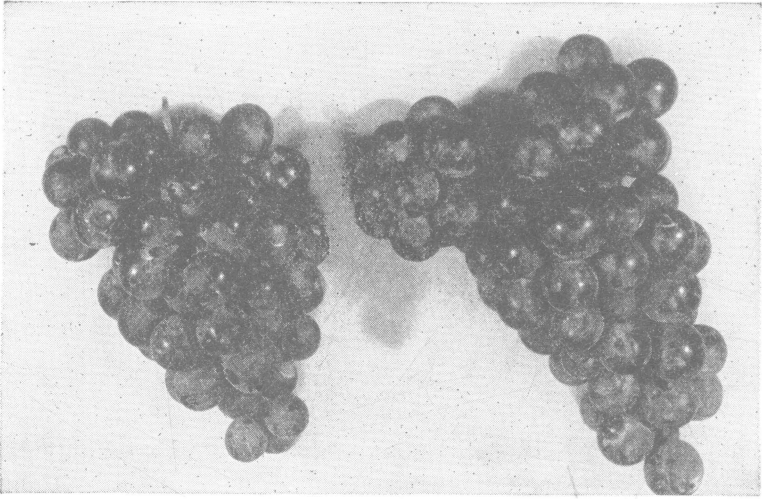


Fig. 1.—Concord, the standard blue grape of Ohio.

Concord (Blue)—The most widely planted grape in Ohio. It is very hardy, highly productive; and the berries are firm and good for table use and excellent for juice.

Delaware (Red)—The bunches and berries are small, but the fruit has excellent dessert and juice qualities. It succeeds only with good culture.

Concord Seedless (Blue)—This is a relatively new variety worthy of trial in the home garden. The berries are practically free from seed, and ripen about the same time as Delaware, Concord and Niagara.

Bronx Seedless, Ruby, Golden Muscat, and Nevel Hybrid are varieties warranting trial in the home garden.

Ordering Plants

Order grape roots from a reputable nursery and specify number 1 grade, one-year-old plants with a good root system.

If plants arrive earlier than they can be planted permanently, set them in a trench and firm dirt gently around the roots.

Propagation

Grapes are propagated by layering, from cuttings, and by grafting. Development of new plants by layering is the easiest system for the home gardner to follow. As shown by the accompanying photograph, bend a vigorous 1-year-old cane from an established vine to the ground. Do this in late fall and place in a trench 4 to 6 inches deep. Then, cover with soil. Cover about two buds with soil and leave at least three buds exposed beyond the point of layering.



Fig. 2.—Before planting, the tops and roots of a grape plant are pruned as indicated by the black marks. The planting depth is shown.

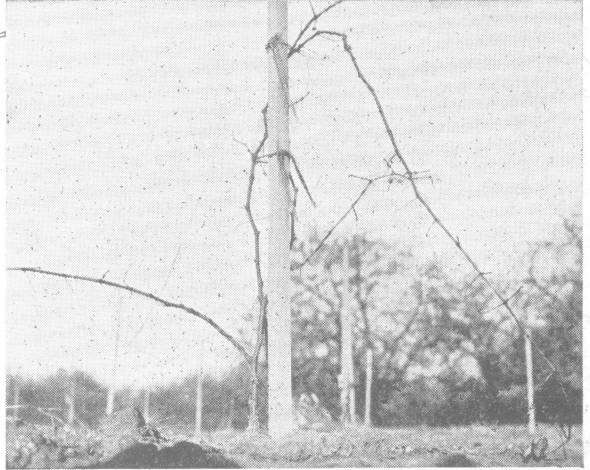


Fig. 3.—Grape plants should be staked shortly after planting to aid in developing a straight trunk. Stakes are removed when the trellis is erected the beginning of the second or third year.

Leave the cane attached to the parent plant for 1 or 2 years until it is thoroughly established. Prune the growing point of the new plant and care for it as a newly set plant. You can move layered plant to a new location after it becomes well rooted.

Planting

Planting distance is not an arbitrary matter. In the home garden let the available space or intended use dictate distance between plants. Normally set plants from 8 to 10 feet apart and about the same distance between rows.

Plan grape roots as early in the spring as you can prepare the soil. Prune the plant as suggested by the accompanying photograph and plant slightly deeper than the plant grew in the nursery. Prune off all but the most vigorous cane and cut it back to two buds.

Soil Management

The easiest system of growing grapes in the home garden is to grow them under a permanent mulch system. Thus, after the grapes are planted, a heavy cover of mulching material such as hay, straw, sawdust, corncorbs, or other suitable material is maintained around the plant. Use an application heavy enough to discourage weed growth, and make additions each year as necessary. The mulch system eliminates the need for cultivation. Other advantages include retention of moisture and maintenance of organic matter.

Grapes also may be cultivated during the summer and a cover crop such as rye seeded in August to help maintain organic matter in the soil. It is advisable not to cultivate too deeply as many grape roots are located at a shallow depth.

If you grow grapes in sod, it will be advisable to apply somewhat larger amounts of manure or fertilizer than if the plants grow under mulch or cultivation.

Fertilization

Manure is probably the best fertilizer for grapes. Three or four shovels per vine each year, applied in fall or early spring should maintain satisfactory vine and fruit growth.

With the mulch system an application of nitrogen fertilizer will be needed in addition to the manure. Purpose of the extra nitrogen is to compensate for the nitrogen used in the rotting of the mulch. About $\frac{1}{2}$ pound of a 16 per cent nitrogen-carrying fertilizer or equivalent applied to the surface of the soil in an area about 4 feet in diameter around the grape trunk would be a normal application for a mature vine. Adequate phosphorus and potash usually will be provided by rotting mulch or application of manure.

The same amount of nitrogen fertilizer suggested for vines under a mulch system will be necessary to maintain growth under the system of cultivation if manure and mulch are not used. You can apply phosphorus and potash as a complete fertilizer, such as 2-12-6 analysis at the rate of $\frac{1}{2}$ pound per plant with the cover crop.

Trellising the Grape

Some type of trellis will be necessary to support the vine after the first year. A single post with two or three cross arms, approximately 6 feet long or extending 3 feet each way from the post will support individual vines. Locate cross arms so that one is 3 feet from the ground and the top one about 6 feet from the ground. A third, midway between the other two, may be used.

To support more than one vine in a row, use end posts substantially located in the soil. Between the end posts, place posts of some what lighter construction—either wood or iron—at about 16 to 24 feet apart or with three vines between posts as determined by the planting distance. Make sure posts extend at least 6 feet above ground and are well anchored in the soil. Stretch at least two wires, preferably of at least No. 9 gauge, between the end posts and attach to the supporting posts in the row. Use wire about 3 feet from the ground and another at about 3 feet above the base wire. If you use a third wire, locate it midway between the two mentioned.

Trellises for arbors may be constructed to conform to the use intended. Your ingenuity will dictate style and construction.

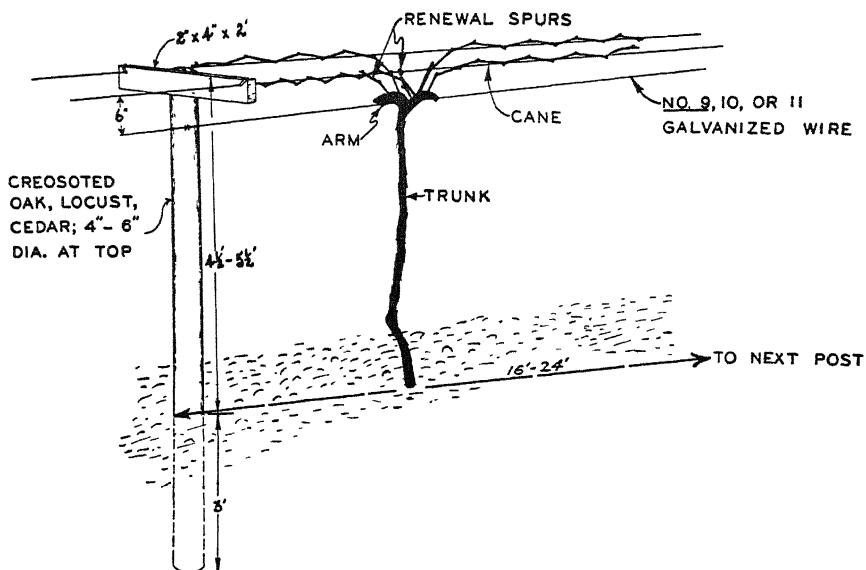


Fig. 4.—The system shown above is convenient for training grapes in the home planting. It is easy to pass under the wires from row to row to cultivate, spray and harvest. Canes can be tied to lower wire, allowing fruiting shoots to grow up and over upper wires.

Pruning the Grape Vine

When pruning, consider the fruiting habit of grapes. A thorough understanding of the manner in which fruit is borne on the plant will help you decide what cuts to make.

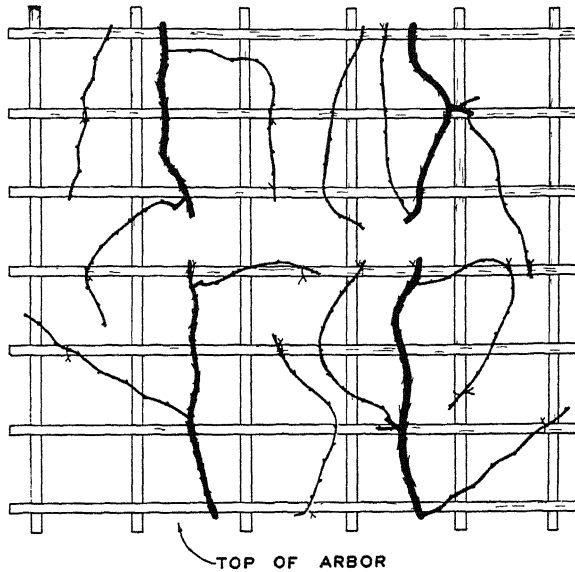
Annual pruning of grapes is absolutely essential to maintain satisfactory growth and production. As thinning of these fruits is not practicable, the pruning procedure becomes one of the most important practices to influence quality, size, and production.

Fruit of the grape is borne on shoots developing from buds on canes of the previous season's growth. Vines must be pruned annually to encourage the development of these canes, to regulate the number of canes to be left, and to limit the number of buds on these canes.

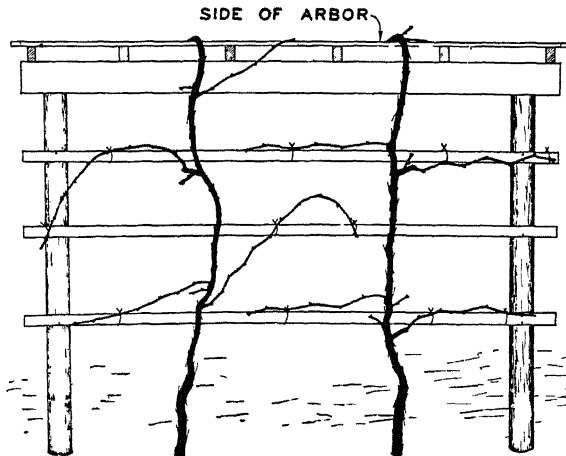
Adjust amount of pruning to the vigor of the vine. More buds can be left on a vigorous vine than on a weak vine. Too few buds left on a vigorous vine will limit production. Too many buds left on a weak vine will result in small scraggly bunches.

Pruning generally is done in Ohio after the coldest part of the winter is past. Usually by the middle of February you can start and can continue until buds swell. You can prune in the spring after sap starts to flow, but the danger of knocking off tender buds when brush is removed makes this practice inadvisable. "Bleeding" of vines caused by pruning after sap starts is objectionable but does little harm to

the vigor of the vine. Summer pruning is not recommended. Grapes do not require direct sunlight to color, but full development of healthy leaves is necessary for satisfactory size and quality of fruit.



TOP OF ARBOR



SIDE OF ARBOR

Fig. 5.

Fig. 6.—More fruiting canes are left in arbor-pruning than for trellis-pruning, because shade is a factor here. A modification of the single-trunk Kniffin plan of training can be used. Sketch shows vines after pruning.

Pruning Young Vines

First Year—At planting time, prune off all but the strongest cane. Cut that cane back to two buds.

Second Year—Remove all but the most vigorous single cane and leave it long enough to reach the first wire of the trellis. This will be between 30 and 36 inches. If the cane is weak, cut it back to two buds as in the first year. It will thus require an additional year for weak growing vines to reach the trellis.

Third Year and Succeeding Years—(Kniffin System)—The four-cane Kniffin, or occasionally a six-cane, is one of the most popular systems of pruning grapes in Ohio. According to this system, a single cane develops a vertical trunk. The trunk is attached to a two-wire trellis—the lower wire of which is about 3 feet above the ground and the upper wire about 2 feet above the lower wire.

During the second year horizontal canes develop parallel to the wires of the trellis. Most fruitful of these canes will be those about

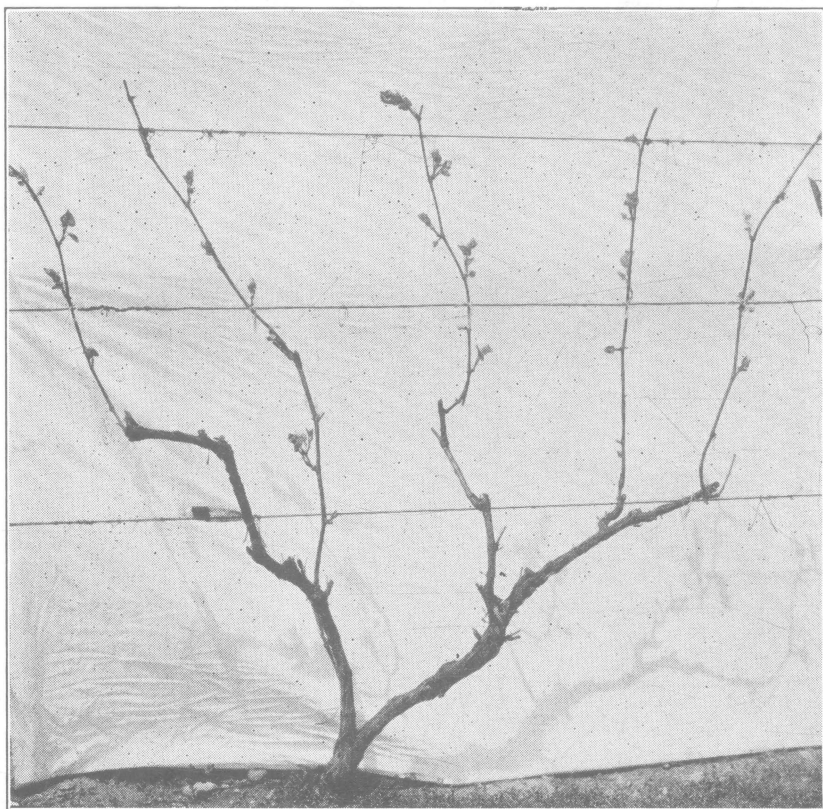


Fig. 7.—Fan system for pruning grapes is popular with some growers. Note the renewal spurs provided near the base of each fruiting cane.

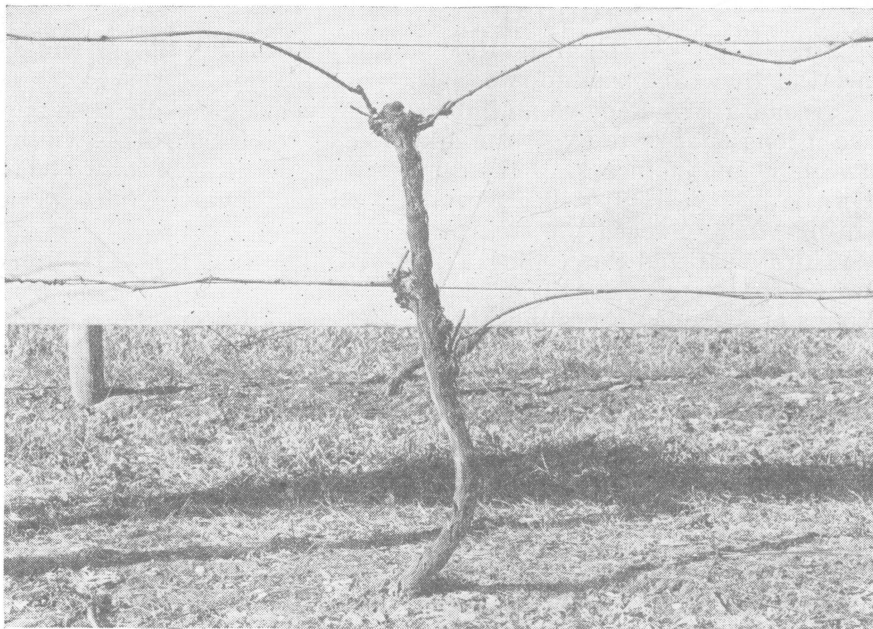


Fig. 8.—Grapevine properly pruned to the four-cane Kniffin system.

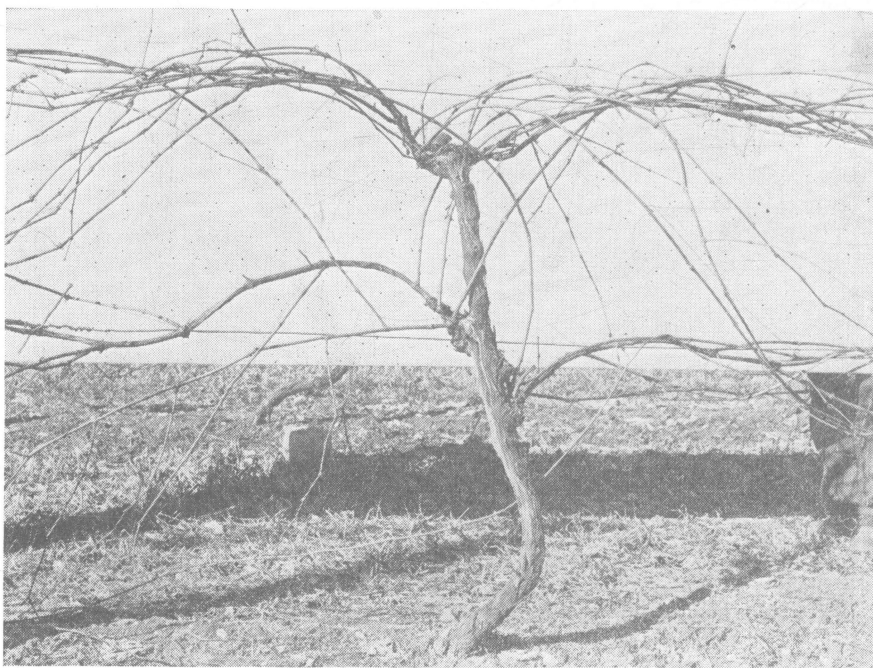


Fig. 9.—Vine before pruning to the 4-cane Kniffin system. Note the number of fruiting canes originating close to main trunk.

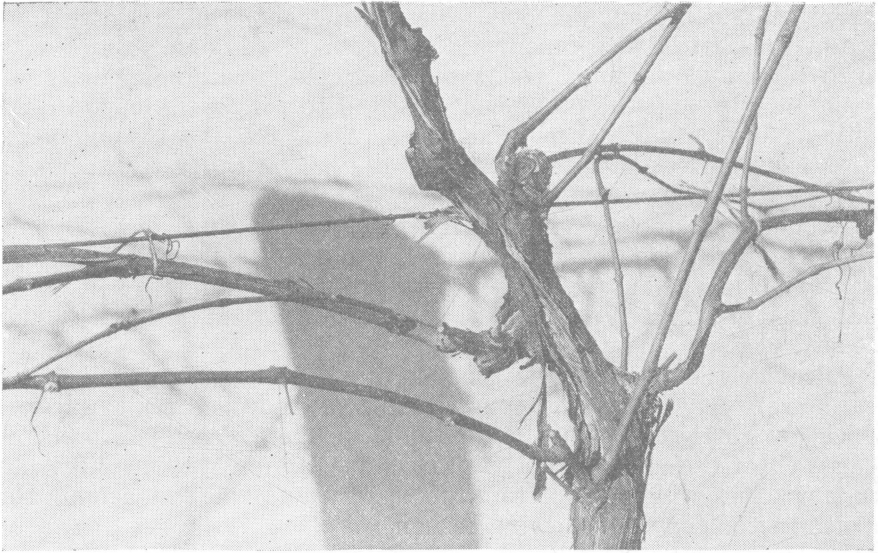


Fig. 10—Fruiting canes develop from buds left on renewal spurs. Note the satisfactory cane growth from the portion of vine before pruning.

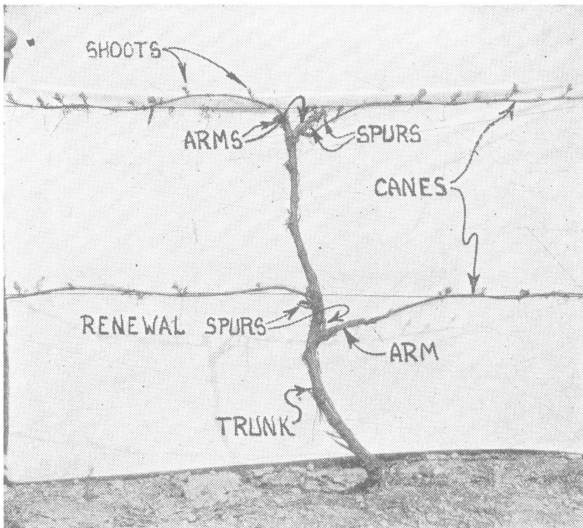


Fig. 11.—This grapevine is trained on a two-wire trellis to the single trunk four-cane Kniffin system. The four fruiting canes carry eight to ten buds each. A renewal spur at the base of each cane will provide a fruiting cane for the next year, when the present canes will be removed.

$\frac{1}{4}$ inch in diameter when measured between the fifth and sixth node. Large "bull" canes and slender, willowy branches are less productive. Two of the desired size canes are selected at the intersection of each wire with the main trunk. One cane is selected to run in one direction along the wire and the other cane selected to run in the opposite direction. These four canes produce the fruit for the coming year. After pruning is completed, the grower ties the canes to the trellis or arbor with twine or wire.

Prune each of your vines according to its age and vigor. During the third year, a vigorous vine can carry about 25 buds after pruning. This would mean that each of the four canes would be pruned back to buds after pruning. Weaker vines will fruit better if less than 40 buds are left.

Provide renewal spurs to produce the fruiting canes for the next year's crop. These renewal spurs consist of unneeded fruiting canes which are cut back to one or two buds. Leave at least two or three near each of the wires when you follow the Kniffin system. Vigorous fruiting canes will develop from these spurs and will thus supply the fruiting wood for the following season.

Fan System—Training grapes this way is popular with some growers in Ohio. As the name suggests, the vine is shaped similar to that of a fan after pruning. When this system is followed, the lower wire of the trellis is usually 2 feet above the ground. Two higher wires, 18 to 24 inches apart, provide places for the fruiting vines to be tied in an oblique pattern.

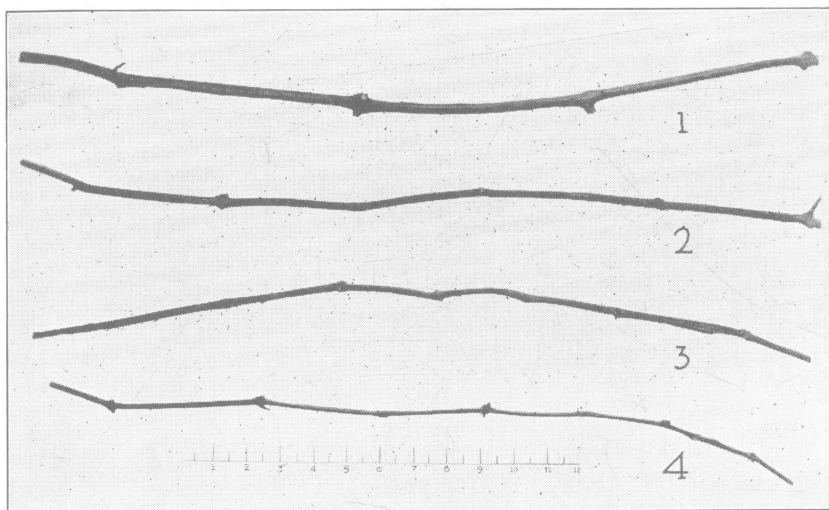


Fig. 12.—Fruiting canes vary in growth and ability to produce fruit clusters. Cane No. 1 is too large, buds are far apart and are small; Nos. 2 and 3 are good. No. 3 is particularly good. Buds are plump and are close together. No. 4 is too small.

In the fan system, the cane is to be used as the trunk is selected in the same manner as for the Kniffin system. At pruning time the second year, the cane is headed back at a point high enough to reach the lower wire of the trellis. In some cases, the head is formed at the lower level and the two side arms of a Y-shaped trunk are tied to the bottom wire.

The main trunk or side arms are tied to the lower wire during the second growing season. Lateral shoots will develop from the main trunk, and at pruning time for the third year, growers select four or five of the most desirable, best located canes and prune them back to about 5 or 6 buds each. Then they tie canes to the trellis in a fan shape—more or less at equal distances apart on the trellis. Growers select renewal spurs as in the case of the Kniffin system.

Prune mature vines exactly the same as for the third year, but leave more buds on the entire vine than for the third year. A total of around 40 buds per vine of a vigorous Concord variety is desirable. You can leave more buds if the vine is particularly vigorous. Be sure to leave fewer buds if the vine is weak.

Pruning Neglected Vines

Vines become rangy and unproductive if pruning is neglected for a year or more. Such vines have too much old wood, and the best fruiting wood is a long distance from the trunk or the base of the vine. Remove as much old wood as can be spared. Leave four or five reasonably desirable canes for fruiting. It is desirable that these originate as close to the main trunk as possible. After 2 or 3 years of renewal pruning, you can bring the neglected vines back to a fairly manageable pattern.

If neglected vines are dehorned, that is, cut back to large stubs with little or no young wood, there are no canes left for fruiting. It will take a year to get such vines producing again. It usually is best to prune neglected vines to a pattern approaching some modification of the fan system. You can rejuvenate old grape vines by pruning more than you would with most other fruits. It always is well to bear in mind that fruiting canes be developed at a point close to the main trunk. It is unwise to attempt to rejuvenate vines that have been neglected for several years. If these vines are over 25 years of age, it usually is best to plant new ones, which in about 3 years will be in full production. Young plants produce better grapes more economically than old vines.

Harvesting

Leave grapes on the vine until they attain full color and flavor. If necessary, you may leave fruit on the vines a week or two after they appear ripe. When they are left too long however, they assume a bitter taste and become mushy. After you pick them, store grapes immediately in a cool cellar or cold storage. You can keep small quantities in the refrigerator.

Common Insects and Diseases of Grapes

Black rot is a common disease in wet seasons. In mid- or late-season the berries turn from green or red to brownish-black, shrivel, and some drop to the ground. Dark brown lesions appear on the leaves and petioles.

Mildew appears as yellowish-green, somewhat translucent splotches on the upper surface of the leaves, while the under surface shows a downy growth. The berries, if infected, turn brown, shrivel, and drop.

Larvae of the grape berry-moth first cause a red spot to develop on the green berry followed by shriveling and dropping of the berries. Control by applying DDT sprays.

Leafhoppers (about 1/8 inch long, winged, and flying in swarms) suck sap from the leaves, causing them to appear whitish and later turn brown and die. Quality and size of the berries are affected. Leafhoppers cause more foliage damage than any other grape pest, and unless controlled with DDT spray, reduce both yield and quality.

Chemical Control of Weeds

Do not use chemicals to control weeds in grape plantings in the home garden. Grapes are easily and seriously injured by certain chemicals, especially 2, 4-D when applied to weeds in grapes or even in lawns and other areas some distance from the planting.



Control of Insects and Diseases

It is absolutely necessary that insects and disease be controlled for successful grape production. The following spray schedule, if carefully applied, should give satisfactory pest control:

No.	Time to Apply	Materials	Amt. to use		Disease and insects to be controlled	Remarks
			in 5 gals.	in 50 gals.		
1	Before blossom buds open When shoots are 10 to 12 inches long.	Ferbam	$\frac{2}{3}$ c.	1 lb.	Black rot Mildew**	Important for black rot
2	When very first bloom appears	Ferbam and DDT (50%) or Home-made bordeaux' and DDT (50%)	$\frac{2}{3}$ c.	1 lb.	Black rot Mildew** Berry-moth Leafhoppers	
			$\frac{1}{2}$ c.	1 lb.		
3	When grape fruits are size of smallshot (about 10 days after bloom)	Fungicide same as above plus DDT (50%)	$\frac{1}{2}$ c.	1 lb.	Black rot Mildew** Berry-moth Leafhoppers	Very necessary for berry-moth Important for black rot
4	About Aug. 1	DDT (50%)	$\frac{1}{2}$ c.	1 lb.	Berry-moth Leafhoppers	For late berry-moth infestation

* Home-made bordeaux mixture can be prepared as follows: 3 ounce copper sulfate (bluestone) and 4½ ounces hydrated lime per 5 gallons of water. The copper sulfate should be dissolved first in about half the water, then poured into the lime and water mixture made with the other half of the water. The whole mixture should be thoroughly agitated and then poured into the spray tank.

** Use bordeaux mixture if mildew is a factor.

NOTE: There is no dusting program that is effective against grape insects.