

Blueberry Production in the Home Garden

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Blueberries can be successfully grown in all parts of Arkansas. There are three types of blueberries to consider, depending upon the part of the state that you live. The northern highbush type is better adapted to the northern part of the state, requiring cooler nights during maturation to produce the flavorful fruit. The northern highbush is also not very tolerant of high daytime temperatures during the summer months. Attempts to grow this plant further south have invariably resulted in the plants beginning to lose vigor after a few years and eventually dying or becoming less and less productive.

In southern Arkansas, southern highbush or rabbiteye varieties should be grown. Southern highbush blueberries are hybrids of northern highbush varieties and blueberry species native to the southern USA. They combine the high fruit quality of northern highbush with the heat and disease tolerance of the native species. Central Arkansas is the transition zone where all types of blueberries can be cultivated, depending on site selection and cultural practices. In general, northern highbush varieties can be grown at higher elevations, while southern highbush or rabbiteye varieties should be grown at lower elevations in central Arkansas.

Variety selection is very important in blueberries, particularly in relation to the intended use of the fruit. Due to the variable ripening habit, it is possible to harvest fresh fruit in central Arkansas from the end of May until late July. Each variety is harvested every seven days, with four harvests needed to get all of the fruit.



Establishing the Planting

Blueberries require a site **free of bermudagrass and johnsongrass** with good air drainage to prevent winter injury and frost damage and a soil that is acid and well-drained with medium to low fertility. In addition, blueberries require irrigation for optimum growth and fruit production. Ultimately, nonirrigated highbush blueberries will perish; the only question is when this occurs in the life of the planting. Nonirrigated rabbiteye plants may survive but will have reduced yield and fruit quality in most seasons.

Although blueberries are not as frost susceptible as some other crops, frost pockets should be avoided. Try to plant on a gentle slope or well-drained,

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Cultivar Selection

Type	Cultivar	Notes
Northern Highbush (Central and Northern Arkansas)	Bluecrop	High yielding; good flavor; tends to overproduce if not pruned properly; midseason harvest.
	Bluejay	Rapidly growing upright bush with moderate yields of medium-sized fruit. Slightly tart fruit. Ships well.
	Blueray	Large fruit, consistently productive, but tends to overproduce if not pruned properly; excellent flavor; midseason harvest; upright-spreading, vigorous growth habit.
	Duke	Consistent production; early-season harvest, blooms relatively late. Bush upright and open.
	Elliot	Very productive, but fruit is small with bland flavor; late harvest season. Berry is not fully ripe when it turns blue. Upright and somewhat bushy growth habit.
Southern Highbush (Central and Southern Arkansas)	Legacy	High-yielding plant with vigorous and upright growth habit. Bud break is earlier than Ozarkblue and Summit. Early harvest season with superior flavor.
	Ozarkblue*	High-yielding and consistent cropper; adapted to traditional Rabbiteye production areas. It breaks bud and blooms later than other Highbush and Rabbiteye cultivars; midseason harvest.
	Summit*	A cooperative release with North Carolina State University and the USDA. Area of adaptation similar to Ozarkblue. Excellent flavor, large-size berries. High-yielding and consistent cropper. Midseason harvest.
Rabbiteye (Central and Southern Arkansas)	Brightwell	Upright, vigorous growth; very productive; large, excellent quality fruit; ripens midseason over a long period.
	Climax	Ripens early over a short period. Fruit size is medium and flavor is good. Growth is upright and spreading. High frost risk.
	Premier	Ripens early. Growth is vigorous and upright. The fruit is large with excellent quality. Plant is very productive.
	Tifblue	Older, traditional variety; very productive plant; small to medium berry size; mid- to late-season harvest.

*Denotes University of Arkansas release.

level, high ground. A location on a slope may be subject to frost damage if surrounded by trees.

Surface and internal soil drainage are essential, since **standing water may kill the plants** and poorly drained soils are conducive to soilborne disease problems. Blueberries require almost continuous optimum soil moisture conditions. This is more likely obtained from a loam or sandy loam top soil and a loam or clay loam subsoil. Gray and mottled subsoil indicates poor drainage. Poor soil drainage is often a severe problem even on a slope. Blueberries should be planted on a raised bed. This can be accomplished by mounding-up the planting row from several inches to a foot high and several feet wide depending on the potential for poor drainage. Plant no deeper than the pot level or nursery level.

The desired pH of soils artificially acidified for cultivated blueberries appears to be in the 5.0 to 5.2 pH range. A high pH soil to be planted to blueberries should be reduced to about pH 5.4 with the initial sulfur treatment. This should be done six months prior to planting. To acidify sandy soils, sulfur is recommended at the rate of 3/4 pound per 100 square feet for each full point the soil tests above the desired level. On heavier soils, use 1 1/2 to 2 pounds. Once proper acidity has been established, it can usually be maintained through the annual use of an acid

fertilizer, such as ammonium sulfate. Yellowing or chlorosis of the blueberry foliage often occurs when the pH is too low or too high. It appears on the younger leaves with chlorosis between the veins with the veins remaining green.

Irrigation

Irrigation is essential for blueberry growth. The root system of the blueberry is very restricted and shallow. The highbush type can easily be killed by dry weather.

During hot weather, mature blueberry plants need 1 to 2 inches of water every 10 days from rainfall or irrigation. Current recommendations are for each plant to receive 6 gallons of water per day during hot, summer days. Young plants require only sufficient irrigation to keep the soil moist in the root zone under the plants. Mulching helps conserve moisture but doesn't take the place of irrigation. Make arrangements and plans for irrigation before planting the crop.

Rabbiteye varieties are much more drought tolerant than northern and southern highbush. However, the health of bushes and maximum yields can only be accomplished with adequate irrigation.

Site Preparation

Take representative soil samples before and add the necessary soil amendments during land preparation. Apply wettable sulfur before planting. Other forms of elemental sulfur such as “flowers” of sulfur require many months to react and acidify the soil. Although a quick soil acidifier, aluminum sulfate is only about one-fourth as effective as sulfur, and several light applications are needed to avoid salt damage. Ferrous sulfate also reacts quickly to lower the soil pH but is less effective than aluminum sulfate.

Complete any smoothing, terracing or soil moving procedures as far in advance of planting blueberries as possible. Where substantial cuts are considered, the remaining soil must be of sufficient depth and condition to support the plants. Green manure crops and moderate amounts of manure or litter should benefit these spots. Chicken litter must be applied well in advance of planting to prevent burning due to excessive soil salt concentration.

Eliminate noxious weeds, such as bermudagrass or johnsongrass, before planting as they are difficult to remove from a blueberry planting. This is also the time to remove weeds and mouse cover from adjoining areas to reduce problems in the future.

New Plants and Planting

The plants in a new planting represent a large investment in time and money, and they should receive lots of tender, loving care. When packaged bare-root plants arrive prior to the planting day, store in the refrigerator at 33° to 36° F. or open a trench and space the plants along the side of the trench and cover the roots with soil with the tops exposed. Protect “potted” plants from freezing or drying.

Plant blueberries in the fall or spring. Cultivate the area before planting. Use a shovel or open a furrow with a turning plow for a convenient size hole. Place 1/2 gallon of moist peat moss in the bottom of the furrow or hole for bare-root plants. Spread the blueberry roots out laterally on the peat moss to give the same depth grown in the nursery. Cover the roots with a mixture of the remaining 1/2 gallon of peat moss and soil, almost filling the hole. Firm the soil about the roots and finish filling the hole with the peat moss mixture. The newly planted blueberries should be watered immediately. Prune bare-root plants back one-half at planting. For container plants, remove from container, and if root bound, make at least four vertical slices through the root mass. Plant so that the pot surface is at the soil surface. Surround the plant ball (under and on the sides) with a generous amount (approximately 1 gallon) of a peat moss and soil mixture. Remove flower buds to promote vegetative growth and plant development.

Dig the holes or open the planting furrows as needed to prevent drying the soil. Do not allow the plant roots to dry out on planting day. Keep the bare-root plants (a few at a time) in water or a shaded plastic bag (be careful of heating on sunny days!) until planted to prevent drying.

Maintaining the Planting

Fertilizing and Mulching

To prevent damage to the root system, blueberries should not receive fertilizer at planting or after planting until growth has started. Unless soil tests indicate a different fertilizer requirement, apply 10-10-10 at 2 tablespoons per plant as a band in a 12-inch radius circle; after six weeks, apply 1 tablespoon ammonium sulfate in the 12-inch radius circle.

In subsequent years, foliar and soil tests should be conducted to determine the fertilizer needs of the planting. If results from these tests are not available, use nitrogen fertilizer only, three applications at six-week intervals in the second and subsequent years. Apply this fertilizer in a uniform application over the sawdust mulch. Adjust fertilizer rates according to plant response. Ammonium sulfate is recommended if soil pH is above 5.2. Use ammonium nitrate or urea in the 5.0 to 5.2 pH range. Urea is preferred if the pH drifts below this range, but the use of calcium nitrate fertilizer may be preferable to urea application below pH 4.8.

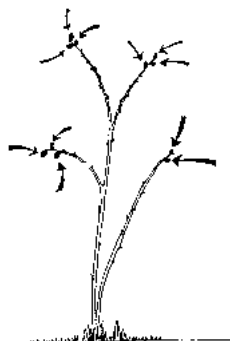
Experience and experiments show that mulching to 5 or 6 inches is essential for new blueberry plantings in Arkansas. The plant roots are so shallow and restricted that even shallow cultivation damages them. The blueberry is also seriously affected by wide fluctuations in moisture and high soil temperatures. Mulch reduces summer soil temperature and conserves moisture. An inch or more of sawdust must be replaced each year. For small plantings, almost any mulching material can be used, except leguminous materials such as alfalfa hay. However, hard and softwood sawdust or chips are generally the most abundant materials. Pine needles or bark are also suitable mulching materials. Fresh (green) mulching material should not be used due to the possibility of plant injury. Material aged for at least one year should be used. Mulch as soon as possible after planting to prevent heaving of fall-planted or drying of spring-planted plants.

Pruning

Pruning of blueberries is essential to produce large, early berries and vigorous plants. Remove the large flower buds at the tips of the shoots the first and second seasons, especially on small plants, to

allow a larger, heavier-producing plant to develop (Figure 1). After the second growing season, remove a portion of the canes and fruiting twigs to shape the plant and reduce the excess flower buds. Remove any low sprawling or weak branches and cut back any excessively tall canes. Thin out the centers and encourage spreading of the upright varieties and make cuts to encourage more upright growth of sprawling varieties.

Figure 1. Flower buds form at the ends of the shoots (arrows). A few will be present on the newly established plants,* and more will be present next spring. All should be removed the first two years to encourage plant growth. Rub them off between the thumb and forefinger or clip off with the tip of the shoots.



Blossoms and fruit occur on shoots and buds produced the previous season. Thus, moderate annual growth is encouraged. Regulate the crop size to allow for growth needed to produce the next crop. Too many blossoms and fruit weaken the plant and result in a large crop of small berries maturing late over a long period of time. Young plants especially may be stunted by overproduction. Remove weak fruiting, twiggy growth as it develops (Figure 2). Old canes or shoots lose fruitfulness over time. Thus, starting about the fifth year, remove one of the largest, oldest canes for every six canes present on the plant, in addition to the other required pruning. Older blueberry plantings should contain about equal numbers of one-, two-, three-, four- and five-year-old canes.

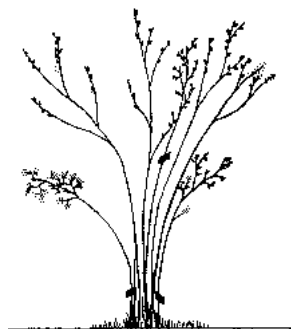


Figure 2. Some blueberry varieties produce excessively twiggy growth. An excess number of fruit buds form on the twiggy growth. By removing it, the excess buds are removed. The remaining buds produce larger, better quality berries.

Bird Damage to Blueberries

Birds can be a most serious pest of blueberries. Large flocks of blackbirds plus the endemic songbird population do extensive damage without some form of control.

Noisemaking devices that produce loud, variable pitch noises have been tried, but the results are erratic and often disappointing. In addition, noise-making devices may not be allowed in urban or suburban areas. Therefore, some form of netting which excludes birds is preferred.

A permanent quonset-type, bird-excluding cage can be constructed of 1 1/4-inch, thin-walled galvanized pipe (either top rail or chain link fence or electrical conduit tubing) covered with 1-inch poultry wire. Allow at least 4 feet from the edge of the cage to the nearest row and at least 6 feet between rows.

Another type cage, small or large, might be made from 10-foot treated posts (buried 3 feet in the ground) supporting cross-wires and bird netting. The plastic bird netting can be stored when not in use and will last several years.

Mouse Damage and Control

Although the sawdust mulch is essential to blueberry establishment, mice (voles) have been a serious problem in many plantings. A continuing chemical control program should be initiated at the first sign of buildup. Mice feed on grass and weeds in the summer but on blueberry roots during the winter. Treat in late fall before the grass and weeds have died from frost. Check with your local county agent for the latest recommendation for mouse control.

Diseases and Insect Pests

Blueberries can be grown with little or no use of fungicides and insecticides. Major blueberry insect pests and diseases found in other blueberry production areas of the USA have not become established in Arkansas at this time. Contact your local county agent for the latest information on blueberry diseases, insect pests and control measures.

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