

Tomatillo

Introduction

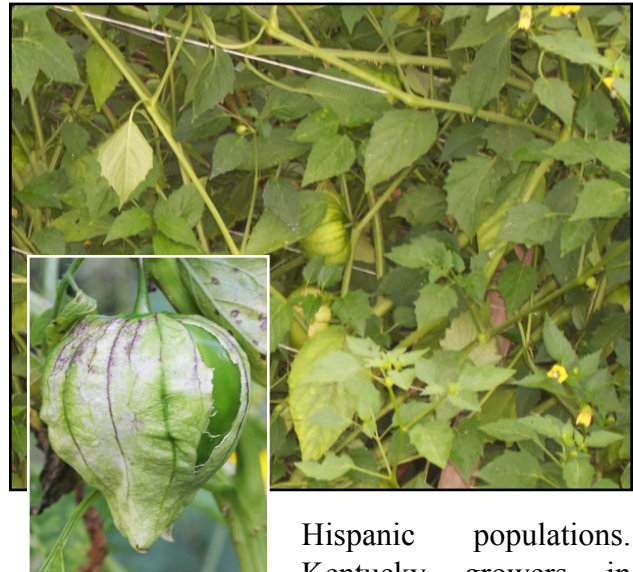
Tomatillo (*Physalis ixocarp*) is a small edible fruit in the Solanaceae family. A tan to straw-colored calyx covers the fruit like a husk, giving rise to the common name of “husk tomato.” Native to Mexico and Guatemala, these tomato-like fruits are a key ingredient in a number of Latin American recipes,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

Marketing

Tomatillos could be sold at farmers markets, particularly in cities where a large Hispanic population is present. Restaurants specializing in Mexican or vegetarian dishes may be interested in purchasing fresh, locally grown tomatillos. Specialty groceries could provide another marketing option. 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 usually requires knowledge of wholesale marketing channels that can handle larger volumes of produce. Currently Mexico (canned) and California (fresh market) dominate the wholesale tomatillo market. Prospective growers should be sure they have a market prior to planting on a large scale.

Market Outlook

The potential for a tomatillo market lies with both the increased popularity of Mexican food in the U.S. and with rising



Hispanic populations. Kentucky growers in

Daviess County were able to tap into this market when they produced 11 acres of tomatillos on contract with a wholesale distributor in 2006. Unfortunately, due to the crop’s high labor needs, they found that large-scale tomatillo production was not profitable for them. However, the Extension Associate connected with the project has indicated that small plantings of tomatillo may be feasible for fresh market retail sales in larger urban areas, such as Louisville, Lexington, or Cincinnati.

Production Considerations

Cultivar selection

Tomatillo is a highly variable crop with cultivars differing in plant habit, days to harvest, fruit flavor, and fruit size ($\frac{3}{4}$ 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.

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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. Fungicides and insecticides 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.

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 since 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 since 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). However, harvest labor for tomatillo will considerably exceed the 600 hours required to harvest 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, mostly for the removal and disposal of the plastic after harvest.

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.

There are no published budgets for tomatillo production available. Nor did the West Kentucky plantings in Daviess County provide sufficient data to develop a budget. However, based on the fact that their wholesale contract buyer paid approximately \$0.40 per pound while harvest costs were in the vicinity of \$0.35 per pound, this one particular wholesale market experience was not profitable. Fresh market sales typically bring greater returns, however. Case in point: a produce price list from a Brooklyn, New York market indicated fresh, non-organic, U.S.-grown tomatillos were selling for \$1.83 per pound through their cooperative in November 2008. Current estimates indicate that smaller scale Kentucky production (1/5 acre) for wholesale or direct marketing will be profitable in the \$0.75 per pound range when plants are producing 2½ pounds of tomatillos per plant.

The following budget information is based on 1/5 acre of tomatillos produced on black plastic with trickle irrigation and yielding 3,600 pounds. Production costs are estimated at \$475, with harvest and marketing costs at \$2,200. Total expenses, including both variable and fixed, would come to approximately \$2,900. Presuming gross returns of \$3,600, returns to land, labor, capital, and management would be approximately \$700. Assuming an operator wage rate of \$15 per 1/5 acre, return to land, capital, and management for

tomatillos marketed at a price of \$1 per pound would be between \$150 and \$200.

Since returns vary depending on actual yields and market prices, the following per 1/5 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 2012.

PESSIMISTIC	CONSERVATIVE	OPTIMISTIC
\$(270)*	\$170	\$410

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

Selected Resources

- An IPM Scouting Guide for Common Pests of Solanaceous Crops in Kentucky, ID-172 (University of Kentucky, 2008) 2 MB file <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, 2004) <http://www.ba.ars.usda.gov/hb66/137tomatillo.pdf>
- Tomatillo (Husk Tomato) Produce Facts: Recommendations for Maintaining Post-Harvest Quality (University of California-Davis, 2006) <http://postharvest.ucdavis.edu/pfvegetable/tomatillo/>

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Photos courtesy of John Strang (fruit close-up) & Nathan Howard (planting), University of Kentucky

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