

ICIPE Makes the first release of parasitoids into the farm in fight against Tuta Absoluta

ICIPE makes the first release of beneficial wasps against Tuta absoluta in Kenya

By Hudson Shiraku

Filled with optimism that tomatoes would give him worthwhile returns, Mr. Gabrielle Murgor had invested Ksh. 400, 000 on a three acre piece of land in Tinga, Magadi, growing tomatoes. Just when the crops had started to flower, Tuta absoluta struck and before he knew it, all the plants were wasting away. "From my huge investment, I only harvested a few crates which we used at home and shared the remaining with neighbors. I could not sell them as they were already affected and had little commercial value," recalls Murgor.

The tomato leaf miner, *Tuta absoluta*, (*Lepidoptera gelechiidae*), is a devastating pest that has frustrated many tomato growers in Africa and beyond. Any tomato grower is familiar with this pest that originated from Latin America and has fast spread across the continent causing huge losses of tomato yield quality and quantity. Its ability to develop resistance to pesticides leaves farmers at a loss when it strikes. However, the International Centre of Insect Physiology and Ecology-(*icipe*) is undertaking a project in the fight against the resistant pest-dubbed "Integrated Sustainable Production of Tomatoes (ISPOT) in Kenya", with the support of the Biovision Foundation.

On 29th October 2020, a group of Scientists from *icipe* were out in a tomato farm in Mwea East, Kirinyaga County, introducing a highly effective intervention against *Tuta absoluta*. In a process called classical biological control, the team from *icipe* released a natural enemy (wasp) that attack the larvae of the pest commonly referred to as caterpillars on tomato in the farm. The wasp species (*Dolichogenidea gelechiidivoris*) introduced in Kirinyaga is from South America, where the pest first originated and has been reared in the campus laboratory in Nairobi for mass release in the fields. The wasps only attacks *Tuta absoluta* and do not cause any sickness to animals or human beings thus they are commonly referred to as "farmers friends". The event was historic in the sense that the wasp was being released for the first time outside its native range of South America. *icipe* will continue releasing the wasps in Kirinyaga, a process called "augmentation" and the exercise will spread to other counties in Kenya and eventually into East Africa and the whole world in general.

Tuta absoluta infests tomatoes throughout the plant cycle and if not managed can cause a 100% yield loss. The pest also called the Tomato leaf miner, is also reported to infest other tomato relatives in the Solanaceae family such as eggplant and potatoes though it highly prefers tomato over all other host plants. In the recent

past, *Tuta absoluta* has been declared a serious threat to tomato production in Kenya due to the difficulty in controlling it.

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Effectiveness of chemical control is limited due to the pest's ability to develop resistance to commonly and widely used synthetic insecticides thereby rendering control efforts worthless. In addition, the pest's rate of reproduction is very high, with a single female moth capable of laying more than 260 eggs in a single month. Furthermore, the damaging stage of the pest (caterpillar) is often protected in the leaf mines, thus making it nearly impossible to reach with insecticides during routine spraying. The larvae of *Tuta absoluta* eat away the fleshy green part of the leaves producing large galleries called mines and also burrow into the fruit creating entry points for secondary infection leading to massive rotting of fruits before and after harvest. Severely attacked tomato plants wilt and eventually die and fruits lose their commercial value and are often discarded. This deprives the farmer of potential income and a source of livelihood.



ICIPE scientists during the release of natural enemies on a farm in Mwea, Kirinyaga County.

As a result of the resistance to chemical control methods, farmers are advised to use IPM methods to manage the pest. IPM strategies such as the use of biopesticides are being further developed to achieve appropriate management of *T. absoluta*. Farmers are strongly recommended to use registered insecticides as and when absolutely necessary as compared to blanket calendar sprays which not only pollutes the environment but also affects their health. Such practices are known to conserve the wasps thus controlling the pest naturally.

The management of *Tuta absoluta* requires concerted effort of policy makers and all stakeholders in the tomato value chain. Sustainable management of the pest and conservation of the released natural enemy hinges on knowledge and

practical application, thus *icipe* will roll out Trainer of Trainers workshops and farmer field days in which farmers will acquire new scientific information and build upon traditional knowledge systems in a bid to produce safe tomatoes for all.

Biovision Africa Trust, through its various communication pathways disseminates information on various scientifically proven ecological sustainable methods of crop protection and this intervention by *icipe* is a major leap in the fight against *Tuta absoluta*. See <https://infonet-biovision.org/> PlantHealth/MinorPests/Tuta-absoluta for more information on *T. absoluta* management.

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