



# Potatoes

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## Introduction

The potato (*Solanum tuberosum*) is a cool-season plant originally from the Andes Mountains of South America. The tubers are underground stems, not roots. Potatoes are most often grown in Kentucky as an early crop for fresh market consumption.

## Marketing and Market Outlook

Potatoes are one of the most widely consumed crops in the world. Per capita potato use in the U.S. declined from the 1990s into the early 2000s, from about 135 pounds to 125 pounds per year for both processing and fresh potatoes. Per capita potato use continued declining from 2006 to 2016, though not at the rate of the previous decade. Fresh market potato consumption was estimated to be from 33 to 35 pounds per capita annually from 2012 to 2016 while consumption of processing potatoes was 78 to 80 pounds.

Fresh market options for potatoes grown in Kentucky include farmers markets, produce auctions, cooperatives, community supported agriculture (CSA) shares and roadside stands. Opportunities also exist for the production of small “new” potatoes, russets, heirlooms and other specialty types for local markets, sales to restaurants or sales to local/area wholesalers. Sales of very small “mini” or “creamer” potatoes (1 to 1½ inches in diameter) are also possible and command premium prices in some markets.

While processing potatoes can be grown in Kentucky, northern production areas dominate chipping and frozen potato markets. Profit margins tend to be much tighter for processing potatoes and high yields are critical for profitability. Most



processing potatoes are purchased by contract with experienced growers who usually grow specialized chipping potato varieties on a very large scale.

## Production considerations

### *Cultivar selection*

Potato cultivars differ in such tuber characteristics as skin color (white, shades of red, and purple tones), flesh color (white, yellows, blue and purple), shape (elongated to round), eye depth (shallow to deep), skin texture (smooth to rough) and size. Varietal differences also include earliness (early, mid- or late-season) and use (baking, chipping, all purpose). Disease resistance/tolerance to scab, early blight, late blight and blackleg are available in some varieties. “New” potatoes are often red-skinned, but can be any variety that

is harvested early in the season when tubers are 1½ to 2¼ inches in diameter. Gourmet or mini potatoes are produced from varieties that tend to yield high numbers of small tubers. Fresh market producers may want to consider adding



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heirloom cultivars to their mix, along with specialty cultivars. Commercial growers should select only well-adapted varieties that have the qualities in demand for the intended end-use and market.

### *Site selection and planting*

Loam soils are most desirable for good potato yields; however, potatoes can be grown on a wide range of well-drained soil types. Sod ground should be treated for grub and wireworm control prior to planting. Potatoes should not follow potatoes or other solanaceous crops (e.g. tomatoes, eggplant, tobacco or peppers) on the same ground year after year. A three- or four-year rotation program should be followed. If tobacco is grown on the same farm, potatoes should not be planted within 200 yards to reduce the risk of aphid-transmitted viruses moving from one crop to the other.

Only certified seed stock should be purchased. Fifteen to 18 100-pound bags of seed potatoes are usually needed to plant an acre. Early potatoes are planted from March 15 to April 10 while a late crop is planted from June 15 to July 15 in Kentucky. Cultivation is necessary for weed control and to keep soil hilled up around plants.

Potatoes have been grown on raised beds with black plastic and drip irrigation. Plasticulture production of potatoes generally allows for easier harvest, particularly when harvesting over a long period of time. High soil temperatures under black plastic, however, can result in smaller tubers in mid- and late-season maturing varieties. In addition, plastic mulch can be an impediment to harvest in larger scale plantings; it is only recommended for small plantings of potatoes. Potatoes have also been grown under high tunnels for even earlier harvests.

### *Pest management*

Colorado potato beetle and flea beetles are the key insect pests of potato. Potential disease problems include blackleg, early blight, root knot nematodes, Rhizoctonia stem canker, scurf, scab and viruses. Late blight could become a problem during cool, wet growing seasons. Multiple control strategies are needed to prevent or reduce losses. The use of certified seed, varietal resistance, crop rotation, sanitation, seed treatment and pesticide applications are important strategies for managing disease and insect pests in potato



fields. Scouting to monitor insect populations and to identify disease problems early can help growers determine if, when and how often pesticides should be applied. Herbicides, mechanical cultivation, and a good rotation system can help manage weeds.

### *Harvest and storage*

The best time to dig potatoes will depend on the price and the market. For “new” potatoes or smaller-sized “gourmet” varieties that will be sold locally early in the season, it may be necessary to dig before the vines die back. In these situations, cutting or mowing the plants a couple of days prior to digging, while not necessary, can help firm up the skin. The vines of potatoes dug for storage should be dead prior to digging. Using approved chemicals to kill the plant tops will aid in earlier harvest and promote a firmer skin set.

Washing potatoes for fresh market is desirable. Potatoes may be stored for long periods at the proper temperature and relative humidity. Spraying potato plants with an approved growth regulator while still in the field can reduce sprouting in storage. Potatoes are marketed in a variety of containers depending on the size/type of potato and the market. Fingerling potatoes are often sold in clamshell containers or small mesh bags.

### *Labor requirements*

Labor needs for potato production are approximately 25 hours per acre. Harvesting fresh market potatoes requires approximately 50 hours per acre, with an additional 25 hours per acre for washing, grading, bagging and packing. Harvest labor requirements will be higher for hand-dug “new” or mini potatoes. Potatoes for chipping require approximately 20 hours per acre for harvest and marketing.

## Economic considerations

Initial investments include land preparation, fertilization, and purchase of seed potatoes. An additional start-up cost for a wholesale market operation can include the installation of an irrigation system.

Pre-harvest production costs (2017) for fresh market potatoes are estimated at \$1,050 per acre, with harvest and marketing costs at \$1,545 per acre. Total costs, including fixed costs, are approximately \$3,100 per acre. Presuming gross returns of \$3,300 per acre, returns to land, capital and management come to approximately \$55 per acre (assuming primarily wholesale price levels). Returns to land, labor, capital and management are estimated at \$205 per acre.

This projection assumes an average price of \$12 per hundredweight (cwt) for fresh market potatoes. This price is based mainly on wholesale price levels with limited direct sales. Producers marketing directly to customers at higher prices per pound (\$0.25 to \$1 retail) may increase the potential profitability of potato production. A 2017 estimate for producing 3,000 pounds of potatoes sold at \$0.50 per pound indicated returns to land, capital and management in the \$800 range for nearby or on-farm sales.

Production of potatoes for processing (chipping) would only be economically feasible with strong yields, larger acreages and contracts with wholesalers or processors that lock in reasonable price levels.

Growers in Kentucky have had some success marketing potatoes on a smaller scale through produce auctions and farmers markets; potatoes are typically sold by the peck or bushel during the early summer markets. Irish-type baking potatoes as well as small red and white potatoes have had strong demand from consumers as well as buyers in the local restaurant community. Historic prices can be found in Center for Crop Diversification produce auction and farmers market price reports online.

## Selected Resources

- An IPM Scouting Guide for Common Pests of Solanaceous Crops in Kentucky, ID-172 (University of Kentucky, 2008) <http://www.ca.uky.edu/agc/pubs/id/id172/id172.pdf>
- Price Reports (Center for Crop Diversification) <http://www.uky.edu/ccd/pricereports>
- Vegetable and Melon Budgets (University of Kentucky, 2017) <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.pdf>
- Commercial Potato Production and Management (Manitoba Agriculture, Food and Rural Initiatives, 2014) <https://www.gov.mb.ca/agriculture/crops/production/potatoes.html>
- Commercial Potato Production in North America (The Potato Association of America, 2010) <http://vric.ucdavis.edu/pdf/POTATOES/Commercial%20Potato%20Production%20in%20North%20America%202010.pdf>
- Organic Alternatives for Late Blight Control in Potatoes (ATTRA, 2004) <http://attra.ncat.org/attra-pub/lateblight.html>
- Potatoes (Agricultural Marketing Resource Center, 2014) <http://www.agmrc.org/commodities-products/vegetables/potatoes/>
- Potatoes: Organic Production and Marketing (ATTRA, 2009) <http://attra.ncat.org/attra-pub/potatoes.html>
- Potato Varieties: A Comprehensive List (Washington State University, 2013) <http://potatoes.wsu.edu/varieties/>
- Specialty Potatoes (University of California at Davis Small Farm Center, 1992) <http://sfp.ucdavis.edu/pubs/brochures/Specialtypotatoes/>

## Suggested Citation:

Kaiser, C. and M. Ernst. (2018). *Potatoes*. CCD-CP-113. Lexington, KY: Center for Crop Diversification, University of Kentucky College of Agriculture, Food and Environment. Available: <http://www.uky.edu/ccd/sites/www.uky.edu/ccd/files/potatoes.pdf>

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**April 2018**

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