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Growing **GRAPES** *in Minnesota*



by

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ALTHOUGH only a small acreage in Minnesota is regularly devoted to commercial grape production, the grapes grown in thousands of home gardens have an important place in the home fruit supply to which they add pleasing variety and substantial value. While the opportunities for commercial development are limited, growers who follow good management practices usually are able to produce crops which find a ready and profitable market.

● Success in growing grapes requires a good understanding of specific requirements of the plant such as pruning and cultivation. Regular and timely attention must be given these procedures; however, the actual work is no greater than that required in the growing of most other fruits.

● Grapes usually begin bearing the third year after planting, increasing in volume of production until about the sixth year, when an average yield of one-fourth bushel of fruit per plant can be expected. Under proper management they continue to bear indefinitely.

● Grapes are better suited than most fruits to the home garden where tillable space is limited. In situations exposed to full sunlight they may be trained on fences, arbors, or trellises, thus utilizing space unsuited to other fruit plants.

New Hardy Varieties

The new varieties recently introduced from the University Fruit Breeding Farm have considerable advantage over grapes heretofore grown in Minnesota. In contrast to other hardy types, such as the Beta, these compare favorably in size and quality with standard "dessert grapes."

It is recommended that the grower include Beta in the home planting for juice and jelly purposes and the new hardy varieties for dessert use.

Nonhardy dessert grapes may also be grown but will require special pruning treatment and winter protection.

Spray Program for Grapes

PREPARED BY THE DIVISIONS OF PLANT PATHOLOGY AND ENTOMOLOGY

Time to Spray	Materials to Use	Pests Controlled
1 When blossoming starts	Copper fungicide (see recommendations on package) Lead arsenate 3 lbs. per 100 gals. 1½ tablespoons per gal.	Black rot Downy mildew Grape berry moth
2 When grapes in cluster are beginning to touch each other	Copper fungicide—like Spray No. 1 Lead arsenate —like Spray No. 1 Nicotine sulfate —1 pint per 100 gals. 1 teaspoon per gal.	Black rot Mildew Grape berry moth Leafhopper

Note: The second spray is very important for grape berry moth control. Be sure to direct spray at undersides of leaves to get good control of leafhoppers and mildew. To get the best results, nicotine sulfate should be used when young leafhoppers are present because the adults are more difficult to kill.

RECOMMENDED VARIETIES

Hardy juice varieties

Beta and **Alpha**—Berries black, small, good for juice, poor dessert quality.

Hardy dessert varieties

Red-Amber (Minn. No. 45)—Red, small to medium size, sweet, good quality.

Moonbeam (Minn. No. 66)—Green, medium size, fair to good quality.

Bluejay (Minn. No. 69)—Blue-black, medium size, fair quality.

Bluebell (Minn. No. 158)—Blue-black, medium size, good quality, resembles Concord.

Nonhardy dessert varieties

Blue (or black)—**Fredonia**, **Concord**, **Campbell**, **Worden**.

Red—**Lucile**, **Delaware**, **Brighton**.

Green (or white)—**Portland**, **Niagara**.

Select Site Carefully

If possible, plant on a site reasonably free from either late spring or early fall frosts. Slopes facing to the south or southeast are desirable. Avoid northerly slopes and low ground.

The importance of soil should also be considered. Grapes grow best on medium loam or sandy loam soils that contain considerable rotted manure or similar organic material. Light sandy soils, lacking sufficient organic material, usually do not furnish enough food or water to the vines for normal growth. Heavy soils produce vigorous, late-maturing growth susceptible to winter injury.

Prepare the Soil Thoroughly

If cultivated crops have been grown on the site and if the soil is in good condition, little preparation will be necessary other than the usual plowing and harrowing. If the land is in sod or has considerable other vegetation on it, deep plowing is desirable, and as a rule a cultivated crop or clover should be grown for at least one season before grapes are planted.

Fall plowing is desirable in most cases. If the soil is low in organic material, manure may be applied before plowing at the rate of 10 tons per acre. If manure is applied in spring preparation, or if it is applied to plowed ground and disked in, it should be well rotted.

Whichever procedure is followed, the soil should be worked with a spiketooth harrow or similar implement in the spring just before planting.

Plants and Planting

Plant in the spring as early as the soil can be properly prepared. Use vigorous 2-year-old plants with well-developed root systems.

Space the plants 8 feet apart in the row and 8 to 10 feet between rows. In a hillside vineyard, plant the rows across the slope. Wider row spacing may be desirable on steep slopes to allow sod strips between the rows to prevent soil washing.

Set the plants deep enough so that the main root system will be at least 6 inches below the soil surface. Firm the soil around them by tramping.

Immediately after planting, cut back each vine to a single cane containing two or three buds.

Thorough Cultivation Essential

Cultivate frequently from early spring until midsummer. The first cultivation each spring can be quite deep. Succeeding cultivations should be shallower (2 inches or less). Frequent shallow cultivation controls weeds and allows the operator to work the soil close to the plants without damage to the roots. Some hand hoeing and weeding will be necessary to keep the rows free of weeds. The area which must be "hand worked" will increase as the vines grow and supports become necessary.

Cultivation after midsummer is not recommended. Late cultivation often results in immature fall growth subject to severe winter injury.

Cover Crops Are Useful

Seeding about the middle of August to oats, rape, or some other crop that will kill out during winter meets several needs of the vineyard. In most cases maturity will be hastened and soil washing prevented. Cover crops hold snow in the winter and serve as a mulch to protect the roots in the absence of snow. Plowing or disking the cover crop under in the spring helps to maintain the desired amount of organic material in the soil.

Oats or rape can be planted at the time of the last cultivation on the freshly cultivated soil. Broadcast, by hand or with a knapsack seeder, oats at the rate of 1.5 pounds per 1,000 square feet or rape at the rate of 2 ounces per 1,000 square feet. Cultivate or rake lightly to cover the seed.

Fertilizers

Manure adds plant food to the soil and also helps maintain the supply of organic matter needed to hold moisture. Yearly applications may be made in the late fall or early spring—about 10 tons per acre or three-fourths bushel per vine.

If manure is not available, sodium nitrate or ammonium sulfate may be used at the rate of one-fourth pound per vine, or a mixed fertilizer such as 4-10-6 at the rate of one pound per vine. Apply in a broad band, 2 to 3 feet away from the base of the vine, avoiding direct contact with the crown. Commercial fertilizers supply plant food but have no effect on the water-holding capacity and workability of the soil. They are therefore mainly useful as a supplement to organic material supplied in the form of cover crops or light applications of manure.

In all cases, fertilizers should be applied before growth starts. Later applications may cause immature growth likely to winterkill.

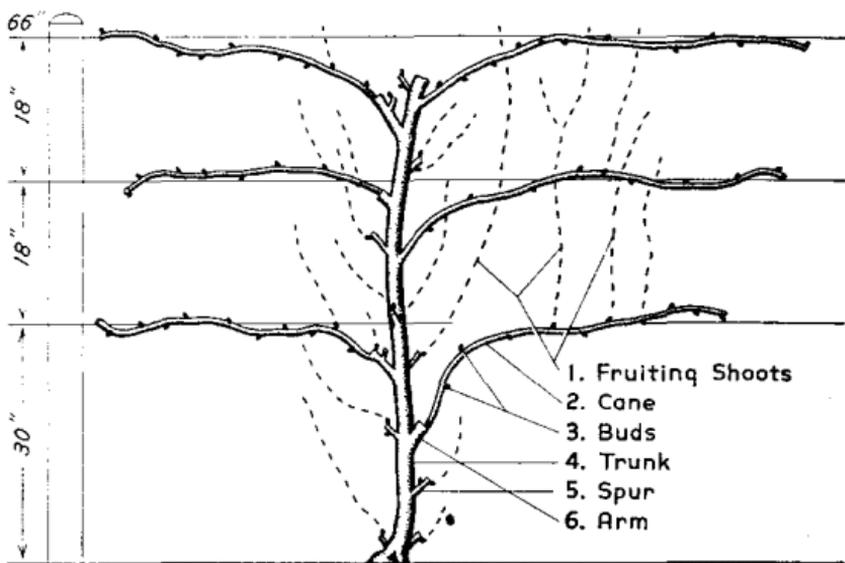


FIG. 1. Training system—hardy grapevine

Prune Properly Each Year

Grapes require severe pruning each year to remove excess wood which has already fruited. They differ from tree fruits in that fruit is borne only on shoots (1 in figure 1) of the current season's growth. When these shoots reach the end of their first growing season they are called canes (2). Having borne their crop they will never bear again, but they do contain buds (3) from which come fruiting shoots for the following season. Each vigorous bud on a new cane will produce a shoot carrying two clusters of grapes on the average. Leaving too many fruiting buds will reduce the size of the clusters.

Time of Pruning—*Tender grapes* should be pruned in the late fall preparatory to laying them down for winter protection.

Hardy grapes may be pruned in late fall or winter. Avoid spring pruning as wounds made at this time bleed excessively. Such bleeding usually does not seriously injure the vine but has some weakening effect.

Pruning Hardy Grapes—Since the vine will not have to be bent down for winter protection, prune to a single upright trunk (4). Each year save only a framework composed of this permanent trunk plus six well-spaced vigorous new canes. Any weaker canes arising from other points on the trunk should be cut back to short spurs (5) containing only one or two buds. The shoots coming from these buds will not produce much fruit but by the end of the season will increase the number of canes from which the framework can be selected when the vine is pruned the next time.

As the trunk increases in age, side arms (6) may develop at the points where the canes attach to

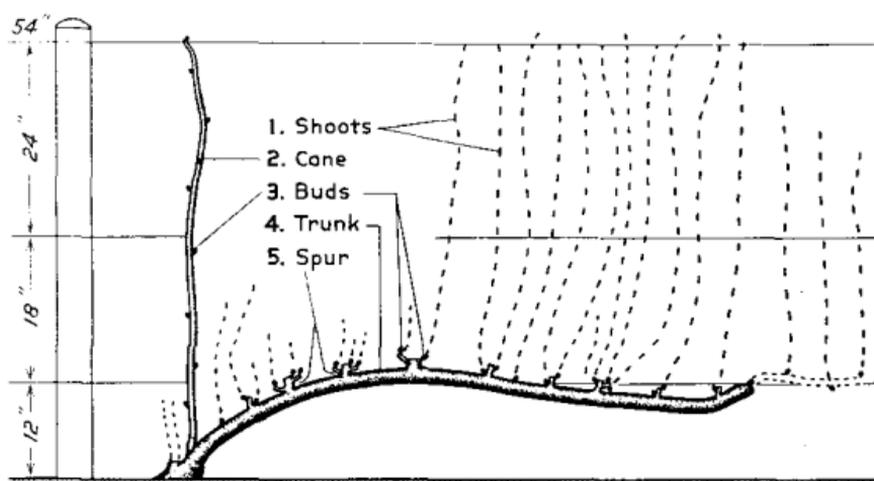


FIG. 2. Training system—tender grapevine

the trunk. When possible, select for framework only those canes which originate near the upright trunk, thus preventing unnecessary accumulation of nonbearing wood.

Shorten each of the six canes selected to 3 or 3½ feet. Studies with the Beta variety have shown that the best fruiting results are obtained when the length of canes saved totals 20 to 25 feet containing 70 to 90 buds.

Pruning Tender Grapes—Since winter protection is necessary, prune the vine to a single horizontal trunk (4 in figure 2) which can be removed from the trellis and bent down and covered with soil. In the spring when the soil covering is removed, lift the trunk from the ground and tie to the lower trellis wire. As the shoots (1) grow from the trunk, tie from time to time in an upright position to the upper wires.

In the fall when these fruiting shoots have matured into canes, cut them back until they become short spurs (5) containing one or two buds (3) each. Old trunks usually contain many spurs in which case some of the older many-branched spurs should be removed each year. The length of the trunk can be increased by bending down the cane nearest the free end. One to 2 feet of new trunk are usually added each year in this manner up to the desired length of 6 or 7 feet.

After several years the trunk may become overgrown and knotty, making a complete renewal desirable. To accomplish this, select a sturdy cane (2) originating as close to the base of the plant as possible. Instead of cutting it back to the usual spur, allow a 3- to 4-foot length to remain. After this cane has completed its second growing season, cut off the old trunk at a point just beyond the attachment of the renewal cane. Bend the renewal cane down to become the new trunk.

Winter Protection

For tender varieties, winter protection is desirable. After the vines are pruned in the fall and just before the ground freezes, open a trench approximately 12 inches wide and long enough to receive the vine and 8 or 10 inches deep. A spadeful of soil close to the base of the vine may be removed to aid in tipping the vine without breaking the roots. Bend the vine carefully into the trench and mound over with soil until there is at least 6 to 8 inches of covering over all parts of the vine.

The soil must be removed from the vine in the spring before growth starts. The usual practice is to remove most of the soil about the middle of April, leaving barely enough to cover the vine. When the buds break, the rest of the soil should be removed and the vine lifted and tied in place on the trellis.

Vine Supports

Until the third season, the vines may be allowed to trail on the ground, but most growers prefer to drive a light stake at each vine to which the shoots may be tied. This temporary support prevents breakage of shoots and permits cultivation close to the plant.

For the third and following seasons, permanent support is needed. This is usually provided in the form of a post-and-wire trellis. Use sturdy posts sufficiently long to project at least 5 feet above ground. Set a post at each end of the row and in each second space between plants. If the plants are 8 feet apart the posts will thus be 16 feet apart. Stretch three No. 10 galvanized wires along the posts. The end posts must be sturdy and well braced. The height at which the wires are attached to the posts will depend on the training system used. For the vertical trunk system (hardy varieties) place the lowest wire 30 inches from the ground. The middle wire should be 15 to 18 inches above the lowest, and the upper wire 15 to 18 inches above the middle one.

For the horizontal trunk system (nonhardy varieties requiring winter cover) place the first wire 12 to 18 inches from the ground, the middle wire 18 inches above the first, and the top wire 18 to 24 inches above the middle one.

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