



Winter Squash

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Introduction

Winter squash is a taxonomically diverse group of vegetables in the *Cucurbita* genus. Cultivars may belong to one of several species: *Cucurbita pepo* (acorn and spaghetti squashes), *C. maxima* (hubbard, buttercup and kabocha), *C. moschata* (butternut), and *C. mixta* (cushaw). Because these squash are harvested when mature and rinds have hardened, most types can be stored for use during the winter.

Marketing

Fresh market options for Kentucky-grown winter squash include wholesale markets, restaurants, farmers markets, community supported agriculture (CSA) subscriptions, produce auctions and roadside stands. Local grocery retailers are another option. In retail markets, point-of-purchase materials such as recipes and other preparation tips are effective marketing aids for increasing winter squash sales. Some winter squash types can be stored throughout the winter to extend the marketing season if humidity is maintained around 50-70 percent and temperature around 50-55 degrees F.

Market Outlook

Although winter squash does not move in the same volume as summer varieties, the quantity demanded of winter squash is strong as more people diversify their diets. A greater use of winter squash for decorative purposes has also helped increase demand. The key to maintaining farm profitability for winter squash in Kentucky may be storing the squash and arranging off-season sales when prices are higher.

Production Considerations

Cultivar selection

Winter squashes differ greatly in shape, coloration, size, skin texture and flavor. Flesh can vary in consistency from smooth



to fibrous to stringy. Because of the great diversity among squash types, it is important to select those with the qualities in demand by the intended market. Once that is determined, growers should select well-adapted cultivars and look for disease and pest resistance, if available.

Site selection and planting

Winter squash produces best on well-drained soil where 10 to 12 tons of well-rotted manure has been applied per acre. To help avoid some soil-borne disease problems, select fields where tobacco, pepper, tomatoes and other cucurbit crops have not been grown for at least three years. Winter squash performs well using black plastic on raised beds with trickle irrigation.

Squash is a warm-season crop that should not be planted in the field until all danger of frost has passed. The planting date should be based on the cultivar's number of days to harvest and the desired harvest date. Winter squash that matures during cooler weather has a higher sugar content and stores better. Honeybees are necessary for pollination and are essential for obtaining high yields of good quality fruit.



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If bees are not abundant at flowering time, hives should be placed next to the field, with at least one hive per acre.

Pest management

Potential disease problems include black rot, downy mildew, Phytophthora blight, powdery mildew, yellow vine and viruses. A good fungicide spray program is critical to produce quality fruit. Cucumber beetles, squash vine borer, spider mites and squash bugs can become serious pests if not controlled. Using insect traps or scouting to monitor populations can help the grower determine when and how often insecticides should be applied. Special precautions should be taken with insecticide treatments during bloom to avoid damaging bee populations.

Harvest and storage

Winter squash is harvested when the fruit is fully mature. Rinds should have hardened to the point where they cannot be easily punctured with a fingernail. A curing period of dry and warm weather helps to rapidly heal squash harvest injuries and increase sugar content. Curing can take place in the field but also in a greenhouse or other building if weather is cold and/or rainy at the end of the season. Curing is not recommended for acorn squash. Winter squash are often placed in storage; however, once removed from storage, they should be marketed immediately.

Labor requirements

Labor needs per acre for trickle-irrigated winter squash are approximately 40 hours for production and 80 hours for harvest. An additional eight to 10 hours may be needed for black plastic disposal.

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 for trickle-irrigated winter squash are estimated at \$1,650 per acre, with harvest and marketing costs at \$2,040 per acre. Fixed and variable costs can total over \$3,750. Since net 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. Conservative estimates represent the University of Kentucky's statewide average cost and return estimates for 2017-18.

Pessimistic	Conservative	Optimistic
\$(261)	\$76	\$517

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

Smaller-scale winter squash production can be profitable in Kentucky when plantings are well-managed and squash are sold directly to consumers or at premium wholesale prices. Small-scale budget estimates, developed using 2017 production assumptions, indicate plasticulture production of 45 50-pound boxes on 700 row feet could return more than \$600 to land and management when squash are marketed at a price equivalent to \$40 per box.

Selected Resources

- IPM Scouting Guide for Common Problems of Cucurbit Crops in Kentucky, ID-91 (University of Kentucky, 2009) 1.8 MB file <http://www.ca.uky.edu/agc/pubs/id/id91/id91.pdf>
- 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://www2.ca.uky.edu/agc/pubs/id/id36/id36.pdf>
- Commercial Squash Production, Bulletin 527 (University of Georgia, 2017) <http://extension.uga.edu/publications/detail.html?number=C527&title=Commercial%20Squash%20Production>
- Guide to Commercial Summer Squash Production, ANR-1014 (Alabama Cooperative Extension, 2005) <https://store.aces.edu/ItemDetail.aspx?ProductID=13753>
- Organic Pumpkin and Winter Squash Marketing and Production (ATTRA, 2010) <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=30>

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For additional information, contact your local [County Extension agent](#)