

Extension Bulletin 323

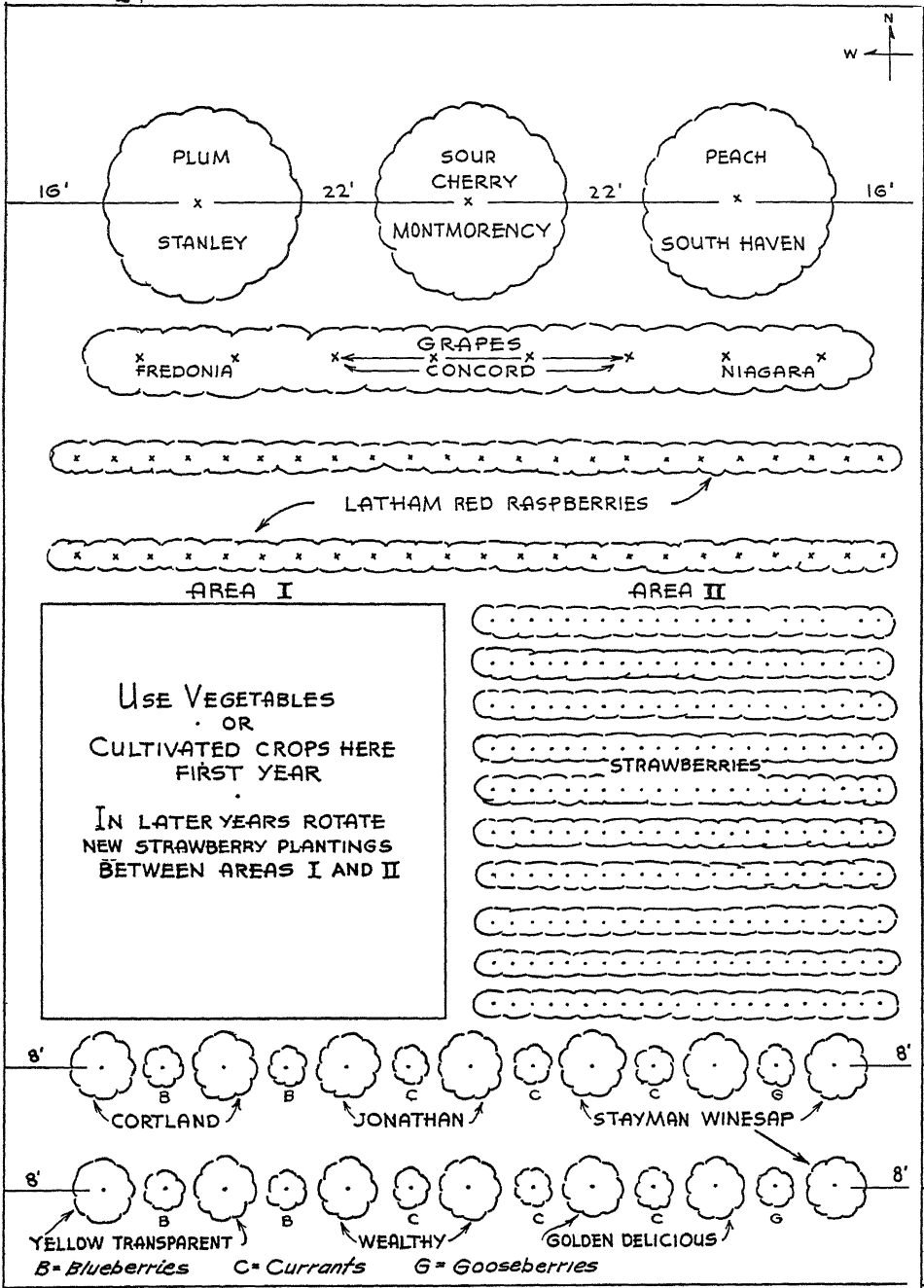
July, 1951



how to grow
bush fruits
in the home garden



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Plan for a home fruit garden, using dwarf apples. Scale: 1/16" = 1'

how to grow *BUSH FRUITS* in the home garden

MOST bush fruits and brambles can be grown successfully in Ohio home gardens. Red, black, and purple raspberries, blackberries, gooseberries, and currants are fairly easy to grow, but dewberries, youngberries, loganberries, and boysenberries are not well adapted to Ohio conditions and need protection against cold winter weather. Blueberries will grow, but they require an acid soil containing a liberal amount of organic matter.

Since all bush fruits tend to increase in size as they become older, make sure the area you choose for growing them is large enough to accommodate developing plants.

Here is a table which may be helpful for determining planting distances, time interval from planting to fruiting, and approximate yield. Ripening dates may be helpful in selecting fruits to grow.

Fruit	Approx. distance between rows (feet)	Approx. distance between plants in rows (feet)	Time interval from planting to fruiting (years)	Annual yield per plant*	Seasonal ripening periods†
Blackberries	8	3	2	1 ¼ qts.	July-August
Boysenberries	8	6	2	1 ¼ qts.	July
Currants	8	4	3	3 qts.	July
Dewberries	5	5	2	1 qts.	July
Gooseberries	8	3	3	3 qts.	July
Raspberries	8	3	2	1 ½ qts.	June-July
Blueberries	6	4	2	4 qts.	July

* Yield varies with age and size of plant and growing conditions.

† Based upon ripening dates at Wooster, Ohio, which are about 1 week in advance of northern Ohio, 1 week after central Ohio, and 3 weeks after southern Ohio.

Black and purple raspberries must be at least 300 feet from red raspberries to reduce the spread of virus diseases from the red to the black varieties. Therefore, in most home gardens *either* red or black raspberries can be grown, but *not both*.

Selecting Varieties

Carefully select varieties of bush fruits that are adapted to Ohio conditions. This makes it possible to grow a continuous supply of fresh fruit as well as a supply for preservation. The variety list below includes approximate ripening dates at Wooster, Ohio.

Blackberries

Eldorado.—Most widely planted variety in Ohio. Fruits glossy, attractive, and fairly large; canes vigorous and strong; and plants productive. (July 6).

Boysenberries

Berries are of high quality but somewhat acid if not picked exactly on time; fruit is large; canes are easily affected by gall and killing by cold temperatures and require winter protection; should be grown only in a limited way. (July 1).

Gooseberries

Downing.—Standard, green-colored gooseberry; plants vigorous and highly productive; fruit of medium size with thin skin and of excellent quality. (July 1).

Poorman.—High quality, standard, red gooseberry; fruit large and attractive with vigorous, high yielding plants; good for eating out of hand when “dead ripe.” (June 25).

Red Raspberries

Sunrise.—One of the earliest of red raspberry varieties; productive and of good quality; berries somewhat smaller than Latham. (July 1).

Latham.—Most widely planted in Ohio; highly productive, hardy, relatively easy to grow, and resistant to virus diseases; berries large, firm, and fairly good quality; long fruiting season. (July 7).

Taylor.—Ripens with Latham but is larger and of better quality; quite disease resistant but not hardy.

Milton.—One of the newer red varieties; ripens later than Latham and Taylor; useful to extend the season. (July 10).

Indian Summer (Red Everbearing).—Bears early in the season and another smaller crop before frost; fruit same size both seasons; good quality but fairly soft; plants vigorous and fairly easy to grow. (June 28, with fall crop in September).

Black Raspberries

Cumberland.—Berries attractive, glossy, large, firm, and of good quality; plants vigorous and productive but susceptible to anthracnose and virus diseases. (July 1).

Logan.—Early and good quality; berries large and firm; plants productive and more resistant to disease than Cumberland. (July 1).

Bristol.—Early to midseason, showing promise by its apparent hardiness to disease; fruit good quality; plants productive. (July 1).

Morrison.—Extends black raspberry season; ripens later than other varieties mentioned; usually not as productive as earlier varieties. (July 7).

Purple Raspberries

Sodus (Purple).—Plant 300 feet from red raspberries to prevent transfer of mosaic virus disease; plants vigorous and productive but susceptible to mosaic; fruit large, light purple, high quality, and good for canning. (July 11).

Currants

Wilder.—Most popular currant in Ohio; good quality, long compact clusters, and vigorous and productive bushes; berries large, bright red, and attractive. (June 20).

Red Lake.—Has large, clustered berries, good quality; plants vigorous, strong, and often more productive than Wilder; gaining prominence over Wilder where earliness is not of special importance. (June 15).

English black currant varieties are prohibited by state regulations, because fruits are susceptible to white pine blister rust and are hosts to its transmission to the white pine. American black currant varieties, such as Crandall, and red varieties are not subject to these restrictions.

Dewberries

Lucretia.—Trailing plant, which requires staking or trellising; fruits large, sweet, bright, glossy, black, and have soft flesh. (July 3).

Blueberries

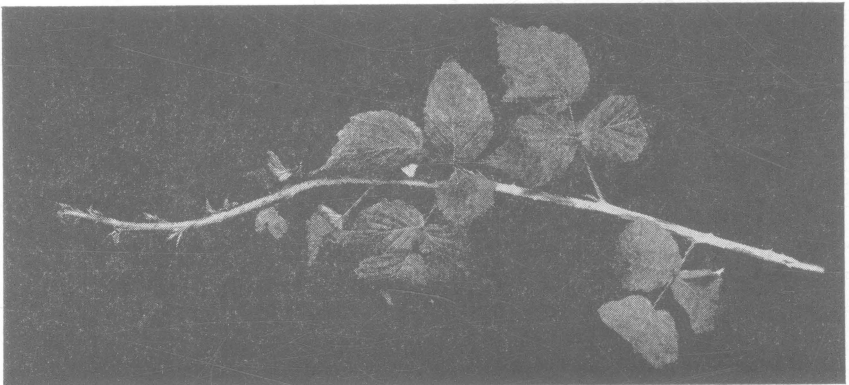
Stanley.—Early midseason variety; bush is upright, open in form, and requires little pruning; fruit large, aromatic, and of high dessert quality. (July 5).

Dixie.—Medium season variety; berries large, and have fine flavor. (July 10).

Jersey.—Late ripening, vigorous, productive, and easy to prune; berries borne in long, clusters. Fruit of blue color, average dessert quality, and firm; probably best variety for Ohio. (July 20).

Planning the Planting and Preparing the Soil

Consider the Site First.—Perhaps the most important concern in evaluating a site for growing fruit is its freedom from late spring frosts. Never consider an area in a low pocket or one subject to frost



Black raspberry cane with elongated tip ready for layering.

injury in any other way. Mechanical frost prevention gadgets such as heaters, however, may work well in small areas.

Soil Structure Important.—Bush fruits respond to large amounts of organic matter, so it becomes necessary to determine whether the soil organic matter content is adequate. Quick soil tests, of course, cannot measure organic content.

Most cultivated soils need more organic material to improve their structure. Best results from commercial fertilizers can then be realized.

Consider Drainage.—Tile drain installations help if the site is not well-drained. Use 4-inch tiles, 30 feet apart for a normal installation.

Improve Organic Matter Content.—Organic matter content of soils can be improved by several ways. For instance—

Use waste materials, such as leaves, crop residues, and the like. Spade or plow these under in the fall or early spring. Two pounds of nitrogenous fertilizer to 100 square feet will cause the organic material to rot more quickly. This can be nitrate of soda or cyanamid.

You can improve organic matter by another method, too—applying animal manures, if available. Normally, apply 50 to 75 pounds per 100 square feet.

Overwintering cover crops is one of the most popular procedures. Many folks use rye, 3-4 pounds per 100 square feet, in the fall of the year. Most people usually sow in August, then spade or plow it under when it reaches a “knee high” growth the following spring.

Crop rotation is a common farm procedure to maintain organic matter. To apply crop rotation to home gardens, devote a part of the garden each year to soil building crops. Use that area the following year for fruit production and another area for soil building crops. A good rotation would be to plant buckwheat (1½-2 pounds per 100 square feet) or soybeans 3-4 pounds per square foot) in June and turn under before rye is seeded in August.

Growing Brambles

Raspberries, Blackberries, Dewberries, and Boysenberries

Plant in late March or early April, slightly deeper than the plants grew in the nursery. Firm the soil around the roots gently with your foot.

Soil Management.—Cultivate and hand hoe brambles the first and second season. Allow red raspberry and blackberry plants to fill in a hedge row about 1 to 1½ feet wide at the base. Remove plants which arise between the rows. Row mulch with cultivation between the rows helps keep down weeds and conserve moisture. A bramble planting will last about 8 to 12 years—then it must be removed and renewed, preferably on another plot of ground.



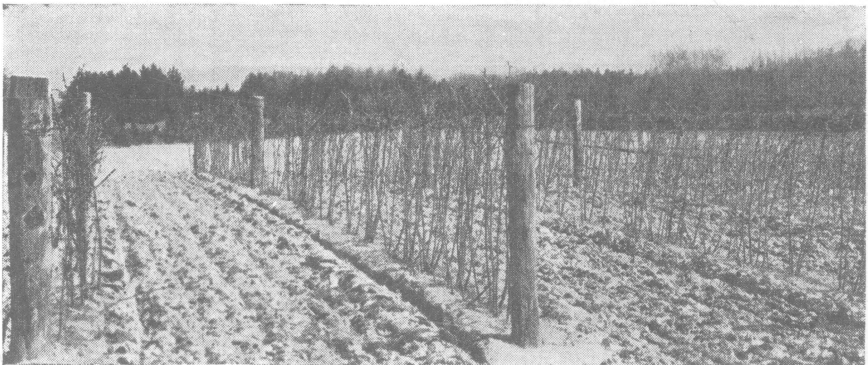
Black raspberries under straw-mulch system of management.

In early November, place boysenberry, youngberry and dewberry canes horizontal and cover with 2 inches of soil to prevent winter injury. Uncover and prune in March.

Fertilizing.—A month after planting, each plant will require about a handful of nitrogen fertilizer, such as ammonium sulphate, or a complete fertilizer which supplies about the same amount of nitrogen. In later years, fertilizer may be distributed in early spring along the soil surface on the sides of the rows. Use 2 to 3 ounces of ammonium sulphate per plant. Double or triple this amount of nitrogen if you use row mulch.

Pruning.—Brambles bear fruit on canes which arise from the roots one year, produce fruit the next, and die shortly after. And, you will have to prune red raspberries differently than black and purple raspberries and blackberries.

Black and purple raspberries require summer pinching of the new shoots. Do this with gloved fingers or shears by removing the



Red raspberries respond well to cultivation. Note size and distribution of the vigorous canes. Tops of canes included between two No. 11 horizontal galvanized wires between the posts. This facilitates picking, spraying, and general management.

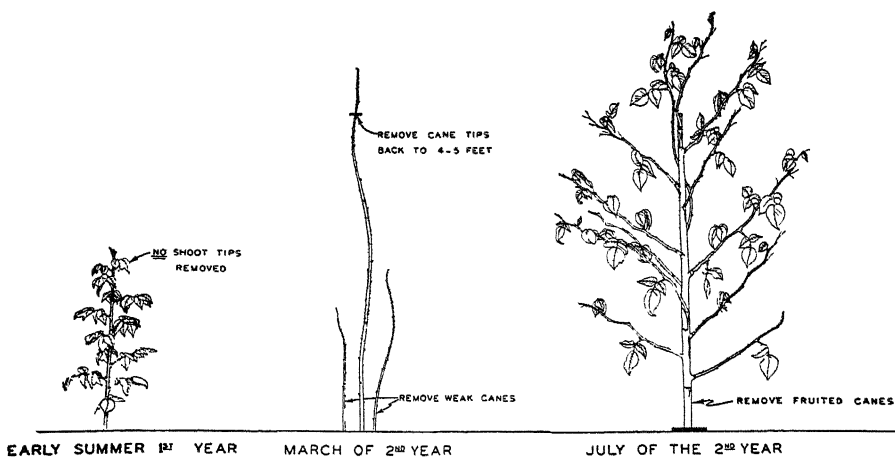
top of 3 or 4 inches of new shoots when they are 18 to 24 inches in height for black raspberries—18 to 30 inches for purple raspberries. This induces laterals and results in a low, stocky plant. Remove the tip of new shoots when they appear before and during harvest. Summer pinch ends of blackberry shoots of upright growing varieties like Eldorado when plants are about 30 inches high.

Red raspberries must not be summer pruned. Soon after the old canes of brambles have fruited, remove them close to the ground and burn.

Do your dormant pruning in March after winter freezing dangers are past and before buds swell in the spring. Red raspberries require only light cutting back of tips to prevent canes from becoming top heavy later on and bending to the ground with fruit. Remove small spindly canes from the hedge row, leaving the larger canes which are $\frac{1}{2}$ inch or more in diameter and from 6 to 10 inches apart. Confine canes to a hedge row about 12 inches wide at the base. Prune ever-bearing raspberries as you do red raspberries.

Black and purple raspberries, which have been summer pinched, need laterals pruned back rather severely in March. Size and quality of black raspberries are improved by leaving the stronger laterals, carrying from 8 to 12 buds, on branches about 8 inches long after pruning. Weaker laterals may be cut shorter; very vigorous laterals may be left somewhat longer.

Laterals of purple raspberries must be pruned back to 10 to 14 inches, depending upon their vigor. Remove small spindly laterals entirely. You may reduce yield if you leave fewer than five laterals per cane. Do not remove canes over $\frac{1}{2}$ inch in diameter at the ground level, for thick canes are most productive. However, it is advisable



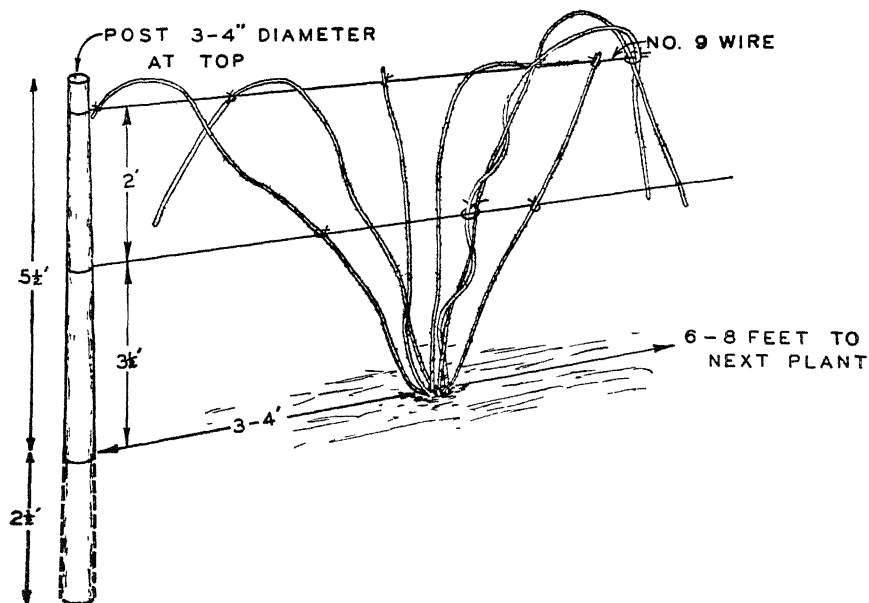
Red raspberry shoots from the roots require no summer pinching. Few, if any, laterals are formed. In March of the following year, remove the weak canes, and cut back the tips of the remaining canes. Immediately after harvest, remove and burn the fruiting canes.

to remove any surplus raspberry canes smaller than $\frac{1}{2}$ inch in diameter.

Leave blackberry laterals about 18 inches long which have been summer pinched. With blackberries, it is sometimes best to wait until the blossoms appear before the laterals are cut back. Some varieties tend to bear fruit far out on the laterals. This prevents cutting away too much of the crop and is particularly true of the Eldorado variety.

The Lucretia dewberry variety is a prostrate growing bramble. Many growers plant it in hills and train to $7\frac{1}{2}$ foot stakes, which they sink in the ground about 2 feet. After they harvest the crop, they remove old canes and cultivate the patch in one direction until new canes seriously interfere. Then they discontinue cultivation and allow canes to grow at random over the ground. The next March, growers tie seven or eight of the strongest canes in a hill to the stake and cut to about 5 feet.

Boysenberry is a vigorous trailing bramble and usually is trained to a two or three-wire vertical trellis. During March pruning, leave canes about 5 or 6 feet long, or longer if very vigorous, and tie to the wires. Allow new canes which arise at the ground surface in the spring to trail along the ground in the direction of the row. As soon as the canes have fruited in summer, remove them close to the ground



A two-wire trellis is useful for training the dewberry, the trailing type blackberries, the Boysenberry, and Youngberry. Establish the trellis before the beginning of the second year. Numbers 11 or 12 wire handle easier than number 9 and are satisfactory for most berry trellises.

and burn. Since these brambles are very thorny, it is wise to wear high boots, heavy trousers, a coat such as a hunting outfit, and leather gloves while pruning. New "thornless" varieties are worth testing. Renew brambles every 10 to 12 years by plowing up the roots and setting new plants. It is best to plant on a new location.

Growing Blueberries

Site and Soil.—Blueberries grow best in acid soils (pH 4.0-5.0) which are high in organic matter.

Finely ground sulfur may be applied to garden soils to provide favorable acidity conditions. On sandy soils, use $\frac{3}{4}$ pound sulfur per 100 square feet for each 1.0 pH over 4.5. On silt loam soils use $1\frac{1}{2}$ to 2 pounds of sulfur for each 100 square feet for each 1.0 pH over 4.5.

Blueberries should not be grown on heavy clay soils unless they are loosened by incorporating large amounts of sawdust or other organic matter.

Blueberries like other fruits are susceptible to injury by frost. The planting should not be located in a frost pocket or where air movement is constricted.

Planting.—Set plants at least 4 but preferably 5 feet apart in rows 6 to 10 feet apart. Do not set plants deeper than they grew in the nursery. Unless the soil is especially rich in organic matter, mix a half bushel of moist peat moss or sawdust with the soil you will place around the roots.

Remove broken and diseased roots and cut back long rangy branches.

Soil Management.—Cultivate blueberries to a shallow depth or establish the planting under a permanent system. Surface mulch of



Blueberries do well with a mixture of peat and soil around the roots at planting time.

peat moss, sawdust, straw, or other similar material is all right. Mulch should be deep enough to smother weeds and extend a foot or more beyond branch spread of the bush.

Fertilizers.—Fertilize 1-year-old blueberry plants with 1 ounce per bush of a nitrogen fertilizer such as sulfate of ammonia or nitrate of soda. Increase the amount 1 ounce per plant per year until about 5 ounces are used on mature plants.

Double the amount of fertilizer on the planting growing under a permanent mulch system. A complete fertilizer, such as a 10-6-4 analysis can be used in place of the nitrogen fertilizer, but the amount must be doubled to provide the same amount of nitrogen.

Pruning.—Blueberries require no pruning for the first 3 years after planting. Prune in the fourth year in the dormant season after the coldest part of the winter.

Remove all dead or broken branches as well as small, spindly shoots. Cut away low branches which extend along the ground. As the plants become older, remove an occasional old stem to allow for a gradual renewal of the bush with younger growth.

Excessive pruning will reduce the yield and cause larger berries to mature earlier.

Growing Gooseberries and Currants

Planting.—Plant in the fall or early spring so the lower branch of each plant is just below the surface of the ground.

Soil Management.—These fruits respond best to cultivation, but in a home garden it is often convenient to mulch with 3 to 6 inches of straw, peat moss, strawy manure, or coal ashes. If field mice are a problem, poison them with zinc phosphide or pull the straw about 18 inches away from the plants to help keep mice away from the tender bark. (Secure information from your county agent about obtaining zinc phosphide.

Fertilizing.—Gooseberries and currants respond to 2 or 3 inches of strawy manure applied, preferably in November, as a mulch about the plant. If manure is not available, use nitrogen in the form of sulphate of ammonia or a similar carrier at about $\frac{1}{4}$ pound per plant in late fall or early spring.

If plants are set near or under trees in the backyard, there will be great competition for water and nutrients. Therefore, take special pains to see that the plants receive adequate amounts. If the growth is vigorous (new crown shoots from 15 to 20 inches long), plants productive, and foliage a dark healthy green, you may consider growing conditions to be satisfactory.

Pruning.—Plants are bushlike, varying in height from 3 to 5 feet. They bear some fruit near the base of 1-year wood and produce the most and best fruit on spurs of 2 and 3 year canes. Older wood produces inferior fruit.

Prune in March or early April before the buds begin to swell. Object is to remove canes over 3 years old, and, by thinning, to select the proper kind and number of younger canes to maintain a productive bush. Judge age of canes by counting back annual growth rings starting from the tip. Note changes in color and character of bark for each year. After it has been pruned, the well pruned dormant bush will have about three shoots of 3, 2, and 1 year wood. Leave a few more canes of each age with old bushes. Thin out surplus, slender, weak, and low growing canes. Remove wood growing level and close to the ground to avoid dirty fruit.

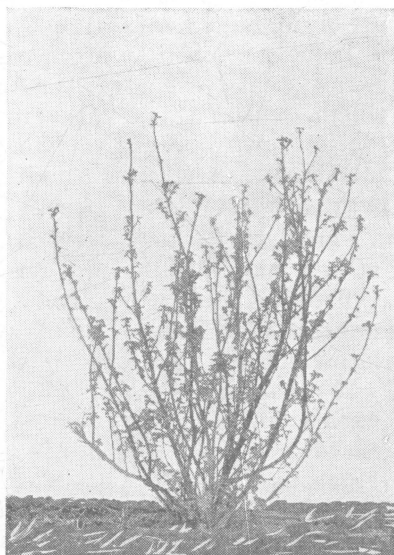
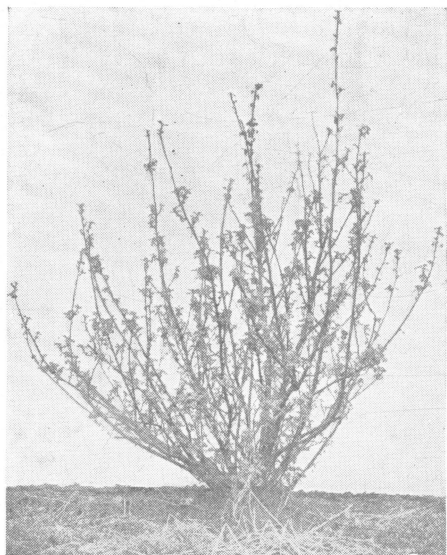
Irrigating

Lack of water can seriously curtail yields of fruit, especially during the period before and during harvest.

Under most Ohio conditions, bush fruits require about 1 inch to 1½ inches of rainfall per week for optimum growth and production. Therefore, if the rainfall per week is less than 1 inch, apply water mechanically. Lighter, sandy soils need more water, and heavier, clay soils need somewhat less than the normal supply.

If irrigation is used, good drainage is absolutely essential. Otherwise if a heavy rain occurred after irrigation water was applied the plants might suffer greatly.

Furrow irrigate on either side of the plant row or apply water



At left is a Red Lake current before pruning; at right after pruning. Tall growth has been cut back and low horizontal branches and wood older than 3 years has been eliminated. The 1-year shoots in the middle of the bush have been thinned to three or four vigorous shoots.

with a canvas ooze hose attached to the end of a garden hose. These are two good systems for home gardens.

An overhead or sprinkler system would be adaptable to larger areas, especially if useful in watering other garden crops.

Trellises

If trellises support canes of raspberries, blackberries, dewberries, and boysenberries, you can pick the fruit easier. Fruit will be cleaner, too. Red raspberry yields may increase if a trellis holds up the longer canes, since the longer canes can grow, the more berries plants will produce. Apparently, buds toward the ends of the canes are more fruitful than those closer to the base. It is possible to secure additional yields of fruit if you leave these end-buds at pruning time.

Many types of trellises are satisfactory. Probably one is no better than another.

Harvesting

Determination of maturity is largely a matter of experience of the grower. As the fruits ripen, they acquire characteristic color and are easier to remove from plants. Flavor and degree of softness are also useful in deciding when to pick.

Currants for jelly must be picked before fully ripe or while an occasional green berry is showing. Avoid mashing by removing clusters carefully.

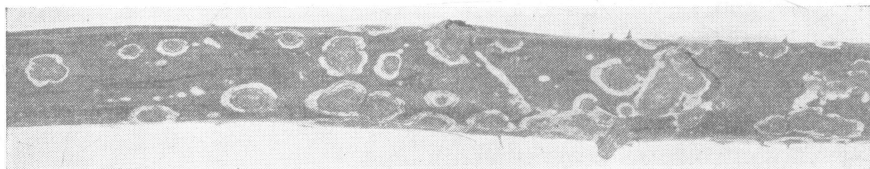
Wear leather gloves to avoid thorns when picking gooseberries. If you want to use gooseberries for pies, jellies, and jams, pick when they attain their fullest size but before they turn reddish-brown and become "dead-ripe." Fruits of the Poorman gooseberry are of excellent dessert quality at the reddish-brown ripe stage.

Allow blueberries to remain on the bush until fully blue in color. At the height of the season, pick the bushes about once a week. Carefully remove the fruit from the bush to avoid unnecessary tearing and bruising.

Disease and Insect Control

Raspberries, Blackberries, Dewberries, and Boysenberries

Common Diseases.—Raspberries are subject to many diseases, most serious of which are the viruses (such as leaf curl—deep green



Anthracnose is a common disease affecting the canes of brambles, especially black raspberries. The disease may markedly reduce yield or kill the canes. Control it with a delayed dormant lime-sulfur spray.

leaves curl downward and inward; mosaic—leaves green and yellowish-green mottled; and streak—reddish or purple stripes on canes in mid-summer) in addition to leaf mottling and curling.

Raspberry virus disease can be controlled by using healthy planting stock and systematically eliminating diseased plants whenever they appear.

Black and purple raspberries are more likely to succumb to virus diseases. Red raspberries may be damaged only slightly, but it is possible that plant lice may spread the virus from red raspberry plants to purple or black raspberries.

Another disease, anthracnose, is likely to be serious on purple and black varieties but usually is not damaging on red varieties. Anthracnose shows up on the canes by oval spots with a purple edge and a sunken center, light gray in color. Crown gall, difficult to control, appears as “cauliflower” swellings on the roots, crown, or lower part of the cane.

Best control of raspberry diseases can be obtained by observing the following precautions.

1. Plant the most disease-free plants obtainable. (Seek state inspected plants.)
2. Keep plants growing vigorously by good cultural practices.
3. Remove and burn “handles” or portions of the old cane on black and purple raspberry-tip plants immediately after planting.
4. Remove old diseased raspberry plantings to prevent spread of disease to new plantings.
5. Dig and burn all plants found with such diseases as curl, mosaic, streak, and rust.
6. Remove and burn old fruiting canes immediately after harvest.
7. Remove and burn all dead canes when pruning in spring.
8. Spray every spring, when buds show $\frac{1}{2}$ inch of green, with dry lime sulfur—1 pound in 4 gallons of water or 1 gallon liquid lime sulfur per 11 gallons of water for anthracnose control.

Common Insects.—Insects attacking the brambles are usually of minor importance. Red spider injury causes a grayish, lusterless cast on the leaves. Spiders are tiny, more greenish than red, and move slowly over the leaf surface. Severe injury may cause leaves to turn brown and die. The pest favors hot, dry weather.

To control, use a spray containing 1 pint of white or summer spray oil in 12 gallons of water. Apply with high pressure as soon as you discover the mites. It may be necessary to use more than one application.



The fan-type duster, driven by a crank, gives an even flow of dust. It is effective for use on currant worm and dusting backyard plants and trees.

Currants and Gooseberries

Insects and Diseases.—The imported currant worm is the chief pest of currants and gooseberries. Prevent defoliation by spraying with rotenone extract or dusting with either 0.5 or 0.75 percent rotenone dust when you find the worms. The same dust or spray recommended for the petal-fall application on apple also is good insurance against injury. Do not apply arsenical sprays when fruits are nearing maturity.

Aphids.—These small soft-bodied green or black insects suck sap from the undersides of leaves. Then, leaves curl and wrinkle until they are distorted. Rotenone dust used to control the imported currant worm is effective against aphids—if it hits the insects.

Leaf spot.—This disease looks about like anthracnose. Symptoms are many small brownish spots on the leaves, which cause them to turn yellow and drop. Apply ready-mix bordeaux at manufacturer's recommendations when symptoms first appear. It may be necessary to use two or three sprays, including an after harvest spray to keep the disease in check when the weather is particularly wet.

Blueberries

Birds—principally robins—are the most serious pest of blueberries. As the berries approach ripening, cover bushes with cheesecloth or similar netting.

Blueberry plantings are not injured seriously by diseases or insects.

Cover by Tom Crane

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