how to...

GROW GRAPES

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HOW TO GROW GRAPES

All areas of Iowa are suited to grape growing if varieties are selected carefully. The southern half of the state, however, is suited to a wider range of varieties. To be most productive, grapes should be pruned annually and maintained under clean cultivation during the growing season. A good trellis must be used to give adequate support for the vines and the crop they produce. Grapes require very little spraying to produce a crop of fruit.

With normal growth and care, grapevines can be expected to produce a partial crop the third year and nearly a full crop the fourth or fifth year.

PLANTING

Planning the Planting

Site. Locate your planting at least 50 feet from shade trees, windbreaks or groves—30 feet from fruit trees and at least 10 feet from woven-wire fences. An area at one side of the vegetable garden is good. Never use woven wire or field fence as a trellis. Tree roots cut yields and the fence makes it difficult to train and prune the vines annually.

Grapes planted on sloping land should be set on contoured terraces.

Select the site with care because, with proper management, the planting will last over 50 years—in fact, some plantings in the Midwest are more than 75 years old and are still producing good crops.

Soil. Grapes don’t require high fertility and on the heavier black soils they will not produce as well as on the lighter or thinner soils. Select a site where the soil is well drained at all times—a soil that will permit deep root penetration.

Size of Planting. Determine the size of your planting by the space available plus the desires and needs of your family. For fresh use, four or five vines will be adequate for a family of four. If you plan to make juice, jelly and jam, an additional five or six vines will be needed. A yield of 10 to 15 pounds can be expected from each vine—with a top yield of 20 to 30 pounds under favorable conditions.

Varieties. In general, the varieties listed for southern Iowa will not be as reliable in central Iowa and should not be grown in northern Iowa.

Those varieties listed for northern Iowa are hardy and should do as well in central Iowa. The varieties for northern Iowa may or may not perform as well in southern Iowa as those varieties listed for this area.

### Area I
- Fredonia—blue
- Concord—blue
- Moore’s Early—blue
- Brighton—red
- Niagara—white
- Lucille—red

### Area II
- Fredonia—blue
- Concord—blue
- Moore’s Early—red
- Blue Jay—blue
- Red Amber—red
- Blue Jay—blue

### Area III
- Fredonia—blue
- Moonbeam—white
- Red Amber—red
- Beta—blue

Map showing state divided into three areas for purpose of selecting grape varieties suited for each.
Buying Plants

Obtain plants from a reliable nursery. It is the variety that determines hardiness, not where they are grown. Within 100 or 200 miles of where you live, you should be able to find reliable nurseries handling varieties suitable for Iowa conditions.

One-year-old, No. 1 plants are preferred. Two-year-old, No. 1 plants will do, but are not necessarily better.

Handling Plants. As soon as plants are received from the nursery, open the package and examine roots. If the ground is ready to plant, soak the roots in water for an hour or two before planting. If weather conditions necessitate a delay in planting, moisten packing material around roots, rewrap, and store plants in the fruit and vegetable section of the refrigerator or in the fruit and vegetable cave.

Never let the roots dry out after you receive the plants. At planting time, carry the plants in a pail of water.

Planting

Early spring planting is recommended. Set plants as soon as the soil is in good working condition.

Soil Preparation

Prepare the ground for grapes in the same way you would for your vegetable garden. Plow or spade in the fall. If barnyard manure is available, apply 500 or 600 pounds per 1,000 square feet, plus 10 to 15 pounds of a 10-20-10 commercial fertilizer just before plowing. Fall plowing is better than spring plowing. Fall-plowed ground can be planted earlier than spring-plowed ground.

Planting Distances. Grapevines do best if spaced 10 feet apart in the row with 10 feet between rows. If more than one row is planted, wider row spacing may be needed where cultivating equipment is over 8 or 8½ feet wide.

Planting. Dig holes 8 to 12 inches deep and 12 inches across. Set the plants slightly deeper than they were in the nursery. Some plants have roots at two levels on the stem—if so, firm the soil over each group of roots separately. Leave a 2- or 3-inch space in each hole for 1 to 1½ gallons of water to which a small amount of commercial fertilizer has been added—just as you do for vegetable, raspberry and strawberry plants. After the water has soaked in, put loose soil around each plant but don’t tramp, for this will puddle the soil around the roots.

Immediately after planting, cut back the top, leaving only two buds.
CULTURAL PRACTICES

Grapes perform best if kept under clean cultivation during the growing season. A disk, springtooth harrow or cultivator is commonly used between rows for commercial or home plantings. Cultivation should be shallow and frequent enough to control weeds and grass before they become established.

In August sow a cover crop of rye or oats to serve as a winter mulch and to help take up moisture to harden vines for winter. Disk or work down the cover crop in the spring by blossoming time.

Weed Control. Clean cultivation is recommended for weed control. Summer mulches for grapes may be as desirable as clean cultivation—and would be much better than sod or weeds. Straw, hay, sawdust, crushed corncobs, leaves and similar materials may be used as a mulch. A mulch conserves moisture, maintains a lower soil temperature and aids in weed control. Do not use 2,4-D weed-killing compounds in or near grape plantings. Grapes are extremely sensitive to injury from 2,4-D. For home plantings, control weeds in the grape row by hoeing.

Commercial growers have obtained fair control of weeds with no damage to mature grapevines by using about two ground-sprays of a dinitro in oil and water. Before attempting to use chemical weed control in the vineyard, commercial growers should contact the Horticulture Department at Iowa State College for the latest recommendations.
TRELLIS. Use the best grade of wood or steel posts because properly cared-for grapevines will outlast the best trellis. Be sure to firmly brace the end posts.

Put the trellis up at planting time. To allow easier tightening of trellis wires when they become loose, wrap them around end posts (or use eye-bolts in end posts) and run through holes in other posts. Don't use staples; they won't hold the wires in place under the weight of fruit-loaded vines.

TRAINING. The single-stem (or trunk) four-cane Kniffin system is best for most Midwest conditions. This system requires a minimum of time for pruning and locates the fruit so it is easy to spray and pick. Better air movement lessens danger of disease.

The grapevine under the Kniffin system of training consists of a permanent trunk (stem) and four short lateral branches (side-arms) which are more or less fixed to the trellis wires. Fruiting canes and renewal spurs are carried on each of these side-arms.

A. AT PLANTING TIME—Cut newly planted vine back to two buds.

B. SECOND SPRING—Cut back to a strong cane which reaches either the lower wire or the top wire. If none of canes will reach lower wire, again cut back to two buds as at planting time.

C. THIRD SPRING—Train two of the canes along the lower wire and cut them back to five or six buds. If the cane reached the top wire the second season, select two more canes to train along the top wire. Cut these back to five or six buds, too.

D. FOURTH SPRING—Select one fruiting cane arising from each of the permanent (side) arms. Shorten each cane to eight or ten buds. One or two renewal spurs are also selected on each arm, cutting each one to two buds.

Terms Used in Training and Pruning Grapevines

TRUNK. The main stem of the grapevine from the ground to the top wire of the trellis. A strong, straight trunk is desirable for a strong, high-producing vine.

ARMS. Short lateral branches of the trunk from which the fruiting canes and renewal spurs arise. These arms are more or less permanent for the production and support of fruiting canes and renewal spurs—and should arise just below each of the wires of the trellis. When these side-arms become more than 12 inches long, they should be removed and new ones developed.

NODES. The position on the cane where the leaves were attached, and where the bud is located. It is these buds on the fruiting cane from which the shoots arise, each carrying about three or four clusters of grapes.
Canes. These are the 1-year-old shoots of the previous season's growth. It is only from these 1-year-old canes that fruit is produced.

The best fruiting cane is about the size of a lead pencil (or slightly smaller) and is 5 or 6 to 8 feet long with nodes about 5 to 7 inches apart.

Excessively large canes (1/3 inch in diameter and up) are commonly called "bull" canes. They are usually poor producers and indicate an over-vegetative condition in the vine.

Renewal Spurs. These are canes which have been shortened to two buds. Since the fruit is produced on canes of the previous season's growth, provision must be made to grow these new canes each year—thus, the need for these renewal spurs. The shoots developing from these usually make good fruiting canes, permitting the removal each year of the old canes which have fruited. You are then able to keep the vine within its allotted space on the trellis.

Watersprouts. These are shoots that develop from older than 1-year-old wood—such as on side-arms or main trunk. Such watersprouts are usually unproductive, but may be used as renewal spurs or to develop new side-arms.

Pruning the Mature Vine

Once the grapevine has the permanent framework established (usually by the fourth season), pruning should be done with the framework and fruit production in mind.

Time of Pruning. Since freezing injury may occur to the vines during severe winter weather, the best time to prune grapes is in March or early April.

Remember: Fruit is produced only from 1-year-old wood (canes of the previous season's growth). The ideal size fruiting cane is about the size of a lead pencil (or slightly smaller) and 5 or 6 to 8 feet long. To get this type of growth the grapevine must be pruned annually. "Courage is about 90 percent of the job of grape pruning."

Each year select four fruiting canes and at least four renewal spurs, then remove all other growth. Annual renewal of fruiting canes is provided by leaving one or two renewal spurs on each side-arm, and as close to the main trunk as possible. Don't allow the side-arms to develop to a length of more than 12 to 15 inches.

Prune before buds swell since they break off easily.

Bleeding often occurs when the vines are pruned after the sap starts to flow. This does not injure or kill the vine. It is much better to prune late rather than not at all.

Summer pruning is not recommended. Successful maturing of good-quality fruit requires vigorous, healthy foliage. Summer pruning has been used with the mistaken idea that it induces early ripening and that some leaf removal will let more sunlight to the berries and thus increase sugar content. This is not true and it can actually reduce the quality because the leaves supply sugars to give better quality fruit.

Pruning Neglected Vines

Grapevines that have been unpruned for many years can be rejuvenated and brought back into good production. Since grapes bear fruit on last season's growth, they can be rejuvenated quickly.

Old vines lacking in vigor and having several trunks frequently are full of dead and weak wood. Often these vines are so lacking in vigor that there is no suitable fruit-bearing wood having 10 or 12 buds. Usually, the quickest and easiest way to rejuvenate such vines is to cut off the vine at the ground line. A large number of suckers or shoots
will come up the first season—leave all of these until the following spring when you will select one of the best to be used as the trunk on the new vine. Then remove all others. From this stage on, handle the vine as shown in the sketches for training new vines (page 4). Under this procedure you lose production for two seasons.

For the neglected grapevine making more vigorous growth and producing some suitable fruiting canes, you can select one of the trunks having four or five canes. Then remove the other trunks or branches completely. After the fruiting canes are selected, choose four or five renewal spurs on the main trunk back of the fruiting canes. Leave 10 to 15 buds on each fruiting cane if possible. During the next year or two you can develop the Kniffin system.

Sometimes a new cane or shoot will be found growing near the base of the old vine. Such a cane may be used to develop a new trunk for the vine. Subsequent training of this vine to the Kniffin system is the same.

Tying

Fasten the main trunk at the upper and lower wires of the trellis. The tie to the upper wire should be moderately tight, and the lower rather loose. After the mature vine has a rigid trunk, no tie is needed at the lower wire if the trunk remains in a good position.

Attach each of the fruiting canes to the trellis wire with two ties—the first near the base of the cane, the other just back of the last bud. Make the basal tie loose to prevent girdling of the growing cane—but the end tie should be tight to keep the canes from slipping due to the wind and the weight of fruit.

For tying use a strong cord or twine. Bailer twine or jute twine does nicely. Strips of old rags or nylon hose will do.

To tie, wrap the twine around the wire twice—then once around the cane or trunk. This double wrap will help prevent slipping. Do not use wire as a wrap.
In some seasons good-quality fruit may be produced with little or no spraying. However, about four or five sprays annually are recommended to insure best quality fruit (six sprays for commercial vineyards). Proper trellising and pruning to the four-cane, Kniffin system will reduce disease severity by providing good air circulation and plenty of sunlight, as well as making it easier to spray and pick the fruit.

Black rot, downy mildew, berry moth, grape rootworm, four-spotted fungus beetle, leafhoppers and wasps are the most common pests on grapes. Black rot causes the berries to shrivel up into hard, black mummies on the bunches. Mildew appears as a fluffy white growth on the undersides of the leaves and other above-ground parts. It sometimes dries up the fruit and may defoliate the vines.

Spray at the following times:
1. When new shoots are 4 to 8 inches long.
2. Just before bloom (generally the new shoots are 18 to 24 inches long).
3. Just after bloom (berries are about the size of BB shot).
4. Ten to 14 days after No. 3 spray.
5. Ten to 14 days after No. 4 spray.
6. Use a 1 percent rotenone dust or spray every 3 to 5 days as fruit begins to ripen. These sprays repel wasps and fungus beetles from ripening fruit. (Sprays No. 3, 4 and 5 are important for grape berry moth, leafhoppers and mildew.)

Use:
1. For all sprays, 50 percent methoxychlor wettable powder plus ferbam or captan (use 2½ tablespoons of the insecticide and 2½ tablespoons of either fungicide per gallon or 1½ cups in 10 gallons)

OR

the general-purpose fruit spray listed in Iowa State College Pamphlet 175, "The Home Orchard Spray Schedule."

2. If mildew is a problem use bordeaux 2-2-50 instead of captan or ferbam starting with spray No. 3 or 4.

For more details refer to Pamphlet 175. Commercial growers should follow the commercial spray schedule.

*This section prepared in cooperation with Harold Gunerson, extension entomologist, and Malcolm Shurleff, extension plant pathologist.