



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 fall-bearing raspberries that ripen their fruit after the first week of July are particularly susceptible to SWD damage. Organic bramble growers can use fine-meshed netting to exclude this pest, and they currently have one effective pesticide for SWD. June-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.

Organic production of brambles requires the use of pest management and fertilization methods that do not include synthetic compounds. 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

Selling organic produce may require



more time and effort than locating markets for conventionally produced crops. It is important for organic producers to identify markets willing to pay the price premiums necessary to justify any additional marketing costs. Product quality is also important to building the organic market; for example, berries with SWD maggots could obviously diminish consumer acceptance and enthusiasm for berries, whether or not grown organically.

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.

Future market growth for organic berries will come through local fresh markets including farmers markets, roadside stands, and local retailers. Berries are also an attractive addition to a community supported agriculture



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(CSA) share. Growers can investigate selling their fruit wholesale at Kentucky's produce auctions, which report strong prices for fresh berry sales. There may be small in-state companies that would be interested in purchasing organic blackberries and/or raspberries for processing into preserves. Wineries are another potential market for Kentucky blackberries. Restaurants, health food stores, and grocers may be interested in Kentucky-grown organic products. The use of season extension techniques (such as high tunnels) can increase the marketing window for bramble fruits, increase fruit quality and size, and reduce disease pressure.

Market Outlook

Organic crop production is one of the fastest growing farm segments by percent of sales. Organic blackberries and raspberries are excellent prospects for both local fresh market sales and value-added products. The USDA Census of Agriculture organic survey reported 10 Kentucky farms grew 5 acres of organic blackberries in 2014. This was the same total acreage as 2008, indicating total organic blackberry production remained similar over time. The 2014 survey reported only 1 total acre of organic raspberries in Kentucky.

Bramble fruits do not store or ship well. While this limits their market radius, it increases the demand for local, high quality fruit. Producers located near population centers will have an added marketing edge. All bramble producers will need to have cooling systems in place for removing field heat and cooling the crop before delivery.

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

Production Considerations

Site selection and preparation

Only land that has been 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, so choosing an appropriate site is critical to the longevity of the planting. A well-drained, deep, fertile soil that is 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 surface 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 or where there is afternoon shade. 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.

Once the production site has been selected, 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, and brambles are no exception. Advanced planning is required to provide soil conditions and fertility necessary for optimal plant growth. 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 varieties with resistance or tolerance to commonly occurring diseases and insects. Growers are encouraged to establish plantings from certified, disease-free, virus-indexed nursery stock purchased from a reputable supplier. Purchasing tissue culture plugs can help avoid virus problems.

Organic production requires the use of certified organic planting stock that has not been treated with synthetic materials. While non-organic plant sources 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 the type of berries grown, training method, and the size of farm equipment. Brambles require regular pruning and training to ensure maximum fruit production. Floricanes should be removed immediately after harvest and burned. Regular removal of dead, dying, and broken canes will also be necessary.

Semi-erect blackberries must be supported on 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. Trellising supports plants and helps keep fruit off the ground while also improving air circulation and light penetration. 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 the use of composted and raw (non-composted) manure must be followed. Beehives are useful to ensure adequate pollination.

Alleyways are normally managed by planting 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 vegetation-free zone around the plants ought to be maintained in the row to reduce competition from the cover crop. Mulching these areas with straw 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 a pest but rather to manage pests and diseases so that crop damage is kept within acceptable economic levels.

Important bramble diseases include anthracnose, cane and 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 are also critical aspects of disease management. Brambles infected with orange rust should be completely eradicated, roots and all. 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, and Japanese beetles are some of the pests that can cause damage 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 from the planting, hand picking of pests, exclusion through the use of row covers, and trapping. Raspberry cane borer control is best achieved by identifying and destroying infested plants.

The main challenge to organic bramble growers, however, is often weed control. 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, organic growers will need to implement alternative measures. Site selection, along with site preparation, should be aimed at making sure existing weeds are under control prior to planting. An important first step is to avoid planting sites with high 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. The fabric must be properly slit 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 with split operations must either use separate equipment and facilities for these operations, or decontamination protocol must be followed before use 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 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% 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 establish different trellis systems. Additional harvest labor requirements, 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 budget for the cost of a cooler, which is of great assistance for berry marketing. Some brambles may require trellis construction.

Management time is usually greater for organic crops compared to non-certified organic crops. Other costs that may be greater in organic bramble production are organic fertilization; additional labor time for weed control; and the use of approved products for disease and insect control. At the same time, a well-managed organic production system may also recognize cost savings by integrating soil fertility and pest control concerns into a broader production system.

Blackberry

Cumulative returns over the first five years per acre to land, labor, and management for organic grower-harvested blackberries are estimated for 2016 as follows: \$520 (thorny erect), \$992 (thornless erect) and \$10,627 (thornless semi-erect). Annual returns

after the fifth year, assuming a price of \$4 per quart, were estimated at \$4,048 (thorny erect), \$4,086 (thornless erect), and \$9,122 (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 potentially double annual returns to land, labor, and management for thorny erect and thornless erect varieties, and substantially increase returns from thornless semi-erect varieties.

Raspberry

Total costs for establishing 1 acre of certified organic raspberries will range between \$11,000 and \$12,000 per acre (2016), including trellising and trickle irrigation. Net returns to land and management can range from \$2,150 to \$3,300 per acre for mature raspberries (2009). 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 U-Pick returns able to reach \$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, 2008 – being updated in 2017) <http://www.ca.uky.edu/agc/pubs/id/id149/id149.pdf>

- Blackberry & Raspberry Growers Information Portal (North Carolina State University) <http://www.ncsu.edu/enterprises/blackberries-raspberries>
- Organic Bramble Production (Pennsylvania Certified Organic, 2007) <http://www.paorganic.org/wp-content/uploads/downloads/2013/03/Organic-Bramble-Production-guidance-sheet.pdf>
- Organic Bramble Production (Southern Region Small Fruit Consortium, 2005) <http://www.smallfruits.org/CoAgentTraining/2005Presentations/Brambles/OrganicBlackberryProduction.pdf>
- Organic Culture of Bramble Fruits (ATTRA, 2003) <http://attra.ncat.org/attra-pub/bramble.html>
- Organic Small Fruit Disease Management Guidelines: Integrated Management of Bramble Diseases (Ohio State University) <http://www.oardc.ohio-state.edu/fruitpathology/organic/Brambles/OSU-Organic-Bramble-Diseases.pdf>
- Midwest Small Fruit Pest Management Handbook Bulletin 861 (Ohio State University, 2004) http://www.oardc.ohio-state.edu/fruitpathology/Bulletins/Midwest_Sm_Fruit_861_1-24-11_S.pdf
- Raspberry and Blackberry Production Guide for the Northeast, Midwest, and Eastern Canada. Lori Bushway, Marvin Pritts, and David Handley, editors. (Natural Resource, Agriculture, and Engineering Service, 2008) 157 pp. *Ordering information:* http://palspublishing.cals.cornell.edu/nra_order.taf?function=detail&pr_id=171

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