

# Organic Asparagus

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## Introduction

Organic asparagus (*Asparagus officinalis*) is produced using pest management and fertilization methods that do not include synthetic compounds. Because organic crop production standards are regulated by the National Organic Program (NOP), growers producing and selling asparagus labeled “organic” must be certified by a USDA-approved state or private agency.

## Marketing

Asparagus is grown primarily in Kentucky for fresh market, especially near large population centers. Potential markets for organic asparagus include roadside stands, farmers markets, cooperatives, community supported agriculture (CSA) subscriptions, produce auctions, and local wholesalers. Restaurants, health food stores, and locally owned grocers may also be interested in Kentucky-grown organic products. Kentucky’s market window for asparagus, which varies depending on region, can start as early as late April and run through the month of June.

## Market Outlook

Organic asparagus has excellent potential for increased production in Kentucky. Growing asparagus organically adds further value to this already high-value vegetable crop. A rule of thumb for conventional asparagus is that it takes a market size of 10,000 people to successfully market every acre produced. The required market size for organic asparagus



may be several times larger per acre. Increasing consumer demand for organic products has made organic crop production one of the fastest growing segments of agriculture. Typically organic production brings higher returns for the producer.

## Production Considerations

### *Site selection and preparation*

Only land that has been free of prohibited substances (e.g. synthetic pesticides and artificial fertilizers) for 3 years can be certified for organic production. A well-maintained asparagus planting can continue to produce for 10 to 15 years. Because of this crop’s longevity, it is especially important to be selective in choosing an appropriate planting site for organic production. Select 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 drainage is essential; asparagus will survive short periods of flooding,



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but not prolonged waterlogged soils. Because asparagus is a poor competitor with weeds, it is also important to avoid fields where aggressive perennial weeds have a history of being difficult to manage.

One to two full seasons prior to planting should be devoted to site preparation. This will include soil build-up, adjusting fertility, and weed management. Soil fertility can be enhanced through cover crops, nitrogen-fixing legumes, green manure, animal manure, and approved natural fertilizers. Compost and composted manure must meet specific NOP processing requirements. Green manure crops should be fully decomposed before setting crowns.

#### *Cultivar selection*

Asparagus produces separate male and female plants. 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 in a commercial planting. However, new all-male hybrids have been developed for improved productivity, uniform spear size, and disease resistance to rust and Fusarium crown rot. Disease resistance is an extremely important selection criterion for the organic grower; it is even more important than uniformity of spears. The University of California has released some resistant cultivars and Rutgers has an active breeding program focusing on disease resistance. Select vigorous marketable cultivars with the disease and insect resistance qualities best suited for your location.

#### *Establishing a new planting*

An asparagus bed is generally established from one-year-old, certified disease-free crowns. These crowns are the root systems from a one-year-old plant grown from seed. Crowns can be purchased from a reputable plant producer, or growers can produce their own in plant beds on the farm. Beds may also be established from greenhouse-grown 10- to 12-week transplants (plugs).

Organic asparagus production requires the use of certified organic planting stock that has not been treated with synthetic materials. Because it is difficult to find certified crowns or seed, organic growers need to plan ahead at least 2 years prior to the desired planting date when purchasing planting material. Soil testing, the organic certification program, and site preparation should be completed before any planting material is ordered. Nine thousand to 11,000 plants are needed per acre.

Crowns should be planted in March or early April while seeding or transplanting should be done in late April or early May. Asparagus crowns are planted in furrows at a depth of 6 inches below soil level. A W-shaped planting furrow is recommended for plugs. Compost or composted manure should be added to the furrow prior to planting and must meet NOP standards.

#### *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 2 years after planting crowns or transplants. In mature beds, watering during fern production is also desirable. Withhold water in the fall to help asparagus enter its dormant period.

Conventional growers generally allow the ferns (tops) to remain standing through the winter whenever possible. Early fern removal can weaken crowns because it results in inadequate food supplies reaching the roots. Additionally, fern growth in the winter catches snowfall, thus protecting crowns from deep freezing and sudden soil temperature changes. However, organic growers may need to mow and remove top growth soon after ferns have died back to the ground, generally about the time of the first hard frost. This provides better management of insect and/or disease problems by removing overwintering material. In addition, removing the tops in the fall facilitates mechanical weed control in the spring, whereas leaving the debris could clog cultivators. Using a controlled burn will

accomplish the same task as mowing; however, it also eliminates the need of physically removing the top growth. Maintain fertility by adding compost to the planting every fall. Supplemental organic nutrient sources include bloodmeal, fishmeal, cottonseed meal, and soybean meal.

#### *Pest management*

Pest management in organic fields emphasizes prevention through good production and cultural practices. Monitoring pests through 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. Fortunately, few disease and insect problems plague asparagus.

Fusarium root and crown rot is the major cause of asparagus decline. This disease was responsible for an almost 90 percent decrease in acreage in New Jersey in the 1960s and 1970s. Foliar diseases, such as asparagus rust and *Cercospora* leaf spot, can also result in reduced yields. 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 problems. Organic control options are almost non-existent once a disease problem occurs.

Insect pests include asparagus beetles, Japanese beetle, aphids, and cutworms. Organic insect management strategies include variety selection, sanitation, controlling nearby vegetation, natural predators/parasites, insecticidal soap, and organic insecticides.

The main challenge to organic asparagus growers, however, is weed control. Pre-planting strategies include selecting sites with low weed pressure, tillage, and the use of smother crops. No-till and minimum tillage systems, which can be used for conventional asparagus, are not recommended in organic asparagus production. While intensive weed control is especially important during establishment when weeds can easily outcompete

the young crop, following good weed management practices throughout the life of the planting is also important.

Cultivation and mowing are methods of reducing weed problems after planting; care must be taken to not damage crowns with equipment. A living mulch between rows provides an alternative method for weed management. Composted wood chips, weed-free hay or straw, or sawdust can be used as mulch to aid in weed suppression within rows. Once mulch is applied, weeds will have to be removed by hand because machine cultivation will not be possible within rows. A smaller hoe, such as those typically used in nursery stock production, is more useful for getting between ferns than a standard row crop hoe. Organic mulches may have a cooling effect on the soil that may delay spear emergence in the spring.

#### *Harvest and storage*

Harvest equipment, storage areas, and packing materials must comply with NOP standards. Asparagus is harvested by hand when spears are 8 to 10 inches long. Ferns should not be allowed to develop until the harvest period is over, otherwise spear emergence will be delayed.

Asparagus to be shipped and sold wholesale is usually hydro-cooled after harvest to retain high quality. Asparagus can then be stored for up to 3 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*

Organic systems are more labor intensive than conventional systems, largely as the result of increased labor times required for monitoring and managing weeds, diseases, and insect pests. Labor needs for organic asparagus the year of establishment are estimated at 200 hours per acre. For the following years, asparagus requires approximately 85 hours per acre for production and 80 to 150 hours per acre (3½ hours per 100 pounds) for harvest and packing. Organic production will also require additional management time for the mandatory recordkeeping.

## Economic Considerations

Initial investments include land preparation (including cover crop seeding and organic fertilizer); purchase of asparagus seed, transplants, or crowns; and installation of an irrigation system.

The cost of planting a new organic asparagus field may be as high as \$4,375 per acre, including 1 year of soil buildup; however, this should be recouped by the fifth year of production. The major establishment costs are labor, crowns, and fertilizer. Once established, asparagus is one of the least expensive vegetable crops to maintain. Per acre production costs for subsequent years are estimated as follows: \$960 for the second year and \$1,470 for the third year. These returns assume producers market 600 pounds of asparagus the year after planting and 1,800 pounds in full production years. Harvest and marketing costs, including labor, are estimated at an average cost of \$0.53 per pound.

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 yield scenarios at \$1.75 per pound. Conservative estimates represent the University of Kentucky's statewide return estimates to land, labor, and management (2012).

| PESSIMISTIC<br>(1,200 LBS) | CONSERVATIVE<br>(1,800 LBS) | OPTIMISTIC<br>(2,500 LBS) |
|----------------------------|-----------------------------|---------------------------|
| \$700                      | \$1,650                     | \$2,750                   |

The average yield for asparagus is about 1,800 pounds per acre, while 2,500 pounds per acre is considered a good yield.

Organic asparagus may also be produced in smaller beds, especially for farmers markets and

other direct market sales. Based on Iowa State University cost and return data for a 100-foot by 4-foot bed producing 35 pounds of asparagus sold at \$2.50 per pound, producers might expect a \$50 annual return over variable costs and \$35 return over total costs.

## Selected Resources

- Commercial Asparagus Production, HO-66 (University of Kentucky, 2008)  
<http://www.ca.uky.edu/agc/pubs/ho/ho66/ho66.pdf>
- Organic Marketing (KDA)  
<http://www.kyagr.com/marketing/organic-marketing.html>
- Sample Asparagus Production Budget for Kentucky (University of Kentucky, 2005)  
<http://www.uky.edu/Ag/cdbrec/asparagusbudget05.pdf>
- Vegetable Production Guide for Commercial Growers, ID-36; includes Organic Manures and Fertilizers: Appendix G (University of Kentucky)  
<http://www.ca.uky.edu/agc/pubs/id/id36/id36.htm>
- Asparagus Breeding Program (Rutgers)  
<http://agproducts.rutgers.edu/asparagus>
- Bring Existing Weeds Under Control Before Planting Weed-Sensitive Crops (eXtension, 2010)  
<http://www.extension.org/article/18549>
- National Organic Program (NOP)  
<http://www.ams.usda.gov/nop>
- Organic Weed Control Toolbox (eXtension, 2010)  
<http://www.extension.org/article/18532>
- Resource Guide to Organic and Sustainable Vegetable Production (NCAT-ATTRA, 2012)  
<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=19>

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*Reviewed by Shawn Wright, Extension Specialist (Revised 2012)*

*Asparagus photo by Gerald Holmes, Valent USA Corporation, Bugwood.org*

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