



# Organic Blackberries & Raspberries

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## Introduction

Blackberries and raspberries (both *Rubus* spp.) are included in the group of small fruits generally referred to as ‘brambles’ or ‘caneberries.’ Erect (thorny and thornless), thorny primocane fruiting, and semi-erect (thornless) blackberries, as well as fall-bearing raspberries, present an opportunity for organic production in Kentucky. Pests, especially spotted wing drosophila (SWD), present the greatest challenge for organic bramble production. Thornless semi-erect and primocane fruiting blackberries and June or summer-bearing and fall-bearing raspberries that ripen their fruit after the first week of July are particularly susceptible to SWD damage. Organic bramble growers may try using fine-meshed netting to exclude this pest, and they currently have one effective pesticide for SWD. Fall-bearing raspberries, however are a greater challenge due to pest and disease problems that can be difficult to manage organically. Trailing blackberries are not recommended for commercial production in Kentucky due to their lack of winter hardiness. Primocane fruiting blackberries have been very poor fall fruit producers in most years because their flowers abort due to Kentucky’s hot summers.

Organic production of brambles requires the use of approved, non-synthetic products for pest management and fertilization. Growers producing and selling their berries with an organic label must be certified by a USDA-approved state or private agency and follow production standards regulated by the National Organic Program (NOP).

## Marketing

Producers must identify markets willing to pay the price premiums often neces-



BLACKBERRIES ON A SINGLE T TWO-WIRE TRELLIS.

sary to justify the production and marketing costs for certified organic production. Common market channels for organic produce include farmers markets, roadside stands and local retailers. Berries are also popular in community supported agriculture (CSA) shares. Local food companies may be interested in processing organic berries, and growers near Kentucky’s produce auctions may find favorable berry prices at auction. Brambles in Kentucky have often been sold on the farm as U-Pick. Promotions for organic U-Pick operations may highlight that customers are picking and handling organically grown fruit.

Growing consistently high-quality berries in the volumes demanded by customers is necessary to enter and build up each market channel. Season extension techniques (such as high tunnels) can increase the marketing window for bramble fruits, increase fruit quality and size and reduce disease pressure.



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## Market Outlook

Berries and berry products have been among the strongest commercial produce categories in the 2000s and continue to be popular with consumers. Organic crop production is one of the fastest growing horticultural segments by percent of sales. Good potential remains for increasing organic berry sales, in both local fresh market sales and value-added products.

Producers located near larger cities have more potential local customers for certified organic products. Proximity to consumers is also important as bramble fruits are very perishable and easily spoil if improperly handled. High-quality fruit grown locally and handled properly after harvest (using cooling systems to remove field heat and store berries before marketing) has a potential quality advantage over other berries.

Growers may also investigate supplying fruit to jam producers or manufacturing their own value-added items as part of their marketing plan. Berry products (such as jams, preserves, syrups and baked goods) are popular with consumers and can increase the profitability of the entire enterprise.



VALUE-ADDED BERRY PRODUCTS SUCH AS JAMS CAN INCREASE PROFITS FOR GROWERS.

## Production Considerations

### *Site selection and preparation*

Only land free of prohibited substances (e.g. synthetic pesticides and artificial fertilizers) for three years can be certified for organic production.

A well-maintained bramble planting can continue to produce for eight to 12 years. Choosing an appropriate site is critical to the planting's longevity. A well-

drained, deep, fertile soil high in humus and free from hard pans is best for blackberries and raspberries. Eliminate wet spots in the field prior to planting or plant brambles in raised beds. Raspberries in particular are not tolerant of wet sites, which encourage the development of fungal root rot. Elevated sites offer the advantages of good water drainage, better air circulation, and some late spring frost protection; however, windy locations should be avoided. When possible, plant brambles on a northern slope to minimize the risk of spring frosts killing blooms. Blackberries or raspberries should not follow solanaceous crops (such as tomatoes, peppers and tobacco), strawberries or other bramble crops for three to four years. Avoid fields with a history of crown gall.

Advanced planning is required to provide soil conditions and fertility necessary for optimal plant growth. A minimum of one full season should be devoted to site preparation and soil build-up prior to planting. Adjusting the fertility level before planting is essential for any perennial crop. Soil fertility is enhanced through cover crops, nitrogen fixing legumes, green manure, animal manure, and approved natural fertilizers. Aggressive perennial weeds need to be controlled prior to setting plants. A crop rotation plan designed to reduce weed pressure is a critical aspect of site preparation.

### *Cultivar and stock selection*

Select well-adapted marketable cultivars suited for your location. Choose cultivars with resistance or tolerance to commonly occurring diseases and insects. Growers are encouraged to establish plantings from certified, disease-free, virus-indexed nursery stock from a reputable supplier. Purchasing tissue culture plugs can help avoid virus problems.

Organic production requires using certified organic planting stock and not treating it with synthetic materials. While non-organic stock may be used if necessary, the planting must be managed organically for at least one year before the berries can be sold as certified organic produce.

### *Planting, trellising and crop maintenance*

Blackberries and raspberries should be planted in early spring. The distance between plants and between rows varies depending on bramble type, training method, and the size of farm equipment. Brambles re-

quire regular pruning and training to ensure maximum fruit production. Floricanes should be removed immediately after final harvest and burned or discarded far downwind from the planting. Regular removal of dead, dying and broken canes will also be necessary.

Trellising supports plants and helps keep fruit off the ground while also improving air circulation and light penetration. It may also help reduce SWD populations. Semi-erect blackberries are best supported on four-wire T-trellises, while erect cultivars require a smaller, less expensive trellis. Red raspberries are trained in the hedgerow system without a trellis or with a low trellis; purple raspberries require a low trellis. Black raspberries can be trained to a two-wire trellis. The trellis should be constructed either before planting or during the first season. Any wooden posts used in the trellis system must be free of prohibited substances per NOP guidelines. Refer to the Organic Materials Review Institute (OMRI) for information on wood treatments allowed in organic production.

Irrigation, which increases productivity and extends the life of the planting, is essential for commercial production. Any liquid fertilizer applied via drip irrigation lines must be approved for organic production. Supplemental organic nutrient choices include compost, bloodmeal, fishmeal, cottonseed meal, soybean meal and many others. NOP regulations regarding composted and raw (non-composted) manure must be followed. Beehives are useful to ensure adequate pollination.

Alleyways are normally planted with a non-aggressive grass, such as bluegrass, creeping red fescue or tall fescue. Alternately, row middles can be maintained by shallow cultivation throughout the season. In this case, an annual cereal crop, such as wheat, could be planted as a winter cover crop. Rye is very vigorous and could be difficult to cultivate down in the spring. A permanent vegetation-free strip around plants in the row is necessary to reduce competition from the cover crop. Mulching these areas with straw, woodchips or other organically approved materials helps suppress weeds and conserve soil moisture.

### *Pest management*

Pest management in organic plantings emphasizes prevention through good production and cultural practices. Healthy, fast-growing plants are better able to

tolerate or outgrow pest problems. Monitoring pests with frequent crop inspections and accurate identification are essential to keeping ahead of potential problems. The goal is not necessarily the complete elimination of pests and diseases but to manage them so that crop damage is reduced to acceptable economic levels.

Important bramble diseases include anthracnose, cane blight, spur blight, crown gall, double blossom, fruit rots, orange rust, *Phytophthora* root and crown rot (red raspberry), and *Verticillium* wilt. Diseases are managed organically by selecting resistant or tolerant cultivars, planting disease-free stock, proper site selection, and by following good cultural practices that promote healthy plant growth. Pruning out diseased canes and removing nearby wild bramble thickets can reduce disease pressure. Plants infected with orange rust should be dug out, including the roots. Timely harvests that minimize the number of overripe berries on canes, along with encouraging good air circulation, can help lessen the incidence of fruit rots. A few fungicides, such as Bordeaux, liquid lime sulfur and fixed copper are available for organic growers.

Spotted wing drosophila, mites, raspberry cane borer, stink bugs, green June beetles and Japanese beetles are common pests in blackberry and raspberry plantings. Pruning, sanitation, weed control and some organically approved insecticides may aid in pest control. Cultural controls to reduce losses to these pests include timely harvest, removal of damaged, fallen and overripe berries, hand picking beetles, exclusion by applying row covers, and trapping. Raspberry cane borer control is best achieved by identifying and destroying infested plants.

Weed control is a major challenge to organic bramble growers. If left unchecked, weeds compete with plants for water and nutrients, harbor insect and disease pests, and reduce air circulation. Because herbicides cannot be used, site selection, along with site preparation, should be aimed at making sure existing weeds are under control prior to planting. Avoid planting sites with extensive noxious perennial weed populations. Other pre-plant strategies include tillage, crop rotations designed to reduce weed pressure, and weed suppression via cover or smother crops. Landscape fabric or other mulches (such as weed barrier or woven plastic fabrics) are suitable for long-term plantings. Holes in

the fabric can be made just large enough for the new plants to be set. In succeeding years, the holes must be enlarged to allow for emerging primocanes. Organic woodchip mulch can also be used. Weed control in established plantings includes cultivating, mowing and hand weeding. Bramble root systems are quite shallow, so care must be taken not to damage them with equipment or tools.

### *Harvest and storage*

Only those crops that have met NOP production and certification standards, including the three-year minimum transition period, can be marketed and sold as certified organic or organic. Harvest equipment, storage areas and packing materials must comply with NOP standards. Growers who also have conventional operations must either use separate equipment and facilities for these operations, or a decontamination protocol must be followed before using equipment from the conventional operation in the organic side of the enterprise. Packaging materials must be protected against potential contamination from prohibited substances. In combined organic and conventional operations, separate picking containers and storage areas are required.

Ripe berries should be hand-harvested regularly, at least twice per week. More frequent harvests will be necessary during the peak of the season and under hot, rainy conditions. Berries are placed directly into the marketing container as they are picked. Cooling within a half hour of harvest is recommended. Because brambles have a short shelf life, fruit that is not sold within one to two days will need to be processed or frozen.

### *Labor requirements*

Organic berry systems are more labor-intensive than conventional systems. This is largely the result of increased labor times required for monitoring and managing pests, as well as more labor for weed control. Organic bramble growers may spend 10 to 20 percent

additional owner labor hours or more than conventional growers. At a minimum, owner labor times per acre will range from 55 to 75 hours during the planting year, 40 hours during the growth year, and at least 100 hours during fruiting years. This does not count the time spent to build trellises. Additional harvest labor, depending on yield levels, can range from 300 to 500 hours per acre, or about 300 U-Pick customers per acre.

## **Economic Considerations**

There is a significant startup cost, demanding management, and a time lapse of two or more years after establishment before a full crop can be harvested. Initial investments include land preparation (including cover crop seeding and organic fertilizer), purchase of plants, plant establishment, and installation of an irrigation system. The grower should also consider buying a cooler, which is of great assistance for berry marketing. Most brambles may require trellis construction.



RASPBERRIES SHOULD PAY BACK THEIR ESTABLISHMENT COSTS IN FIVE TO EIGHT YEARS.

Management time is usually greater for organic crops compared to non-certified organic or conventional crops. Other costs that may be greater in organic bramble production are organic fertilization; additional labor time for weed control; and approved products for disease and insect control.

### *Blackberry*

Total costs for establishing organic blackberries will range considerably according to production situation. Estimated establishment costs for 2019 ranged from \$11,000 (thorny) to \$13,500 (thornless semi-erect) per acre; these numbers represent the possible expense from site preparation/planting until the crop begins producing positive returns. Cumulative returns over the first five years per acre to land, labor and management for organic grower-harvested blackberries were estimated for 2019 as follows: \$1,300 (thorny erect), \$3,489 (thornless erect) and \$10,627 (thornless semi-erect). Annual returns after the fifth year, assuming a

price of \$5 per quart (retail prices in Kentucky during 2019-20 were more than \$8 per quart), were estimated at \$6,819 (thorny erect), \$6,931 (thornless erect) and \$13,035 (thornless semi-erect). Producers marketing U-Pick blackberries can reduce their handling and harvesting costs by \$0.60 or more per quart. This savings can significantly increase profitability because of lower harvest labor costs.

### *Raspberry*

Total costs for establishing 1 acre of certified organic raspberries will range between \$12,000 and \$13,000 per acre (2019), including trellising and trickle irrigation. Net returns to land and management can range from \$1,900 to \$3,600 per acre for mature raspberries (2019). Depending on the marketing method used, raspberries should pay back their establishment costs in five to eight years. Well-managed U-Pick marketing has the potential to add \$0.50 to \$1 per pint to organic raspberry profitability, with possible U-Pick returns reaching \$5,000 or more per acre.

### **Selected Resources**

- Growing Blackberries and Raspberries in Kentucky, HO-15 (University of Kentucky, 2005)  
<http://www.ca.uky.edu/agc/pubs/ho/ho15/ho15.pdf>

- Kentucky Blackberry Cost and Return Estimates, ID-149 (University of Kentucky, 2017)  
<http://www.ca.uky.edu/agc/pubs/id/id149/id149.pdf>
- Blackberry & Raspberry Growers Information Portal (North Carolina State University)  
<https://rubus.ces.ncsu.edu/>
- Management Recommendations for Spotted Wing Drosophila in Organic Berry Crops (Michigan State University, 2018)  
<https://www.canr.msu.edu/ipm/uploads/files/SWD/SWDOrganicBerryCrops.PDF>
- Brambles: Organic Production (ATTRA, 2017)  
<https://attra.ncat.org/product/brambles-organic-production/>
- 2021 Organic Production and IPM Guide for Raspberries & Blackberries (Cornell University)  
<https://ecommons.cornell.edu/handle/1813/42889.2>

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