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

Dates of Travel: April 30th – May 7th 2018

Travelers' Names and Affiliations: Laouali Amadou, INRAN (National Institute for Agricultural Research)

Purpose of Trip: To work on the manuscripts on the biological control of the millet head miner

Sites Visited: Center for International Research, Education and Development (CIRED), Blacksburg

Description of Activities/Observations:

During this week-long stay, several activities were conducted:

1. **Work on Manuscript:**

Manuscript 2: Optimization of *Habracon hebetor* Say (Hymenoptera: Braconidae) releases technic for improving control of the Millet head miner *Heliocheilus albipuntella* in Niger

Dr. Muniappan, Dr. Sidhu, and Laouali Amadou continued to work on the manuscript. A new discussion was written and supported with recent downloaded publications. The collaborators from ICRISAT and University of Maradi sent their comments and observations, which were taken into consideration. The selected review for publication is *Biocontrol Journal* and the paper was made to fit the specific review format. Below is the abstract of the manuscript.

Abstract

The *Heliocheillus albipunctella* is one of the major insect pests of millet in Sahelian countries. The biological control with release of native parasitoids *Habrobracon hebetor* to control the pest damage is the current promoting control method in West Africa. Field studies were carried out from 2015-2017 in cropping seasons in two millet growing regions of Niger. The studies were evaluating the release at different millet stages, the timing of parasitoid release and the different numbers of parasitoids released. The results from the studies demonstrated that the infestation rate by *H. albipunctella* varied from 16.31% to 49.28%. The parasitoid release at the flowering stage recorded the highest parasitization level 60.47%. The parasitization rate with release at four weeks after the *H. albipunctella* occurrence ranged from 31.13% to 44.14% while those of six weeks after pest occurrence varied from 23.37% to 37.06% and the release of 1,600 parasitoids recorded the same parasitization rate as 800 parasitoids. Therefore, we are recommending the early release of *H. hebetor* at the flowering stage or four weeks after the pest occurrence with 800 parasitoids or its equivalent, and 12 release bags to cover millet fields within 3km.

2. **Presentation edits**:

As a recipient of the BIFAD award, I was asked to present my research during the award reception. Therefore, two days before the end of the stay in Blacksburg, a PowerPoint presentation for the BIFAD ceremony was edited, corrected, and sent to the organization committee in Washington, D.C.

3. **Others**:

Meeting

On April 4, there was a meeting with the CIRED Executive Director, IPM Director and Innovate Director about the biological control project approach being extended to other countries.

The idea to meet with international organizations such us FAO, Bill and Melinda Gates, etc. for regional projects with similar approaches to that of the biological control of the pearl millet head miner was discussed.

Trip to Washington, D.C.

At the end of the stay in Blacksburg, Dr. Muniappan and I travelled to Washington, D.C. for the BIFAD meeting.

Suggestions, Recommendations, and/or Follow-up Items:

The manuscript will be submitted to *Biocontrol Journal* soon.

List of Contacts Made:

Name	**Title/Organization**	**Contact Info (address, phone, email)**
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