



Brussels Sprouts

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Introduction

The Brussels sprout (*Brassica oleracea* var. *gemmifera*) is a cool-season cole crop that is related to broccoli, cabbage and cauliflower. The sprouts are buds or small heads that are produced in the leaf axils (the space between the base of the leaf and the stem above it). Sprouts mature starting at the base of the stem and working upward. In Kentucky, Brussels sprouts do best as a fall crop since sprouts maturing in hot weather are less firm and prone to bitterness.

Marketing and Market Outlook

Commercial production of Brussels sprouts in the United States is concentrated in California, with some East Coast production on Long Island, New York. Across the entire U.S., 2,541 farms reported harvesting 9,445 acres of Brussels sprouts in 2017, with 9,115 acres being harvested for fresh market sales.¹ The Census of Agriculture reported 24 Kentucky farms harvested Brussels sprouts for the 2017 growing season.² Fall and overwinter production occurs on farms across the state.

In Kentucky, fall crops have the most potential for fresh market sales. Brussels sprouts can provide more variety of produce offered at roadside stands, community supported agriculture shares, and farmers market booths. Direct marketers should work to create fall and winter niche markets, like restaurant or farmers market sales, for freshly harvested Brussels sprouts. Offering recipes and other tips for use can help introduce Brussels sprouts to new consumers.

Production considerations

Cultivar selection

Brussels sprouts are a slow-growing



cool-weather vegetable, growing best when daytime temperatures are between 65 and 80 degrees F; they even do well in lightly frosty weather. For an early spring crop, start the seed about six weeks before the plants are to be transplanted, or about mid-February for transplanting around April 1 in most areas of Kentucky, allowing for harvest in mid-June. For a fall crop, plant seed between early and mid-June and set transplants in the field between July and August 1. Fall planting harvest might extend through Thanksgiving and even into December in mild years. Growers should be careful when selecting varieties as some may not produce firm harvestable sprouts under our growing conditions. Five varieties good for Kentucky are listed in Table 1 (see Page 2), although Jade Cross E is the best performer by far.

Site selection and planting

In Kentucky, Brussels sprouts do best as a fall crop in a cool, moist climate. All cole crops grow well in reasonably fertile, well-drained, moist soils with plenty of added organic matter. Mulch will help



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Table 1. Common Brussels sprouts varieties for Kentucky

Variety	Maturity	Hybrid	Days to Maturity	Comments
Jade Cross E	Early	Yes	85	Medium sprouts
Dimitri	Late	Yes	105	Medium sprouts
Diablo	Late	Yes	110	Medium sprouts
Franklin	Early	Yes	80	Medium-large sprouts
Hestia	Early	Yes	93	Medium-small sprouts

keep the ground cool and moist. The pH should be between 6.0 and 7.0 for optimum growth. A pH within this range will discourage club root disease and maximize nutrient availability. Cole crops are heavy users of sulfur; soils prone to deficiencies can be amended by using one of the many sulfur-containing fertilizers to supply 10 to 20 pounds of actual sulfur per acre. Boron will need to be supplied in areas of the state that are low in boron to prevent hollow stems and small buds. Brussels sprouts should be spaced 18 to 24 inches apart in the row, with rows at least 36 inches apart. A starter fertilizer applied around the root system during transplanting is recommended. Throughout the growing season, it is important to keep soil moist and the plants growing; irrigation is important.

Pest Management

Weeds and insect pests can be problematic because Brussels sprouts are a long-season crop. For weed control, careful and frequent cultivation, as well as preemergent herbicides can be helpful. Damage to plants can result from cutworms, cabbage loopers, imported cabbage worms, diamondback moth larvae, cabbage maggot, thrips and cabbage aphids. Early detection is critical for controlling these pests. Scouting to monitor populations can help growers determine when and how often pesticides should be applied. Cabbage aphids are a serious late season pest; freezing temperatures will cause them to move inward toward the plant’s center for shelter. Infestations between and within sprouts are difficult to remove. Selecting a cultivar like ‘Dimitri’ with more widely spaced sprouts along the stem will aid in spray penetration. Several plant diseases can result in yield losses. Black leg, black rot, club root, powdery mildew and wirestem can affect Brussels sprout plants. Select tolerant varieties, use disease-free seed or transplants and rotate cole crops with other (non-cole) crops annually. Fungicide and bactericide sprays may also be necessary.

Harvest and Storage

Cut off the top of plants when the lower sprouts are

around ¼- to ½-inch in diameter, usually in mid-September. This is referred to as “topping.” It takes about 30 days for sprouts to develop after topping. Another management practice

is called “kiting.” This involves removing the lower leaves as sprouts develop. It can help with more uniform sprout formation. This is usually done in combination with topping. Harvest begins after the first frost in October when cool temperatures increase sugar accumulation and before stalks are heavily colonized by cabbage aphids. Fall harvest in Kentucky is the most practical and rewarding. Extended production is possible as plants will tolerate temperatures down to 20 °F, but once this low temperature is reached, sprouts turn a dull purplish green and are not marketable. Harvest the sprouts when they are about ¾-inch in diameter, compact and bright green to obtain the most tender and best flavored sprouts. Commercially, sprouts are also harvested when they are between 1 and 1½ inches in diameter. Brussels sprouts can be harvested two different ways — successive harvests of individual sprouts or a single harvest of the entire plant. For successive harvests, the plant’s lower leaves should be broken away and the sprouts snapped or cut off close to the stem with a sharp knife. Make successive harvests from the base upward as the sprouts develop. Sprouts should be cleaned, trimmed of loose leaves, and sorted to remove those that are soft or damaged. Avoid yellowing sprouts with signs of wilt, rot, or in-



sect damage. Refrigerate soon after harvesting until selling at 32°F and 90 to 95 percent relative humidity. Brussels sprouts can be sold in pint or quart baskets or bags. A single harvest of the entire plant means that some producers cut the plant at its base with loppers and sell the entire stalk with Brussels sprouts attached after removing the leaves. North Carolina State University Extension has found that one Brussels sprout plant is capable of producing about 2.5 to 3 pounds of sprouts; however, a Kentucky grower averages 1.5 to 2 pounds per plant. There is a small market for Brussels sprout leaves that are cooked like collard greens. The best looking leaves are selectively cut about a week before stalks are harvested and tied in bunches of 10 for marketing.

Labor Requirements

Brussels sprouts are labor intensive; University of Wisconsin production budgets estimate 470 hours required per acre, including 426 hours per acre for harvest (of individual sprouts) and 40 hours for marketing. Plasticulture will add eight to 10 hours more per acre, mostly for plastic removal. Labor requirements per 100-foot row of Brussels sprouts are estimated at three to five hours, including marketing time.

Economic Considerations

Initial investments include land preparation, purchase of seed or transplants, and installation of an irrigation system. Cooling, irrigation and handling equipment for proper Brussels sprouts production are similar to those needed for broccoli and cauliflower. Brussels sprouts production in Kentucky is probably best suited for direct, niche and well-developed local markets.

Returns will vary greatly depending on yield, markets and price. Per acre production budget estimates for Kentucky suggest estimated variable costs of about \$7,000 per acre, and fixed costs of \$300 per acre. As-

suming 8,000 pounds of production per acre sold at a price of \$1.25 per pound, returns to land and operator could approach \$3,000 per acre. Returns to land and management per 100-foot row of direct market Brussels sprouts are estimated at \$30 to \$35, assuming 100 pounds sold at \$1.50 per pound.

¹USDA, NASS. United States, Table 36. Vegetables, Potatoes, and Melons Harvested for Sale: 2017 and 2012
https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1_Chapter_1_US/st99_1_0036_0036.pdf

²Kentucky, Table 29. Vegetables, Potatoes, and Melons Harvested for Sale: 2017 and 2012
https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1_Chapter_2_US_State_Level/st99_2_0029_0029.pdf

Selected Resources

- Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky)
<http://www2.ca.uky.edu/agcomm/pubs/ID/ID36/ID36.pdf>
- Home Vegetable Gardening in Kentucky, ID-128 (University of Kentucky)
<http://www2.ca.uky.edu/agc/pubs/id/id128/id128.pdf>
- Vegetable Directory: Brussels sprouts (University of Illinois Urban Extension) <http://urbanext.illinois.edu/veggies/brusselsprouts.cfm>
- 2014 Wisconsin Fresh Market Vegetable Budgets
<https://fyi.uwex.edu/farmteam/fresh-market-vegetables/>
- Horticulture Information Leaflets: Brussels sprouts (NC State University, 2001)
<https://content.ces.ncsu.edu/brussels-sprouts>

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