Tuta absoluta

Photo: Marja van der Straten, NVWA Plant Protection Service, www.bugwood.org, #5432149

Tuta absoluta

- Small moth native to South America
- Major pest of tomatoes and other solanaceous plants (nightshades)
- Larvae mine inside leaves and also feed inside fruits
  - Decreases production and fruit quality
  - Can result in complete plant loss

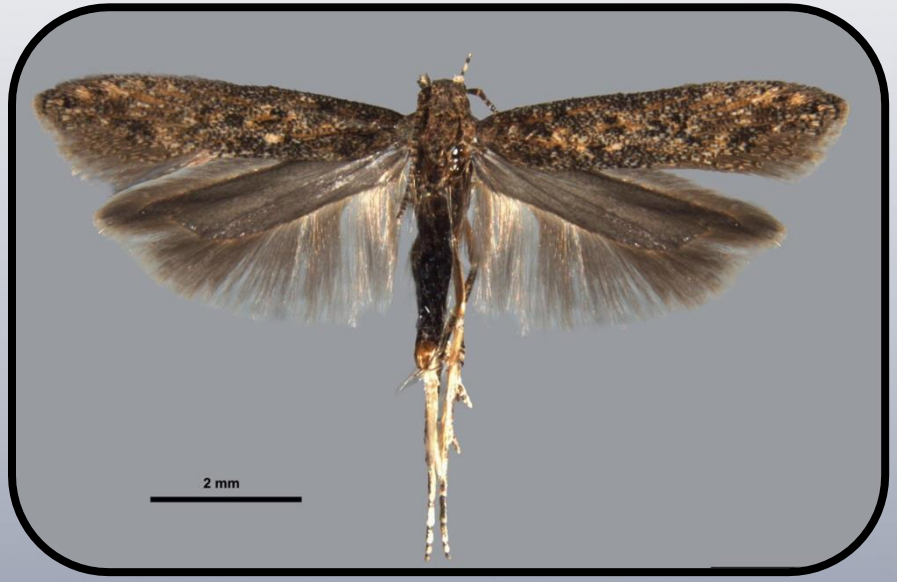
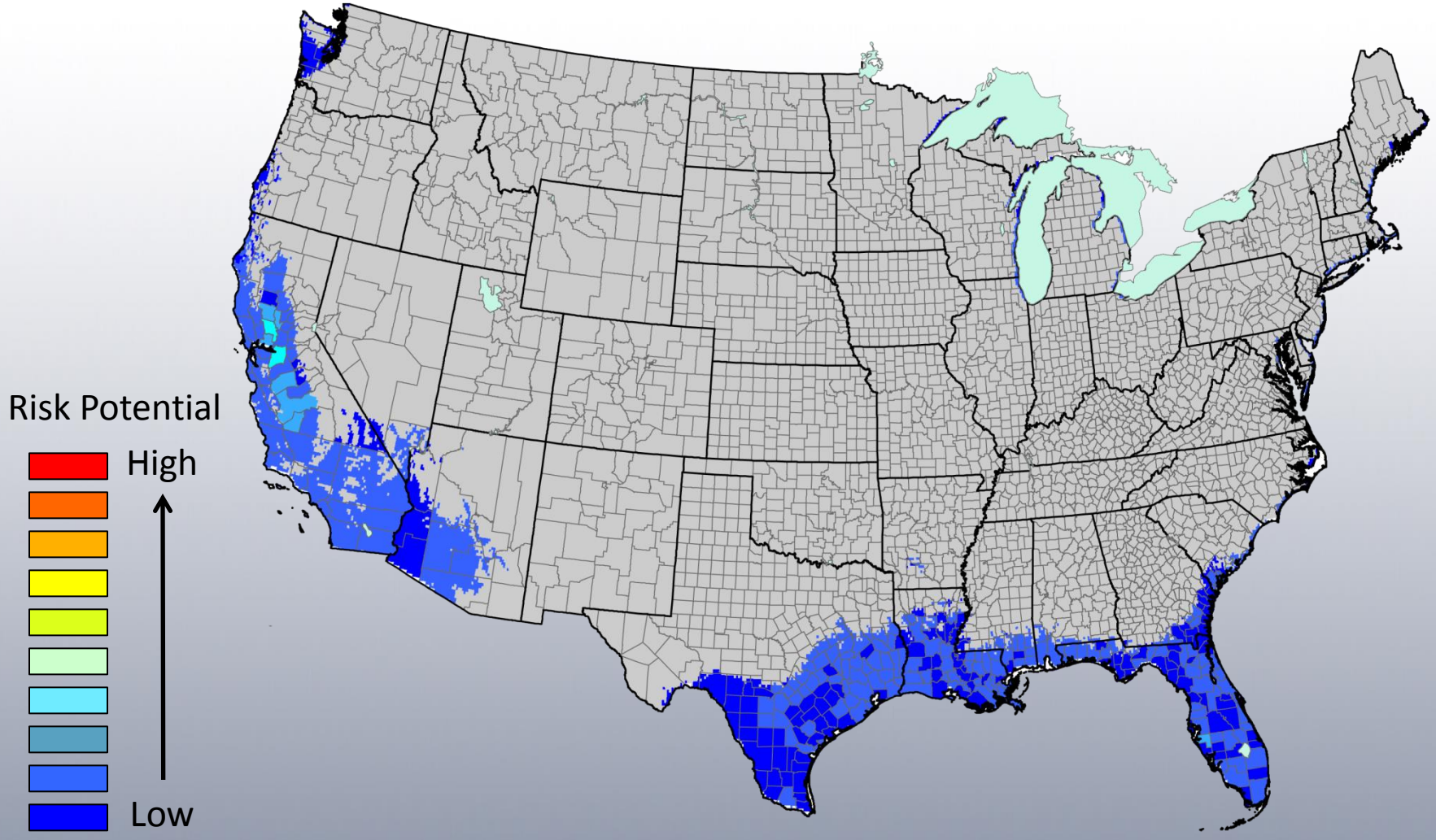


Photo: Sangmi Lee, Hasbrouck Insect Collection, Arizona State University, www.bugwood.org, #5432148

Distribution

- Native to South America
- Spread to Europe, Central America, Africa, and the Middle East
- Currently, it is not known to occur in the U.S.

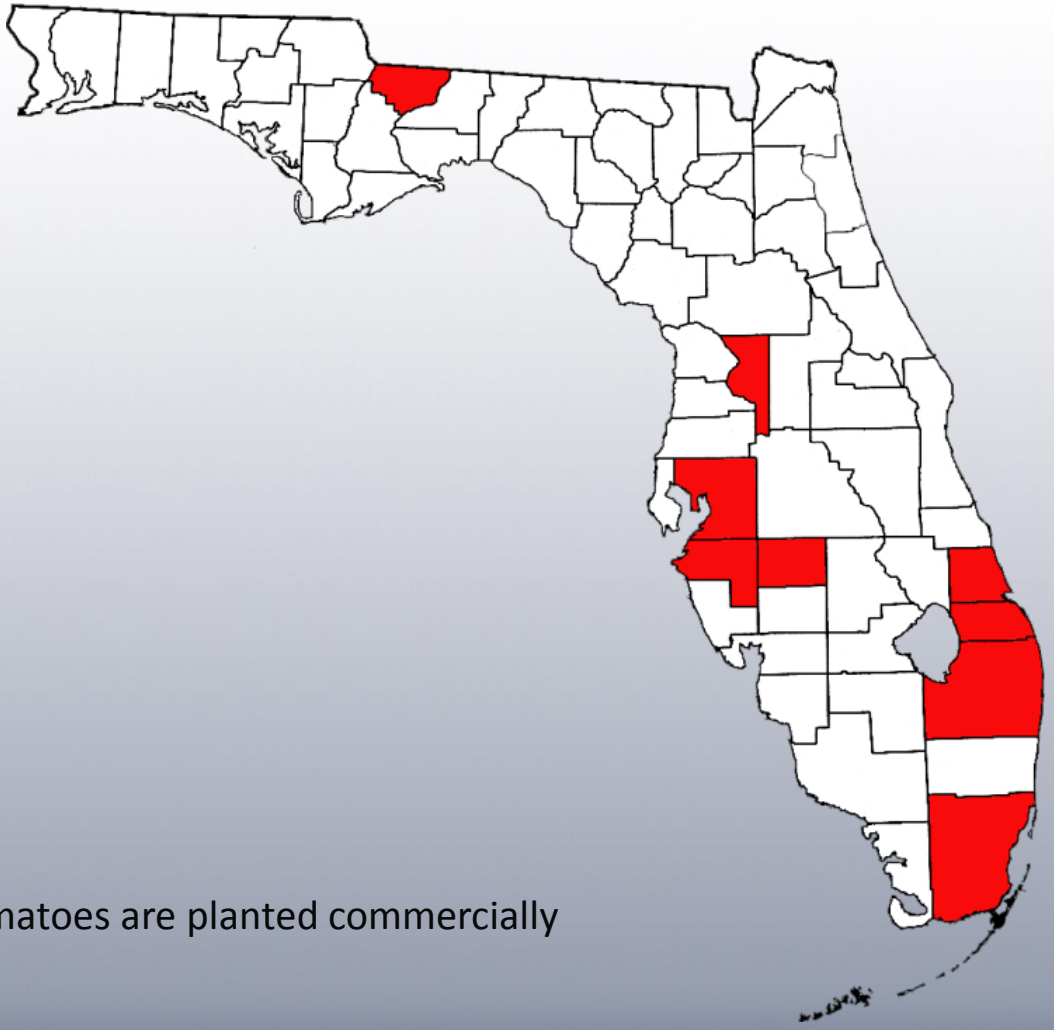
Areas at Risk of Establishment



Map courtesy of *http://www.nappfast.org/caps_pests/Caps%20edits%20for%20matrix.htm*.

"This Risk map is a combination of the Host and Climate suitability. A Risk map depicts, with relative scale, the potential areas that are unsuitable or highly suitable for growth and establishment."

Counties that Grow Tomatoes in Florida



Counties where tomatoes are planted commercially

Map courtesy of *Florida Agriculture by Numbers.*

Susceptible Plants

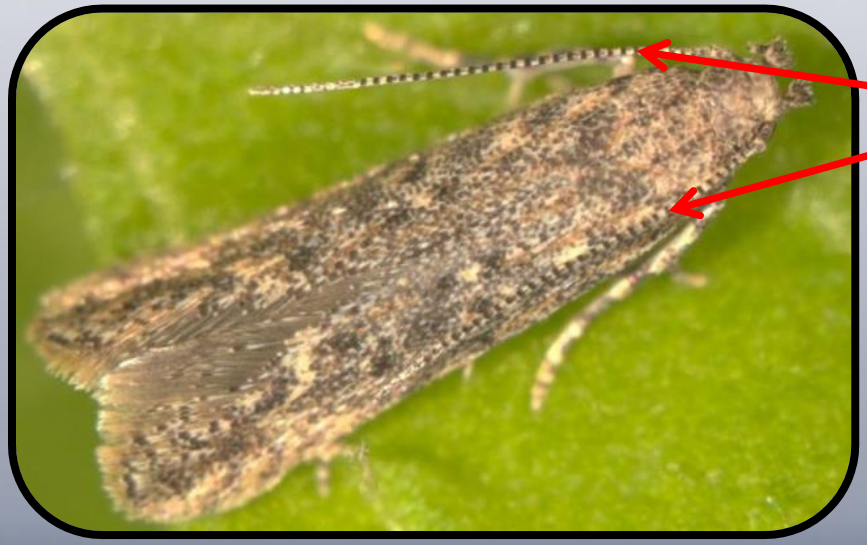
- Prefers tomato
- Will also feed on other nightshades, such as potatoes, eggplant, and peppers
- Other host plants possible but unlikely and incidental

Photos: Wikimedia commons

Identification: Adults

- Filiform antennae, alternating rings of light and dark scales
- Recurved labial palps
- Body length up to 10 mm

Light/dark bands on antennae



Recurved (upcurved) labial palps

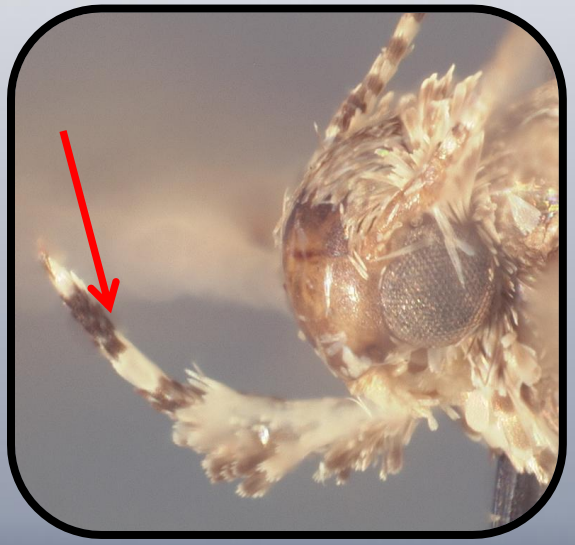


Photo credit: Marja van der Straten, NVWA Plant Protection Service, www.bugwood.org, #5432149 and James Hayden, FDACS Division of Plant Industry, Bugwood.org, #5499

Identification: Adults

Hindwings have apical concave margin and fringed edges

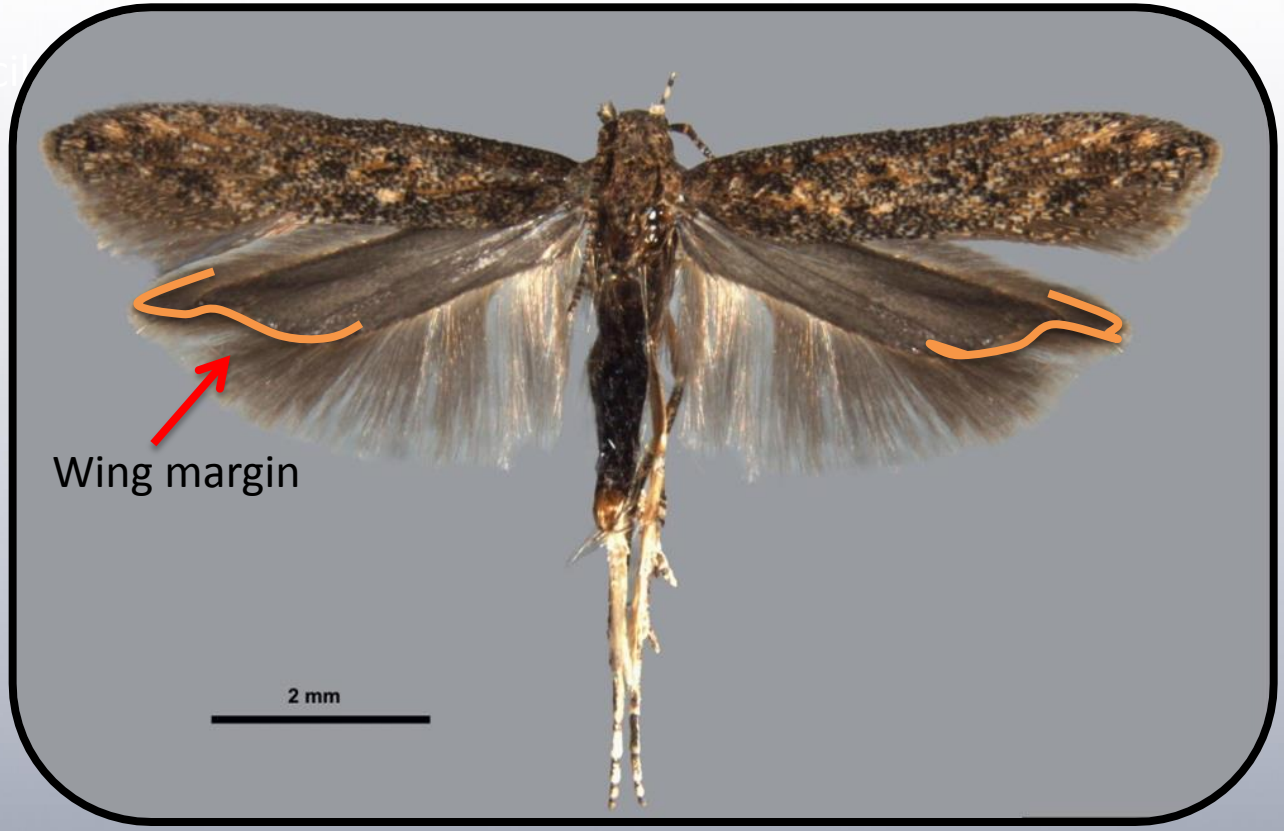


Photo: Sangmi Lee, Hasbrouck Insect Collection, Arizona State University, www.bugwood.org, #5432148

Identification: Larvae and Pupae

"hair pencils"

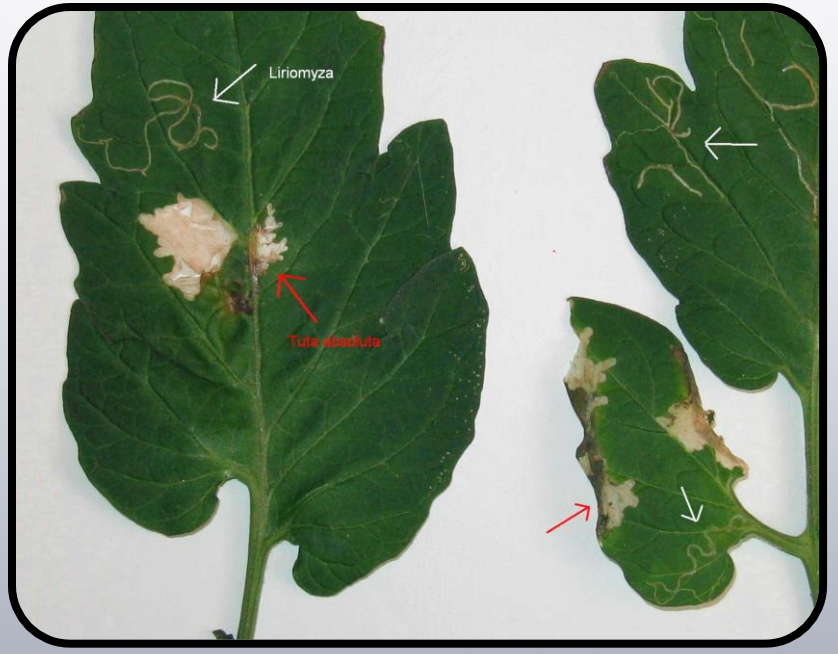
Photos: (*Left*) Marja van der Straten, NVWA Plant Protection Service, Bugwood.org, #5431766 and #5431769

Life Cycle

- Can complete up to 12 generations per year depending on temperature
- The adults mate multiple times
- Females can lay up to 260 eggs
- Can overwinter in the following stages:
  - Egg
  - Pupa
  - Adult

Damage

- Larvae cause damage when they tunnel through leaves, shoots, flowers, and fruit
- Produce mines and galleries and large amounts of waste as they tunnel through plant tissue
- Galleries and pinholes can lead to secondary infections by pathogens

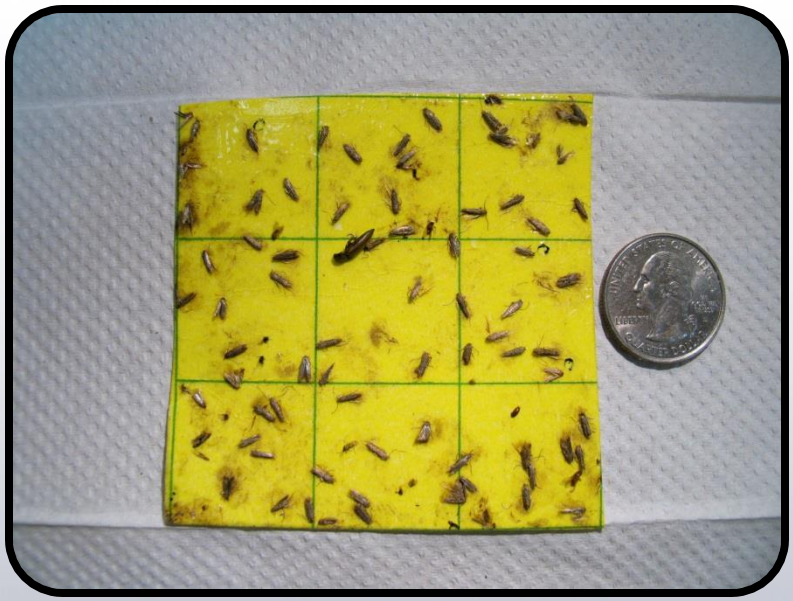


Leafmines of *Liriomyza* sp. (white arrows) and of *Tuta absoluta* (red arrows) on tomato leaves

Photo credit: Wietse den Hartog, National Reference Centre, Plant Protection Service Wageningen (NL)

Monitoring and Management

- Monitoring:
  - Scouting
  - Synthetic pheromones in delta or sticky traps



Sticky board with males attracted to pheromone

- Cultural management:
  - rotation with non-solanaceous crops
  - ploughing for weed control
  - adequate fertilization and irrigation to minimize plant stress
  - destruction of infested plants
  - removal of plant debris after harvest

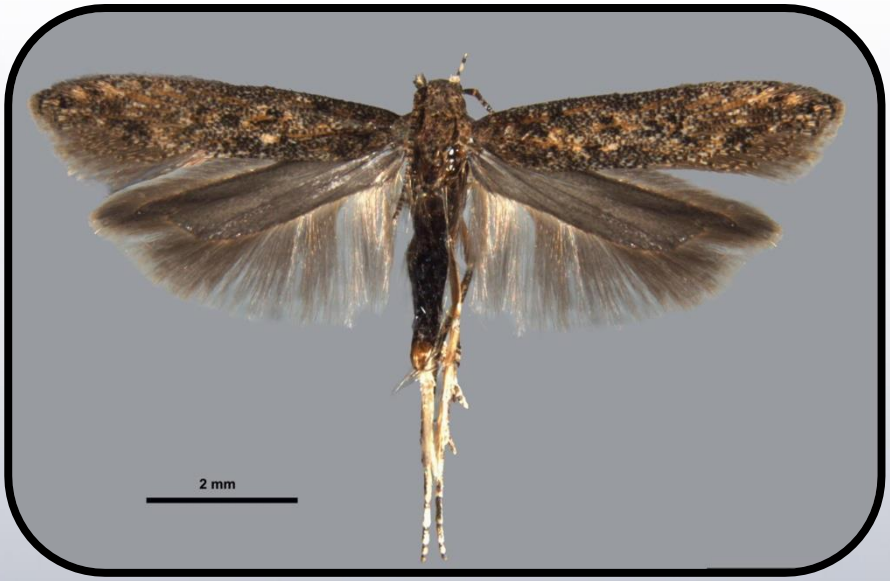
Photo credit: Dr. J.E. Hayden, FDACS-DPI

Monitoring and Management

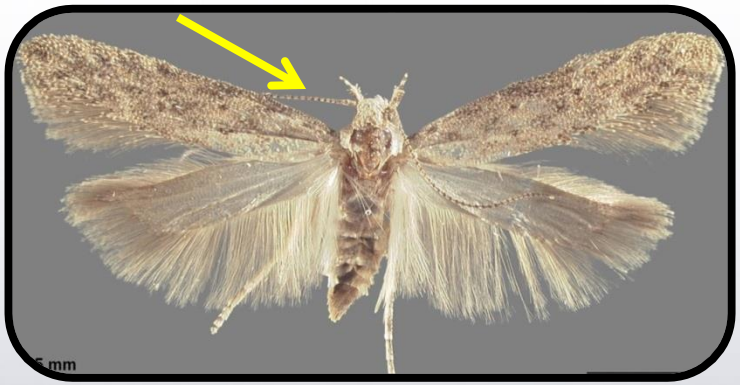
- Chemical Management:
  - insecticides can be effective, but some evidence of resistance
- Biological control:
  - research being done on various parasitoids or predators
- Resistant cultivars are also being investigated

Look-alike Species

Tuta absoluta



tomato pinworm



potato tuber moth

Hair pencil of tomato pinworm

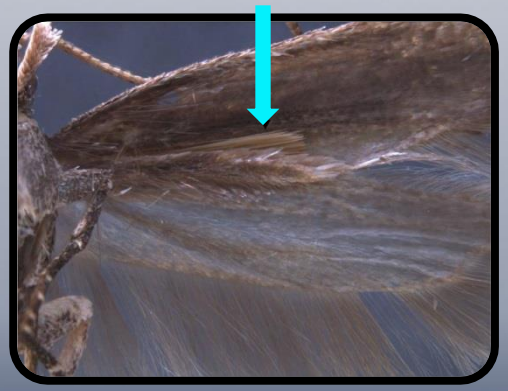


Photo: Clockwise upper left to right: *Tuta absoluta* - Sangmi Lee, Hasbrouck Insect Collection, Arizona State University, www.bugwood.org, #5432148; tomato pinworm - James Hayden, FDACS Division of Plant Industry, www.bugwood.org, #5499727; potato tuber moth - James Hayden, FDACS Division of Plant Industry, Bugwood.org, #5499679; hair pencil - James Hayden, FDACS-DPI

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Collaborating Agencies

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- Cooperative Agricultural Pest Survey Program (CAPS)
- Florida Department of Agriculture and Consumer Services (FDACS)
- National Plant Diagnostic Network (NPDN)
- Sentinel Plant Network (SPN)
- Protect U.S.
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