University of Kentucky
College of Agriculture,
Food and Environment
Cooperative Extension Service

Center for Crop Diversification Crop Profile
CCD-CP-84

Asparagus

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Introduction

Asparagus (*Asparagus officinalis*) is a high-value perennial vegetable crop that is well suited for conventional production in Kentucky. A well-maintained asparagus planting can continue to produce for 15 years or more.

Marketing

This crop is grown primarily in Kentucky for fresh market, especially near large population centers. Asparagus has great potential for farmers markets, for direct sales to local supermarkets, and for sales to local and regional wholesalers. Asparagus can also be sold direct to consumers at farm stands and through community supported agriculture shares (CSA). Direct sales to local restaurants may also be possible. Kentucky's market window for asparagus is from early May through mid-June.

Market Outlook

Asparagus has excellent potential for increased production in Kentucky. Per capita use of asparagus in the U.S. increased from 1.25 pounds in 2000 to 1.58 pounds in 2010 and 1.90 pounds in 2018. This increase is due to the amount of fresh asparagus available per capita increasing from 0.96 to 1.76 pounds from 2000 to 2018, mainly because of higher import volumes.

According to the USDA, fresh asparagus is a good source of vitamins A and C, iron, calcium and folic acid. U.S. fresh asparagus is primarily produced in California, Washington and Michigan. Top sources for imported asparagus out-of-season are Mexico and Peru. Due to increased importation of asparagus out of the Michigan and West Coast seasons, American consumers have gained an increased appetite for asparagus. Many consumers can detect a difference in the quality of fresh asparagus, providing local producers an opportunity for fresh asparagus sales during their local season.

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Production Considerations

Cultivar selection

Cultivar selection is critical to the success of any asparagus planting. Asparagus produces separate male and female plants (dioecious). Older cultivars (e.g. 'Martha Washington' and 'Mary Washington') are a mix of both male and female plants. While female plants typically yield larger spears than male plants, female plants also produce and drop berries. Seed production and the resulting volunteer asparagus seedlings are undesirable. However, all-male hybrids have been developed for improved productivity, uniform spear size, and disease resistance to rust and Fusarium crown rot. Cultivars also vary in spear color, bract color, thickness and length of spears, and earliness. White asparagus is pro-

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duced from green cultivars; spears are covered with 8 to 10 inches of soil just before growth starts in the spring. Select vigorous marketable cultivars with the disease and insect resistance qualities best suited for your location.

Site selection
Choose a relatively level, rock-free site with light to medium-textured loam soil where asparagus has never been grown. Soils should be deep and without a hardpan. Good soil drainage is essential; asparagus will survive short periods of flooding, but not prolonged waterlogged soils. Avoid frost pockets that could result in damage to newly emerged spears. Asparagus is a poor competitor with weeds; avoid fields with a history of aggressive weeds. Site preparation should be started one year prior to planting. The ideal soil pH is 6.6; asparagus will not tolerate wide ranges of soil pH. Adjusting the fertility level before planting is essential since an asparagus planting may last 15 to 20 years and cannot be plowed or tilled once the crowns are set.

Establishing a new planting
An asparagus bed may be established from transplants (plugs) or crowns. Direct seeding to the field is not recommended as a method for establishing a new planting because weeds can be a serious problem.

Crowns can be purchased from a reputable dealer or growers may produce their own. Purchased crowns should be certified disease-free. On-farm crown production entails growing crowns from seed for one year in plant beds. One-year-old crowns should be planted in furrows at a depth of 6 inches below soil level during March or early April.

Seedling transplants started in a greenhouse take 10 to 12 weeks compared to the year for producing crowns. Seedlings can be transplanted to the permanent field using a mechanical transplanter. Plugs are transplanted into W-shaped planting furrows during late April or early May.

Compost, or composted manure, should be added to the crown or transplant furrows prior to planting. Seven thousand to 9,000 plants are needed per acre with 1 foot plant spacing and 5 to 6 feet between rows.

Managing the planting
Providing supplemental water can increase productivity and extend the life of the planting. Irrigation is especially important during establishment, i.e. the first two years after planting crowns or transplants. In mature beds, watering during fern production is also desirable. Water should be withheld in the fall to help asparagus enter its dormant period. Ferns (tops) are left standing until they are dry. Early fern removal can weaken crowns because it results in inadequate food supplies reaching the roots. Removing and burning dry fern growth helps eliminate potential disease problems that might otherwise develop during the growing season. Dry ferns burn very hot and very quickly. Make sure to check for open burning restrictions.

Pest management
Asparagus can be grown using either a no-till or minimum tillage system of weed control. Fusarium root and crown rot is the major cause of asparagus decline. Foliar diseases, such as asparagus rust and Cercospora leaf spot (needle blight), can also result in reduced yields. Insect pests include asparagus beetle (common and 12-spotted), Japanese beetle, tarnish bugs, aphids and cutworms. Careful production site selection, growing resistant or tolerant cultivars, sanitation, and following good cultural practices will enhance the crop's ability to deal with disease and insect problems.

Weed management begins prior to planting by selecting sites with low weed pressure,tillage, and the use of smother crops. Intensive weed control is especially important during establishment when weeds can easily out-compete the young crop. No-till and minimum tillage systems can be used for conventional asparagus, but are not recommended in organic asparagus production.

Harvest and storage
Asparagus should not be harvested during the first year

(planting year); however, studies show that harvesting one year after planting does not reduce future yields and does give growers some income one year early. As a rule of thumb, asparagus can be harvested for two weeks the first year, four weeks the second year, and six to eight weeks after that. Typically, spears are harvested when they are 8 to 10 inches long. Spears should be quickly cooled after harvest.

Asparagus to be shipped and sold wholesale is usually hydro-cooled after harvest to retain high quality. Once hydro-cooled, asparagus can then be stored for up to three weeks. Spears are cut to uniform length, tied in 2- to 2½-pound bunches, and packed in pyramid crates for wholesale market sales.

Labor requirements

Labor needs for the year of establishment are estimated at 50 to 60 hours per acre. For the following years, conventionally grown asparagus requires approximately 15 to 20 hours per acre for production and 40 to 60 hours per acre for harvest and packing.

Economic Considerations

Initial investments include land preparation; purchase of seed, transplants, or crowns; and installation of an irrigation system.

The cost of establishing a new asparagus field, including labor costs, ranges from $2,500 to $3,000 per acre for the pre-planting year of soil buildup, planting year, and maturing year. Per acre costs (2019) by year are estimated as follows: $460 for soil buildup, $2,175 for planting, and $530 for production costs in the first harvest year. Total costs in the maturation/first harvest year are $765, with income usually exceeding production and harvest costs. Once in full production, 1,500 pounds sold at an average of $1.75 per pound may return an estimated $1,450 above total costs of $1,175.

Asparagus establishment costs are usually recouped by the fourth year of production. The major establishment costs are crowns and fertilizer. Once established, asparagus is one of the least expensive perennial produce crops to maintain. Since returns vary depending on actual yields and market prices, the following per acre returns to land and management for the fourth year are based on three different scenarios. Conservative estimates represent the University of Kentucky's statewide return estimates to land, labor and management (2019).

PESSIMISTIC	CONSERVATIVE	OPTIMISTIC
$575	$1,450	$2,125

Selected Resources

- Commercial Asparagus Production, HO-66 (University of Kentucky, 2008) http://www.ca.uky.edu/agc/pubs/ho/ho66/ho66.pdf
- Organic Asparagus (CCD, University of Kentucky, 2016) http://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/Asparagus-Organic.pdf
- Sample Asparagus Production Budget for Kentucky (University of Kentucky, 2016) http://www.uky.edu/ccd/sites/www.uky.edu.ccd/files/asparagus_budget_2016.pdf
- Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky) http://www2.ca.uky.edu/agc/pubs/id/id36/id36.pdf
- Organic Asparagus Production (ATTRA, 2001) https://attra.ncat.org/attra-pub/summaries/summary.php?pub=377
- Asparagus Production (Penn State University, 2014) https://extension.psu.edu/asparagus-production

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