

# Grapes for Oklahoma



Circular 457

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**EXTENSION SERVICE, OKLAHOMA A. AND M. COLLEGE**  
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# GRAPES FOR OKLAHOMA

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Oklahoma is not a commercial grape producing state. However, tests indicate that climate and soil conditions are favorable for growing many varieties of grapes on a commercial scale. A long list of varieties are recommended for home planting. Grapes can be grown better throughout the state than any other small fruit.

## LOCATION

Soils of medium fertility and well drained are most suitable for growing grapes. A sandy loam soil high in organic matter is best. The subsoil should be a sandy clay or gravel. Soil with hard pan or bed rock within three or four feet of the surface is poorest.

Home plantings can be located with an orchard or the garden. Keep livestock out of vineyards. Northern slopes are best because of wind protection. In western areas the vineyard should be protected by a good windbreak.

The vineyard should be large enough to include space for planting several varieties that will bear fruit from early in the season to late. Since birds feed heavily upon the grapes when they are ripening plant more plants than are needed for home use.

## ESTABLISHING THE VINEYARD

Set the plants in rows running north and south. More sunlight and less wind damage and better air drainage is possible if this is done. The rows should be ten feet apart for commercial plantings. For home planting, closer spacing may be made, depending upon cultivating equipment. Grapes need more space than is generally provided. There should be enough space between rows for cultivation equipment, wagons and spray machines. Rows should be straight so that trellis can be built and kept up. Where the location is sloping enough to erode terrace the land before the vineyard is planted. Rows can be laid with a lister. Cross furrows can be made at the correct distances, thereby eliminating much of the labor required in digging the holes for setting the grape plants.

## PLANTS

Strong, vigorous, one-year-old plants are more economical and satisfactory for general use. Two-year-old plants can be used, but small, weak plants are the most expensive.

### PLANTING

When moisture conditions are favorable, plant in the fall; otherwise, plant in the spring. A good rule to follow is plant in November and December on the east side of the state, and February and March on the west side.

When the plant shipment is received, the bundle should be opened immediately and the plants heeled in, unless it is possible to set the plants in the vineyard at once. In heeling in dig a trench deep enough so that all roots may be covered three or four inches. Separate the roots and work soil down between them. Compact the soil after the roots have been covered. If the soil is dry, the plants should always be thoroughly watered. Always exercise care to prevent the roots from drying out while plants are being handled.

Never expose roots to the sun or wind; instead protect with wet burlap or soil. Haul plants to the field in a tub or barrel of thin mud. It is better not to immerse them in water because this may wash off soil clinging to the roots.

A shovel, spade, or post-hole digger is used for digging holes for the plants. Make the holes deep enough so that after completely filling the plants will be an inch or two deeper in soil than they were in the nursery row. Separate and spread out roots in transplanting and work soil well between them. Fill in with loose soil until the hole is about two-thirds full; then thoroughly firm the soil by tramping with the feet or tamping with the shovel handle. Tamping or firming of the soil should never be neglected because it helps to establish the moisture connection of the roots with the soil.

Water plants thoroughly even when the soil is moist, and especially when dry. Thorough watering settles the soil around plant roots better than tamping. After watering has been done, fill the hole level with the top of the ground, then compact the soil again. Loose soil is then placed on top. Be sure to set the plants in straight rows. A little care at this time will save trouble and expense later on.

### GRAPE PLANT TERMS

Trunk—Main stem or permanent upright part of the plant.

Head—The portion of the trunk next to the wire of the trellis.

Shoot—The small growth of the season; becomes a cane at the end of the growing season.

Cane—One-year-old growth.

**Fruit Buds**—Buds which produce shoots upon which the fruit is formed. They develop during the summer at the bases of leaves and are found on the cane during winter at pruning time.

**Pruning**—Cutting out and removing parts of the vine not needed for fruit production.

**Training**—Arrangement of the vine on the trellis.

When plants are set, select the best cane, prune it back to two buds, cut off all other canes leaving a two-inch spur on one of those to tie to. This pruning balances the top with the root system.

### CULTIVATION

Cultivate to save moisture by killing weeds and grass. In commercial vineyards, special tools are used for cultivating. The first cultivation in the spring is usually made with a plow. The disc or spring tooth harrow is the standard cultivating equipment. Cultivation should start in the spring and continue until September. The soil should be cultivated as soon as it is dry enough after each rain. Cultivate shallow to keep a dust mulch.

### COVER CROPS

Around September 1, or as soon as moisture conditions permit, plant a cover crop. Hairy Vetch, a winter legume, is the best cover crop to use because it adds nitrogen and organic matter to the soil. Seed about fifteen pounds per acre. On most soils suitable for growing grapes, the phosphate content may be too low. Vetch requires a soil well supplied with phosphate. Make soil tests and add phosphate, if it is needed, before the Vetch is planted. From 100 to 200 pounds of superphosphate per acre is a normal application. Wheat, rye, or a small grain mixture may be used. Turn the cover crop under in the spring before it uses the soil moisture needed by the grape plants.

### TRELLIS

Two types of trellis are used in Oklahoma—the Munson or Canopy and the Four Cane Kniffen system.

A special type of wire is best in the construction of grape trellises. This is a smooth wire and is usually called “self-tightening” or “coiled spring steel wire.” It has long, easy kinks or waves. Vines cling to it better than on a straight wire. If this type is not used, tighten the wires each season to avoid sagging of the trellises. Too, end posts may be loosened by the pulling of ordinary straight wire during the winter.

If you save the first season's growth, a grape harvest will be made the second year. Build the trellis during the first season's growth. Since the Kniffen system is cheaper, easier to build, and less repair is needed, it is used by most producers.

The Four Cane Kniffen system consists of two wires supported by posts. The lower wire is loosely stapled to the post about 30 inches above the ground, and the upper wire about 24 inches above the lower wire. This places the top wires nearly 54 inches from the ground, making it necessary to use six and one-half or seven foot posts to build the trellis. Posts of durable wood are set in the ground a depth of one and one-half feet, or deeper if there is danger that the trellis will be blown down by storms. End posts are set about two and one-half feet in the ground and are heavier material than the other posts. Brace the posts well in order to prevent sagging and loosening of the wires. Staple wires firmly to the end posts, and tie the loose end around the post. In stapling the wire to any except end posts, staples are not driven down tightly on the wires but left loose enough so that the wire will pull through them when tightening becomes necessary. Always place wires on

the windward sides of the posts or if the vineyard is constructed on a slope, place on the uphill side. If this is not done, they will exert a direct pull on the staples which will loosen and pull out. Number nine wire is used for the top. Number eleven is heavy enough for the bottom wire.

Before pruning is started, the method of how the grape bears its fruit should be understood. A grape cane (one-year-old wood) bears fruit buds that produce shoots (current season's growth) on which the grapes grow. Fruit buds occur only on one-year-old wood. Canes about the size of a lead pencil are most desirable. The proper number of fruit buds are left on the canes. If all the one-year-old wood is removed, no fruit will

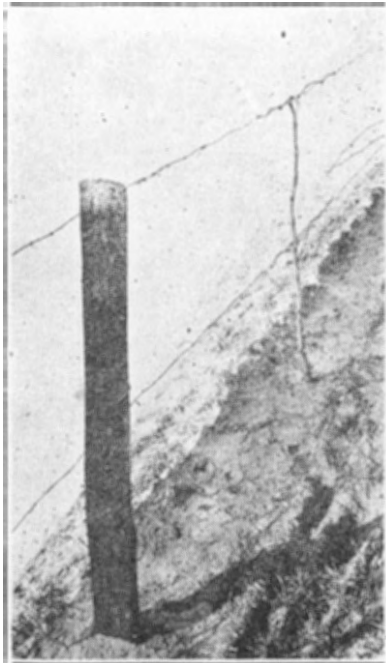


Fig. 1.—Kniffen Trellis.

be produced that year. If all one-year-old wood is left, the vine overbears and there will be very little fruit the next year. Clusters of fruit on vines not pruned will be small and often of low quality.

#### PRUNING

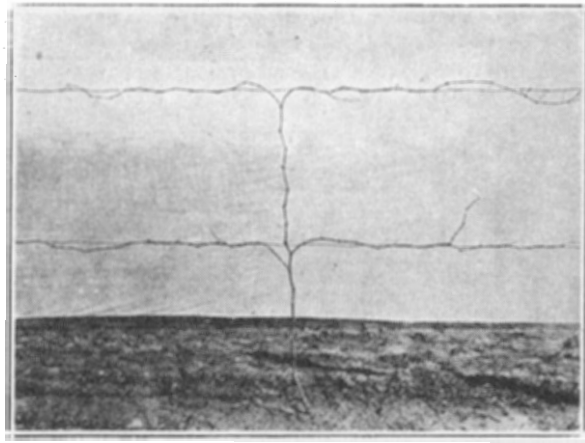
At planting time cut the top back to two buds. During the first growing season select the strongest shoots and tie up to the trellis. Save two shoots until they are strong enough to withstand the wind. Young grape shoots break off easily. Cut one cane leaving a stub or spur about two inches long near the base of the plant. Remove buds from this spur. String used to tie up the cane will be tied to the stub and one turn made on the lower trellis wire and then tie to the top wire. As the selected shoot grows it is twined around the string and the other shoot removed. Pinch the tip out of the shoot about three inches below the top wire. During the rest of the first growing season, side shoots will develop. These shoots will be the canes selected to bear fruiting wood next year.

#### PRUNING AT THE END OF FIRST SEASON'S GROWTH

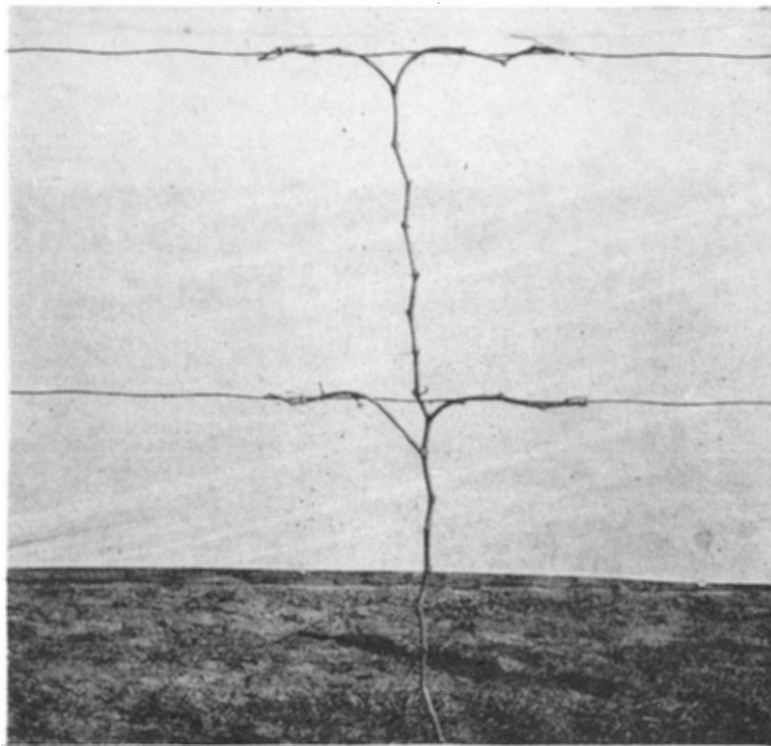
At the end of the first season of growth the vines, if properly cared for, will consist of a straight trunk from the ground to top wire with lateral canes growing from each side. Four canes, about the size of a lead pencil should be selected for fruit production. All other growth is removed from the vine. The four canes selected for fruit production will extend along the wire on each side of the trunk, starting just below the wire. Each of these canes is shortened to a length of two to ten buds from plant trunk. Weak vines are pruned more severely than strong ones. After pruning, the vine will consist of a trunk and four fruiting canes. One cane will run in either direction along the top wire and one will run in each direction along the bottom wire. Each cane is tied securely around the wire between the two outer buds. During the summer months, remove all side and basal shoots which appear on the trunk until the shoot reaches the top wire.

#### PRUNING AT THE END OF THE SECOND SEASON

Select four fruiting canes, one each way on the wires, and cut back to a length of eight to fifteen buds, depending upon the vigor of the vine. In addition to the fruiting canes, four short spurs, two buds in length, are left. Locate one spur on each side of the trunk near the wire. The spurs provide canes for next year's crop and in so doing will keep the canes starting nearer the trunk each year. Otherwise,



**Fig. 2—Young Grape Vine on the Kniffen Trellis.**



**Fig. 3—Same Vine as Shown in Fig. 2 After Pruning.**



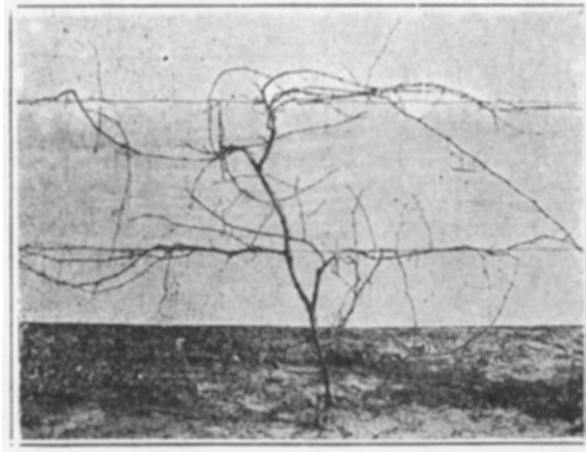
the canes would start further away from the trunk each succeeding year.

The fruiting canes should be about the same diameter as a lead pencil or a little larger for some varieties. Under all circumstances, canes of average size should be selected rather than very large or very small canes. All growth, except the four fruiting canes and four spurs is removed. As soon as the plants are pruned, the canes extending each way on the wire are separately twined and tied between the outer two buds.

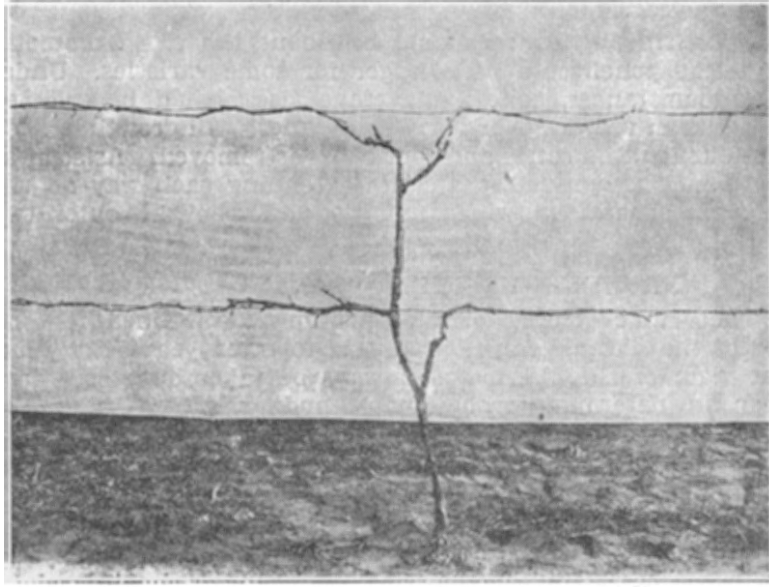
#### PRUNING THE THIRD YEAR AND AFTER

The same general plan of pruning as outlined for the end of the second year of growth is followed year after year. The vigor of the plant must always be taken into consideration in determining how many buds should be left for fruiting. Plants which have made the least growth should be more severely pruned than those which have made the largest amount of growth.

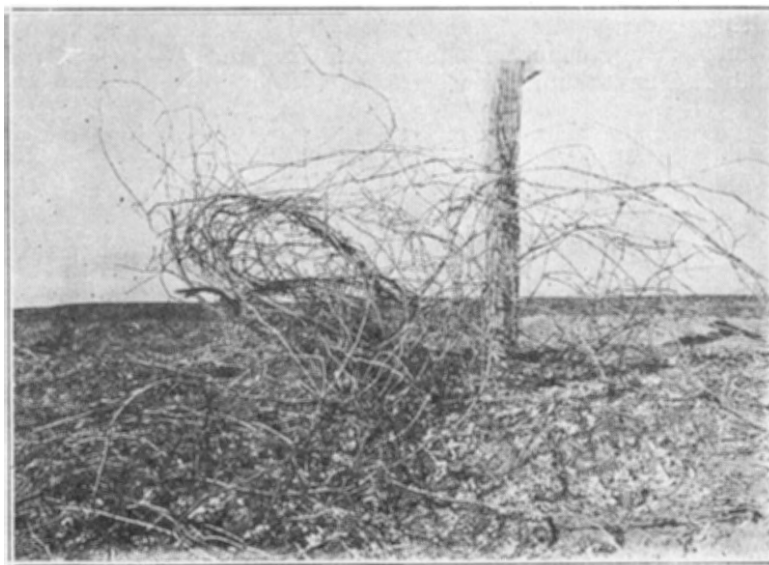
After 10 or 12 years, plants become weakened or less vigorous, making it desirable to renew the top. This may be accomplished at any time by selecting a cane or shoot developing from the base of the plant and training it up on the wire in the same manner as the original plant was trained. After the shoot has developed, a sufficient amount of growth and fruiting canes make a full crop, the old trunk may be removed at the surface of the ground or near the point from which the new trunk grew.



**Fig. 4—Before Pruning—Mature Vine.**



**Fig. 5—After Pruning—Same Vine as Shown in Fig. 4.**



**Fig. 6—A Neglected Grape Plant.**

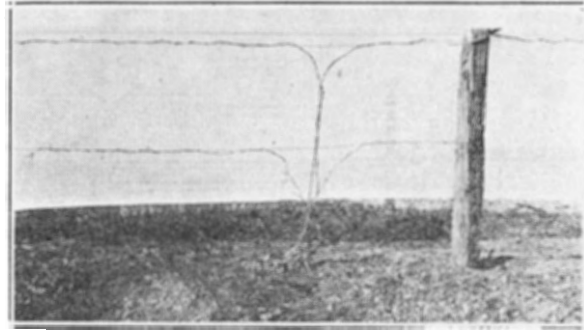


Fig. 7—After Pruning. Same Plant as Shown in Fig. 6.

#### PRUNING NEGLECTED VINES

Where pruning has been neglected for a year or more with mature vines, they become very rangy with too much old wood. The best fruiting wood will be found a long distance from the trunk. Select the canes as near to the trunk as is possible. Be sure to select one-year-old wood. Remove as much of the old wood as possible and leave spurs near the trunk. Two or three years will be required to bring the canes back to the trunk. Old tops may be renewed at any time.

#### VARIETIES

The Concord Grape is the most popular commercial variety produced in the United States. But in Oklahoma its production is limited to three counties in the northeast corner of the state. A large number of varieties have been successfully grown in Oklahoma.

The following varieties are listed in the order of ripening:  
**MOORE EARLY.** Black, fair quality, early, vine not vigorous.

**CAMPBELL EARLY.** Black, good quality, early, vine not vigorous.

**SENECA.** White, good quality, early, good market grape, not bud hardy.

**RIPLEY.** White, good quality, early, good market grape.

**LUCILE.** Red, small, very good quality.

**BEACON.** Black, large cluster, shatters, very productive.

**DELAWARE.** Red, small, very good quality.

**BAILEY.** Black, large cluster, productive.

**NIAGARA.** White, large clusters, productive, good quality.

EXTRA. Black, compact cluster, productive.

MUENCH. Black, small berries, productive.

CATAWBA. Red, good quality.

GOETHE. Red, productive, fair quality, very late.

Those classed as high quality table grapes are Seneca, Ripley, Delaware, Niagara, Catawba, Goethe, Campbell Early and Moore Early. Those of lower quality but heavier producers are Beacon, Bailey, Extra and Muench.

Campbell Early and Moore Early are old varieties which have been widely planted throughout the state. They are poor growers and should be planted only in rich soils adapted to grapes. These two varieties, when grafted to certain vigorous American root stocks, make a good growth. The common whip and tongue bench graft is the best method to use in propagating new plants. The graft is usually made on one-year-old plants grown from cuttings. The graft is made when the plants are dug from the nursery row. They are stored in a callusing box until spring when they can be set in the vineyard. When pruning a grafted plant, be sure to save new growth on the trunk above where the graft was made.

#### CHANGING VARIETIES BY GRAFTING

Undesirable varieties now growing in vineyards may be successfully grafted to more desirable types. This work may be done in the spring just before the sap starts to flow. The Clift graft is used in making the change usually during February or March. Pieces of one-year-old cane of desirable varieties cut in pieces containing two or three buds are prepared before sap flow starts. These scions are held in damp sawdust or sand, or buried in the soil on the north side of the building where they will remain moist until time to use them. The lower end of the scion is cut wedge-shape by making the cuts about one and one-half or two inches long at the lower end of the scion. The soil is removed from around the old grape vine to a depth of two or three inches. At this spot the vine is sawed off and either split or sawed vertically to a depth of about two inches. A screw driver or wedge-shaped tool is placed in the split holding the vine halves apart until the scion can be inserted in each side, bringing the cambium layer of each in contact. By having prepared the scion slightly wedge-shaped, the contact will be better. The screw driver or instrument used to hold the halves apart is then removed and the spring in the old vine should be strong enough to hold the scions in place. If the halves are loose, a strong piece of twine may be used to bind the stock.

A piece of heavy paper is wrapped around the stock and scion, and soil mounted over the area to prevent drying out. The top bud of the scions should be about level with the top of the soil. Remove the large number of sucker sprouts that usually grow when an old vine has been cut off. After a year or two of growing, a new top of the desired variety should be producing grapes.

#### MAKING GRAPE CUTTINGS

Grape cuttings are made by selecting pencil size canes of the varieties desired. These canes are cut in lengths usually containing about three or four buds each. Cuttings are generally made up at the time the grape vines are pruned (January and February). Bundles containing about 25 cuttings should be properly labeled. Point all buds on the cuttings in the same direction in the bundle. Bundles are then buried with the buds pointing downward (upside down) in the soil in a well-drained area and covered with about six or eight inches of soil. In the spring, after the danger of heavy frosts has passed, the cuttings are dug up and set in the nursery rows. Have the soil well prepared. Push the cuttings down into the soil at about a 45 degree angle, leaving the top bud above the ground layer (right side up). Unless moisture conditions are good, water the cuttings. The soil is then well firmed about the cuttings. A spacing of about one-half foot is generally followed. Rows may be three or four feet apart depending upon the cultivating equipment. A good dust mulch form of cultivating is followed throughout the growing season. Cuttings produced under this basis produce well-rooted plants that could be set in the vineyard early in the spring. Some producers have found it to their advan-

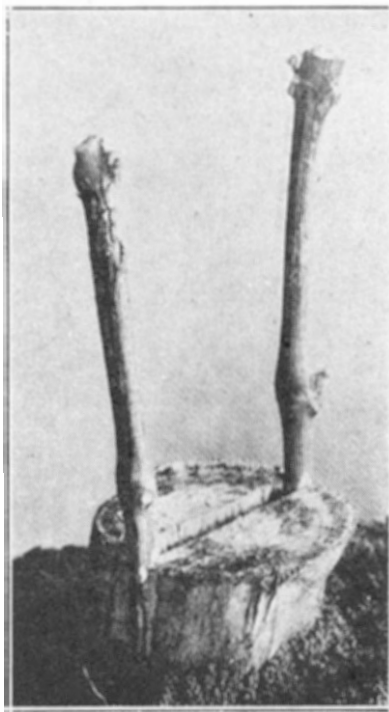


Fig. 8—A Clift Graft Before Covering With Soil.

tage to grow a few grape cuttings to replace or to add to the vineyard, selecting the varieties that are best suited to their conditions.

#### DISEASES AND INSECTS

Some years Black Rot is a disease that destroys the entire grape crop. Poor air drainage and wet, cool, cloudy weather are factors favoring the disease. A thoroughly effective spray program is ordinarily required for satisfactory grape production in the central and eastern parts of the state.

Following is a spray schedule that has been found to be satisfactory:

## Pest Control Schedule—Grapes

Application and Timing	Pests Involved	Spray Mixtures to Use— Materials for Mixing 100 gal. Spray	Dust Mixtures to Use— Materials for Mixing 100 lbs.
<b>FIRST SUMMER.</b> Apply when new shoots have two leaves.	Black rot, anthracnose, flea beetles.	4-6-100 Bordeaux or low-soluble copper mixture as directed by the manufacturer and 3 lbs. lead arsenate.	20 lbs. low-soluble copper (50% metallic) See Note 2. 20 lbs. lead arsenate 60 lbs. hydrated lime.
<b>SECOND SUMMER.</b> Apply just before the blossoms open.	Black rot, anthracnose, flea beetles.	Same as above.	Same as above.
<b>THIRD SUMMER.</b> Apply just after blossoms fall.	Black rot, anthracnose, curculio, aphids.	4-6-100 Bordeaux or low-soluble copper mixture <b>as directed by the manufacturer</b> and 3 lbs. lead arsenate. (See Note 1.)	Same as above. (See Note 3.)
<b>FOURTH SUMMER.</b> Apply two weeks after third summer.	Black rot, anthracnose, curculio, leaf hoppers.	Same as above.	Same as above.
<b>FIFTH Summer.</b> Apply two weeks after fourth summer.	Black rot, anthracnose, curculio, leaf hoppers.	Same as above.	Same as above.

**NOTE 1:** If aphids or leaf hoppers appear at the time the third, fourth or fifth spray application are made, add 1 pint of nicotine sulfate to each 100 gals. of spray mixture, or 2 lbs. 50% water sol. DDT.

**NOTE 2:** Mix low-soluble coppers according to their metallic content, using the amount necessary to give the proportion indicated. If more is needed than indicated, reduce the lime accordingly.

**NOTE: 3** to 5% DDT dust may be used. If aphids or leaf hoppers are present add nicotine sulphate to make a 3% dust.

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