

## Feed the Future Innovation Lab for Integrated Pest Management Trip Report

**Name of Traveler:** Malick Ba, Principal Entomologist, International Crops Research Institute for the Semi-Arid Tropics, Niamey, Niger

**Project:** IPM Innovation Lab

**Countries Visited:** Kenya

**Purpose:** Resource person for fall armyworm workshop organized by ICIPE

**Period of Visit:** February 24 – March 2, 2019

**February 24** – Left Niamey at 11:30 am

**February 25** – Reached Nairobi at 2:30 am and transported to ICIPE Guest house

**At 8:30 am**, I met with Dr. Tadele Tefera and attended the training workshop. I have followed the different presentations on the status of fall armyworm in Kenya, Tanzania and Ethiopia. This was followed by a presentation of potential biocontrol agents (parasitoids and biopesticides).

**At 2:00 pm**, I made a presentation on “**Mass culture of *Trichogramma* and *Telenomus* for use in biological control program against the FAW.**” In my presentation, I first gave an overview of *Trichogramma* species, their life cycle, ecology, and their uses in biological control in agriculture. This was followed by a presentation of the species of *Trichogramma* present in Africa, including species recently recovered on eggs of FAW in Kenya and Niger. I did the same for *Telenomus* parasitoid (life cycle, ecology) and ended with species recorded in Africa. I highlighted the recent confirmation of the presence of *Telenomus remus* on FAW in several African countries (Benin, Cote d’Ivoire, Kenya, Niger and South Africa). I concluded the section on *Telenomus* by highlighting the need to rely on indigenous *T. remus* parasitoid for biological control of FAW instead of importing some from the Americas.

After presenting the potential egg parasitoids for uses against FAW, I highlighted the need to have a mass culture of host species before trying to culture the parasitoids. Thus, I explained how to culture the rice moth *Corcyra cephalonica* (Lepidoptera: Pyralidae), a factitious host for *Trichogramma* parasitoids. This is based on our own experience at ICRISAT in Niger where 2 Trichogrammatid species are cultured on eggs of *C. cephalonica* for uses against the millet head miner and the FAW. I finished by presenting how to prepare eggs of *C. cephalonica* for exposure to *Trichogramma* for parasitism and to start a colony. I emphasized the need to sterilize the eggs before exposure and also used non-toxic glue for preparing of cardboard on which eggs are glued. Among other issues, I underlined the need to know the parasitoid species very well for morphological distinction of males from females.

After *Trichogramma*, I presented the technique for mass culture of *Telenomus remus*. At ICRISAT-Niger we use eggs of FAW for rearing *T. remus*. We collect eggs laid by FAW on sorghum leaves, cut down the part of the leaf bearing the egg mass and paste it on cardboard. As explained for *C. cephalonica*, the egg masses of FAW are also sterilized under UV-light before exposure to *T. remus*.

I ended my talk by presenting the trichocard technique for on-farm release of *Trichogramma* egg parasitoid in the field using the example of *T. armigera* against the millet head miner in Niger.

**February 26-27:** The trainees were split into four groups of 3-4 persons and each group spent some time in the laboratory to practice the following: i) Mass rearing of FAW using artificial diets, ii) Mass rearing of the flour moth, *Ephesia kuehniella*, iii) Mass rearing of *Trichogramma*, iv) Mass rearing of *Telenomus* and *Cotesia icipe*. The demonstrations were carried out by the laboratory technician assisted by Dr. Tadele Tefera and myself. After the demonstration, the trainees repeated the different practices. I have mainly provided support on the mass rearing of the flour moth and *Trichogramma* and the preparation of the Trichocards for field releases.

**February 28:** We traveled early in the morning to Mwea, 80km east of Nairobi to visit a maize farm. Dr. Tadele and I selected the field for trainees to scout FAW eggs and larvae and for releases of egg parasitoids. I have assisted the trainees on different hands-on activities.

**March 1:** We spent some time in the laboratory with the trainee to revisit some of the procedures participants learned earlier and closed the training at 12:00 am.

**March 2** – Air travel and reached Niamey at 12:30 PM

**Recommendation:** During the week, Dr. Tadele Tefera and I discussed the need to develop a manual for mass rearing of FAW egg parasitoids. This will be developed in coming months. I have also decided with the participant from Cote d'Ivoire to plan a similar training for francophone countries later in the year in Niger.