



GROWING BLUEBERRIES IN YOUR HOME GARDEN

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Growing highbush or cultivated blueberries in your home garden can be very rewarding. You can eat the berries fresh, make them into pies and other desserts, or freeze and can them for out-of-season uses.

Highbush blueberries are perennial, long-lived, deciduous shrubs growing to a height of 5 to 10 feet at maturity. The plants are very nice as ornamentals, which is an added bonus. The plants have a profusion of white blossoms in late spring. Leaves are a glossy green in spring and midsummer and have red, orange, and yellow colors in the fall. You can grow plants in beds, rows, hedges, or individually. Dwarf and semidwarf cultivars (varieties) are available for container culture.

SELECTING A SITE

Blueberries require a sunny location for full production. Avoid areas surrounded by trees. Trees can provide too much shade, compete with plants for water and nutrients, encourage birds, and interfere with air movement around the plants. Poor air circulation increases the risk of spring frost damage to blossoms and favors the development of diseases.

Avoid planting on heavy soils that drain slowly. Water standing on the soil surface for more than 2 days during the growing season can damage roots.

Soils. Blueberries have very specific soil requirements. Plants grow best in well-drained,

light sandy loam soils that are high in organic matter with a pH between 4.5 and 5.5. Peat and muck soils are also suitable. The soil water table should be at least 14 inches below the soil surface, or roots will suffocate.

If your garden has only coarse sandy or gravelly soils, pay more careful attention to watering and fertilizing. However, you can modify many soils that are initially unsuitable to make them suitable for blueberry production.

SELECTING A CULTIVAR

In Oregon, the blueberry fruiting season extends from early July to mid-September, depending on which cultivar you grow. The fruit on each cultivar ripens over a 2- to 5-week period.

Although highbush blueberry cultivars are generally self-fertile, cross-pollination produces larger berries. Also, if you plant two or more

cultivars that ripen at different times, you'll lengthen the harvest season.

Some cultivars grown in Oregon are (in order of ripening): Earliblue, Bluetta, Duke, Spartan, Patriot, Collins, Bluejay, Blueray, Ivanhoe, Berkeley, Bluecrop, Pemberton, Jersey, Coville, Dixi, Lateblue, and Elliott. See EC 1308 for a detailed description and evaluation of these and other blueberry cultivars.

ESTABLISHING YOUR PLANTING

Preparing the soil. You must prepare soils that are not naturally suitable for blueberry plant growth before planting. If you plan on growing several plants together, you'll obtain more satisfactory results if you prepare an entire bed, rather than digging holes for individual plants and preparing soil to fill these holes.

It's better to group plants together in a bed or row than to scatter individual plants around your home or garden. Blueberry plants are long-lived, so considerable time and expense in preparing the soil can be justified.

A well-drained, acid soil *with a pH between 4.5 and 5.5* is considered ideal for good growth. Incorporate organic matter, such as well-decomposed (rotted) sawdust, bark dust, or leaves, to improve soil aeration and drainage. Test soil pH a year before planting.

For most soils the pH must be lowered (made more acidic). However, *if the pH of*

What cultivars should you choose?

- Choosing two cultivars that flower at the same time allows for cross-pollination and larger berries.
- Choosing various cultivars that ripen at different times allows you to pick fruit for a longer period.
- Choose cultivars with favorable fruit characteristics and plant growth habit (see EC 1308).

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your soil is below 4.0, incorporate finely ground dolomitic limestone, following the rates recommended on the soil test report.

If the pH is above 5.5, acidify the soil by one of the following methods:

1. Mix 4 to 6 inches of peat moss into the top 6 to 8 inches of soil. In addition to acidifying the soil, peat increases the organic matter content.
2. Mix sawdust (*do not use cedar*) into the soil the fall before planting as outlined above for peat. Sawdust is not as effective as peat for lowering soil pH, but it's effective at increasing soil organic matter. You can also use wood shavings (*no cedar*), alfalfa, or grass hay, pine needles, leaves, and manures; however, these materials must compost (rot) before they become very beneficial. Composting robs soil of nitrogen. Therefore, as a general rule add 1 lb ammonium sulfate per 100 ft² per inch depth of sawdust.
3. Apply elemental sulfur or aluminum sulfate the year before you plant and thoroughly mix into the top 6 to 8 inches of soil. The amount of sulfur required to lower pH to the desired range differs for each soil type, so you must determine the amount required by trial. As a guide, it requires 1 to 2 lb sulfur or 6 to 12 lb aluminum sulfate per 100 ft² to lower the pH one unit (say, from 6 to 5). Use the higher rate on heavier loam soils high in organic matter and the lower rate on light sandy soils low in organic content. It takes several months for sulfur to lower the pH. Check the pH once or twice during the first growing season to determine if more sulfur is required.

If the pH is slightly above 5.5, continued use of ammonium sulfate fertilizer will gradually lower the pH.

If the pH of an organic soil is higher than 6.5, it's usually not practical to acidify it.

Although blueberries require readily available moisture, they will not tolerate poor drainage. Ideal soils are well drained with a water table 14 to 22 inches below the surface. You can often make poorly drained sites or soils suitable for growing blueberries by tiling and/or planting on raised beds.

A raised bed 8 to 18 inches high and 3 to 4 feet wide is usually sufficient to provide adequate drainage and aeration. Remove some of the soil and replace it with about 3 inches of coarse material (gravel, crushed stone, etc.) to provide good drainage.

On top of the coarse material add 8 to 18 inches of a mixture containing a high content of acid peat. For example, you can use a mixture of half sandy soil and half peat or half soil and half sawdust. Use logs or stones to retain the soil mixture if necessary.

Planting. Plant healthy 2- to 3-year-old plants in late winter or early spring. Purchase bare-root or container grown plants from a reputable nursery. If you purchase bare-root plants, plant them before they break dormancy (begin growth in spring). Space plants from 4 to 6 feet in the row. Spacing between the rows can be from 7 to 9 feet.

Set plants no more than 2 inches deeper than they were growing in the nursery row or container. Firm the soil well to remove air pockets. Avoid fertilizing plants when you plant them. Water thoroughly after planting, but don't overwater.

Remove blossoms. Strip off flower buds or blossoms that appear the year the plants are set, so that no crop is produced. Be patient! It's important that plants grow well the first year, and flower and fruit production hinder growth.

It's easy to strip off blossoms by wearing leather gloves and rubbing your hands up and down the twigs.

Weed control. Eliminate all perennial weeds before planting and keep the planting free of all weeds during the growing season to within at least 4 feet of the plants. Blueberry roots grow mostly near the soil surface. Thus, to prevent root damage any cultivation you do must be very shallow and not too close to the plant.

Mulching. Blueberries grow better on mineral soil if you mulch them. After planting, apply mulch to a depth of 3 inches. Increase the depth of the mulch to 6 inches over a period of years. You can mulch the entire soil surface (and then you don't have to cultivate), or you can place a band of mulch about 3 to 4 feet wide in the row. You may have to apply two to three times as much fertilizer on mulched plantings compared to unmulched plantings.

Mulching with old sawdust or some other well decomposed (rotted), suitable material keeps the soil cool, helps conserve moisture, adds organic matter to the soil, improves soil structure, and aids in weed control.

Fertilizing. Four weeks after planting, apply 10-10-10 fertilizer at the rate of about 1 ounce (1½ tablespoon) per plant. Sprinkle it evenly within 12 to 18 inches of each plant, but not directly on the crown or stems. If possible, use mixtures in which potassium is supplied in the form of potassium sulfate rather than potassium chloride.

Fertilizer is more effective when it's in contact with the soil. If you mulched the plants, rake it aside, apply fertilizer, then replace the mulch.

Watering. Blueberries have a shallow, fibrous root system, so they're susceptible to drought injury. A uniform and adequate supply of water is essential for optimum growth. If this isn't supplied by natural soil water or rainfall, then you must irrigate. On the average, plants need 1 inch of water per week. Check the soil frequently for adequate moisture and irrigate if necessary.

Pruning. At planting, prune all branches back by about 30 to 40% to encourage vigorous new growth. Young plants require little pruning for the first 2 to 3 years. Remove dead or dying parts of branches and less vigorous, spindly growth around the base of plants to encourage vigorous upright growth.

Whenever you fertilize, use either ammonium sulfate (21% nitrogen) or a well-balanced fertilizer containing potassium sulfate. These fertilizers will gradually lower the pH of the soil. Blueberries grow best if the soil pH (a measure of acidity) is between 4.5 and 5.5.

CARE OF ESTABLISHED PLANTS

Adding mulch. Add mulching material as required to attain a depth of about 6 inches once plants are mature. In row plantings, widen the mulched area to at least 4 feet as plants become larger. As a rule, sawdust mulch decomposes at the rate of about 1 inch per year.

Fertilizing. Apply 10-10-10 fertilizer annually in the spring at the rate of 2 ounces (¼ cup, or equivalent rate of another well-balanced fertilizer) per plant the second year after planting, increasing by 1 ounce each year until you reach a total of 6 to 8 ounces (¾ to 1 cup) per plant. If the soil is quite fertile, an application of 5 ounces of ammonium sulfate (21-0-0) per mature plant is sufficient.

Checklist for establishing a blueberry planting and taking care of plants the first year:

1. Select a good site.
2. Eliminate all perennial weeds before they go to seed.
3. Test the soil pH a year before planting.
4. Prepare the soil the year before planting:
 - incorporate organic matter,
 - modify soil pH if necessary, and
 - if the site drains poorly, use tile drains and build raised beds.
5. Choose cultivars — planting two or more leads to larger fruit and a longer harvest period.
6. Plant in the spring.
7. Apply 3 inches of straw or other mulch.
8. Prune all branches back by 30 to 40%.
9. Apply fertilizer a month after planting.
10. Keep the planting weed-free.
11. Irrigate as required.

Apply this fertilizer at the time the buds are swelling. Spread it evenly around the plant, over an area approximately equal to that of the maximum spread of the bush, without touching the base of the canes.

The first 2 or 3 years after you start mulching, plants may become pale green, because much of the soil nitrogen is used by organisms that decompose the mulch. Therefore, it's often necessary to fertilize each plant with 1 to 2 ounces of ammonium sulfate in early May and again in late June to avoid nitrogen deficiency. In general, you should avoid fertilizing after July 1.

Check the soil pH every year or two, especially if growth is poor. If the pH is above 6, you can apply sulfur to the surface of the soil or mulch at the rate of about 1 ounce of elemental sulfur or 6 ounces of aluminum sulfate per plant. Water or lightly rake the sulfur into the soil or mulch. (It's best to delay this sulfur application for about a month after applying fertilizer, to avoid possible burning of blueberry roots.)

Ammonium sulfate fertilizers used over a period of years will gradually lower the pH. However, if you use nitrate fertilizers, you tend to raise the pH.

Watering. A uniform and adequate water supply is needed from blossom time to the end of harvest. The demand for moisture is greatest from berry swell through harvest. Fruit bud formation for next year's crop begins from late July to early August — so adequate water is needed at this time.

Irrigate if plants don't receive about 1 inch of water a week through rainfall. Irrigate frequently enough to prevent the leaves from wilting. However, avoid overwatering the plants, or roots may be killed.

Pruning. After the third year, you need to prune blueberry plants regularly. The main objectives of pruning are to promote the growth of strong, new wood and to maintain good fruit production. Fruit is produced on 1-year-old wood.

If you prune too little, plants become crowded, with weak, twiggy growth; and they fail to develop strong new wood for future production. Severe pruning produces fewer, larger berries and more new wood. Experience is the best guide on how hard to prune.

The best time to prune is January to mid-March, when plants are dormant. If you follow a series of steps, you may systemize your pruning job and make it easier:

1. Cut out any wood that's dead, damaged, or diseased.
2. Keep the bush fairly open. Remove basal shoots smaller than pencil size in diameter, but leave larger shoots to develop into next year's fruiting wood. Cut out one or two old, unproductive canes (large stems arising near the base of the plant). Fourth-year or older wood (with small, weak laterals and few fruit buds) is unproductive — cut these canes back to the ground or to a strong new side shoot. Limit the number of canes to one for each year of age of the plant, or a maximum of 6 to 8 canes for old bushes. If you remove one or two old canes each year and if one or two new ones are produced, none will be over 4 to 6 years old — a good goal to work for.
3. Remove excess sucker shoots (growing from base of plant or roots) and weak, twiggy wood, especially from the top of the plant, to allow light to reach the center. Twiggy wood generally has few fruit buds.
4. Plants may overbear. This often results in very little new growth of wood, and small, late-maturing berries. If this is a problem, remove some of the weakest 1-year-old wood and, if necessary, tip back some of the remaining 1-year-old wood. Cut off about ⅓ of the flower buds; these are larger, fatter, and less pointed than vegetative buds.

If you prune bushes correctly, you'll have a good balance between fruit production and growth of vigorous new shoots.

Remember that your visual assessment of plant growth and fruiting is extremely useful in a good fertilizer program. If the plants are growing well (10 to 12 inches of new growth each year) and if you obtain average yields, there's no need to worry about whether plants are getting an adequate amount of nutrients.

Checklist for taking care of mature plants:

- Add mulch to a depth of 6 inches.
 - Apply fertilizer in the spring when the buds start to swell.
 - Maintain a uniform and adequate moisture supply by irrigation if required.
 - Pick fruit at optimum maturity.
 - Prune from January through mid-March.
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HARVESTING

Each blueberry cultivar ripens berries over a 2- to 5-week period. Berries occur in clusters of 5 to 10. Don't be too anxious to pick the berries when they first appear ripe. They'll develop better flavor if you leave them for a few days

after they completely turn blue. Pick about once a week or more often in hot weather. Gently roll berries between your thumb and forefinger, removing fully ripe berries and leaving unripe berries for the next picking.

You can collect berries in an open container attached to a belt or cord at waist level. This frees both hands for picking. You can keep fruit for a week or more in the refrigerator.

PESTS

Many species of birds feed on blueberry fruit; they can harvest 100% of the berries if you don't control them. Scare tactics like aluminum plates and strips of foil flapping in the wind have limited effectiveness; birds become used to these devices.

The most effective method of bird control is netting with a light plastic fabric. You can place nets directly on the plants, but this makes harvesting fruit difficult, and birds can still feed on some of the outside fruit by pecking through the netting. As an alternative, you can construct a small wooden frame over individual or groups of plants as a support for the netting.

If any diseases or insect pests become a problem — such as mummy berry, *Botrytis*, *Pseudomonas*, aphids, root weevils, and scales — check with your county office of the OSU Extension Service for control recommendations.

FOR FURTHER READING

This publication is available from Agricultural Communications, Publications Orders, Administrative Services Bldg. 422, Oregon State University, Corvallis, OR 97331-2119. Please add 25¢ shipping and handling for orders up to \$2.50. For orders between \$2.50 and \$100, add 15% shipping and handling. For orders of \$100 or more, please call (503) 737-2513 for a price quote.

EC 1308, *Blueberry Cultivars for Oregon*, by Bernadine C. Strik, Oregon State University Extension Service publication (Corvallis, 1989). 75¢

This publication replaces EC 699. Trade-name cultivars are listed as illustrations only. The OSU Extension Service does not endorse any listed cultivar or intend any discrimination against others not listed.

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