

IPM IL Trip Report

Country(s) Visited: Ethiopia

Dates of Travel: December 16 to 30, 2016

Travelers' Names and Affiliations: Dr. Wondi Mersie, Virginia State University (VSU)

Purpose of Trip: to assess activities at bioagent rearing sites located at Guder (Ambo University), Wollenchiti and at the campus of Haramaya University and if necessary make changes to the operations.

Specific objectives of the trip were to:

- (i) To visit the bioagent mass rearing sites at Guder, Wollenchiti and Haramaya University and assess the status of each biological agent.
- (ii) To discuss with staff about the challenges and opportunities at each rearing site.
- (iii) To confer with partners about the progress of bioagent rearing and the coming year work.
- (iv) To review the progress of the rearing activities at each site and if necessary make changes on the procedures followed to raise parthenium stock and rear Zygotogramma as well as Listrionotus.
- (v) Visit sites where Zygotogramma was released and see the conditions of the bioagent.
- (vi) To identify potential field sites for bioagent release during the coming season.
- (vii) Confer with Ethiopian Institute of Agricultural Research's (EIAR) economist about assessing the economic impact of the released bioagents.

Sites Visited: Addis Ababa (EIAR, Min. of Agriculture), Wollenchiti, Ambo University (Guder Campus), Dire Dawa, Haramaya University (HU) Campus, Hawassa University's Research Center.

Description of Activities/Observations:

Itinerary:

December 16: Traveled to northern Virginia to spend the night for the morning flight.

December 17: Fly from U.S.A. to Addis Ababa, Ethiopia

December 18: Arrived in Addis Ababa, Ethiopia. Met Ms. Sintu (Lidya) Alemayhu, VSU's Parthenium Project Coordinator in Ethiopia. The two discussed the current state of the project, current implementation issues and further research tasks that need to be taken in the short and long term periods. Met Dr. Amer Fayad Associate Director at IPM IL Virginia Tech and discussed about the status of the parthenium project.

December 19: Travelled to Wollenchiti to meet the workers at the rearing facility and examine the status of the *Zygogramma* and *Listronotus* cultures. Visited the sites where *Zygogramma* was released in July 2016. Suggestion were made on how to grow quality parthenium stock to rear the bioagents and improve the handling of the agents. Delivered supplies brought from U.S. for rearing the bioagents.

December 20: Travelled to Guder to visit the rearing facility and confer with staff who work there. The rearing facility is located on a satellite campus of Ambo University (AU) at Guder. Met AU faculty who are collaborating on the parthenium project and held discussion with Dr Mulugeta Negari, Dean of the College of Agriculture and Veterinary Science. Met Gizachew Girima, an M.S. student supported by the Parthenium Project and discussed the progress of his thesis research. Visited the cages he installed outside to monitor the effect of *Zygogramma* on parthenium. Met with staff at the rearing site and discussed the challenges they face. Delivered supplies brought from U.S. for the rearing site. Visited the sites around Ambo where *Zygogramma* was released in 2016. Checked parthenium plants at the site for any adult, larva or egg of *Zygogramma*. Returned to Addis Ababa late in the afternoon.

December 21: Visited EIAR Head Quarters and met Dr. Kassahun Zewide. Part of the day was also used to identify vendors who sell key supplies for the rearing sites.

December 22: Traveled to Haramaya University to meet faculty and staff collaborating with the Parthenium Project. Visited the rearing site and saw first-hand the conditions of the *Zygogramma* and *Listronotus* cultures. Made recommendations to improve the nursery that supplies parthenium seedlings and the management of the rearing cages. The nursery will be located outside and will be seeded weekly to provide seedlings for transplanting regularly. The employees were also asked to regularly fertilize the potted plants and avoid over-watering.

December 23: Returned to the campus of HU and visited the sites where parthenium was released last summer. There were some stunted parthenium plants at the sites. But the plants didn't have *Zygogramma*. It was agreed to release additional *Zygogramma* adults at each site if the small rains materialize in the coming months.

Staff were also asked to regularly visit the release sites to ensure the fences are not vandalized. Dr. Mersie and staff walked to several sites in the campus to identify suitable places to release *Listronotus* in the coming season. Two locations were identified as potential sites and staff agreed to fence them so that parthenium will grow undisturbed once the rains start.

December 25: Dr. Mersie returned from Dire Dawa to Addis Ababa.

December 26: Dr. Wondi and Ms. Lidya travelled to Wollenchiti. They were joined by Asmert T/Mariam and Dejenie Ayenew from Ambo and Haramaya Universities respectively; Mulu Haile Giorgis, Demeku Zewdie and Kassahun Gurge from Wollenchiti. Dr Wondi Mersie and Ms. Lidya Alemayehu discussed methods of producing high quality parthenium for rearing and on the management of *Zygogramma* and *Listronotus* cultures. Dr Wondi asked staff to remove the shades from the rearing cages so that parthenium seedlings get adequate sunlight. It was decided to install wooden benches in three of the cages. This arrangement will provide more space for potted plants. Discussions were held with staff on how to maintain the facility and the planned activities for the coming season.

December 27: Visited Hawassa University campus and the sites where *Zygogramma* was released in the past season. Held discussion with Dr. Ferdu Azerefege on further release sites around Awash, Melkassa and central Rift Valley.

December 28: Surveyed sites for future release on the way back to Addis Ababa from Hawassa.

December 29: Met Mr. Agajie Tesfaye, an agricultural economist from EIAR and discussed on how to assess the economic impact of parthenium control using biological agents.

Traveled back from Addis Ababa to U.S.

Training Activities Conducted: no formal training session was organized on this trip.

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

Suggestions and recommendations were provided on how to produce quality parthenium stock for rearing the bioagents on a regular basis. Staff have been instructed to seed and transplant parthenium every week. They are also asked to fertilize and water the potted parthenium seedling on regular bases to produce quality stock for rearing. Recommendations were also made on how to increase the number of adult *Zygogramma* and *Listronotus* reared at each site.

List of Contacts Made:

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