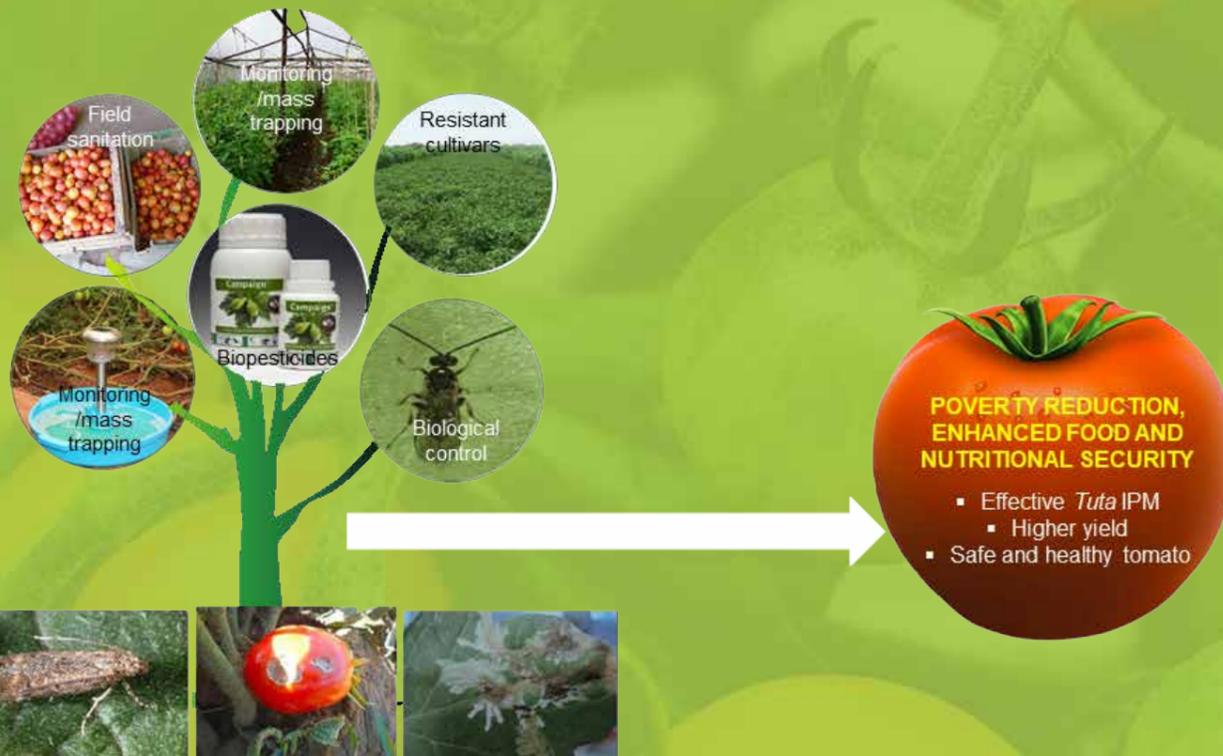


## Tuta absoluta management toolbox



# Tomato Leaf Miner

(*Tuta absoluta*)



### icipe – Working in Africa for Africa...

International Centre of Insect Physiology and Ecology (*icipe*) – was established in 1970 in direct response to the need for alternative and environmentally-friendly pest and vector management strategies. Headquartered in Nairobi, Kenya, *icipe* is mandated to conduct research and develop methods that are effective, selective, non-polluting, non-resistance inducing, and which are affordable to resource-limited rural and urban communities. *icipe's* mandate further extends to the conservation and utilisation of the rich insect biodiversity found in Africa.

*icipe* contributes to sustainable food security in Africa through the development of integrated pest management systems for major agricultural and horticultural crops. Such strategies include biological control and use of behaviour-modifying and arthropod-active botanicals. *icipe* puts emphasis on control approaches that have no detrimental impact on the environment. These options are always designed to fit the needs of the farmers and are developed on-farm and with farmers' participation. In addition to fruit flies, other key areas of *icipe's* research include pests of tomato, brassicas, beans, and staple food crops such as maize and sorghum.

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### PARTNERS



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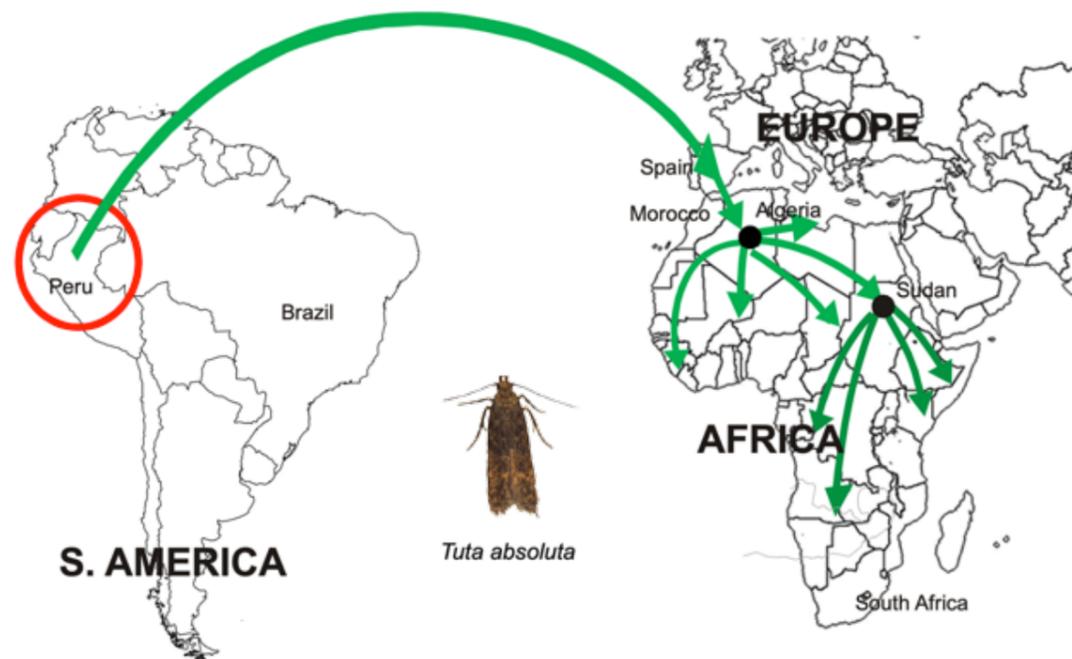


## Tomato Leaf Miner: *Tuta absoluta*

*Tuta absoluta* commonly known as tomato leaf miner, is a small yet highly destructive pest that mainly affects tomatoes. Although originally from South America, it has spread to several countries in Europe, Asia and almost all countries in Africa within a short time, causing huge losses to tomato farmers. Farmers have resorted to heavy use of synthetic chemicals to save their crops. However, the pest is known to develop resistance to the pesticides owing to its high reproductive capacity, producing many generations per year.



### *Tuta absoluta* invasion pathway



*Tuta absoluta* is native to Peru in South America. It was detected for the first time outside Peru in 2006, and thereafter, it spread rapidly to the Mediterranean region, Europe, South Asia and Africa

### *Tuta absoluta* behavior

The pest usually hides under plant leaves during the day and sometimes leaves the tomato garden or greenhouse to seek refuge in the surrounding vegetation. At sunset, the female and male moths fly around and mate, resulting in fertilized females who lay eggs on the tomato leaves, flowers, stems and tomato fruits. Each female moth can survive for up to 40 days during which period it lays up to 260 eggs! If not controlled, only 10 moths in a farmer's greenhouse or open field can produce up to 2 600 eggs which hatch into *Tuta absoluta* moths in just one month.



*Tuta absoluta* caterpillar eating away the green part of the leaf from inside

### Symptoms and crop damage

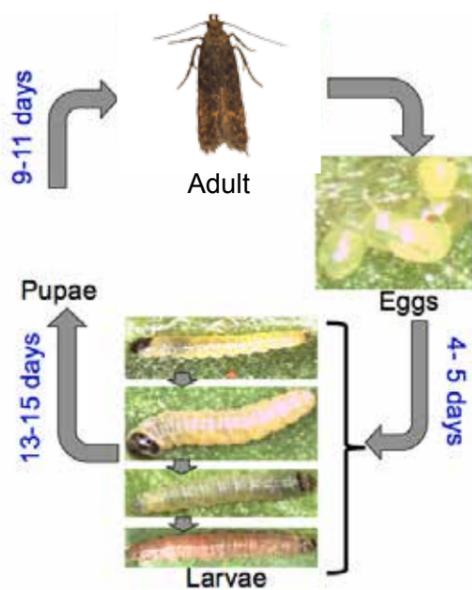
The tiny *Tuta absoluta* caterpillars tunnel into the leaves, eating the green part of the leaf, causing the leaves to dry out. They also move from one tomato plant to another by swinging using a silk web they produce, resulting in more damage to fruits and plants.



Tomatoes rotting as a result of secondary infection following initial attack by *Tuta absoluta* caterpillars

They also tunnel into tomatoes causing deformities and rotting due to secondary infection.

- All aerial parts of the plant are attacked by the pest
- Young larvae penetrate the leaves for feeding and development
- Mines are created on the leaves
- The larvae also attack the stems, young shoots, flowers, apical buds and fruits



### Life cycle of *Tuta absoluta*

The life cycle comprises four stages of development namely the egg, larvae (caterpillar), pupa and adult moth. The duration from egg to adult moth emergence can be up to 38 days depending on environmental conditions such as temperature. The caterpillar undergoes four changes in size before it turns into a non-feeding pupa either in the soil, on the leaf surface or inside the tunnels called mines which are created by the feeding action of the caterpillars.

### Effects of *Tuta absoluta* damage on the tomato plant

- Necrotic mines (dead and dried out areas) on leaves hinders the plant from making its own food through the process of photosynthesis.
- Heavy infestation leads to leaf defoliation (falling of leaves from the plant) and death of the plant
- Mining damage on stems causes malformation of the plant and results in plants which fall over due to failure to support themselves upright
- Mines and galleries on fruits lead to fruit rot
- Reduces aesthetic appeal of tomato and their market value



Blemishes on tomatoes as a result of *Tuta absoluta* damage leads to loss in market value