



Cucumber

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Introduction

The cucumber (*Cucumis sativus*) is a warm-season vining crop in the Cucurbit family. Cucumbers suitable for immediate consumption are referred to as “slicers,” while those for processing are “picklers.” Although there once was a large pickling cucumber industry in Kentucky, nearly all cucumbers grown commercially in the state are now for fresh market consumption.

Marketing

Cucumbers are grown in Kentucky primarily for fresh market (slicing types) rather than for processing (pickling types). Some pickling types are sold at auctions and farmers markets. Fresh market options include wholesale markets, auctions, cooperatives, community supported agriculture (CSA) subscription shares, farmers markets, and roadside stands. Sales to local retail markets, such as supermarkets and restaurants, are also an option.

Market Outlook

U.S. per capita use of cucumbers increased about 10 percent (one pound per capita) between 2012 and 2017. Higher fresh cucumber usage caused this increase; per capita pickling cucumber use declined from 2013-2015. Total per capita cucumber use exceeded 11 pounds in 2015 and 2016, the highest levels since 2009.

Cucumbers are a summer vegetable staple in Kentucky farmers markets, Community Supported Agriculture shares and roadside stands. Smaller-scale wholesale deals to local restaurants and groceries can complement direct market offerings. In the early 2010s, restaurants showed



more interest in purchasing larger lots of pickling cucumbers for in-house preserving. This vegetable tends to be a low-profit part of direct market offerings, and wholesale cucumber prices tend to be lower during summer production peaks. Fresh cut processors have increased quantities demanded for cucumbers, but pricing remains very competitive. Kentucky’s location has provided access to wholesale markets for both spring and fall slicing cucumbers. Some Kentucky wholesale growers have tried to capitalize on a narrow marketing window in mid-September after slicing cucumbers from northern sources have moved from the market.

Production considerations

Site selection and planting

Cucumbers do best in well-drained soils that are relatively high in organic matter. The soil should be plowed in the fall and then disked two or three times in early spring for a well-prepared seed bed. Land that has been in sod is very



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desirable or another grass crop such as corn or small grains as long as triazine herbicides have not been applied. Also avoid planting on a site that has recently had other cucurbit crops (melons, pumpkins, squash, etc.).

Cucumbers are very cold-sensitive and should not be planted until all danger of frost has passed and the soil has warmed sufficiently. Two pounds of seed are needed per acre for direct seeding. This crop requires a continuous supply of moisture during the growing season, with the critical time occurring at fruiting. Pickling cucumbers mature quickly and fit well into double-cropping systems.

Growing cucumbers on raised beds with black plastic and trickle irrigation increases yields and earliness as well as helping with weed management. Cucumbers can be direct-seeded through the plastic, or two- to four-week-old seedlings can be transplanted into holes in the plastic. Plasticulture cucumbers are usually grown in double rows.

Vines should be trained to run lengthwise in the row soon after vining starts. This training makes hand harvesting easier and quicker with less damage to the plants. For small-scale growers, cucumbers should be trellised to improve fruit quality.

Providing one strong hive of bees for each acre of cucumbers will help to ensure good pollination in commercial plantings but is not critical. There are other native pollinators that will pollinate the cucumbers as well.

Pest management

Cucumber beetle, the major insect problem of cucumbers in Kentucky, is also the carrier (vector) of one of the most serious cucumber diseases, bacterial wilt. The use of an imidacloprid insecticide at transplanting provides good protection for about three to four weeks, weather dependent, and may be followed by regular foliar insecticide applications. Other troublesome pests include mites and squash vine borer. It is important to avoid spraying insecticides when the pollinators are visiting the bloom, so spraying is usually done in the early morning before sunrise or at sundown.

In addition to bacterial wilt, powdery mildew, downy

mildew, gummy stem blight, belly rot, and viruses can result in crop losses. Multiple control strategies are needed to prevent or reduce disease losses. The selection of disease-resistant varieties, where available, is important, as is sanitation. Fungicides are often used as an important tool in disease management.

Black plastic mulch usually works well to remove weed pressure from within rows, while areas between rows are typically cultivated and a pre-emergent herbicide applied shortly after planting.

Harvest and storage

Picking the first harvestable cucumbers is very important to ensure continued production. Cucumbers picked by hand should be harvested every other day for best yields and quality. Cooling soon after harvest helps maintain quality and extend shelf life. Cucumbers for fresh, wholesale market are often waxed and marketed in 1¹/₉-bushel waxed cartons. Fruit can be held in storage for about two weeks at the proper temperature and relative humidity.

Pickling cucumbers are harvested when the fruit is small and immature. For best yields it is essential that plants be picked clean at each harvest, being sure to remove any overgrown fruit that was missed during previous harvests. The fewer fruits that are allowed to become full-grown, the more the vines will produce.

Labor requirements

Labor needs for irrigated cucumbers are approximately 20 hours per acre for production, plus 50 hours per acre if plants are trellised. Plasticulture will add eight to 10 hours more per acre for the post-harvest removal and disposal of the plastic. Harvesting, washing and packing will require about 150 hours per 300 boxes, or 250 hours per 500 boxes.

Economic considerations

Initial investments include land preparation and the purchase of seed or transplants. Additional start-up costs can include the installation of an irrigation system and black plastic mulch.

Production costs in 2017 for cucumbers grown on black plastic with trickle irrigation are estimated at \$1,460 per acre, with harvest and marketing costs at \$3,010 per acre. Total costs (including fixed costs) are

approximately \$5,000 per acre.

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

SUMMER PRODUCTION

<i>Pessimistic</i>	<i>Conservative</i>	<i>Optimistic</i>
\$(1,327) *	\$(479)	\$89

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

Selected Resources

- IPM Scouting Guide for Common Problems of Cucurbit Crops in Kentucky, ID-91 (University of Kentucky, 2009) 1.8 MB
<http://www.ca.uky.edu/agc/pubs/id/id91/id91.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 of Pickling and Slicing Cucumbers in North Carolina, AG-552 (North Carolina State University, 2016)
<https://content.ces.ncsu.edu/commercial-production-of-pickling-and-slicing-cucumbers-in-north-carolina>

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