



# Sweet Cherries

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## Introduction

Sweet cherries (*Prunus avium*) are mainly consumed fresh; however, they may also be frozen, canned, or processed for wine. Frequent losses due to such factors as fluctuating winter temperatures, spring frosts, rain-induced fruit cracking, and bird losses make commercial sweet cherry production a challenge in Kentucky.

## Marketing and Market Outlook

U.S. per capita fresh cherry use increased 150 percent (from 0.6 to 1.5 pounds) from 2000 to 2009. Per capita use fluctuated between 1.0 and 1.5 pounds. Most sweet cherries are grown in Washington, Oregon, Michigan and California; California acreage has increased since 2005. Drier, cooler growing conditions in the western states are more conducive to cherry production than Kentucky's warmer, wetter climate.

Potential fresh market outlets in Kentucky include farmers markets and roadside stands. There is strong demand for fresh fruit at these markets, and sweet cherries are not a common crop in Kentucky, making fresh sweet cherries potentially very popular for direct sales. Successful sweet cherry production in Kentucky will require overcoming a number of significant production obstacles, especially preventing bird and wildlife damage and managing risk from freezes.

## Production considerations

### *Cultivar selection*

Consumers look for fresh market



sweet cherries to have a deep red, glossy appearance. Fruit should be firm, sweet, and juicy with high flavor. Cultivars vary in their susceptibility to cracking, a physiological problem that can occur following rainfall and high humidity as the fruit nears maturity. Because cracking reduces marketability and increases susceptibility to fruit rots, select cultivars that are less susceptible to this problem. Other desirable traits include bacterial canker and leaf spot resistance, winter hardiness, and late blooming (to avoid spring frost damage).

### *Site selection and planting*

Sweet cherries require a well-drained soil. Planting trees on a 1- to 1½-foot-high raised ridge is highly recommended. Trees generally do not survive on heavy, poorly drained soils. Select a site that is considerably higher than surrounding areas, with good slopes leading to lower areas for



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air drainage. Avoid protected areas, such as near wood lots, since these obstruct air flow and allow frost pockets to form. Sweet cherries bloom early in the spring and are prone to spring frost losses; however, some cultivars do bloom later, reducing the possibility of complete crop loss.

One-year-old nursery stock should be planted in the spring. The availability of size controlling Gisela rootstocks (Gisela 5) has recently made planting dwarf cherries possible. Most sweet cherry cultivars are self-incompatible and require another cultivar to serve as a source of pollen; however, some recently developed cultivars are self-pollinating and can be planted in solid blocks. Pollinizers, when required, are dispersed throughout the orchard, generally one tree for every eight to nine trees of the main cultivar. One to two honey bee hives per acre will also be needed to act as pollen vectors, regardless of pollination ability.

Trees are pruned lightly until after they come into production in the third or fourth season. Sweet cherries are trained to a central leader or modified central leader system, though others exist. Annual pruning during dormancy or after harvest is used to develop and maintain tree size and shape. Pruning also opens the canopy for more effective pesticide coverage.

#### *Pest management*

A number of diseases, insects, animal pests and environmental conditions can cause heavy sweet cherry losses in Kentucky. Brown rot, cherry leaf spot, and bacterial canker are the most serious disease problems. Common insect pests include cherry aphids, plum curculio, cherry fruit fly, and peach tree borers. A regular preventative spray schedule must be followed to control insect and disease problems, and to ensure high-quality fruit. Rains and high humidity occurring just before harvest can result in fruit cracking, making the fruit unmarketable. Even minor cracking can open the fruit to further damage from the brown rot fungus. Birds feeding on ripening fruit will cause substantial yield reductions if trees are not

netted. Deer rubbing and feeding on shoots and bark may destroy young cherry trees; mice and rabbits can also injure the lower trunks of trees through their feeding. Orchard weed management programs commonly consist of mown sod alleys along with herbicide bare strips or cultivation of the drip-line area beneath trees.



#### *Harvest and storage*

Fresh market sweet cherries are hand-harvested leaving the pedicels (stem) intact. Fruit maturity can be determined by color and the use of a refractometer that measures the level of soluble solids (sugar).

Cherries should be refrigerated immediately after harvest to remove field heat. Because the fruit has a very short shelf life, cherries need to be moved to market as quickly as possible. Sweet cherries can be stored for no more than 10 to 14 days at 32°F.

#### *Labor requirements*

Labor needs per acre are significant, mainly due to the requirement that fruit be hand harvested for fresh market use. Washington State University estimates it takes 30 people to pick 1 acre of cherries in one day.

#### **Economic considerations**

Initial investments include land preparation, purchase of trees, tree establishment, and installation of an irrigation system. A good forced

air sprayer for insect and disease control will also be needed. Additional costs include the purchase of bird netting, post-harvest grading, and cooling equipment.

Establishment costs and annual production costs for sweet cherries will vary depending on planting system and density. Establishment costs for an acre of sweet cherries can total between \$11,000 and \$15,000 before fruit may be marketed.

Annual preharvest production costs (for mature trees) for a low-density sweet cherry planting in Kentucky were estimated for 2016 at \$1,500 to \$2,300 per acre, with harvest and marketing costs at \$4,800 to \$7,500 per acre. Total expenses per acre, including both variable and fixed, are approximately \$6,300 to \$9,800. This is similar to a Penn State University estimate in 2016 of \$6,785 production costs for 1 acre of 272 mature dwarf sweet cherry trees. High-density cherry orchards can be more expensive to establish, due to more trees and the cost of training systems, but may also result in higher yields.

Cherry yields can be highly variable, with gross returns estimated from \$4,000 to \$14,000 per acre. This would result in annual returns to land, capital and management of negative \$2,300 (a net loss) to \$6,200 (a net gain) per acre. The time needed to recapture the investment in cherries varies depending on yields and returns; tree fruit crops normally require four to eight years to pay back establishment costs while covering costs of production. The high establishment costs, unpredictable returns and significant growing challenges require the costs and returns for sweet cherry production in Kentucky's climate to be carefully evaluated at the individual farm level to determine if the expected payback is worth the farm's investment.

## Selected Resources

- Cherry training systems, PNW 667 (A Pacific Northwest Extension Publication, Oregon State University, Washington State University, University of Idaho, in cooperation with Michigan State University, 2015) [http://msue.anr.msu.edu/uploads/resources/pdfs/Cherry\\_Training\\_Systems\\_\(E3247\).pdf](http://msue.anr.msu.edu/uploads/resources/pdfs/Cherry_Training_Systems_(E3247).pdf)
- Midwest Fruit Pest Management Guide, ID-232 (University of Kentucky, et al., 2016) [https://ag.purdue.edu/hla/Hort/Pages/sfg\\_sprayguide.aspx](https://ag.purdue.edu/hla/Hort/Pages/sfg_sprayguide.aspx)
- Midwest Tree Fruit Pest Management Handbook, ID-93 (University of Kentucky, et al., 1993) <http://www2.ca.uky.edu/agcomm/pubs/id/id93/id93.htm>
- Cherries (Agricultural Marketing Resource Center, 2015) <http://www.agmrc.org/commodities-products/fruits/cherries/>
- Crop Profile for Sweet Cherries in Washington (Washington State University, 2003) <http://www.ipmcenters.org/cropprofiles/docs/WAcherries-sweet.pdf>
- Growing Cherries in Indiana (Purdue University, 2001) [https://edustore.purdue.edu/item.asp?item\\_number=ho-9-w#.WCTB-9wwbxU](https://edustore.purdue.edu/item.asp?item_number=ho-9-w#.WCTB-9wwbxU)
- Sweet cherry rootstocks, PNW 619 (A Pacific Northwest Extension Publication, Oregon State University, University of Idaho, Washington State University, 2010) [http://treefruit.wsu.edu/wp-content/uploads/2015/02/sweet\\_cherry\\_rootstocks\\_pnw619.pdf](http://treefruit.wsu.edu/wp-content/uploads/2015/02/sweet_cherry_rootstocks_pnw619.pdf)
- Tree Fruit Production Budgets (Pennsylvania State University, 2016) <http://extension.psu.edu/business/farm/management/financial-management/cost-and-budget-calculators-tree-fruit/tree-fruit-production-budgets>

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*Reviewed by Daniel Becker, UK Extension Associate*

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