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

**Center for Crop Diversification Crop Profile**
**CCD-CP-90**

# Cabbage

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## Introduction

Cabbage is a cool-season crop with a high cold tolerance; however, heads may bolt (flower prematurely) in warm temperatures. Cabbage is suitable for both fresh and processed products. Cabbage is mainly grown for fresh market sales in Kentucky, where growers have in the past planted significant contracted acreage for the processing market. As a member of the crucifer family, cabbage is closely related to other cole crops, such as broccoli, cauliflower and Brussels sprouts.

## Marketing and Market Outlook

Fresh market options for Kentucky cabbage producers include wholesale marketing through produce auctions and cooperatives, as well as restaurants and local retailers. Direct markets for fresh cabbage include farmers markets, roadside stands and community supported agriculture (CSA) shares.

Fresh cabbage sales are heavily influenced by fresh-cut coleslaw consumption and the use of red cabbage in salad mixes. Fresh cabbage use per capita has declined substantially in recent years, from 8.9 pounds per capita in 2000 to 6.3 pounds in 2016. Access to fresh-cut processing will be critical for Kentucky producers seeking profitability from large-scale cabbage production.

## Production considerations

*Cultivar selection*

Growers should consider head size (small to large), shape (round, flat-round, conical and variations), density, and color (green, blue-green or red), as well as leaf texture (smooth or savoy). Wrapper leaves (number, thickness and tightness) and core length can also vary among cultivars. Typically, cabbage heads grown for processing are much larger than those grown for the fresh market.

Growers should consider growing varieties with the largest head size when producing for the processing market. Smaller heads are particularly suited for direct marketing. Resistance and/or tolerance is available for Fusarium yellows, black rot, tip burn and bolting. Some varieties are better suited for fall production than spring production. Select locally adapted varieties that have the qualities in demand for the intended market.

*Site selection and planting*

Select a site that is well-drained; poorly drained soils should be avoided. Slightly rolling land is suitable. This crop will do well on ground that has been in tobacco. Fescue sod ground is also good if the sod is plowed under early in the fall and allowed to decompose. Boron deficiencies have appeared in cabbage in several Kentucky counties; the addition of 2 pounds of actual boron is recommended where cabbage is to be planted if the site has a history of boron deficiency or if soil testing indicates deficiency.

The ground for spring cabbage should be plowed in the fall to have a crop ready for early market. Transplants should be in the field by the middle of March for a spring

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crop. Fall cabbage also does well as the crop matures when temperatures are cooler and there are often fewer pest problems. A fall crop should be transplanted by mid-August but sourcing transplants at that time of year can be difficult. Tobacco setters can be used for planting. A plant population of 14,000 plants per acre is desirable.

*Pest management*

Insect pests can be a major problem in cabbage production. Damage to transplants and older plants can result from cutworms, imported cabbage worm, cabbage looper, diamondback moth larvae and cross-striped cabbage worm. Marketability is reduced when insects feed on heads or wrapper leaves. Early detection is critical for controlling these pests. Scouting to monitor populations can help growers determine when and how often pesticides should be applied. Bt is a microbial insecticide that can be used effectively against most types of cabbage pests; a number of Bt products can be used in organic production. Several plant diseases (black rot, Fusarium yellows and downy mildew) can also result in yield losses. A good crop rotation program, the use of certified disease-free resistant/tolerant varieties, and control of cruciferous weeds will help in the prevention of many of these diseases. Fungicide/bactericide sprays may also be necessary. The use of floating row covers can also help prevent damage.

*Harvest and storage*

Cabbage yields for fresh market production should approach 40,000 pounds per acre, while yields for cabbage grown for processing should be near 50,000 pounds per acre. Fresh market cabbage is harvested when the heads are firm and solid. Heads are cut low enough to leave two or three loose wrapper leaves. Cabbage is usually marketed in 50-pound boxes or bags with 16 to 18 heads per bag. Heads can be stored at 32o F and 90% to 95% relative humidity.

*Labor requirements*

Labor needs are approximately 15 hours per acre for production and 250 hours per acre for harvesting and packing 600 boxes.

## Economic considerations

Initial investments include land preparation and the purchase of seed or production of transplants. An additional start-up cost can include the installation of an irrigation system.

Production costs for 600 boxes of fresh market green cabbage in 2017 are estimated at $2,215 per acre, with harvest and marketing costs at $4,080 per acre. Total costs for 600 boxes, including fixed costs, can reach $6,900.

Since returns vary depending on actual yields and market prices, the following per acre returns to land and management are based on three different economic scenarios for irrigated, fresh market green cabbage. Conservative estimates represent the University of Kentucky's statewide average cost and return estimates for 2017.

| *Pessimistic* | *Conservative* | *Optimistic* |
|---|---|---|
| $(2,629)* | $(1,821)* | $(1,253)* |

** Parentheses indicate a negative number, i.e. a net loss*

## Selected Resources

- Bt Basics for Vegetable Integrated Pest Management, ID-156 (University of Kentucky, 2005) http://www.ca.uky.edu/agc/pubs/id/id156/id156.pdf
- Growers' Guide to Bt, ID-156A (University of Kentucky, 2005) http://www.ca.uky.edu/agc/pubs/id/id156a/id156a.pdf
- Integrated Crop Management for Kentucky Cabbage, IPM-11 (University of Kentucky, 1997) https://ipm.ca.uky.edu/files/ipm11cab.pdf
- Vegetable and Melon Budgets (University of Kentucky, 2013) http://www.uky.edu/ccd/tools/budgets
- Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky) http://www.ca.uky.edu/agc/pubs/id/id36/id36.htm
- Commercial Production and Management of Cabbage and Leafy Greens B-1181 (University of Georgia, 2017) http://extension.uga.edu/publications/detail.html?number=B1181

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*Reviewed by Shawn Wright, UK Horticulture Specialist*
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