Tomato Leaf Miner  
*Tuta absoluta*

**ALLERT- New Pest Reaches Iraq- 2011**

May 2011, a new pest affecting both greenhouse and open field tomato crops appeared in Basrah, Muthanna, Dhi Qar and Ninawa. By June the Iraqi Ministry of Agriculture confirmed that it had reached Sulaymaniyah, and the Syrian border. The tomato leaf miner, *Tuta absoluta*, originated in South America in the 80s, was first detected in Spain in 2006, has rapidly spread across the Mediterranean region and has now reached South East Iraq. Crop damage from this pest can reach 100%.

**DESCRIPTION OF THE PEST**

**Eggs** are oval-cylindrical, usually laid on the underside of leaves, on buds, or on the calyces of green fruit. They are cream-colored and very small, being about 0.2 mm in diameter and less than 0.4 mm on the longest axis.

**Larva**

Larvae are white or cream in early instars, with a black head. As they grow older, they turn pink or green with a brown head. The prothoracic shield just behind the head has paler patches in later instars, though the exact markings are variable. There are no other distinctive markings. Larval identification can be made from leaf mines, as few other larva mine tomato leaves.

**Pupae**

Pupae are brown, and less than 6 mm long.

**Adult**

The adult moths are small, with a body length of around 7mm. They are a brown or silver color with black spots on the narrow wings. The antennae are long, and the legs and palps are ringed with black and brown.
**Tuta absoluta** can produce 10-12 generations per year with females laying up to 260 eggs in each generation. The total life cycle is completed within 30-35 days. Adults are nocturnal and hide between leaves during the day time. In Iraq, *Tuta absoluta* can over-winter as eggs, pupae or adults. The larval period is the most damaging period, usually completed within 12-15 days. However since the larvae can delay maturity as long as food sources are available, they may be active feeders for the entire crop cycle. *(See photo above).*

**DAMAGE**

This pest attacks tomato leaves, stems, flowers, and fruits. It also attacks potato, eggplant and bean crops. Most feeding damage is done to the leaves and stems of tomatoes creating blotch leaf mines that are visible on both sides of the leaf. There can be several mines on a single leaf. The mines have dark frass (excrement) visible inside, and over time the mined areas will turn brown and die. Larvae prefer to feed in new growth, e.g., apical shoots, thus affecting the overall growth and yield of the plant, even if the fruit is not attacked. Up to 100% losses have been reported in tomato crops, and even where control programs are implemented, losses can still exceed 5%. Fruit are usually only attacked if the infestation of *Tuta absoluta* is heavy, but even small amounts of damage mean that the fruit will not be suitable for market. Secondary rot can occur in the wounds, rendering the fruit unfit for consumption.

**MANAGEMENT AND CONTROL**

*Tuta absoluta* is a very challenging pest to control. Effectiveness of chemical control is limited due to the insect's nature of internal plant feeding as well as its rapid capability to develop insecticide resistant strains. The use of biological controls are still largely under development and not yet ready to combat this pest in a cost effective way. Pheromone traps can be used as an early detection tool. Mass trapping and lure and kill application of pheromone has been found to be effective to control *Tuta absoluta*.
Qlure –TUA (Tuta absoluta), a clear film pheromone treated sticky trap, (See photo) with its high capture rate is ideal for mass trapping of Tuta absoluta particularly in greenhouse tomato cultivation. It will reduce Tuta absoluta populations in greenhouses particularly if insect exclusion nets and tight doors were utilized. Although applicable to open field production, for practical reasons, application in protected agriculture has a higher chance of success.

IPM strategies are being developed to control Tuta absoluta.

The following insecticidal active ingredients have exhibited satisfactory efficacy against Tuta absoluta larval infestations in Spanish outbreaks; Bacillus thuringiensis var. kurstaki (Dipel DF), and spinosad (Conserve*/Tracer**).

Contact your agricultural extension agent for additional information on potentially effective chemical controls.

There are a number of cultural control measures that aid the eradication of this pest. Crop rotation, crop residue removal and the selective removal and destruction of infested plant material are important practices that help eradicate this pest in greenhouses. Wild host plants in infested areas should be removed and destroyed, to prevent the buildup of a potential population reservoir. All infested plant material should be removed and disposed of in a phytosanitary secure manner.

Farmers are currently advised to adopt the antivirus ventilation screens introduced by USAID-Inma, to screen or cover all other entry points into greenhouses and to control the insects with pheromone traps.