



Adult *Tuta*



TUTA ABSOLUTA



Tuta egg



Tuta larva

***Tuta* LIFE CYCLE**

Tuta absoluta reproduces rapidly, with 10-12 generations per year. The total life cycle is completed within 30-35 days. Adults are nocturnal and hide between leaves during the daytime. Adult females lay eggs on host plants and a mature female can lay up to 260 eggs before completing its life cycle. Eggs are small, cylindrical, creamy-white to yellow and approximately 0.35 mm long. Egg hatching takes place 4-6 days after egg laying. The larva is cream-colored with a characteristic dark head. *Tuta* has four larval instars. Pupation may take place in the soil, on the leaf surface or within mines. The adults are small moths with 5-7 mm body length. They can be easily identified by their thread-like antennae and forewings with grey scales and black spots.

COUNTRY SENSITISATION WORKSHOP
26 JANUARY 2016

WHAT IS *Tuta absoluta*?

Tuta absoluta (Lepidoptera: Gelechiidae) is a species of moth originating in South America. Tomato is its main host plant but *Tuta* also attacks other crop plants of the nightshade family, including potato, eggplant, pepino and tobacco. It is also known to thrive on several solanaceous weeds, including *Datura stramonium* and *Lycium chilense*. *Tuta absoluta* was detected in Spain in 2006 and has since spread into Europe, the Middle East, South Asia and Africa possibly through contaminated produce and packaging material. It has become well known as a serious pest of tomato crops and is currently a threat in sub-Saharan Africa, where it has recently invaded farmers' fields in East Africa.

EVENT PARTNERS



AVRDC
The World Vegetable Center





TUTA ABSOLUTA

What DAMAGE does *Tuta* cause?

T. absoluta attacks tomatoes at all developmental stages, from seedling to mature fruits, in both the field and protected areas. The larvae feed between the leaf layers causing irregular mines. They eventually tunnel into the stems or burrow into the fruits. Due to its high reproductive rate within a short period of time, *T. absoluta* can cause up to 100% loss of tomato fruits if left uncontrolled.



Damaged tomato leaves

MANAGEMENT STRATEGY

Farmers rely heavily on pesticide sprays to control *T. absoluta*, and the pest can quickly develop resistance to chemical pesticides. It cannot be killed by contact pesticides because of concealed larval feeding. The proposed strategic approach to minimize the impact of *T. absoluta* damage in tomatoes is an IPM strategy that is based on removal of alternate host plants, prompt removal and destruction of infested fruits, mass trapping with sex pheromone lures, bio-pesticides such as *Bacillus thuringiensis* and neem, and bio-control agents, especially parasitoids. These technologies were developed and are being used in other parts of the world. This integrated pest management (IPM) strategy needs to be validated in Tanzania under local conditions, before it is promoted on a larger scale among growers in the country.



Damaged tomato fruit

RESEARCH on *Tuta* in TANZANIA

AVRDC – The World Vegetable Center, in collaboration with the Tanzania Horticultural Association (TAHA), and *icipe* - African Insect Science for Food and Health, develops, tests and adapts sustainable IPM options for *T. absoluta* to increase tomato production and improve the income and nutrition of small-scale tomato growers in Tanzania. The following components of an IPM strategy are currently being developed:



A sex pheromone lure

- Identifying alternate host plants, including weed species, to suggest proper habitat management
- Evaluating bio-pesticides for prophylactic (e.g. oviposition repellents) and curative (e.g. larval control) control of *Tuta* on tomato.
- Identifying resistant sources in close relatives of cultivated tomato and incorporating them in *Tuta* resistance breeding program.

In addition, exploration and introduction of efficient natural enemies, development of newer bio-pesticides based on fungi and viruses, and habitat management, especially intercropping, are being carried out by *icipe*.



Research Assistant Elias Shem

More information:
AVRDC – The World Vegetable Center
<http://avrdc.org>

Tanzania Horticultural Association (TAHA)
<http://taha.or.tz>

References
<http://www.tutaabsoluta.com/tuta-absoluta;>

Additional photos: Marja van der Straten, Bugwood.org,
[http://www.agripest.net,](http://www.agripest.net)