



# Tomatillo

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## Introduction

Tomatillo (*Physalis ixocarp*) is a small edible fruit in the Solanaceae family. A tan to straw-colored calyx covers the fruit-like a husk, giving rise to the common name of “husk tomato.” Native to Mexico and Guatemala, these tomato-like fruits are a key ingredient in a number of Latin American recipes, including salsa and chili sauces. Tomatillo may have potential as a specialty crop in some areas of Kentucky.

## Marketing

Tomatillos are sold by Kentucky farms through direct marketing channels, including farmers markets, CSAs and roadside stands. Market potential may be greater at farmers markets in areas with larger Hispanic populations. Local groceries, as well as restaurants specializing in Mexican or vegetarian dishes, may be interested in purchasing locally grown tomatillos. Production of tomatillo for direct sale to smaller specialty food manufacturers, or for use in foods prepared by the producer, may also be an option for Kentucky growers.

Large-scale production requires accessing wholesale marketing channels. Most fresh market shipments are sourced from Mexico and California; Florida and Michigan also ship through the commercial fresh market in the summer. Prospective growers should be sure of access to a market channel prior to planting on a large scale. The wholesale processing tomatillo market is largely supplied by production from Mexico; as of 2016, in-season produce terminal prices for processing tomatillos remained below the estimated cost of production in Kentucky.

## Market Outlook

The popularity of ethnic cuisine and an



increasing U.S. Hispanic population helped establish tomatillo as a nationwide

commodity within wholesale produce marketing channels. Producers considering growing tomatillo will likely have more success with fresh market retail sales in larger urban areas such as Louisville, Lexington, or Cincinnati. Novel or distinctive tomatillos, such as varieties with purple coloration, could be offered alongside classic green tomatillos; however, producers should identify the preferences of potential customers, as some may prefer certain colorations. Tomatillos have also been offered in fresh salsa “kits,” baskets of produce accompanied by a fresh salsa recipe. Restaurant chef interest remains strong in ethnic heirloom vegetables, like tomatillos.

## Production considerations

### *Cultivar selection*

Tomatillo is a highly variable crop with cultivars differing in plant habit, days to harvest, fruit flavor, and fruit size



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(¾ inch to 2½ inches). The fruit color at ripening is usually yellow to green, although some varieties may be wholly or partially purple. Growers should select only adapted varieties that have the qualities in demand for the intended market.

#### *Site selection and planting*

Tomatillos are grown very much like field tomatoes. Select a site in full sun with well-drained, fertile soil that warms up quickly in the spring. Low-lying fields that are subject to late spring frosts should be avoided. Tomatillos are very sensitive to freezing at any growth stage and should be planted only after all danger of frost has passed. On the other hand, high temperatures during flowering can result in poor fruit set. Flowering occurs in mid-June and fruits start to ripen in mid-July. Fruiting continues until frost.

Seedlings raised in a greenhouse take only about three to four weeks from seed to transplant. The plants can easily become too large for the container if transplanting is delayed. Some growers allow tomatillo plants to sprawl naturally on the ground; however, staking has a number of advantages, including ease of harvest. In addition, husks can rot if heavy rains occur at harvest and plants are not staked. Trellised plants will need to be tied about four times during the growing season. Stakes that are 5 to 6 feet long should be sufficient for most varieties. Plants can also be grown with black plastic mulch and drip irrigation.

#### *Pest Management*

Tomatillo has few insect or disease problems. Possible Kentucky insect pests could include aphids, cutworms, European corn borer, mites, and fruit worms. Scouting to monitor populations can help the grower determine when and how often insecticides should be applied. Tomatillos are generally considered quite disease tolerant, making a rigorous spray program unnecessary. Sprays can be held back until foliar disease symptoms first appear, especially prior to fruit set. It is important to note that pesticides registered for tomato are not necessarily labeled for use on tomatillo. Additionally, few selective herbicides are registered for tomatillo. The use of plastic mulch can provide weed control, as well as a number of other production advantages.

#### *Harvest and Storage*

Tomatillo plants can be extremely productive. An individual plant may produce 64 to 200 fruits in a

season. In test plantings at Ames, Iowa, yields averaged 212 pounds of fruit per plant, equal to approximately 9 tons per acre. Fruit can be harvested directly into buckets or boxes in the field. Fruit does not need to be sorted by size in packing containers.

Growers should check with buyers to determine the desired level of maturity for harvest. Generally, fruits are ready to harvest when the husk begins to split and the fruit is bright green; however, fruit color at ripening could vary with the cultivar. Tomatillos are usually hand-harvested several times throughout the growing season, generally at seven- to 14-day intervals. The end market or buyer will determine whether husks are to be removed or left intact. Removing the tight-fitting, papery husk is both time consuming and labor intensive on a large scale, but is less of a problem on smaller acreages. Husks are generally left intact on fruit sold for fresh market. Over-mature fruit has a very limited market because they are too sweet for most uses. However, these fruit have been used to make pies similar to those prepared with ground cherries (*Physalis pruinosa*), a close relative to tomatillo.

Fruit should be cooled immediately following harvest; however, tomatillos are sensitive to chilling injury during prolonged storage at temperatures below 41° F. Additionally, tomatillos should not be stored where they will be exposed to ethylene as this gas induces undesirable color changes in the mature fruit. Properly stored, tomatillos with husks have a shelf life of two to three weeks.

#### *Labor requirements*

Production labor needs should be similar to that of tomato (60 hours per acre). However, harvest labor for tomatillo will considerably exceed the 600 hours per acre required to harvest field tomatoes, mainly due to the large number of fruit per tomatillo plant. Husk removal will require additional hand labor. Plasticulture will add 10 to 18 hours more per acre, including plastic removal and 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. Labor-intensive harvest will require substantial operator time or hired labor expense.

A 2016 Kentucky cost of production estimate for 1/5-acre of tomatillo production on black plastic in Kentucky assumed yields of 3,600 pounds and a hired labor rate of \$12.50. Production costs were estimated at \$550 and harvest and marketing costs (labor, containers, sales fees) at \$2,350. Total expenses, including both variable and fixed, would come to approximately \$2,900. Gross returns of one dollar per pound (\$3,600 total) generated \$708 in returns to land, capital, operator labor and management. Subtracting the value of operator labor resulted in a \$212 loss (negative return) to capital and management.

Under the 2016 scenario, the breakeven price would be \$16 per 15-pound box, or \$1.07 per pound. This price is at the high end of the fresh tomatillo wholesale price range reported at some U.S. terminal markets during Kentucky's 2016 season. This scenario indicates producer profitability from tomatillos is likely far greater when selling at direct market outlets or at prices at or above tomatillo prices in mainline food retail stores.

## **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>
- Tomatillo Production in California, Publication 7246 (University of California Vegetable Research and Information Center, 1999) <http://anrcatalog.ucdavis.edu/pdf/7246.pdf>
- Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stock: Tomatillo, USDA Agricultural Handbook 66 (USDA, 2016, Page 579) <http://ucanr.edu/datastoreFiles/234-2927.pdf>
- Tomatillo (Husk Tomato) Produce Facts: Recommendations for Maintaining Post-Harvest Quality (University of California-Davis, 2006) [http://postharvest.ucdavis.edu/Commodity\\_Resources/Fact\\_Sheets/Datastores/Vegetables\\_English/?uid=35&ds=799](http://postharvest.ucdavis.edu/Commodity_Resources/Fact_Sheets/Datastores/Vegetables_English/?uid=35&ds=799)

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*Reviewed by Shawn Wright, UK Extension Specialist*

*Photos courtesy of John Strang (fruit close-up) & Nathan Howard (in field)*

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