

Texas Fruit and Nut Production

Blackberries

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Blackberries are an excellent fruit plant for Texas home landscapes: They are relatively easy to grow in small areas, they tolerate hot Texas summers well, and they bear good fruit in spring, summer, and fall (Fig. 1).

Although blackberries have some challenging diseases and insect pests, they produce well for growers who follow Earth-Kind® orchard principles. Earth-Kind uses research-proven organic and traditional gardening techniques to maximize production while protecting the environment (<http://earthkind.tamu.edu>).

Blackberries can also be a profitable commercial crop. Mature blackberry plants can produce 5,000 to 10,000 pounds per acre per year, and fresh fruit commands good prices. Varieties are available that bear large fruit, have an extended harvest period, and are firm enough to be transported to distant markets (Fig. 2).

However, because of the high labor requirements for harvesting, most commercial plantings are restricted to small-acreage ventures.

Growth habits

The cultivated blackberry is an improved form of wild southern blackberries, or *dewberries*. All blackberries are biennial plants—flowering plants that take 2 years to complete their biological life cycle.

Blackberries have two types of canes: primocanes, which grow during the current season (Fig. 3); and floricanes,



Figure 1. Abundant fruit.



Figure 2.
 'Rosborough'
 fruit.



Figure 3. Primocaine.

which are 1-year-old, flower-bearing canes that die after the berry crop matures.

Cultivated blackberries are classified into two fruiting types:

- **Floricanes-bearing**, which flower and set fruit only on floricanes
- **Primocane-bearing**, which flower and set fruit on primocanes late in the growing season, and then bear on floricanes also the following spring

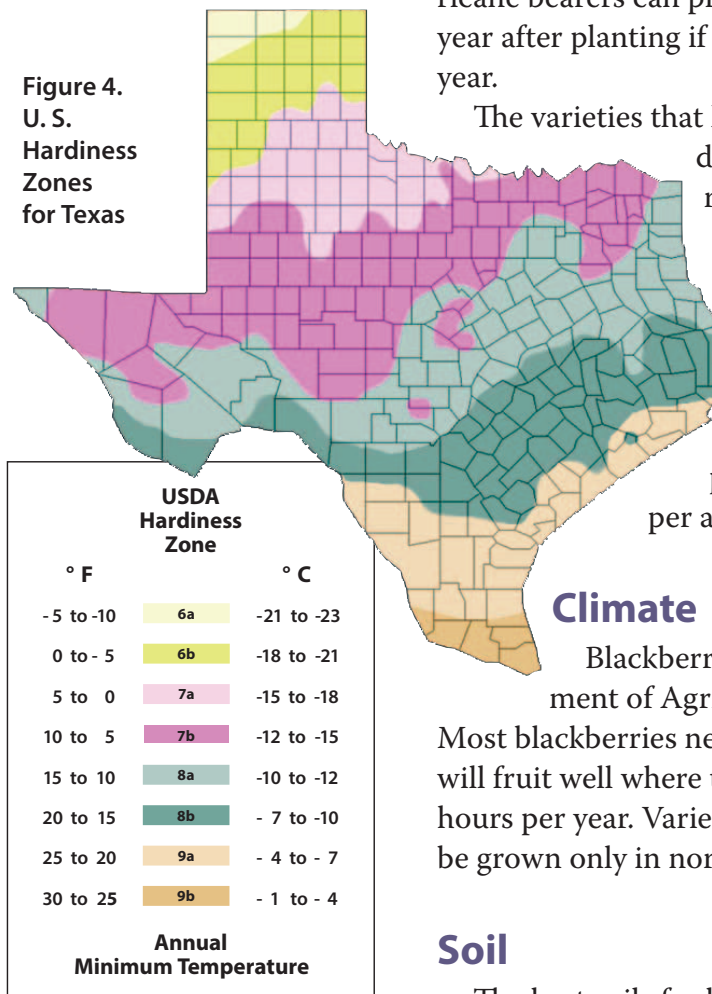
The amount of fruit produced is related to the growth and vigor of the primocanes and their adaptation to climate. The primocane-bearing varieties available to date are not well adapted to the hot summers in Texas and therefore may not set good primocane crops in some areas.

Primocane bearers can produce a small crop during the first year that they are planted, increasing in the second season. Floricanes bearers can produce a sizeable crop of berries the second year after planting if the primocanes grow well during the first year.

The varieties that live longest in Texas are those that were developed here. With proper care, they may remain productive for 20 years or longer.

University of Arkansas varieties (those having American Indian tribe names such as 'Apache') generally produce for only 5 to 10 years, depending on the variety and growing location. Good yields on healthy, mature plantings range from 5 to 10 pounds per plant or 5,000 to 10,000 pounds per acre.

Figure 4.
U. S.
Hardiness
Zones
for Texas



Climate

Blackberries can be grown anywhere in U.S. Department of Agriculture Hardiness Zones 7, 8, and 9 (Fig. 4). Most blackberries need relatively few winter chilling hours; they will fruit well where temperatures are below 45°F for 300 or more hours per year. Varieties that require more chilling hours should be grown only in northern Texas.

Soil

The best soils for blackberries are well drained soils, are at least 1 foot deep, and have a pH range of 4.5 to 7.5. On soil with a pH of 8.0 or above, the plants will experience iron chlorosis, which requires that chelated iron products be added to the foliage and soil.

Site preparation

If the soil drains slowly, plant the blackberries on raised beds or berms (mounded planting rows), which will enable the soil to dry faster and help keep water from ponding near the crown of the plant.

Varieties

Three categories of blackberry varieties can be grown in Texas:

- **Thorny varieties** are generally most productive and bear larger fruit than do the thornless types, although fruit of 'Apache' and 'Natchez' compare well to many thorny varieties. All of the varieties of blackberries developed in Texas have thorns (Fig. 5).
- **Thornless varieties** are easy to harvest, train, and prune.
- **Primocane-bearing varieties** have been introduced in Texas only recently, and their potential for long-term performance is not well understood. They should be considered experimental and planted in limited quantities.



Figure 5. Blackberry thorns.

New blackberry growers should consider experimenting with all three types to learn which grows and fruits best in their area, and which they prefer to maintain. The harvest season for commercial blackberries can be extended by growing all three types (Table 1).

Propagation

Blackberry plots may be established from rooted cuttings, bareroot plants, or small, tissue-culture plants. New commercial plantings should be made from disease-free stock obtained from traditional nurseries or tissue-culture labs.

Dormant bareroot blackberry and rooted cuttings are planted in mid to late winter. Space the plants 2 to 3 feet apart in rows 8 to 12 feet apart.

Tissue-culture plants are generally disease free and grown in propagation laboratories. Most of the tissue-culture labs that grow blackberries are in the Pacific Northwest production region (Oregon, Washington). They are best planted in spring or fall, when mild temperatures favor establishment.

Nursery plants in containers are generally bigger and have more extensive root systems. With appropriate watering, they can be established in fall, winter, or spring.

Table 1. Blackberry varieties suitable for growing in Texas

Plant type	Variety	Production	Description
THORNY	'Brazos'	High yields; large fruit; typically the first blackberry variety to ripen in Texas	An old, reliable, and tough variety, developed at Texas A&M in 1950; bears well for many years; acidic fruit is usually better for cooking than for the fresh market; vigorous canes; drought and heat tolerant
	'Brisson'	Abundant crops, very large fruit	Texas A&M variety released in 1977; has done better in South Central Texas and on blackland clay soils; erect
	'Chickasaw'	Ripens a little before 'Kiowa'; yields well; bears large, desirable fruit	Requires 500–700 chilling hours
	'Choctaw'	Soft, medium to large fruit; small seeds	Early-maturing, erect
	'Kiowa'	Bears the largest fruit of any variety; good yields of large, firm, high-quality berries	The top-performing thorny Arkansas variety for Texas conditions; requires 200 chilling hours
	'Rosborough'	Large fruit; sweeter than 'Brazos'; yields are often higher	Texas A&M variety; released in 1977; the best early variety for East and South Central Texas; erect
	'Shawnee'	Very productive	Not being planted because of the success of 'Kiowa'
	'Womack'	Yields similar to 'Rosborough', but fruit are smaller	Texas A&M variety; released in 1977; does best on deep, sandy soil; erect
THORNLESS	'Apache'	Bears large, sweet fruit	Plants grow rapidly, but yields have been variable; white drupelet is a serious problem; requires 800 chilling hours
	'Arapaho'	Very productive; medium-sized, firm, high-quality fruit over a 4-week season	Resistant to double blossom and orange rust; suitable for Zone 8 and above; erect; requires 500 chilling hours
	'Natchez'	Large fruit; good production and growth	Not widely tested, but results are very promising where growers have tried it; requires 500 chilling hours
	'Navaho'	Firm, medium-sized, sweet berry; ripens later than 'Arapaho', but yields are usually higher	Should not be grown in Central or South Texas; difficult to establish from root cuttings but produces a dense hedgerow once established; erect; requires 800 chilling hours
	'Ouachita'	Maturess in mid–late season; heavy yields; firm berries	Fruit size similar to 'Arapaho' and 'Navaho'; requires 300 chilling hours
PRIMOCANE BEARING	'Prime-Jim' 'Prime-Jan'	Fruit size and quality similar to some thornless varieties; canes are thorny	Have performed poorly in the hot, humid South; should be tried only by hobbyists and home gardeners; set fruit on primocanes Jul–Aug, on floricanes in May
	'Prime-Ark 45'	Nice-sized fruit	Thorny; better adapted to hotter climates; set fruit on primocanes Aug–Sept; on 1-year-old floricanes, May–June

Irrigation

Blackberry plants must be watered regularly to grow well and to produce full-sized fruit. Drip irrigation lines can be laid at planting, attached to trellis wires, or laid on top of the ground beside the plants and covered with mulch.

Begin irrigating in March or April, paying careful attention to watering well during the bloom and early fruit-sizing periods, continue watering through the harvest period, and reduce it by September to slow new growth and to allow the canes to harden. In the winter of drought years, the plants may need to be watered occasionally.

Fertilization

The most important nutrient in annual fertilization is nitrogen. For best results, apply it in split applications, the first in spring as the buds begin to break dormancy, and the second in summer after the fruit harvest is completed.

Other nutrients may be deficient occasionally. Have your soil tested at least every 3 years to identify potential deficiencies and pH changes. If soil pH is over 8.0, blackberries can exhibit interveinal chlorosis (leaf yellowing between the veins) from iron deficiency, which is corrected by applying iron chelate products to the soil and/or foliage.

Training and trellising

Most of the varieties for Texas are semi-erect to erect. Although the growth is generally upright, a heavy fruit crop can cause the floricanes to bend over and touch the ground. Trellises can help prevent fruit decay caused by ground contact.

In home gardens, blackberry plants may be trellised, planted near a fence for support, or left free-standing. They should be regularly tip-pruned—pinched or pruned back a few inches—to prevent the canes from growing too long and to encourage many short floricanes to form.

All floricanes die after fruiting. To reduce disease-causing organisms, prune and remove all dead canes every year as early in the growing season as possible. Keep the trellising and sup-



Figure 6. Simple two-wire trellis, with horizontal wires at 30 and 60 inches high.



Figure 7. A supported hedge-row training system, with T-posts supporting two parallel wires 18 inches apart and about 30 inches high.

ports simple to make it easier to remove dead floricanes.

Commercial blackberry plants should be trellised to make it easier to control weeds, prevent diseases, and hand harvest the fruit. Two systems are most common: a simple, two-wire/two-level trellis (Fig. 6), and a two-wire retainer trellis, also known as a *supported hedge-row* (Fig. 7).

In both training systems, tip-prune the primocanes at strategic heights to encourage branching and to better distribute the blooms on the floricanes.

When needed, use clips or ties to attach the fruiting canes to the support wires.

In blackberry plantings that are infested with double blossom and other diseases, you may mow all of the canes back to the ground in midsummer. Although this mowing reduces yield the following year on floricanes-bearing varieties, it will reduce only the floricanes crop of primocane bearers.

Weed control

Weeds should be controlled to increase fruit yields, reduce disease pressure, and make it easier to find and harvest low-hanging fruit. Before planting, kill all perennial weeds, especially native dewberries, which can harbor diseases and are nearly impossible to remove later. They may be sprayed with glyphosate or glufosinate herbicides the year before the blackberries are planted.

Organic mulches of hay, chipped limbs, pine straw, or bark chips reduce weed growth and make it easier to control weeds. Do not use pruned blackberry canes as mulch in Texas.

Weed-barrier fabrics may also be used in strips to retard weed growth. Do not allow them to cover the center of the blackberry row, as they can prevent new primocanes from emerging.

Both organic and fabric mulches help retain soil moisture and cool the soil in the summer, which enhance plant growth and development. Selective chemical herbicides can be used to control grass and weeds in established blackberry plantings. Nonselective and broadleaf weed-killing herbicides can damage blackberry plants if applied directly to growing plants.

Table 2. Common blackberry diseases

Disease	Symptoms	Prevention	Treatment/notes
Anthracnose	Oval spots on new primocanes; small, purplish spots on new shoots and leaves in spring; shothole effect on leaves; canes may die back; fruit is usually small, dry, and scabby	Plant in sites with good air circulation; control weeds; prune and remove all dead canes each year	A fungal disease; use copper sprays in the delayed dormant period or early spring as buds begin to open; strobilurins are effective if applied between budbreak and flower petal fall
Crown gall	Irregular, swollen galls at the plant crown (stem/root junction) and on any roots and canes	Buy cuttings or plants from reliable sources; avoid areas known to be infected; prune and remove all dead canes each year	A bacterial disease; remove infected plants
Double blossom, rosette, witches broom	Short, broom-like clusters of foliage arising from infected canes; large, misshapen blooms with wrinkled and distorted petals; leaves may grow in the flowers	Plant highly resistant thornless varieties; 'Brazos', 'Womack', and 'Kiowa' have some tolerance; many other thorny varieties are highly susceptible; prune and remove all dead canes yearly	The most serious fungal disease in East and southeast Texas; remove and destroy infected canes; destroy wild berries in the area; may need to mow the plants to the ground; during bloom, fungicides are effective
Orange rust	Masses of orange spots on leaves in spring; moves through the plant, and all canes produced afterward will be nonproductive	Plant disease-free nursery stock; prune and remove all dead canes each year	A fungal disease; a serious problem for susceptible varieties, especially thornless; Quickly remove infected plants exhibiting symptoms
White drupelet	Light beige to white drupelets that may or may not be softer than normal-colored drupelets	—	A serious problem for 'Apache'

Pests

You may reduce the need for chemicals to control insects and diseases by keeping the blackberry plants trellised properly, pruned meticulously, and spaced widely. Prune branches near the ground to promote airflow, enable the leaves to dry faster, and reduce the incidence of diseases.

A few diseases attack blackberries (Table 2). Fungal diseases that affect blackberries include anthracnose; double blossom, also called rosette or witches broom (Fig. 8); and orange rust (Fig. 9). Crown gall (Fig. 10) is caused by bacteria. The cause of white drupelets (Fig. 11) is not fully understood; possible factors include stinkbugs and sunscald.

Insect and mite pests include leaf-footed plant bugs, red-neck cane borers, spider mites, stink bugs, strawberry weevils, thrips, and white grubs. Nematodes may infest the roots and reduce the plants' vigor and productivity.



Figure 8. Healthy blackberry branch (left) and one affected with double blossom.



Figure 9. Orange rust.



Richard Klerk, University of Arkansas Cooperative Extension

Figure 10. Crown gall disease.



Rebecca Barocco, University of Arkansas Cooperative Extension

Figure 11. White drupelet.



Figure 12. Blackberry flats.

Harvest

Thousands of wild dewberries are harvested and marketed by the gallon along Texas highways in May and early June. Cultivated blackberries are either sold in “pick-your-own” farms or hand-harvested and sold fresh in local markets (Fig. 12).

Blackberries do not continue to ripen after harvest—their flavor is best when they are fully mature, having changed color from red to glossy black to dull black at maturity. To prevent the loss of ripe fruit, small commercial operations usually harvest three to four times a week. Varieties differ in shelf life, but they all will soften in a matter of hours if not refrigerated after harvest.

Although few crops are as easy to grow and as rewarding as blackberries, economic success is based on having affordable, readily available labor. Blackberries are not machine harvested in Texas. Economic analyses of commercial blackberry farms have found that labor for harvest and other operations comprises about 70 percent of total annual variable expenses.

While growers may find harvesting blackberries a challenge, the fruit is easy to market, as many people are attracted to this flavorful and healthful fruit.

For more information

Fruit and Nut Resources, Aggie Horticulture®:

<http://aggie-horticulture.tamu.edu/fruit-nut>

Insect Answers, Texas A&M AgriLife Extension Service:

<http://insects.tamu.edu/extension/insctans/>

Texas Plant Disease Handbook, Texas A&M AgriLife Extension Service:

<http://plantdiseasehandbook.tamu.edu/>

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