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# Oregon Agricultural College Extension Service

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## The Brambles

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## THE BRAMBLES

Though the Brambles are treated alike in many ways, still they vary in several important particulars. The ideal way of handling the subject would be to take each one of the group separately and describe it. But, for the sake of brevity, all the members of this group will be described together, noting only such points of difference between them as may seem necessary, for a clear understanding of the subject.

Only such brambles are included in this description as are grown to considerable extent in the state of Oregon; namely, the Blackberry, Mammoth Blackberry, Evergreen Blackberry, Himalaya Berry, Dewberry, Black Raspberry, Red Raspberry, Purple Cane Raspberry.\*

All of the above groups, with the possible exception of the dewberry, seem to be well suited to the climate of the fruit-growing sections of Oregon. While the dewberry has not been particularly successful in most parts of the state, on rich, sandy loam bottom land, where it can be irrigated, it has been a profitable crop for several growers. The Himalaya berry probably will never be of great commercial importance, because the berries are too soft for shipment; but for home use, especially where the garden area is rather limited, this berry is coming to be more appreciated. It can be planted along the garden wall or at the side of a building and without any great amount of care other than plenty of water, it will bear berries large and luscious through a large part of the summer.

**Soils and Slopes.** All the brambles do best on a deep, well-drained soil, well supplied with plenty of vegetable matter or humus, and capable of holding moisture well throughout the summer. The raspberries, with the exception of the blackcap, thrive best on the lighter, more sandy loam types of soil, and like sunny slopes; but the blackberries, including the Himalaya and the blackcap raspberry, do best on rather heavy loam soil and prefer the cooler, northern exposures. A moderate amount of shade often benefits the quality of the fruit. Good air drainage is necessary to avoid suffering from frost.

**Soil Preparation and Fertilizers.** The blackcaps and blackberries are all rank feeders and need the soil kept in the best of cultivation and well supplied with plant food. While a reasonable amount of fertility is required in the soil for the other raspberries and the dewberries, still they will thrive well on a soil which is not as rich as that needed for the blackberries.

The land should be thoroughly prepared for the brambles. It is best to plow the land to a depth of eight to ten inches sometime during the fall. If it is planned to set the plants in the autumn, the ground should be disked, harrowed, and thoroughly prepared immediately after plowing. If the setting is to be done in the spring, the ground should be plowed in the fall and harrowed lightly, the balance of the work being done early in the spring before the plants are put out.

There is no better fertilizer for the brambles than well-rotted stable manure, as free as possible from weed seed. A dressing of from ten to twenty tons per acre should be applied before the ground is plowed.

\*The Loganberry has been treated in another bulletin.

Manure containing considerable unrotted straw should be avoided, since it may cause the soil to dry out during the summer.

If stable manure is not available and the grower wishes to try out some commercial fertilizers, he is advised to make tests of the different fertilizing elements on his soil in order that he may not throw away money in buying fertilizers which the soil does not need.

The plant-food elements which are most apt to be lacking in the soil are nitrogen, phosphoric acid, and potash. Some of the nitrogen fertilizers are nitrate of soda, sulphate of ammonia, dried blood, and tankage. Phosphoric acid is contained in such fertilizers as superphosphate, ground bone (both raw and steamed), Thomas slag, South Carolina rock, and Florida phosphate rock. Muriate of potash and sulphate of potash, and wood ashes are common potash fertilizers.

The grower should measure off portions of rows of equal length on soil as nearly uniform as possible, and apply some of the above fertilizers alone and in combination to each one of these rows. A check row receiving no fertilizer is left frequently for comparison. One row receives nitrogen; another, phosphoric acid; and another potash; while other plots should receive combinations of these fertilizers, such as nitrogen and phosphoric acid; nitrogen and potash; phosphoric acid and potash; and phosphoric acid, potash, and nitrogen.

It is suggested that nitrate of soda will be found very satisfactory at a strength of from one hundred to two hundred pounds per acre. A high-grade superphosphate testing about 15 percent should be put on at about two hundred to four hundred pounds per acre. Muriate of potash should be applied at one hundred to one hundred and fifty pounds per acre.

Growers should study carefully the question of fertilizers in bulletins or books on that subject.

**Propagation.** The blackberry, red raspberry, and a few of the purple cane raspberries are propagated by suckers, which grow up from the roots. If more suckers are desired than naturally grow, they can be obtained by wounding the roots with a spade. Suckers then start from the wounded places. Nurserymen frequently start new plants by cutting roots into sections about three inches long and planting them in shallow trenches in a horizontal position. These sections grow into well-rooted plants in a season's time. The other brambles all start young plants from the tips of the cane, or from buds along the cane, if the cane be covered with dirt, with the exception of the Evergreen blackberry and the Himalaya berry, which may be propagated by root cuttings also. The tip plants are usually much stronger and should be used in preference to plants obtained by layering the vine. In removing young plants from the soil, especially the blackberry and raspberry, great care should be taken not to strip off or injure the roots.

A better rooted plant is obtained by growing these suckers or tips in the nursery for one season before planting in the field. When the land for planting is valuable and returns as quickly as possible are desired it will be best to plant the nursery-grown stock.

**Varieties.** Blackberries: Snyder, Kittatinny, Eldorado, Lawton are among the leaders in this section. For commercial canning no black-

berry on the coast equals the Evergreen blackberry. It is prolific, firm, and does not get mushy in the can. The other blackberries are not very satisfactory for commercial canning purposes. Dewberries: The Lucretia is the leading commercial berry. The Gardenia is another variety well recommended. Black Raspberries: The Plum Farmer, Munger, America, Kansas, Gregg, Ohio, and Cumberland are widely grown in the State. Of these, the first three varieties seem especially well adapted to our conditions; are berries of fine quality, good size, and quite prolific; and, consequently, are becoming more popular than some of the older sorts. Red Raspberries: The Cuthbert is easily the leader for shipping and canning purposes. The Marlboro is a very good early berry, while the Red Antwerp and Loudon are two other good varieties. The Superlative, more recently introduced, gives considerable promise as a home berry. The yellow raspberries are like the red raspberries in every particular except that they bear yellow fruit. This fruit is very attractive when put up in glass cans for home use. Two of the most common varieties of the yellow raspberry are Golden Queen and Yellow Antwerp. Purple Cane Raspberries: Schaffer's Colossal, Columbian, and Cardinal are the common varieties grown.

**Planting.** After the soil has been thoroughly prepared for the plants, the ground should be marked off into rows and cross marked with a marker. For blackberries the rows should be from five to eight feet apart and the plants should be kept from four to six feet apart in the rows, according to the vigor of the variety set. For Mammoth blackberries, Himalaya berries, and Evergreen blackberries, the rows should be from eight to nine feet apart and the plants should be set from eight to twelve feet apart in the rows, depending upon the strength of the soil and the fertilizer it has received. Red raspberries, black caps, and purple canes, should be set in rows running five or six feet apart and three to four feet in the row. The rows for dewberries should run six or eight feet apart and the plants be set from six to eight feet apart in the rows. When the blackberries or the raspberries are to be cultivated both ways, the blackberry may be set five by five or six by six feet apart, and the raspberry may be set about four feet apart each way.

If the plants of the first season's growth are set, only vigorous tips or suckers should be planted. Plants grown one year in the nursery usually do enough better to make it worth while planting them even at the extra expense for plants. A furrow for each row should be plowed seven or eight inches deep and the plant set at the bottom of the furrow. The roots of the plant should be covered lightly at first, taking care not to hurt the crowns. Subsequent cultivations will bring the ground up to the level.

In western Oregon the plants may be set either in the fall or in the spring, preferably in the fall. But in the colder parts of the State there will be less damage from freezing if the plants are set out in the spring.

Plants that have been grown in the nursery should have the tops cut back to make up for the loss that the roots have suffered in the digging.

**Cultivation.** All the brambles need plenty of moisture in the soil, especially during the fruiting season; otherwise the fruit becomes small

and seedy. To maintain this moisture, frequent cultivation is needed through the growing season. This cultivation should be thorough but not deep enough to hurt the feeding roots of the plants. In fall plowing, the furrows should be turned toward the plant either with a vineyard plow or a disk. This leaves a dead furrow for drainage. In the spring-time this soil is turned back again toward the center of the row. Whenever suckers on the blackberry or red raspberry become troublesome, they can be removed by putting well-sharpened square teeth on the cultivator. A horse will do better work among brambles if he is protected with a leather apron.

**Irrigation.** For the production of first-class bush fruits irrigation is necessary in most parts of southern and eastern Oregon. While it may not be absolutely necessary in western Oregon, there is no doubt that, on certain types of soil, irrigation would be of considerable benefit, especially just before fruiting. In the Willamette and Umpqua Valleys it is likely that two irrigations, one application just before picking and the other during the picking season, would be of immense value in some dry seasons. Too much water, on the other hand, may bring serious results in causing the berries to become too soft and watery for marketing.

**Training and Trellising.** Raspberries of all varieties and the true blackberries may or may not be trained to wires. To keep the vines upright when loaded with fruit and out of the way in cultivating, most growers set stakes at intervals of 25 to 30 feet and nail cross arms, about 18 inches in length, to these stakes about 2½ feet above the ground. From the ends of these cross arms, wires are run, one on either side of the row.

The Mammoth blackberry, Evergreen blackberry, and Himalaya berry are all trained to trellises made by stapling No. 12 wire to stakes set every twenty-five to thirty feet in the row. The wires are run 3 and 4½ feet above the ground. The stakes should be at least 7 feet long, set 2 feet in the ground, and the one at the end should be very well braced. Dewberries may be trained along low trellises similar to the one described above, or they may be tied to a stake set one at each plant. These stakes should run 6 or 7 feet above the ground. Another common way of handling the dewberry is to cut it back to three or four feet and keep it without trellising, similar to the blackberry.

**Pruning.** Blackberries and raspberries should be pruned in the spring, as soon as the plants have reached 3 or 4 feet in height, by pinching back the terminal shoots. This pruning will cause the plants to grow out four or five laterals. When the laterals become 18 to 20 inches long, they should be pinched back. After fruiting, the old canes should be cut out and burned. Winter pruning, when necessary, consists in cutting out the weaker canes and pinching back some of the laterals that have grown too long. A good instrument for cutting out the old canes is made by fashioning a hook out of a file, sharpening it and then attaching it to a handle. Gauntlet gloves should be worn to protect the hands. The Mammoth blackberry, the Evergreen blackberry, the Himalaya berry, and the dewberry, if grown on trellises, should be cut back at the time when they are tied to the trellis. Vigorous growing canes are cut back to 8 to 10 feet in length; the dewberry

canes, somewhat shorter. This trellising and pruning may be done in the fall when there is no danger from cold weather. But where some winter injury may develop it is best to leave the vines on the ground until spring before putting them on the trellis. When the canes are tied to the trellis the laterals should be pinched back to about 2 feet in length. The old canes of the Mammoth blackberry and the dewberry should be removed and burned after fruiting; the canes of the Evergreen and Himalaya varieties are perennial and should only be thinned out in autumn or spring.

**Winter Protection.** In parts of eastern Oregon where winter temperatures are severe, the brambles ought to have protection in winter. This is accomplished by bending the canes over in the fall and covering them with a layer of earth. Hay, straw, or coarse manure is sometimes used as a covering, but there is some danger that mice may be harbored in this material and, in that case, that the vines may be girdled.

The canes should be bent after all danger of warm weather has past but before the ground is frozen. If the sap is still circulating in them, the canes will not break. Frequently the soil for a few inches deep is drawn away from one side of the plants with a hoe or a plow, when the plants are then more easily tipped over in that direction.

Plants should be uncovered in spring after severe weather has passed and before warm spring weather sets in.

The Evergreen and Mammoth blackberries and the Himalaya berry are not likely to stand the low temperatures of Eastern Oregon unless planted in warm valleys or in spots especially well protected.

**Harvesting and Yields.** The brambles, for the most part, bear soft fruits, which must be handled very carefully all the way from vine to consumer. Berries should be picked, as far as possible, in the morning, but when they are dry. They should not be over-ripe and soft. Pickers must be watched carefully to see that they do not crush or bruise the fruit. Each picker should be given a carrier holding six berry boxes. When these boxes are filled, he should bring the fruit to the packing shed, so that it will not be kept out in the hot sun any length of time.

For drying purposes, black caps, in the eastern states, are often batted off the bushes. The picker wears a large canvas apron attached to a frame reaching out in front of him. He has a hook with which he brings the vines toward him with one hand and with a small wooden bat knocks the berries off into the apron with the other hand.

Blackberries ought to yield from two hundred to two hundred and fifty 24-pound crates to the acre. Dewberries will not quite equal this yield, while the Evergreen and Mammoth blackberries and Himalaya berries frequently run considerably above that figure. The raspberries under favorable conditions will average from one hundred and fifty to two hundred 24-pound crates to the acre.

**Marketing.** The first step in successful marketing is to see that the berries arrive at their destination in good condition. To do this, they must be transported to the town or shipping point on a rig that will give as little jolting as possible. A light wagon fitted with springs just stiff enough to make the load ride easily, makes a very good rig for this purpose. The berries should be covered with canvas on the road to protect them from dust. Berries which are to be shipped in large

lots should be placed in a refrigerator car and properly iced in transit. The crates are tiered up in the cars and braced carefully in practically the same way that apples are handled. The fruits of all the brambles, when thoroughly ripe, are delicious when eaten fresh. They are all good for canning at home, but the blackberry, the Mammoth blackberry, the Himalaya berry, and the dewberry are not suitable for commercial canning because they become too soft and mushy in the cans. The only berries that are dried on a commercial scale are the black cap and purple cane raspberries.

Some work has been done in manufacturing the juice of the red raspberry. This makes a fine beverage when carbonated or blended with other fruit juices.

In drying, the black cap and purple cane raspberries lose about three-quarters of their weight. Prune driers can be utilized very well for this work. The short tunnels running from twenty to twenty-four feet in length are preferable to longer ones. A three-tunnel drier will handle over five thousand pounds of black caps in a day of twenty-four hours, or in other words it would be large enough to handle the crop of about thirty acres of black caps.

**Costs.** The cost of young plants varies considerably with different nurseries and with the different localities in which they are grown. Newly introduced varieties always bring a higher price than the older ones. It is best to try out a few plants of a new variety at first to see if they are suited to your soils, climate and market, before planting heavily of that variety. Well-rooted tips or suckers will cost from \$15 to \$25 per thousand. Plants grown one year in the nursery will cost from \$10 to \$15 more per thousand.

The following figures are approximations based on results obtained by some of the growers in this State:

**COST OF PRODUCTION.** Plowing and fitting the land, \$5 to \$6 per acre; cultivation, \$8 to \$10 per acre; fertilizer, if needed, \$10 per acre; hoeing, \$5 per acre; pruning and trellising, \$5 to \$10 per acre; spraying, if needed, \$5 per acre. With yields running from one hundred and fifty to three hundred 24-pound crates per acre, the cost of production per crate will be 15 to 35 cents.

**COST OF MARKETING.** Crates and boxes, 15 cents per crate; picking, 25 cents per crate; packing, handling, hauling, and depreciation charges, 10 cents per crate; making a marketing charge of 50 cents per crate. Combining the cost of production with the marketing cost gives a total cost of from 65 to 85 cents per crate. The blackberries with their high yield would come nearer the lower figure, while the raspberries would more nearly approximate the higher figure.

**Insects and Diseases.** The three most serious insect pests affecting the brambles are the raspberry cane maggot, the raspberry root borer, and the leaf hopper.

The cane maggot will cause the canes to wilt and finally die. A careful examination will disclose a bluish ring under the bark and above the ground. The cane should be cut off below this ring and destroyed.

The work of the root borer causes the infested plant to become yellow and the berries to be small and seedy. Two years are required

for the borers to mature. The first season they attack the canes, girdling them near the surface of the soil. The injured canes may be easily observed in late summer lying flat on the ground with the foliage wilted. By wearing a heavy pair of gloves a man can twist off the injured cane at the girdle. In most cases the borer will remain in the detached cane and should be removed from the field and destroyed.

The leaf hoppers are sucking insects; they do their damage by sucking out plant juices from the young canes and leaves. They should be attacked while young or in the nymph stage. They may be killed by some contact insecticide, such as whale oil soap, 1 pound to 10 gallons of water; kerosene emulsion, 10 percent solution; or a mixture of Black Leaf 40,  $\frac{1}{2}$  pint to 4 pounds of whale oil soap and 100 gallons of water.

The most serious diseases affecting the brambles are crown gall, mushroom root rot, and anthracnose. Plants affected by crown gall gradually turn yellow and lose their vigor. A careful examination will disclose corky swellings on the roots, usually near the surface of the ground, but often on the smaller roots. This trouble occurs frequently as a swelling or a canker along the side of the cane. Diseased plants, with their roots, should be removed from the patch and burned. As this disease persists in the soil for some time, it is not safe to reset soon after the diseased plant has been removed unless a large, deep hole is made and this hole filled with dirt from an uninfected source.

Mushroom root rot is a fungous disease, which attacks the roots of the plants, finally causing their death. The disease grows on old tree roots and stumps and is more apt to affect plants set on newly cleared land. As soon as a plant is found to be infected by this disease, it should be removed to prevent neighboring plants from becoming infected. The same recommendations for replanting as in the case of the crown gall.

The fungus disease called anthracnose attacks most of the varieties of the blackberry and black raspberry. It also attacks the dewberry and some of the varieties of the red raspberry and purple canes. The Himalaya berry is subject to this disease, but the Evergreen blackberry never seems seriously affected by it. The disease causes lightish gray spots to appear on the leaves and on the canes of the plant. It may attack the roots of these fruits, also, causing them to turn a light gray color. Usually, this disease can be kept under control by cutting out the old vines after they have fruited and burning them. Bordeaux mixture, 4-4-50, is used as a remedy in case spraying is necessary. The mixture is best applied with a resin fish-oil sticker, to improve the sticking and spreading qualities of the Bordeaux. The first application should come about the time the first leaves attain good size. The second application should be made just before the blossoms open and the third may be put on about the end of the summer, in case new infection begins to make its appearance on the foliage of the young growth. To protect the fruit, some colorless mixture like Burgundy Mixture should be applied about two weeks before the petals fall. A resin fish-oil sticker should be used with this also. The formula for Burgundy Mixture is as follows: 2 lbs. copper sulfate (blue stone), 3 lbs. sodium carbonate (sal soda), and 100 gallons water. Each of these chemicals should be mixed separately with water before putting them together.