

IPM Innovation Lab helps fight pearl millet pests in Niger



The pearl millet head miner attacking a millet plant in Niger.

In Niger, there are two destructive pests, the pearl millet head miner and the pearl millet stem borer. These pests that can cause up to 85 percent yield loss of millet, which is a deadly problem in a food-insecure country where millet is the most important staple crop.

To fight one of these pests, the pearl millet head miner, the IPM Innovation Lab (IPM IL), in collaboration with ICRISAT-Niger and INRAN-Maradi, received a sub-award from the Sorghum and Millet Innovation Lab at Kansas State University to work on biological control of the pest.

The IPM IL Director Muni Muniappan along with his collaborators took a two-pronged approach to this serious problem. Because they already knew that the larval parasitoid *Habrobracon hebetor* is a successful biocontrol agent of the head miner, they first began rearing that parasitoid in the laboratory on the larvae of the Indian meal moth. They then released those in the field to control the pearl millet head miner.

While this produced a good outcome, Muniappan also wanted to test the egg parasitoid *Trichogrammatoidea armigera*, which had been reported on the eggs of pearl millet head miner but its effect had not yet been proven. They tested the egg parasitoid and found that it did indeed parasitize the eggs of the pearl millet head miner.

And although no egg parasitoid had been reported on the pearl millet stem borer, Muniappan hypothesized that the *Trichogramma* egg parasitoid would also be effective on the stem borer. This also proved to be correct and it was the first report of an egg parasitoid infecting the pearl millet stem borer.

Rearing the egg parasitoid is challenging, however the project successfully reared it on Indian meal moth eggs in the laboratory and also on infected eggs of pearl millet stem borer. Currently the project is mass multiplying both egg and larval parasitoids for release in the pearl millet fields in the next season starting June 2017.

Even though the project was designed to work on the pearl millet head miner using the larval parasitoid only, the IPM Innovation Lab and its project partners were able to expand the activity by introducing an additional parasitoid that will attack both pests and greatly increase the success of growing millet in Niger.



Laouali Amadou from INRAN-Maradi inspecting a millet plant.



Dr. Malik Ba, the Principal Investigator of the Kansas State Sorghum and Millet Innovation Lab project in Niger, and Dr. Muni Muniappan of the Integrated Pest Management Innovation Lab stand next to a millet plant in Niger.

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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).

