UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Elderberry

Introduction

Elderberry (*Sambucus nigra* subsp. *canadensis*) is a large shrub or small tree native to Kentucky. The small fruit have prominent seeds and are produced in large clusters. While elderberries are not normally eaten fresh due to their tartness, wild and cultivated elderberries can be processed, either alone or with other fruit.

Marketing and Market Outlook

Most commercially grown elderberries are sold to processors for wines, juices, jellies, jams, syrups, and pies. Both the fruit and flowers are used in winemaking. Additionally, there is a growing demand for elderberries in the health tonic industry. Wholesale growers should arrange for a market contract prior to production.

Commercial elderberry production and market development efforts in the United States are currently focused in Missouri and in northern states. In Missouri, a group of interested elderberry growers has formed a small cooperative to generate volumes adequate for small-scale processing. This effort, ongoing as of 2012, is complemented by concurrent production research (variety trials, pest management research, etc.) by the University of Missouri and Missouri State University.

Production Considerations

Cultivar selection

Elderberry varieties differ in earliness, yield, hardiness, plant vigor, and disease susceptibility. Berry flavor, as well as cluster and berry size, can also vary between cultivars. Fruit color may be red to bluish-black to dark purple. Many of the improved cultivars currently available were developed in New York or Canada between the 1920s and 1960s. The University of Missouri is currently evaluating a number of elderberry selections for commercial production in the Midwest; they expect to name and release two new cultivars soon. Growers should only select adapted varieties that have the qualities in demand for the intended market.

Site selection, planting, and maintenance

Virus-free bare-rooted plants of horticultural varieties can be purchased commercially. Plants are also easy to propagate from seed, cuttings, or suckers. One-year-old nursery stock plants are transplanted to a well-tilled site in early spring. Plants are somewhat tolerant of wet or poor sites; however, they are not drought tolerant. Plants have a shallow, fibrous root system that can be damaged if the soil is cultivated too deeply.

CENTER FOR CROP DIVERSIFICATION

Fruit is borne on the current year's growth, as well as on older wood; second-year canes with several lateral branches

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are generally the most fruitful. Elderberry plants are partially self-fruitful and will require more than one variety in a planting to ensure cross-pollination.

Elderberry should be pruned during dormancy to remove dead, damaged, and unproductive canes. Pruning is also beneficial for disease and insect management. Canes are removed at ground level, leaving equal numbers of one-, two- and three-year-old canes.

Pest management

Relatively few insects and diseases are problematic on elderberries. Potential insect pests include cercropia caterpillars, eriophyid mites, cane borers, sawfly larvae, aphids, and fall webworms. Diseases such as viruses, cankers, leaf spot, and powdery mildew may attack elderberry. Few pesticides are labeled for use on this crop, so growers will need to rely on good cultural practices for pest management. Birds can be a serious problem, especially in small plantings near woods. Selections in which the fruit clusters hang downward are somewhat less attractive to birds.

Harvest and storage

Elderberry comes into full production after 3 to 4 years. Fruit is hand-harvested in August and September by cutting the cluster (panicle) from the bush once all berries in a cluster have fully ripened. Because berries produced on different age canes will ripen at different times, fruit is generally harvested weekly over a period of approximately three weeks.

Elderberries are separated from the panicle by freezing and then stripping or shaking off the fruit. The harvested fruit is either re-frozen for later processing or thawed for immediate processing. Freezing is important to reduce the green extract from the berries that tenaciously adheres to equipment. With good growing conditions, an average yield of 3 to 4 tons of fruit per acre can be expected.

Labor requirements

Elderberry production is labor-intensive since the berries must be removed from the panicle after field harvest. Labor needs per 1/5 acre are approximately 20 hours for production and 130 hours for hand harvest and freezing/processing. Mechanical elderberry harvest is under investigation in some parts of North America. Machine harvest could significantly reduce harvest labor time, but would require the equipment to be used over significant elderberry acreage to be financially feasible.

Economic Considerations

Initial investments include land preparation and the purchase of planting material. An additional start-up cost could include the installation of an irrigation system since elderberry is drought intolerant. Producers who do not already have an existing refrigeration system in place will also incur this cost for processing. Those producers who do have existing cooling systems may be able to reduce their fixed production cost by nearly $1,000 per year, depending on the size and scale of the cooling facility. The potential for retail elderberry production in Kentucky is most likely for small-scale processing in a certified kitchen or other food preparation facility. Elderberry wine production is also a possibility.

Production costs for an irrigated small-scale (1/5-acre) elderberry planting are estimated at $675 per 1/5 acre, with harvest and marketing costs at $2,050 per 1/5 acre. Total expenses per 1/5 acre, including both variable and fixed, are estimated at $2,965. Presuming gross returns of $3,325 per 1/5 acre, returns to land, capital and management would be approximately $400 per 1/5 acre. These 2012 returns presume a realized price of $3 per pound of elderberries. For every $0.10 change in price, returns per 1/5 acre will increase by approximately $110.

A crop such as elderberries can also generate non-financial returns to producers and landowners. Elderberries are a native plant possibility for

incorporating into agroforestry production and conservation systems. Site-specific considerations for establishing elderberry plantings could include their use as windbreaks and buffers. Landowners may be interested in establishing a small intensive planting of elderberries for a financially profitable harvest for food purposes while also establishing other plantings for conservation, wildlife habitat, or property improvement purposes.

Selected Information

- Common Elderberry Plant Guide (USDA NRCS, 2005) http://plants.usda.gov/plantguide/pdf/cs_sanic4.pdf
- Demand Increasing for Arona and Elderberry in North America (Cornell University, 2004) http://www.fruit.cornell.edu/berry/production/pdfs/aroniaeldeberry.pdf
- Economic Budgeting for Agroforestry Practices (University of Missouri, 2010) *1 MB* http://extension.missouri.edu/explorepdf/agguides/agroforestry/af1006.pdf
- Elderberry Cultivar Development in Missouri (University of Missouri, 2009) *2 MB* http://www.elderberryalliance.org/documents/ByersPatrick.pdf
- Elderberry Research and Production in Missouri (Missouri State University and Cornell University, 2005) http://www.fruit.cornell.edu/berry/production/pdfs/elderberrymissouri.pdf
- Fruit Production Guide: Elderberries (Pennsylvania State University) http://agsci.psu.edu/fphg/elderberries
- Using NRCS Technical and Financial Assistance to Establish Elderberries (University of Missouri, 2011) *4 MB* http://www.centerforagroforestry.org/pubs/NRCS_Elderberries.pdf

Reviewed by John Strang, Extension Specialist (Issued 2008, Revised 2012) **February 2012**
Photos by Pat Switzer, KY Grower (planting) and John Strang, University of Kentucky (berries)