

After IPM Innovation Lab trainings, Bangladesh and Nepal confirm tomato-pest invasion



Sulav Paudel from iDE Nepal demonstrates leaf damage done by the South American tomato leafminer.

“Looking at the morphology, damage, and moth catch in the pheromone traps, we were sure that what we were seeing was *Tuta*,” said Sulav Paudel of International Development Enterprises (iDE) Nepal, an NGO and IPM Innovation Lab partner.

This past May, Bangladesh and Nepal confirmed the presence of *Tuta absoluta* (Lepidoptera: Gelechiidae), also known as the South American tomato leafminer, within their borders. They were able to identify the tiny moth thanks to awareness trainings put on by the Feed the Future Innovation Lab for Integrated Pest Management.

This leafminer was accidentally introduced to Spain in 2006 from Chile and it has since spread all over Europe and crossed the Mediterranean Sea to invade northern, eastern and southern Africa, along with countries in western Africa, and central and south Asia. It is a serious pest of tomato and can cause up to 100% crop loss without proper control measures. It mines leaves, and bores into stems, stalks, and fruits. Because it is a quarantine concern, USDA-APHIS has instituted regulations to prevent its introduction into the United States.

The IPM Innovation Lab has been monitoring the spread of *Tuta absoluta* around the world. To help countries prepare for *Tuta*'s arrival, the Innovation Lab has conducted 14 workshops/symposia in different parts of the world, with scientists and researchers from 55 countries participating. These workshops/symposia covered origin, taxonomy, distribution, biology, damage, monitoring, and different methods of control.

It was thanks to two of these workshops that officials in Bangladesh and Nepal knew how to read clues that *Tuta* had arrived after scientists taught them what signs to look for. The IPM Innovation Lab provided lures to scientists in Bangladesh and Nepal who trapped the moths, which then enabled identification to take place. In Nepal, Sulav Paudel at International Development Enterprises (iDE) Nepal, an NGO and IPM Innovation Lab partner, credited the training for the quick identification. “Looking at the morphology, damage, and moth catch in the pheromone traps, we were sure that what we were seeing was *Tuta*,” Paudel said.

After capturing the specimens, the specialists in both countries shipped them to Blacksburg, Virginia where the IPM Innovation Lab director, entomologist Muni Muniappan, confirmed that the pest in question was *Tuta absoluta*.



A pheromone trap in Nepal filled with *Tuta absoluta* specimens.

Adjacent countries such as Burma, Cambodia, and Thailand will likely be invaded in the near future. For this reason, the IPM Innovation Lab recently held two workshops in Cambodia. The pest cannot be eradicated, but employing integrated pest management practices focused on nontoxic means can lead to effective control. “With these proactive measures, we hope to significantly reduce the economic loss caused by this pest in Nepal and Bangladesh, as well as in the rest of Asia and the United States,” Muniappan said.

While it has not yet entered the United States, the IPM Innovation Lab has been collaborating with USAID-APHIS to prevent its introduction. It has also been using national media such as the New York Times to inform the public about the consequences of accidental introduction of *Tuta absoluta* into the United States and also has a project with the Biocomplexity Institute at Virginia Tech to model the pest’s spread using human movement.



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General

The IPM Innovation Lab is housed in the Office of International Research, Education, and Development, a university-wide office at Virginia Tech that supports the university’s international efforts in learning, discovery, and engagement. With a portfolio of close to \$100 million, the office manages projects in 30 countries and partners with 80 NGOs, research organizations, private sector concerns, and governmental organizations. The office comprises a staff of 30 people who are well-versed in handling complex, multimillion dollar projects.

Funding

The Integrated Pest Management Innovation Lab is supported by a grant from USAID and managed by Virginia Tech’s Office of International Research, Education, and Development (OIRED).

