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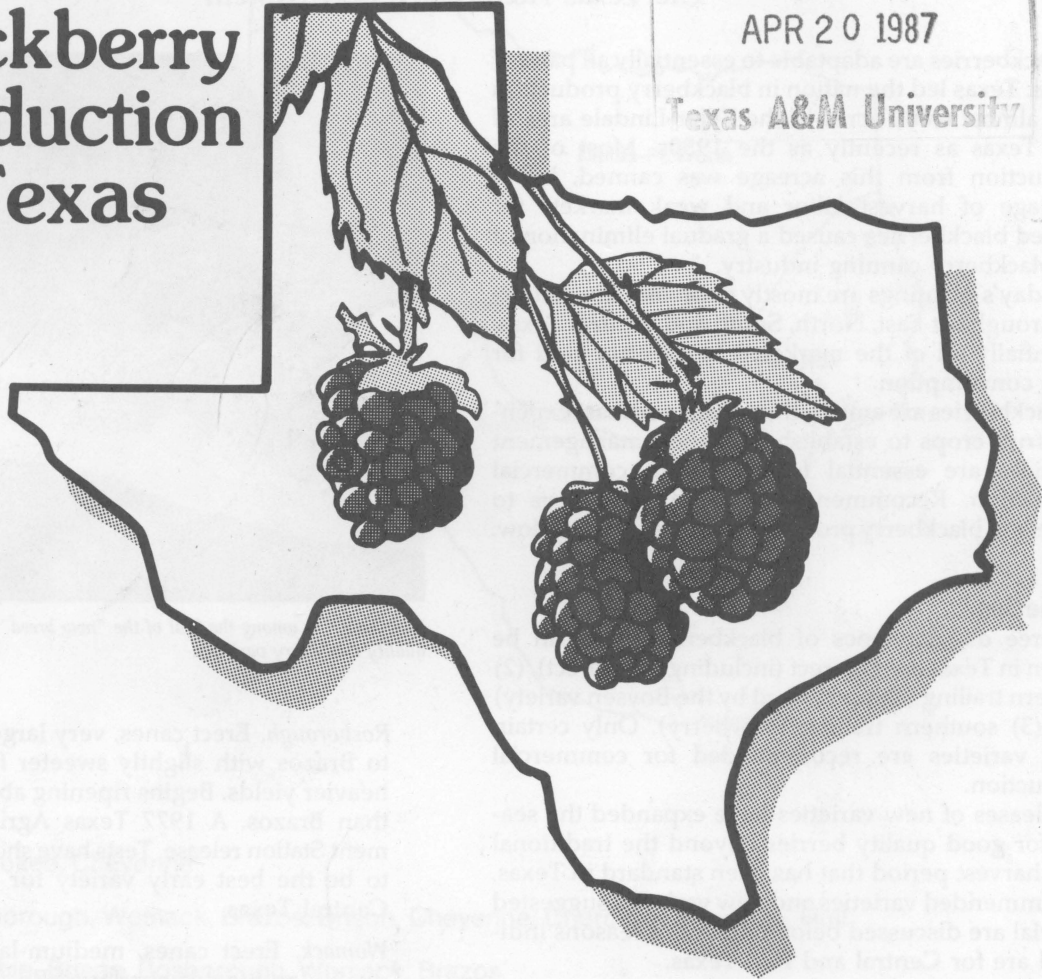
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Keys to Profitable Blackberry Production In Texas

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Keys to Profitable Blackberry Production in Texas

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Blackberries are adaptable to essentially all parts of Texas. Texas led the nation in blackberry production with almost 6,000 acres in the Tyler-Lindale area of East Texas as recently as the 1950s. Most of the production from this acreage was canned, but a shortage of harvest labor and weak markets for canned blackberries caused a gradual elimination of the blackberry canning industry.

Today's plantings are mostly small and are scattered throughout East, North, South and Central Texas. Essentially all of the marketed berries are sold for fresh consumption.

Blackberries are among the easiest and least expensive fruit crops to establish, but good management practices are essential for successful commercial production. Recommended varieties and keys to success in blackberry production are discussed below.

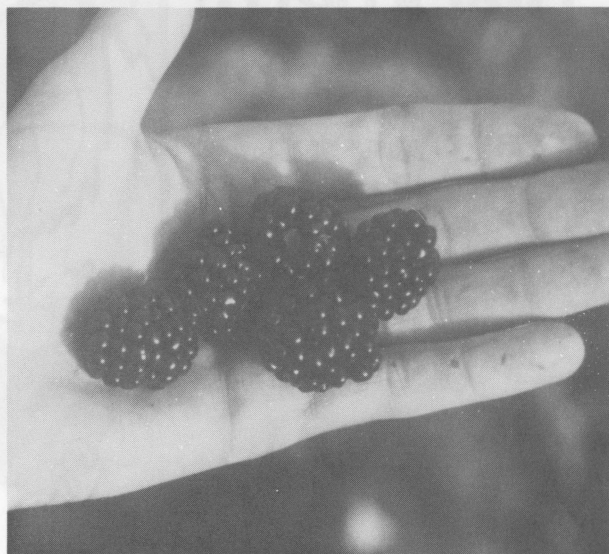
Varieties

Three distinct types of blackberries that can be grown in Texas are (1) erect (including semi-erect), (2) western trailing (characterized by the Boysen variety) and (3) southern trailing (dewberry). Only certain erect varieties are recommended for commercial production.

Releases of new varieties have expanded the season for good quality berries beyond the traditional May harvest period that has been standard in Texas. Recommended varieties and new varieties suggested for trial are discussed below. Ripening seasons indicated are for Central and East Texas.

Mid-Late May

Brazos. Erect canes, very large fruit. Brazos has become the standard of Texas blackberries since its release by the Texas Agricultural Experiment Station in 1959. The relatively acid berries are excellent for baking and in jams and jellies. Brazos and other Experiment Station varieties are vulnerable to freeze damage at temperatures below 0° to 5° F. and thus should not be planted in extreme North Texas.



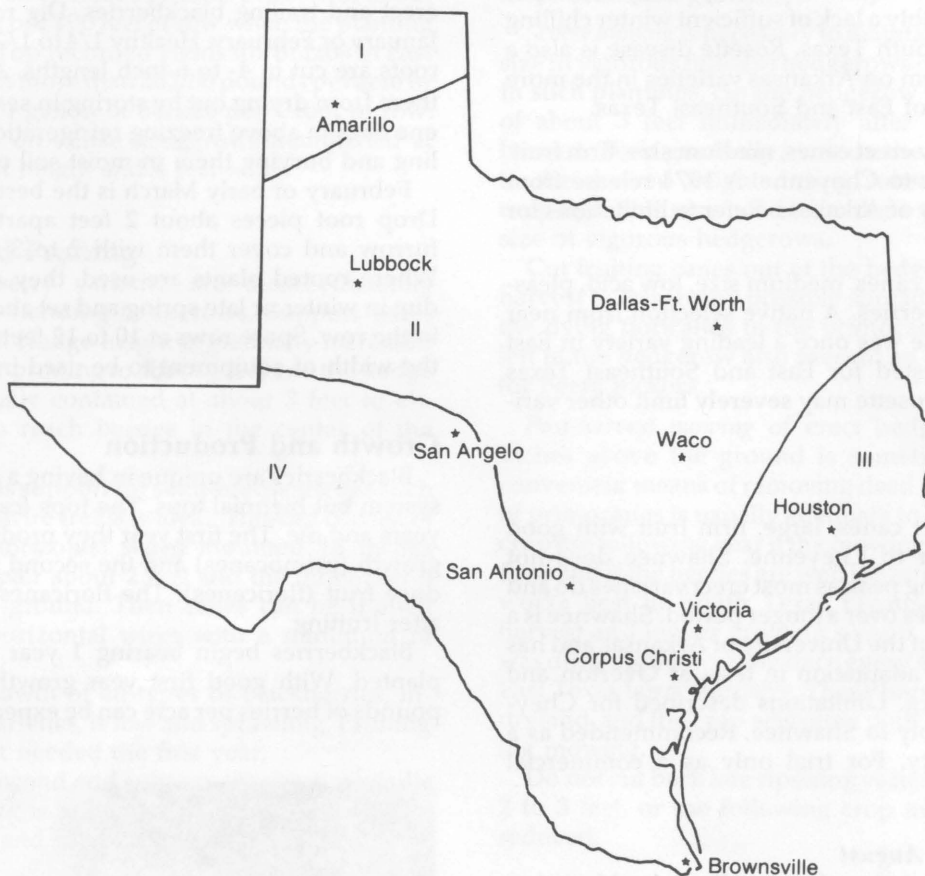
Rosborough is among the best of the "new breed" of large-fruited, good quality blackberry varieties.

Rosborough. Erect canes, very large fruit. Superior to Brazos with slightly sweeter flavor and often heavier yields. Begins ripening about 1 week later than Brazos. A 1977 Texas Agricultural Experiment Station release. Tests have shown Rosborough to be the best early variety for East and South Central Texas.

Womack. Erect canes, medium-large fruit. Berry quality and yields similar to Rosborough. Begins ripening with or slightly behind Brazos. Noted as the best variety in tests at Stephenville in Central Texas. A 1977 Texas Agricultural Experiment Station release.

Brisson. Erect canes, very large fruit. Berry quality similar to Rosborough. Tested as the best variety at Yoakum in South Texas but has not done as well at most other Texas locations. A 1977 Texas Agricultural Experiment Station release. Usually begins ripening a few days earlier than Brazos.

TEXAS BLACKBERRY REGIONS*



- I. Cherokee, Cheyenne
- II. Rosborough, Womack, Brazos, Brison, Cheyenne, Cherokee, Shawnee, Hull
- III. Humble, Brison, Rosborough, Womack, Brazos
- IV. Brazos, Rosborough, Womack, Brison
(Soils in most of the western portion of this area are too alkaline for blackberry production.)

*Adaptation tests of Shawnee and Hull have not been reported in Regions I, III and IV.

Late May-Mid June

Cheyenne. Erect canes, large, firm fruit. Moderately acid with a pleasantly sweet flavor. A 1977 release from the University of Arkansas. A combination of large size and excellent quality make Cheyenne a top choice in areas where it is well adapted. Cheyenne and other Arkansas varieties have generally shown fair vigor and productiveness in South Texas. This appears to be caused by a combination of high soil pH (especially above pH 7.5) and possibly a lack of sufficient winter chilling in extreme South Texas. Rosette disease is also a severe problem on Arkansas varieties in the more humid areas of East and Southeast Texas.

Cherokee. Very erect canes, medium size, firm fruit. Flavor similar to Cheyenne. A 1974 release from the University of Arkansas. Refer to limitations for Cheyenne.

Humble. Erect canes, medium size, low acid, pleasantly sweet berries. A native selection from near Tyler. Humble was once a leading variety in East Texas. Suggested for East and Southeast Texas areas where rosette may severely limit other varieties.

Early-Late June

Shawnee. Erect canes, large, firm fruit with good flavor, similar to Cheyenne. Shawnee does not have a ripening peak as most erect varieties do and it ripens berries over a longer period. Shawnee is a 1984 release of the University of Arkansas and has shown good adaptation in tests at Overton and Fredericksburg. Limitations described for Cheyenne also apply to Shawnee. Recommended as a garden variety. For trial only as a commercial variety.

Late June-Early August

Hull. Semi-erect, thornless, medium sized fruit that is somewhat acid if picked before reaching a fully ripe, dull black color. Fully ripe fruit has an excellent flavor. Hull was released by the USDA at Beltsville, Maryland in 1981 as a superior replacement for the Black Satin thornless blackberry. Fruit of Hull does not soften, leak juice or lose color on hot sunny days as Black Satin is prone to do. Insufficient winter cold may be a limitation in extreme South Texas. Recommended as a garden variety. For trial only as a commercial variety.

PRODUCTION KEYS

Soils

Well-drained sandy or loamy soils with a pH of 6.0 to 6.5 are ideal. Blackberries generally grow well in soils with a pH between 4.5 and 7.5. Soil pH above 7.5 can cause serious iron chlorosis problems. Much of West

Texas and many South and Central Texas areas have soils too alkaline for blackberries. Varieties developed in Texas appear slightly more tolerant of alkaline soils than other varieties listed.

Planting

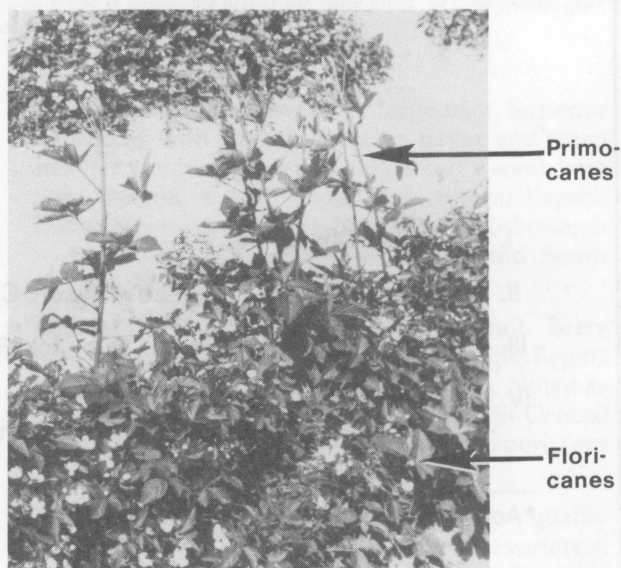
Erect blackberries are efficiently and economically started from root cuttings. Rooted cane cuttings or layering is the usual method used to propagate semi-erect and trailing blackberries. Dig root cuttings in January or February. Healthy 1/4 to 1/2 inch diameter roots are cut in 4- to 6-inch lengths. Always protect them from drying out by storing in sealed polyethylene bags in above freezing refrigeration or by bundling and burying them in moist soil until planting.

February or early March is the best time to plant. Drop root pieces about 2 feet apart in a shallow furrow and cover them with 2 to 3 inches of soil. Where rooted plants are used, they are commonly dug in winter or late spring and set about 3 feet apart in the row. Space rows at 10 to 12 feet depending on the width of equipment to be used in the middles.

Growth and Production

Blackberries are unique in having a perennial root system but biennial tops. The tops (canes) live for 2 years and die. The first year they produce vegetative growth (primocanes) and the second year they produce fruit (floricanes). The floricanes die promptly after fruiting.

Blackberries begin bearing 1 year after they are planted. With good first year growth, about 2,000 pounds of berries per acre can be expected in the first



Blackberries are perennial plants but canes live for only 2 years and then die. Vigorous, large-leaved vegetative canes (primocanes) emerge from below ground each spring. One year later these canes are termed "floricanes." The floricanes bloom, fruit and then die by mid-summer.

crop. This amounts to approximately 8 gallons per 100 feet of row. First year growth of erect blackberries is low and non-erect and often causes concern among beginning blackberry growers, but beginning the second year, all growth is erect.

A planting may produce for more than 15 years, but production is usually best during years three through eight and often begins to decrease after that. Production from well-managed plantings usually ranges from 5,000 to 10,000 pounds per acre or about 23 to 50 gallons per 100 feet of row when the planting is in its prime. Top recorded yields for Brazos in East Texas have been more than 20,000 pounds per acre or approximately 1 gallon of berries per 1 foot of row. This was done on dense hedgerows maintained at almost 5 feet in height and 4 feet wide.

Training and Pruning

Erect blackberry varieties are most efficiently trained in free-standing hedgerows. Support wires are not needed. Hedge height is gradually increased during summer pruning to about 4 feet and the hedge width is normally contained at about 3 feet to enable pickers to reach berries in the center of the hedge.

Provide trellis support for semi-erect varieties such as Hull. A four-wire trellis is ideal. This can consist of two pairs of horizontal wires mounted 18 inches apart. Set one pair about 2 feet and the other pair 4 feet above the ground. Then canes can be trained between the horizontal wires with a minimum of tying.

First year growth of all types of blackberries, including erect varieties, is low and sprawling. Pruning is generally not needed the first year.

During the second and subsequent years, periodic summer topping is important to produce maximum yields of erect and semi-erect varieties.

Begin spring and summer topping of the primocanes of erect varieties as soon as they reach above the fruiting



Erect blackberry varieties are readily trained into self-supporting hedgerows by periodic spring and summer topping of primocanes.

canes. Topping vigorous cane growth at least monthly from May through August results in a well-branched, dense hedgerow with greatly increased fruiting potential. If a hedgerow height of 4 feet is desired, begin topping at slightly below 3 feet and gradually increase the height to 4 feet with each successive topping.

Also top trellised semi-erect and trailing varieties occasionally in the spring and summer to encourage more branched growth.

Severe topping is necessary to maintain the hedgerow size in vigorous full-size hedgerows of erect varieties. In such plantings, cut the hedgerow back to a height of about 3 feet immediately after completing the harvest. Then gradually increase the hedgerow back to the desired height during subsequent summer topplings. This may need to be done yearly to control size of vigorous hedgerows.

Cut fruiting canes out of the hedgerow soon after harvest to lessen any possible spread of disease from the dying floricanes to the primocanes. Dead canes left in the hedgerow also present an added nuisance for berry pickers.

Post-harvest mowing of erect hedgerows 6 to 12 inches above the ground is sometimes done as a convenient means of removing dead canes. Regrowth of primocanes is usually adequate to produce a good crop the following year if the mowing is done by early June and if the berries are well irrigated. This practice works best in South Texas because of the earlier harvest and longer growing season. In practice, this was done approximately once every 4 years in the old East Texas berry industry. These berries were grown dryland, and the crop was often poor the year following mowing.

Do not cut back late ripening varieties shorter than 2 to 3 feet, or the following crop may be seriously reduced.

Fertilization

In good blackberry soils, nitrogen is usually the only serious limiting nutrient. Requirements for phosphorus, potassium and other elements vary in different areas of the state and should be based on soil and leaf analysis recommendation and on general knowledge of local soil nutrition.

Blackberries generally need about 60 pounds of actual nitrogen per acre annually. Apply two-thirds of this amount in February or early March before growth begins and the additional one-third in June. Apply the fertilizer in a band alongside the row or broadcast on the surface under the row. An example of the amount of nitrogen to apply if using ammonium sulfate (21-0-0) fertilizer works out to 200 pounds per acre (4.6 pounds per 100 feet of row) in February and 100 pounds per acre (2.3 pounds per 100 feet of row) in June. Apply about one-half this amount of fertilizer the year the planting is started.

Iron chlorosis is generally a problem in blackberries growing in soils with a pH above 7.5. Moderate chlorosis (interveinal yellowing) can be overcome with an annual soil application of iron chelate or foliar sprays of iron sulfate every 3 to 4 weeks. Only iron chelate is effective in alleviating severe chlorosis.

Weed Control

Good weed control is essential for survival of first year blackberries and is necessary for good production in mature plantings. Eradicate highly competitive perennial grasses such as bermudagrass before planting.

Several weed control chemicals are labeled for use around blackberries. Do not use these chemicals unless the applicator is equipped to apply them according to label directions with an accurately calibrated herbicide sprayer.

Surflan® preemergent herbicide is labeled for control of many annual grasses and weeds in newly planted blackberries. Solicam® and Princep®, as well as Surflan®, are labeled for preemergent weed control in established blackberries. The best time to apply preemergent herbicides is in January or February, before spring weeds begin to germinate.

Paraquat® is labeled for contact kill of weeds and grasses but use care to keep Paraquat® off of blackberry canes and foliage. Fusilade® is a contact grass herbicide that is labeled for use in non-bearing blackberries. Fusilade® is not toxic to blackberry foliage, but to be effective apply it to young succulent grasses strictly according to label.

Mechanical tillage, when used, should be very shallow to avoid cutting of roots and the subsequent suckering from damaged roots.

Irrigation

Irrigation is essential to good survival of first-year plants—especially in the central and western parts of the state. Established blackberry plants are hardy, but irrigation is necessary to gain top yields.

Drip irrigation with a soaker-type tube buried alongside each row is the most efficient; however, stoppage usually necessitates replacing most types of soaker tubing in 3 to 5 years, even with well-filtered well water. Leave drip tubing on the surface of sites with gophers.

Young plantings on well-drained soil need at least two 6-hour waterings per week during peak summer stress. More frequent and longer watering is needed on mature plantings.

Begin irrigating in March or April as needed and gradually increase to a maximum level in July. Begin cutting back on irrigation frequency in September and cease irrigation in October. Irrigate occasionally during the winter if the soil becomes dry.

Insects and Diseases

Blackberries can be grown with a minimal pest control program, especially in the western and northern portions of Texas. Disease pressures are greater in East and Southeast Texas. Problems with viruses and rosette seriously limit blackberry production in Southeast Texas areas. Native blackberries are host to most of the serious disease problems, so eradicating natives or planting well away from them is the best and sometimes only way to have productive plants. Unfortunately this is not always possible in areas where native blackberries thrive.

Rosette, also called double blossom or witches broom, is a serious fungal disease in East and Southeast Texas. Infected plants bloom after the normal bloom. Short, broom-like clusters of foliage grow on infected canes. Destruction of wild blackberries within at least 50 yards of the planting is the most effective way of preventing the disease. Using sprays with benomyl at weekly intervals throughout the bloom period have given fair control. Cut off infected canes near the ground and destroy. Mow severely infected plantings to the ground soon after harvest or earlier if no crop is present and destroy the diseased canes. After mowing, the new growth should be relatively disease free.

Humble variety is essentially immune to rosette and is recommended for planting in locations where disease pressure is high. Trailing varieties also have high resistance. Recommended varieties developed in Texas have moderate resistance to the disease; whereas, varieties developed in Arkansas have poor resistance.

Anthracnose commonly produces small purplish spots that gradually enlarge and turn gray on canes and leaves. The spots on leaves gradually turn white and drop out leaving a shot-hole appearance. Cane dieback occurs in heavily infected plantings. Affected fruits are usually small, dry and scabby. Erect blackberry varieties are more resistant to this fungal disease than trailing varieties. Control, where needed, involves dormant sprays with Kocide 101 in the spring when leaf buds are just beginning to open, followed by spraying with Captan® or benomyl when flower buds appear and after petal fall.

Orange rust is a fungal disease that seriously damages certain varieties, especially Humble. The recommended varieties developed in Texas and Arkansas are highly resistant to the disease. The only control is complete removal of infected plants.

Sterility is a serious problem in Southeast Texas areas. This disease is caused by a virus and is transmitted from wild blackberries. Destruction of wild blackberries in the vicinity of the planting is the only prevention. Infected plants often appear exceptionally healthy, but they fail to set fruit or produce poor quality berries with very few drupelets.



Infected

Uninfected

Rosette disease can severely limit blackberry production in Southeast and East Texas. Infected shoots are heavily branched (rosetted), bloom late and have drastically elongated sepals.

Refer to Texas Agricultural Extension Service publication MP-1332 *Blackberry Diseases and Their Control* for more detailed information on diseases of blackberries.

The *strawberry weevil* is among the most serious insect pests particularly in East Texas. This small, reddish-brown weevil lays its eggs at the base of flower buds and the larvae girdle the stem just below the bud. Apply an insecticide such as Sevin® or diazinon when cut buds are first noted (usually near the beginning of bloom) and as needed thereafter.

Larvae of the *red-neck cane borer* burrow longitudinally in the cane pith. Prominent swellings or galls result and affected canes may lose vigor or die. Removing and destroying infested canes as soon as they are noted in the spring or summer is the most effective control. Destroying nearby wild blackberries is also advisable if red-necked cane borers are a serious problem.

Spider mites feeding on the underside of leaves commonly cause foliage to look whitish or stippled. This usually occurs during hot summer weather. Apply a labeled miticide such as Kelthane® as needed.

Stink bugs and *leaf-footed plant bugs* attack maturing berries causing dried brownish drupelets. Sometimes thrips inhabit the spaces between the fruit drupelets and create consumer problems. Apply a labeled insecticide such as Sevin® or malathion as needed to control these insects.

White grubs, the larvae of May beetles, may feed on blackberry roots in damaging numbers and require control measures occasionally.

Harvest

The perishable nature of blackberry fruit requires

frequent picking and prompt marketing. Softer varieties require harvesting on a 2- to 3-day schedule while firmer varieties may tolerate a 5- to 6-day picking schedule, depending on the weather.

Ideally, harvest berries early each day and transport to market by noon. Good eating quality of fresh berries can be maintained for 4 to 5 days in cold storage, but stored fruit gradually loses black pigment and takes on a less attractive reddish tone.

Blackberries become fully black 2 to 3 days before they are fully mature. They change from a shiny black as they approach maturity to a dull black at full maturity. This distinction is not critical in the erect Texas and Arkansas varieties because the acid levels are reasonably palatable when the berries are shiny black. Numerous other varieties, including the semi-erect, thornless varieties such as Hull, are very acid when shiny black. With these, pickers must be more discriminate in waiting for the dull black color.

Use shallow picking containers to avoid mashing berries. To minimize handling, berries are often picked directly into 12-pint flats or gallon containers that are market-ready. Ideally, tie the harvest container to the waist or hang around the neck of the picker to free both hands and eliminate time wasted in handling the container.

COMMERCIAL PRODUCTION AND MARKETING

Most blackberries are sold on local markets. If not well-developed, such markets are easily saturated by a highly perishable crop such as blackberries. As a beginning producer, carefully explore local and other potential markets before starting a planting. A plant-

ing of only 1,000 feet of row can often supply two to three fruit stands or supermarkets. Carefully consider harvest labor, for at least three full-time pickers per acre are generally needed during the harvest season, and the thorny nature of erect blackberries often causes problems in securing enough dependable pickers.

Farmers markets and pick-your-own operations are popular marketing options, particularly for producers near urban centers. Pick-your-own is a particularly desirable marketing solution to the high harvest labor input required.

Establishment costs and annual production costs,

excluding harvest labor, are both well under \$1,000 per acre. Returns from blackberries tend to be extremely variable, but most wholesale prices range from 60 cents to more than \$1 per pint, while retail prices range from near \$1 to more than \$2 per pint, and pick-your-own prices range from \$3 to \$6 per gallon. With production of nearly 10,000 pounds per acre (there are approximately 3/4 pound per pint or 6 pounds per gallon), the potential for excellent net returns is good. However, achieving good returns requires careful market development by each grower as well as careful attention to production management practices.

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