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GROWING BLACKBERRIES IN MICHIGAN

by
 E. J. Hanson and C. D. Kesner

Blackberries may be grown successfully in several regions of Michigan. Blackberries are generally less winter hardy than most raspberries, but can be grown most successfully along the shore of Lake Michigan where winter temperatures are less severe and snow is adequate to cover the plants. It may be necessary to cover canes with mulching materials for protection during the winter months if less hardy varieties are grown or plantings are located away from the lake influence.

Blackberries usually require 3 years to reach maximum productivity. Erect, thorny types may yield 3 to 6 pounds per mature plant, whereas trailing types may yield 12 to 24 pounds per plant. Two-year-old plants may yield half as much. Fruit may ripen from late July into September depending on the region and cultivar.

Types of Blackberries

There are two types of blackberries: erect and trailing. Most erect types produce self-supporting, thorny canes, which are generally more hardy than those of trailing

varieties. Canes of even the hardiest blackberries will be injured by temperatures below -10°F. Canes of erect types are too rigid to bend over and cover with a protective mulch during the winter. Substantial winter injury can be expected if erect types are grown where temperatures fall to -10°F, unless 3 to 4 feet of protective snow remains on the ground through the winter.

Trailing and semi-trailing cultivars produce low-growing canes that require trellising for support. Although trailing varieties often produce larger and sweeter fruit than erect types, canes are generally less hardy; few tolerate temperatures lower than 0°F. Low-growing canes of trailing types may be protected more easily with mulch covers or snow than erect types. Most trailing and semi-trailing types are also thornless.

Blackberry varieties have not been evaluated extensively in Michigan, but general characteristics of some varieties that show promise are summarized in Table 1. Remember that temperatures below -10°F will injure exposed canes of even the hardiest cultivars.

Table 1. Characteristics of blackberry varieties.

Variety	Growth Characteristics	Relative Hardiness	Productivity ¹	Season ²	Fruit Characteristics
Erect Types					
Cheyenne	Erect, thorny	Tender	L	E	Medium, firm
Cherokee	Erect, thorny	Tender	L	E	Medium, firm
Comanche	Erect, thorny	Tender	L	E	Medium, firm
Darrow	Erect, thorny	Hardy	H	E	Medium, firm
Ranger	Erect, thorny	Semi-hardy	M	E	Medium size
Raven	Erect, thorny	Semi-hardy	M	E	Medium to large size
Trailing Types					
Black Satin	Semi-erect, thornless	Semi-hardy	H	L	Large, firm
Dirksen Thornless	Semi-erect, thornless	Semi-hardy	H	ML	Large, soft, fair flavor
Hull Thornless	Semi-erect, thornless	Semi-hardy	M	ML	Large
Thornfree	Trailing to semi-erect, thornless	Semi-hardy	H	L	Large, firm, tart, good flavor
Smoothstem	Trailing to semi-erect	Less hardy	M	ML	Medium size, firm
Chester Thornless	Trailing to semi-erect, thornless	Semi-hardy	M	L	

¹L = low, M = medium, H = high.
²E = early, M = midseason, L = late.

Site Requirements

The most important considerations in site selection are the danger of mid-winter and late-spring freeze damage. For best results, grow the most hardy varieties along the Lake Michigan shoreline. Elevated sites with wind protection are generally warmer in the winter and spring because cold air drains away into the surrounding low areas. Areas that accumulate snow will provide protection to plants during the winter. Avoid areas continually exposed to winter winds.

Where moderate snow cover is common, thornless trailing to semi-erect cultivars such as "Chester Thornless," "Hull Thornless," "Black Satin," "Dirkson," and "Thornfree" can be grown successfully with very little winter injury by following certain cultural practices. Since these cultivars require trellising, old canes can be left on the trellis over winter and new canes can be left lying in the row on the ground. This serves as a snow fence and most of the tender canes produced the previous summer will remain covered with snow, providing excellent protection from cold winter temperatures. Plants of the above cultivars were grown for over 8 years without significant winter injury at the Northwest Michigan Horticultural Research Station near Traverse City. Using this system, trailing cultivars consistently produced better and sustained less winter injury than hardier upright, thorny types.

Soil Requirements

Blackberries grow well on a variety of soil types provided drainage is good and water does not stand long in the planting. Light, sandy soils are excellent if irrigation can be provided. Maintain soil pH between 5.5 and 7.0.

Obtaining Plants

Transplants or root cuttings from commercial nurseries range in price from \$.75 to \$1.50 each. Transplants may establish earlier than root cuttings, but are often more expensive.

Plants of thorny cultivars may also be propagated by transplanting rooted suckers. Propagate trailing thornless varieties, which root sucker very little, by tip layering. Cover the tips of canes with soil in the late summer or early fall. Cut rooted tips from the cane and transplant them the following spring.

Both erect and trailing types can be propagated from root cuttings. Roots can be severed and exposed by plowing a furrow down one side of an established row. Collect pieces 4 to 8 inches in length from roots the diameter of a pencil. Bury these 3 to 6 inches deep in nursery rows and grow for one year before transplanting, or set directly in the bed in early spring.

Spacing

Space plants of erect varieties 2 or 4 feet apart in rows 10 to 12 feet apart. Trailing types are more vigorous and should be spaced 5 to 6 feet apart in rows with 10 to 12 feet in-between. Plants of erect types will fill in and establish a hedgerow over time. Plants of trailing types generally will not produce new plants, but 5 to 6 feet between plants is required so that there is adequate space on the trellis each year.

Planting

Soil Preparation

Plant green manure crops, such as rye, buckwheat or sudan grass, the year before setting plants. Plow these under in the spring and cultivate to produce a fine, uniform bed. Eliminate perennial weeds, such as quackgrass, with nonresidual herbicides, like paraquat or glyphosate, and/or repeated cultivation.

Setting Plants

Plant as soon as the ground can be worked in the spring. Plants received too early can be heeled into a well drained soil until planting. Place the bundles of plants in a shallow trench and cover the roots with moist soil until planting time.

Keep plants from drying out during planting by dipping them in water or a thin mud mixture and keeping them in plastic bags. Cut the tops of plants back to 6 inches and use a spade or shovel to cut a slit in the soil deep enough to hold the roots. Place the roots of the plant in the slit so that the plant is set at the same depth it grew in the nursery. Remove the blade of the shovel or spade, close the hole and firm the soil with your heel. Mechanical transplanters can be used if available. Roots of trailing or semi-erect cultivars are extremely sensitive to exposure to sunlight or wind. Root exposure of more than a few minutes can result in high plant mortality.

Training and Pruning

Blackberry plants are perennials and will grow for many years if properly managed. Individual canes are biennial, growing vegetatively one year, fruiting the next, then dying back to ground level. Established plantings contain one-year-old vegetative "primocanes" and two-year-old, fruiting "floricanes."

Erect Varieties

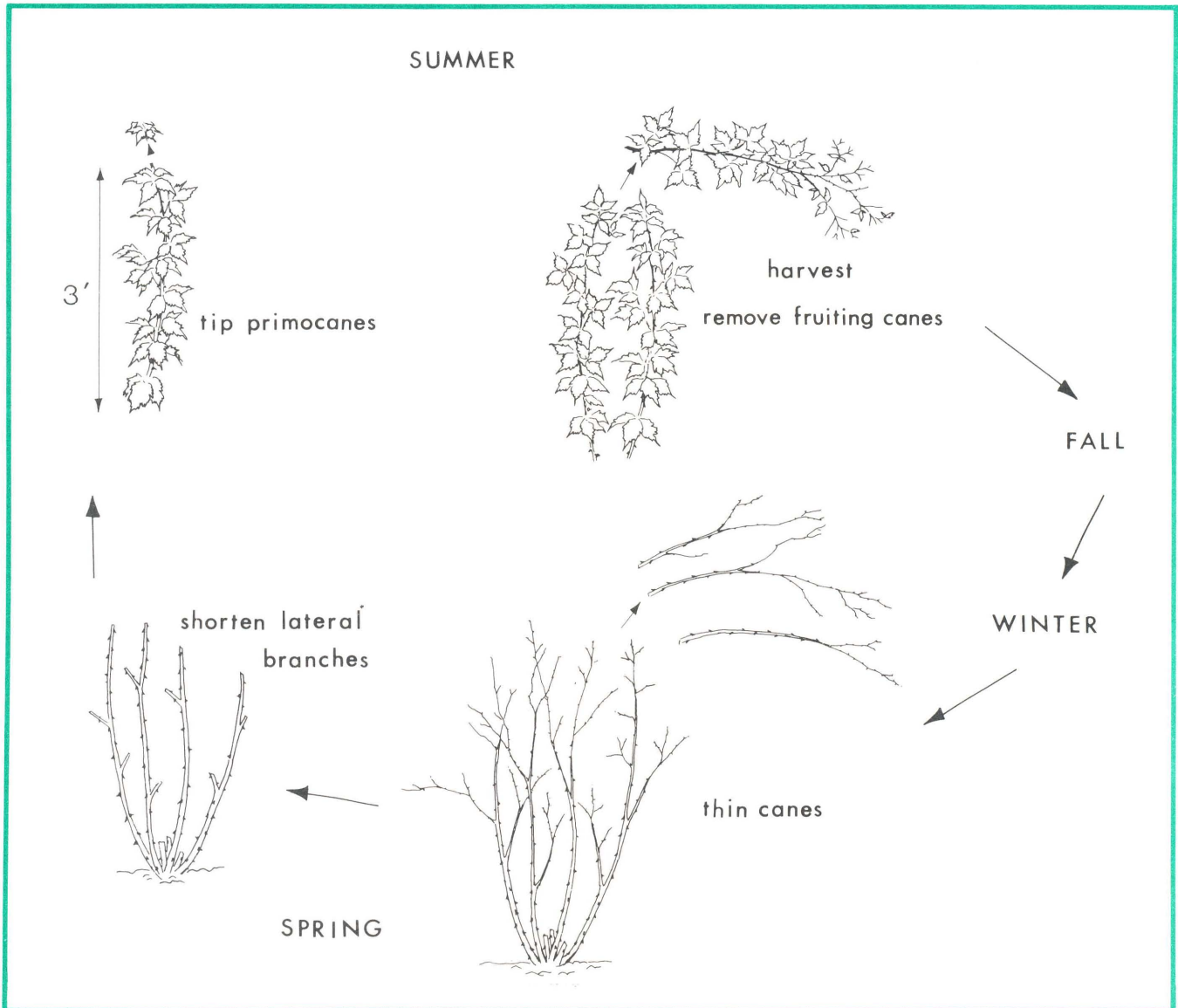
Erect varieties generally do not require a trellis for support. Where growth is very vigorous, two wires, one running down each side of the hedgerow at a height of 3 to 5 feet, will prevent canes from bending into the rows.

Little pruning or training is required during the planting year. Early in the summer of the second year, remove the tops of new primocanes when they are 3 feet tall. The new lateral branches that grow will bear most of the fruit the next year. Remove the 2-year-old floricanes at ground level after harvest. Do this immediately after harvest so that diseases present on floricanes do not spread to the rest of the plant.

Before growth resumes the following spring, shorten the lateral branches to 12 to 18 inches. Longer laterals will produce more fruit of smaller size than those cut shorter. Also, remove any weak or spindly canes and some large ones if canes are closer than 4 to 6 inches in the row.

Repeat these four steps annually as illustrated in Figure 1: 1) Tip primocanes (early summer); 2) Remove floricanes after harvest (late summer, fall); 3) Shorten lateral branches (early spring); 4) Thin canes (early spring).

Figure 1. Pruning erect varieties of blackberries.



Trailing Types

Little pruning or training is required during the planting year. In late summer, it may be necessary to gently move prostrate growing canes into the direction of the row to facilitate cultivation.

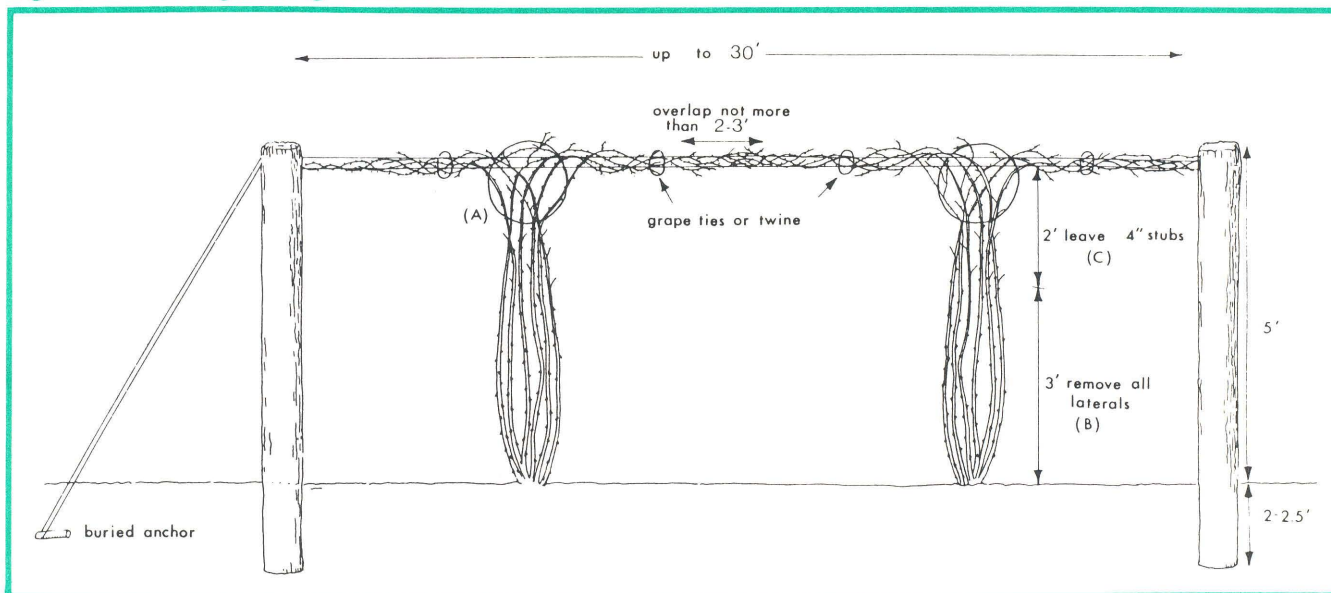
Make sure the trellis system is in place well before growth resumes the second spring (Figure 2). Set trellis posts about 30 feet apart down each row. End posts should be about 6 inches in diameter at the top, while posts in the row need only be 4 inches. End posts should lean slightly away from the row and be fastened to an anchor with 9- or 10-gauge wire, in order to support the vigorous growth of trailing blackberries. Two number 10-gauge wires are adequate for most trellises. Run both wires about 5 feet above ground level on opposite sides of each post and secure to posts with staples or nails. Wires placed this way will support the weight of canes and fruit and resist wind that may loosen the staples on one side of the posts. There is a great deal of wind resistance in a solid row of berries and if the plants are blown down in midseason, it is nearly impossible to get them back up.

Once the trellis system is in place, canes can be tied to the wires with twine at the beginning of the second season. All canes may not reach the wires, but the twine can be used to hold up the new bearing canes.

Early in the third spring, remove last year's floricanes. Choose six of the healthiest primocanes from last year and tie these to the trellis as shown in Figure 3. Cut the rest off at the ground. In warmer regions, old fruiting canes are removed and primocanes tied to the trellis in late summer or fall. Delaying these operations until spring is recommended in Michigan so that snow cover will protect canes during the winter.

Carefully lift the six canes to the wires and loosely tie them together. The twine should go around all six canes and both trellis wires at point (a). Carefully bend three canes each way onto the wires and tie them. Canes from adjacent plants should overlap only 2 to 3 feet and the rest should be removed. All main canes will have side lateral branches that can be quite long. Remove all side lateral canes lower than 3 feet from the ground (b). Above 3 feet (c), shorten side laterals to 2- to 4-inch long stubs. These

Figure 2. Trellising trailing blackberries.



short stubs usually contain one or two buds that will produce fruiting clusters. Some side laterals near the top may be left on and tied down with the main canes.

Note that some of the main canes may reach lengths of 15 feet or more so a significant portion of the cane may have to be removed when trellising the plants. Leaving too many canes and/or leaving canes too long will result in delayed ripening, small fruit, and often poor growth of new canes for the next season's production. Steps required in the annual pruning and training of trailing blackberries are summarized in Figure 3.

Fertilization

Submit a soil sample before planting to determine soil phosphorus (P), potassium (K), calcium (Ca), and magnesium (Mg) levels and pH. Apply lime as recommended. Apply a K fertilizer if the soil tests lower than 250 lb K/acre and a P fertilizer if tests show less than 100 lb P/acre.

In most blackberry plantings, nitrogen (N) is the only nutrient needed annually. Recommended N rates are given for new and established plantings of erect and trailing types in Table 2. These are average rates and may have to be adjusted up or down for specific sites. Trailing types are generally more vigorous and require higher rates. Plantings on sandy soils may also require higher rates. Recommended fertilizers and the percent N they contain are listed in Table 3.

Fertilize new plantings by sprinkling recommended rates of fertilizer in a two foot circle around plants about 2 weeks after planting. Do not place fertilizer in direct contact with plants.

In 2-year-old and established beds, broadcast fertilizer in a 3- to 4-foot wide strip in the rows in March and April. On light, sandy soils, split the rate, applying half in April and half in June.

Table 2. Yearly nitrogen (N) requirements of blackberries.

Years of age	lb N/100 feet row		lb N/acre	
	Erect	Trailing	Erect	Trailing
1	0.5	0.5	20	20
2	0.75	1.0	30	45
3	1.50	2.0	50	75-90

Table 3. Recommended fertilizers.

Fertilizer	% N
12:12:12 (N:P:K)	12
16:16:16	16
ammonium nitrate	33
calcium nitrate	16
urea	45

Weed Control

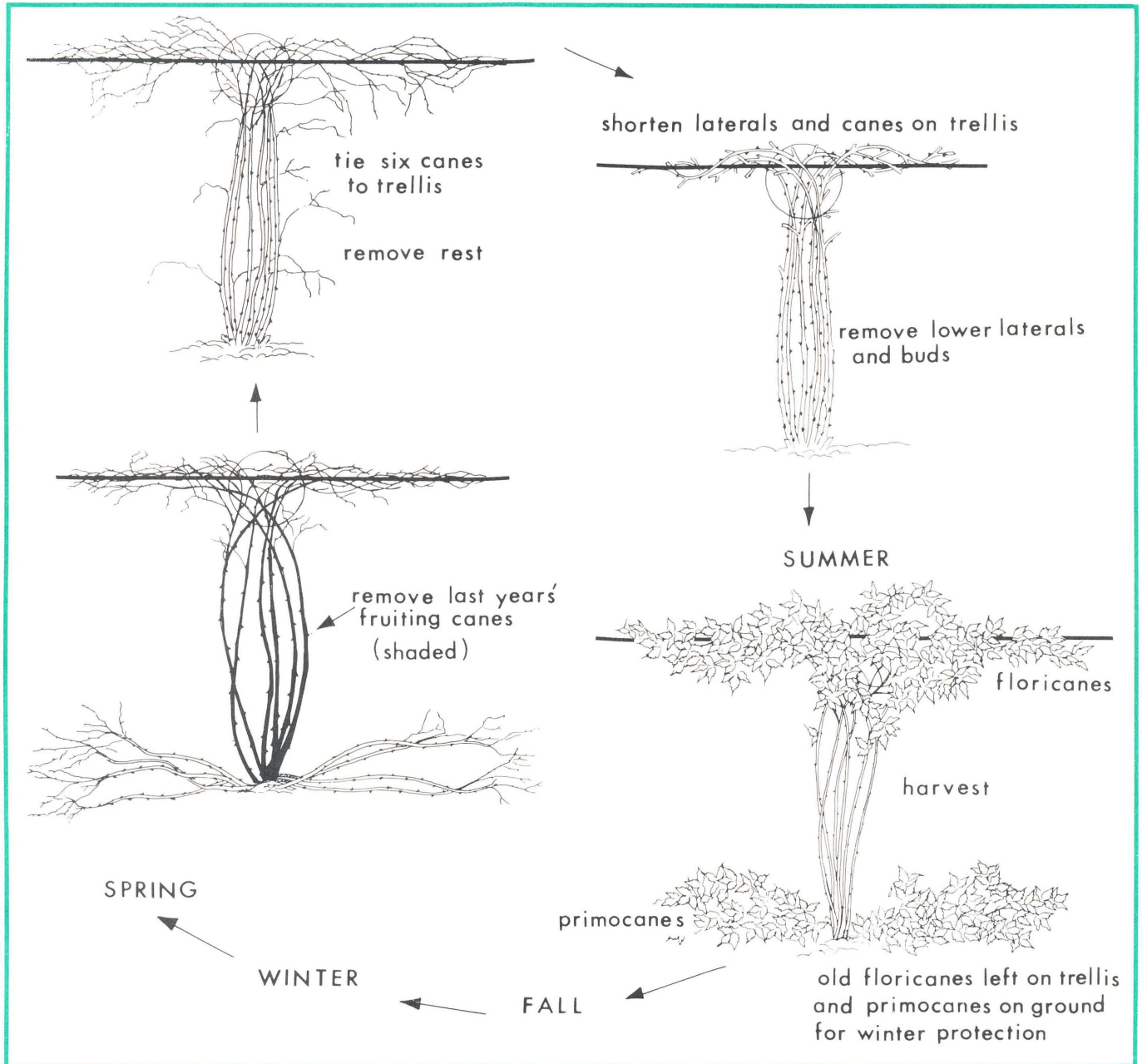
Before Planting

Eliminate weeds, such as quackgrass, wild brambles, and Canada thistle, before planting. Nonselective herbicides applied in the fall followed by repeated cultivation before planting has been effective.

Planting Year

Weeds emerging between rows during the planting year are most easily controlled by shallow cultivation. Weeds within the row may be most safely controlled by hoeing.

Figure 3. Pruning trailing varieties of blackberries.



Established Plantings

Again, weeds emerging between rows may be most effectively and economically controlled by cultivation. Several herbicides are commonly used to control weeds within the row. Consult Extension bulletin E-154, *Fruit Spray Calendar*, for information on herbicides currently labeled for use on blackberries.

Blackberry Diseases

A number of diseases are potentially damaging to blackberries. Some of the most common are described here.

Root and Crown Diseases

- 1) *Crown Gall* is caused by soil-borne bacteria that enter plants through wounds. The disease is widespread and causes wart-like galls to form on crowns and canes. To prevent or avoid the disease, plant clean nursery stock in areas not recently used for bramble, grape or tree fruit production.
- 2) *Verticillium Wilt* is caused by a soil-borne fungus that infects canes causing them to yellow and die rapidly in mid-season. Prevent infection by fumigating the

area before planting or avoiding areas recently used for bramble, strawberry, tomato, pepper, potato or eggplant production.

Cane Diseases

- 1) *Anthracnose* is a fungus disease resulting in small purple spots on leaves and canes of blackberries and raspberries. Anthracnose is best controlled by removing floricanes immediately after harvest and applying lime-sulfur sprays in late winter and early spring. Consult Extension bulletin E-154, *Fruit Spray Calendar* for current recommendations.

Disease Control

Avoid most diseases by following these general practices:

- 1) Purchase disease-free plants from a reputable nursery, and examine plants for diseases before planting.
- 2) Avoid areas where other brambles or solanaceous crops (tomatoes, peppers, potatoes and eggplant) had recently been grown.
- 3) Remove floricanes after harvest and diseased plants from the field.
- 4) Destroy wild brambles (raspberries and blackberries) in the immediate area.
- 5) Follow the spray schedule recommended in E-154, *Fruit Spray Calendar*.



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