

Bramble Fruits

Circular 458

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BRAMBLE FRUITS

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Blackberries and dewberries grow wild in most parts of the state except in the dry sections of the West. The cultivation of commercial varieties has not developed too rapidly because there are many wild berries in some areas. The high qualities of some commercial varieties are being recognized. Generally the size and flavor and keeping qualities of the commercial varieties are better than the wild berries. Berries are well adapted to freezing. In the community where frozen food locker service is available, there is a good berry demand.

Berries are well adapted to a large part of the state. They are one of the small fruits successful in home plantings. No doubt, it will be a long time before there is an over-production of bramble fruits.

LOCATING THE PLANTING

For best results, locate plantings near the market centers since berries are very perishable and only a short time should be allowed for delivery to the consumer. It is best to locate home plantings where they can be watered if necessary. Berries require adequate moisture during the growing and ripening seasons. On sloping soils locate plants on the contour. In windier sections run the rows north and south. A good wind break is helpful. In some sections of the state winter injury is not uncommon.

SOILS

Berries will grow on a wide variety of soils. Deep sandy loam soil, well-supplied with organic matter, is best. The sub-soil should be mellow and open enough to provide drainage. If surface water stands too long, berry roots will rot. Sub-soil containing gravel is satisfactory. Sub-irrigated sandy areas with good drainage is best for berry production.

TIME OF PLANTING

Plants may be set in the fall, winter, or early spring. In the eastern side of the state, fall or winter planting is recommended. In the central and west part of the state early spring planting is sometimes better. Remember: Plant only when there is sufficient moisture in the soil.

PLANTING AND SPACING

The soil should be cultivated to row crops for at least two years before being planted to berries. Since most soil will need

more organic matter, grow a cover crop such as Hairy Vetch the season before. The berry plants are set in a well prepared soil about one inch deeper than they had been grown before. Set blackberries, raspberries, and Austin Dewberries in rows eight to twelve feet apart and space about three to four feet in the row. Boysenberries and Youngberries are set in rows eight to twelve feet apart and spaced from six to eight feet apart in the row. Spacing depends to some degree upon the moisture and richness of the soil.



Fig. 1.—Note clean cultivation and spacings between the blackberry rows.

The type of cultivating equipment is also considered in spacing rows. An error usually made is locating rows too close together. Rows should be wide enough apart to provide space needed for teams or tractor-drawn cultivating equipment. After plants are fully developed, space between rows will be reduced by as much as two to four feet. Set only strong, well-rooted plants. Avoid exposing roots to the sun and wind during transplanting. It is important that the plants be protected against drying out. When the plants are received, set in the field at once, or heel in. The vines are cut back to the original ground line at planting time. Removal of any part of the vines not needed reduces chances of starting the anthracnose disease in the new planting.

FERTILIZING

Berries use more plant food from the soil than is generally believed. Commercial fertilizer has given good results

where the soil fertility was low. Barnyard manure, if available, applied to the soil every year is probably the best form of fertilizer to use.

CULTIVATION

Start cultivation in early spring and continue through the growing season. Frequent shallow cultivation with a disc or spring tooth is best. Cultivate to control weeds and grass and sucker plants in order to conserve moisture. During the first growing season a row of early vegetables may be grown in the middle between the berry rows. Irish potatoes, cabbage or onions are satisfactory, since they are out of the way before the berry plants need the moisture. Do not use crops that grow all summer or those that furnish too much shade.

COVER CROPS

Hairy Vetch is one of the best winter cover crops that can be grown in the berry patch. Vetch will add fertility and organic matter to soil. This practice will also increase the moisture-holding capacity of the soil and result in a bigger yield. Cover crops are planted in September and turned under in the spring before too much growth occurs and before the moisture requirement interferes with the development of the berry crop. Allow cover crops to occupy only three or four feet space in the middle. One or two rows planted in the middle will usually cover the space. Soil tests will show if phosphate or lime need be added before the Vetch is seeded. Inoculate seed before it is planted the first time in a field.

MULCHES

For home or small commercial plantings many growers prefer to apply mulching material on the soil about December 1st. Old hay or straw, cotton burrs, or manure containing a lot of straw may be used. Mulches add organic matter to soil, prevents wind and water erosion, and eliminates cultivation except for cutting a few weeds that might come through the mulches. Mulches tend to keep down sucker growths. They also provide some winter protection for berries with trailing vines and help protect fruit from the dirt at harvest time. Cleaner berries of higher quality are usually harvested from areas where mulches are used. Enough heavy mulching material should be put on to form an adequate cover that will stay in place. Mulching material six inches deep worked well under the vines as well as in the middle will be satisfactory. After three or four years of mulching, weed and grass growth will

increase to where a clean summer cultivation program will need to be followed. Mulching may be applied then in the fall or a winter cover crop may be used.

PRODUCING NEW PLANTS

When a berry plant is well established the root system may be expected to last a number of years depending upon the moisture supply and the soil fertility. Canes produced from the crown each spring lasts two years. The cane makes its growth the first year and bears fruit and then dies during the second growing season. Berries bear fruit the second year after they are planted. A new crop of canes grow each year to replace those that are fruiting and will die during the season. Berry plants are propagated by three methods:

(1) The most popular one, especially in the case of blackberries and raspberries, is the use of the sucker plants that come up near the old crowns at every spot where any of the roots have been broken in cultivation. These plants are usually well rooted and can be set to start a new planting.

(2) Root cuttings of blackberries may be made. Select roots about the size of a lead pencil. Cut these into pieces about three to four inches long. Cuttings are made in the fall or early spring and are planted in rows about six inches apart and three inches deep. Cultivation and care of the plants are necessary. Good strong well-rooted plants can be grown by this method and will be ready for planting by late fall or early in the next spring.

(3) Tip layering is a method ordinarily used to propagate berries with trailing canes such as the dewberry group. Some of the raspberry varieties are also propagated in this manner. During the fall of the year, about a month before growth stops, tips of the shoots are covered to a depth of about three inches. Usually the shoots are covered out in the middle of the rows where the new plants can be dug without interfering with the old crown. The end of the canes may be placed in a small plowed furrow and covered. Then the soil is firmed well. One common method of rooting a few plants is to use a narrow spade, push it down in the ground about four inches deep and push the handle forward. Insert the tip of the cane in this opening and press the soil firmly back with the foot. Sometime during February or March, before growth starts, the vines are cut loose near the tip end and new plants dug. They may be set directly to the field or spaced about one and one-half feet apart and grown for one season in a nursery row.

PRUNING AND TRAINING

Life of the bramble fruit plantings depends largely upon proper pruning methods. Unless the berries have plenty of room quality will be low and picking will be difficult. Where suckers are allowed to grow, the planting will soon become a *brier patch* instead of a *berry patch*. Too many berry plantings in Oklahoma have gone this route and have been abandoned. Proper *spacing, cultivation, and pruning* are necessary to profit berry production.

Blackberries are ordinarily planted three or four feet apart in the row. They may be cultivated crosswise the first year to reduce hand labor necessary to keep down weeds, grass and sucker plants. Soon the row will be about two feet wide and the canes will be solid in the row. Pinch out the top of the new cane when it reaches a height of about thirty inches. This will require going over the patch two or three times during and just before harvest time.

The fruit is easier to pick and is larger in size if a good job of pruning is done. During the next spring, before growth starts, remove weaker canes. The desired spacing will depend upon the soil fertility and the available moisture supply. An average of three or four plants per foot

of row is normally considered an average stand. Prior to blooming, cut back about one-third of the side branches causing the plant row to look like a hedge. Remove from one-third to one-half of the outer end of the laterals that grow from the main vine. The difference in the type of growth by some varieties will change the method of pruning to be used. Remove canes that bear the fruit and burn as soon as harvest is completed. In windy sections the old canes are sometimes left to protect young plants until spring.



Fig. 2.—Unpruned blackberry fruiting canes.

Dewberry types are usually trellised. Trellising is best for such varieties of Boysen and the Young. For short vine growth varieties such as Lucretia and Austin the use of stakes about four feet high driven at each hill is a good way to train vines. Space these plantings in check rows about six feet by six feet. Pick up canes each spring just before growth starts, wrap around the stake and tie near the top. Old canes are usually removed soon after harvest.

A two-wire trellis is the best method of handling longer trailing vine types such as Boysen and the young. Construct trellis with sturdy well-braced end posts and a post in the row between every third or fourth plant. Place the first wire about two feet above the ground and upper wire

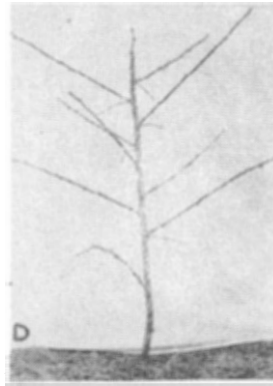


Fig. 3.—Blackberry cane after summer pinching and spring pruning.



Fig. 4.—Note thick cluster of fruiting canes before pruning and thinning.



Fig. 5.—After pruning and thinning of canes in Fig. 4.

about three and one-half feet high. In the spring, before growth starts, *but after danger of heavy frost has passed*, divide the canes from one hill about equally and wrap around the first and second wire running each direction from the plant. The number of wrappings from the top wire to the bottom wire and back up to the top will depend on the length of the canes. Vines from each plant are divided into four bunches and one bunch wrapped on each wire. Sometimes shorten the cane growth to not more than eight feet. Canes are usually tied near the end with binder twine.

A one-wire trellis may be used. It is usually placed about three feet high. Divide vines from each plant about equally and wrap on the wire running each direction from the plant.

Cut the canes that have borne fruit at the ground line and remove them from the trellis soon after harvest. Usually a large number of new shoots will already be developing. Save only ten to fourteen shoots per plant. Unless this is done, more fruiting canes will develop than can be supported during the summer months. By keeping the proper balance of fruiting canes, a higher quality fruit will be produced. Some producers divide the new growth during the growing season and encourage it to grow along the row to permit cultivation and planting of the winter cover crop. These shoots are picked up in the spring before growth starts and placed on the trellis.



Fig. 6.—One wire trellis system.

They are removed as soon as harvest has been completed. Trellising keeps the berries clean and makes picking much easier. Unless trellising is used on trailing types, it is impossible to do a good job of cultivating, mulching or growing a winter cover crop.

Where good mid-summer growing conditions exist, remove all new shoots about a week or ten days before harvest. This practice will help reduce damage by the red-necked cane borer and the disease anthracnose.

SUGGESTED VARIETIES FOR NEW PLANTINGS

Records from the variety trial plots at the Oklahoma Agricultural Experiment Station, and the experience of commercial growers, show there are several varieties of blackberries adapted to Oklahoma.

Early Wonder is a vigorous, early to mid-season variety. The plants are low and spreading the first year or two, but become tall and curving after several years' growth. Berries are medium to large, black, firm, and of excellent quality. Plants are very productive and quite drought resistant. It is recommended for both home garden and commercial planting. Planting distance: Rows 8 feet, plants 3 feet.

Early Harvest is one of the earliest maturing varieties. Berries are small to medium in size, mild flavored, good quality with small seeds. Plants are very erect and tend to set more fruit than they can properly mature unless pruned heavily. This variety is subject to leaf spot, orange rust, and red spider. Planting distance: Rows 8 feet, plants 3 feet.

Lawton has the distinction of being the only variety grown to any extent commercially in Pottawatomie county, where there are approximately 1,500 acres planted to this variety alone. Several counties are developing commercial plantings of *Lawton*. Such qualities as erect cane growth, high productivity, medium to large firm fruit of good quality, resistant to disease, and drought resistant make it an excellent berry for commercial production. Planting distance: Rows 12 feet, plants 3 feet.

McDonald is one of the very earliest varieties of blackberries. Berries are large, firm, and of good quality. There are two objections to this variety. One, it must be cross-pollinized by such varieties as *Early Wonder*, *Dallas*, or the *Austin Dewberry*. Two, it is subject to attacks by the red necked cane borer. Planting distance: Rows 10 feet, plants 3 feet.

Dallas is a vigorous variety adapted to *less fertile soils*. Fruit ripens early to mid-season. The berry is medium in size, firm and of good quality. Plants are spreading in habit, and are *drought and disease resistant*. Planting distance: Rows 10 feet, plants 3 feet.

DEWBERRY VARIETIES

Austin (Austin Mayes) is an early productive variety. Berries are medium in size, of good quality, too soft for shipping, but an excellent berry for home use or local markets. Planting distance: Rows 8 feet, plants 4 feet.

Lucretia is a variety similar to the *Austin* in plant growth, being vigorous and productive. The berries are large, long, black, of good quality and firm, making this a good variety for shipping. Planting distance: Rows 8 feet, plants 4 feet.

Boysen is a vigorous-growing dewberry variety commonly known as the *Boysenberry*. It is a rather new variety developed by Rudolph Boysen, Anaheim, California, and was introduced commercially in 1926. It is the most vigorous of the present cultivated varieties, the vines often making a growth of 10 feet or more in length. The *Boysenberry* blooms later and the fruit ripens 7 to 10 days later than the *Youngberry*.

The berries are very large and long. They are dark reddish black when fully ripe and are of excellent quality, perhaps slightly more acid than *Young*. Because the large berries are somewhat soft when fully ripe, the commercial practice is to harvest them while they are still quite red to insure their arrival on the market in a firm condition. Quality is sacrificed, since best quality is not secured until fully ripe. It is recommended that for home use and local market the berries be picked every day or at least every other day to secure the high

quality that this variety can produce. The vines have shown remarkable resistance to summer drought and are fairly winter hardy except when weakened by insect and disease injury, but are subject to anthracnose and red-necked cane borer. Planting distance: Rows 12 feet, plants 8 feet.

Young is similar to the Boysen dewberry, although not so vigorous. The leaves are smaller and lighter green in color. This variety is commonly spoken of as the Youngberry. It originated in Louisiana in 1905 as the result of a cross between Austin (Mayes) and Phenomenal dewberries by B. M. Young, but was not introduced to the commercial trade until 1923. Vines are not as winter hardy nor as resistant to drought as the Boysen and are quite subject to anthracnose and red-necked cane borer.

There are two types of the Young dewberry: One with spines and one without spines, often spoken of as thorny and thornless. There seems to be a difference of opinion among commercial growers regarding the hardiness of the two strains, although the thorny type is generally the more hardy. The thornless type is also subject to more serious rabbit injury during the winter. Points in favor of the thornless type are that they are more easily trained on the trellis and more easily harvested.

The fruit of the two strains are almost alike. The berries are large, oblong in shape, very dark wine color, and of excellent quality. As compared to the Boysen they are not so large, very similar in flavor, but slightly less acid. The fruit ripens 7 to 10 days earlier than the Boysen.

Where these berries can be grown successfully, the Young and Boysen make a good combination for commercial planting. It is recommended that such plantings consist of one-third Young and two-thirds Boysen. The earliness of the Young may be favored by a higher price some seasons, but the greater yields of the Boysen will more than off-set any disadvantage in lower market prices. Remarks regarding degree of ripeness and quality of the Boysen apply to the Young also. Planting distance: rows 12 feet, plants 8 feet.

Nectarberry and Thornless Boysen came recently from California. All available evidence seems to indicate that the Nectarberry is similar to the Boysen, and that the Thornless Boysen is similar to the Thornless Young. In many sections the thornless types have not been as productive as the thorned varieties.

RASPBERRIES

The raspberry is one of the high quality small fruits. The plants suffer from the summer drought and high temperature. Cold, drying winter winds cause dieback of the canes. Raspberry production is limited to the northeastern part of the state. Small home plantings are recommended where there is an available moisture supply and protection from wind. Well-drained creek bottom soil is best.

Raspberries are susceptible to the disease and insects mentioned under blackberries and dewberries and in addition are subject to crown gall, mosaic, and wilt. The only control for these three diseases is the planting of disease-free plants on clean soil.

Follow soil preparation and planting as outlined under blackberries and dewberries. There are three types of raspberries: Black, purple and red. The black and purple raspberries are propagated by tip layers. Plant them in early spring. Red raspberries are propagated from suckers and may be planted in the fall or any time during the winter that the soil is in good condition. Prune black and purple raspberries as erect blackberries are pruned. Red raspberries are not tipped during the growing season, but head the canes back to about four feet in length before growth starts in the spring.

VARIETIES

The list of varieties adapted to Oklahoma conditions are those able to withstand summer heat, drought, and late spring freezes.

Bristol is the most hardy and productive black raspberry variety. The berries are medium to large and of very good quality. Planting distance: Rows 8 feet, plants 4 feet.

Sodus is the most vigorous and drought resistant of the purple varieties. Plants are large and productive. Berries are large size and of excellent quality. They are not as dark in color as most purple varieties. Planting distance: Rows 8 feet, plants 4 feet.

Van Fleet is the most drought resistant and most winter-hardy of all varieties tried at the Oklahoma Agricultural Experiment Station. Berries are good quality, light in color, medium to small in size and ripen over a period of about three weeks. Planting distance: Rows 8 feet, plants 4 feet.

Morrison is a promising new black raspberry variety.

St. Regis (Ranere) and *Latham* are varieties found growing in the northeastern part of the state. These varieties are low in quality.

DISEASES AND INSECTS

Anthracnose is a fungus disease attacking the canes of all bramble fruits. On blackberries and dewberries the most serious damage is to fruit stems, resulting in too early ripening and withering of the berries.

Severe infections also weaken the canes, resulting in serious winter dieback. Leaf infection is often so severe as to cause part of the leaves to fall.

The disease first appears in the spring as small, purplish, slightly raised spots on new shoots. As the shoots grow, the spots enlarge and become lens-shaped or oval in outline, with a slightly raised purple edge. The center gradually takes on a light grayish color and becomes sunken. The scars are often so close together that they form large, irregular spots over the surface of the cane. On the leaves, small, purple-bordered spots with rather definite outlines develop. Heaviest infection occurs during the early spring while the buds are unfolding and new tender parts are exposed. As the season advances, weather conditions become unfavorable for the continued spread of the fungus.

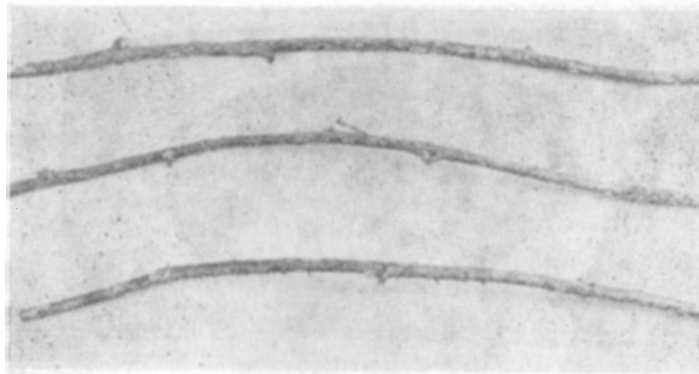


Fig. 7.—Youngberry fruiting canes showing scars of the disease anthracnose.

Anthracnose may be controlled by spraying, although other measures such as sanitation and planting of resistant varieties are of great importance.

Best control comes from a delayed dormant spray about the time the buds begin to swell. The most effective material is commercial liquid lime-sulphur applied at the rate of one gallon in ten gallons of spray. For effective control, thor-

oughly cover the canes with spray. In severe cases of infection, a later spray applied just before the blossoms open will help, using either lime-sulphur 1-40 or Bordeaux Mixture 2-3-50.

On dewberries in the southern part of the state, or where soil fertility and soil moisture is enough to make a good growth during midsummer, spraying may be eliminated by cutting off all growth, both old and new, at the surface of the ground and burning it right after harvest.

In sections where plants will not make good midsummer growth this practice will materially reduce the yield, since the producing capacity is governed by the amount of growth made by the plant.

Leaf Spot is a fungus disease which may cause serious defoliation on heavily infected plants. The disease, commonly known as Septoria leaf spot, may be confused with anthracnose leaf infection; however, the spots remain small and more regular in outline. The edge has a zone of purple tissue similar to anthracnose, but the center is light brown or tan in color while the center of an anthracnose spot is darker in color.

Control measures recommended for anthracnose are also effective in controlling leaf spot.

Orange Rust, although not very serious at present in the state, may become a problem if control measures are not taken as soon as it appears. The disease is recognized by its striking orange color, especially on the under-surface of the leaves. Underneath, the leaves have a velvety feeling and an orange-yellow color. The disease is first seen by noting small yellow dots scattered over both surfaces of the leaves. Later the surface breaks open, exposing large, orange-red areas. A plant once infected never recovers, and the disease will destroy the entire patch in a short time unless control is put into effect.

As soon as a diseased plant is seen it should be dug up with as much of the root system as possible and burned. Avoid bringing them in contact with healthy ones, as the disease is easily spread in this manner. Do not cultivate an infected patch in early morning, since cultivation spreads the disease and spores and damp foliage is ideal for their germination and growth. Careful inspection of surrounding woodland should be made for the presence of infected native plants, and those also should be destroyed.

Crown Gall causes plenty of damage to raspberries. Blackberries are often affected. Some raspberry plantings have been killed by this disease. As the name suggests, a gall grows at the crown of the plant, or just below the soil cutting off the sap flow to the canes.

It is important to buy only disease free plants. Plant only on soil free of the disease. There is no other practical method of control.

Red-Necked Cane Borers: This is the most serious of insect pests on brambles in the state. Trailing and low spreading varieties of blackberries and dewberries are most heavily infested. Infested canes have enlarged swellings or galls, one and a half inches to two inches in length, on the lower part of the cane. During the winter, if the canes are cut open, slender, creamy white grubs up to one-half inch in length will be found in the pith within the gall or several inches above the gall. These are the larvae of the red-necked cane borer. The adults, which are bluish black beetles about $\frac{3}{8}$ inch long with a coppery red thorax or neck, appear during May. After the beetles lay their eggs the larvae hatching from them bore just beneath the bark, encircle the cane several times, then enter the pith. This initial encirclement by the larvae causes the abnormal swelling and checks the normal growth of the cane. Most upright varieties of blackberries are not severely infested or are able to bear fruit even though they have been infested by the cane borer. Infested canes of dewberries and most low-growing varieties of blackberries, however, suffer from severe winter dieback, usually from the top to the lowest gall formed on the cane.

The best method of control is to remove the new shoots about a week or ten days before harvest. This practice works well where summer growing conditions are favorable. The fruiting canes should be removed and burned as soon as harvest is completed. During the winter all canes showing large swellings should be removed and burned. These practices are very effective also in the control of anthracnose.

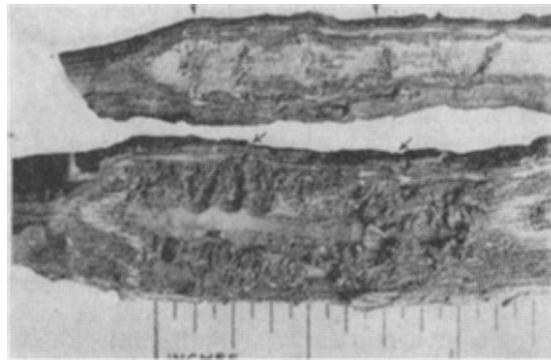
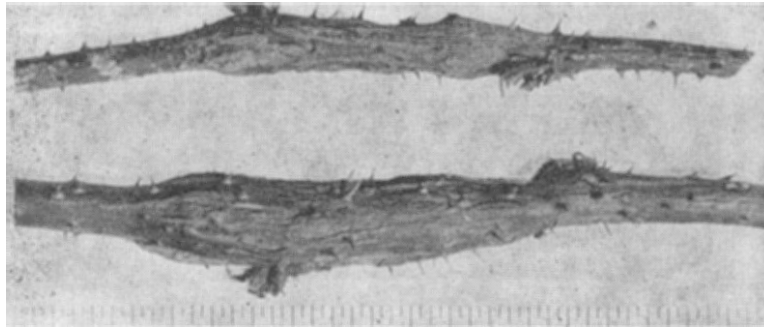


Fig. 8.—Red-necked cane borer injury. Enlarged swellings, “galls,” caused by the larvae of the red-necked cane borer. Upper: Two galls from a single cane of Boysen dewberries. Lower: The bark cut away to show the paths of encirclement around the cane, indicated by arrows. Within the larger gall there is complete disintegration of the bark which will cause death of cane above this point before spring.

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