



Cornell University  
College of Agriculture and Life Sciences  
Entomology Department

## Tomatillo (*Physalis philadelphica*)

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### Botanical classifications, Origins, Uses

Tomatillos (also referred to as “miltomate” in Mexico) are in the *Physalis* genus and Solanaceae plant family, related to crops such as tomato, potato, eggplant, ground cherry and pepper. Native to Mexico and Central America, they have been cultivated since the pre-Columbian era and are a staple in Mexican and Guatemalan cuisines. Tomatillo and related *Physalis* species grow throughout North and South America.

### Variety Selection

While replicated field trials are still necessary, preliminary data from 15 varieties of tomatillo grown in Tompkins County, NY in 2019 show considerable variation in yield, fruit color, sugar content and susceptibility to pests.

Of the commercial varieties that were screened, ‘Cisneros,’ and “Purple Tomatillo” were susceptible to insect pests, while the cultivars ‘de Milpa’ and ‘Tarahumara’ received relatively little pest damage. ‘Cisneros,’ ‘Super Verde,’ ‘de Milpa’ and ‘Siquieros’ yielded highest.

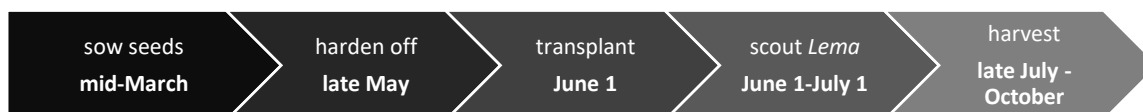
### Production

#### **Soil and climate**

Tomatillos are competitive growers in the Northeast US that can thrive even in poor quality, low nutrient soils, though trials show they are more productive and vigorous in a well-drained loam amended with nutrients; those with a balanced ratio of NPK (10:10:10) are best. Tomatillos are adapted to arid regions, so therefore don’t handle excessive soil moisture very well.

Tomatillos will grow in the northeast US, but as they are from a warm climate, prefer warmer, full-sun conditions, with optimum growth at 25-32° C (77-89° F).

#### **Growing timeline**



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### Germination

Tomatillos have relatively no-fuss germination requirements. Sow seeds ¼" deep in potting soil. Germination typically takes 7-14 days.

### Trellising

Recommended for ease of harvest and fruit quality.

### Pollination

Tomatillos typically require pollen from at least one other plant to successfully set fruit. Several types of pollinators visit tomatillo in NYS, including bumble, honey, sweat and colletid bees.

### Harvesting

Fruits can be harvested when the calyx is mostly filled out by the fruit, for a tart product. For a sweeter product, harvest fruits once they have completely filled out the calyx, and it has started to brown and become papery. The calyx must be removed before consumption.

### Insect Pests in New York State



*Lema trivittata* (pictured above) is a beetle that causes chewing damage on the leaves of tomatillo and related species. It is ubiquitous in the northeast US and can do extensive early season damage, especially if transplants are not large.

Management: Non-pesticidal methods of controlling this pest include removing eggs and larvae from foliage. Larvae typically feed in groups and are relatively easy to spot. There is no current



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research on efficacy of common insecticides. Pyrethrin may be an effective method of chemical control of this pest.



*Chloridia subflexa* (pictured above; previously named *Heliothis subflexa*) is a moth that infests the fruits of tomatillo, rendering it unmarketable, because it burrows into and consumes the fruit from the inside out. A close relative, the tobacco budworm *Heliothis virescens* can also infest the fruits.

Management: In Mexico, farmers use broad spectrum pesticides to control this pest, but there are not pesticides currently labeled for use in NYS. Pyrethrin or azadirachtin may be effective, but to date there is not data available on efficacy of different pesticides. It has not been shown effective to scout for eggs because eggs are very difficult to find. There has been some work looking into pheromone traps as a way to detect early infestation of this pest. Future research will identify resistant cultivars that grow well in NYS.





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*Symmetrischema lavernella* (pictured above using photos from (Roulston et al. 2017)) is another moth that infests the fruit of wild *Physalis* species, in a similar fashion to the Subflexa straw moth. To date, it has not been reported in tomatillo except from 2019 field trials in NYS. If this pest is present at a site, it may infest tomatillos depending on whether wild *Physalis* co-occurs at the site, and the moth's preference for wild versus cultivated plants. Very little is known about control of this pest.

### **Disease**

While generally resistant, tomato yellow leaf curl (vectored by whiteflies) and turnip mosaic virus (vectored by green peach aphids) have been documented in tomatillo production in Mexico, Guatemala and California.

### **Yield**

Depends on the variety, but a healthy plant can yield 10-15 pounds.

## References and Further Reading

Hatfield, M J. "Heliethinae, Subflexus Straw Moth - Chloridea Subflexa." *BugGuide*, 7 Feb. 2015, [bugguide.net/node/view/1038889](http://bugguide.net/node/view/1038889).

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