

IPM Innovation Lab Trip Report

Country Visited: Ethiopia

Dates of Travel: December 11 to December 25, 2018

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

Purpose of Trip: to conduct training and assess activities at bioagent rearing sites located at Guder (Ambo University) and Wollenchiti.

Specific objectives of the trip were to:

- (i) To conduct training to staff from Ethiopia, Kenya and Uganda on the rearing of the leaf-feeding beetle *Zygogramma bicolorata* and the stem-boring weevil, *Listronotus setosipennis* at Wollenchiti, Ethiopia
- (ii) To accompany Dr. Subramanyam Shanmugasundaram, Team Leader of External Reviewers on site visit of the Parthenium Project.
- (iii) To visit the bioagent mass rearing sites at Guder and Wollenchiti and assess the status of each biological agent.
- (iv) To discuss with staff about the challenges and opportunities at each rearing site.
- (v) To confer with partners about the progress of bioagent rearing and the coming year work.
- (vi) 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 *Zygogramma* as well as *Listronotus*.
- (vii) Visit sites where *Zygogramma* was released and see the conditions of the bioagent.
- (viii) To identify potential field sites for bioagent release during the coming season.
- (ix) Release *Zygogramma* and *Listronotus* at parthenium infested fields.

Sites Visited: Melkassa Agricultural Research Center (Ethiopian Institute of Agricultural Research (EIAR)), Wollenchiti bioagent rearing site, Ambo University (Guder Campus) parthenium infested fields around the town Bishofitu.

Description of Activities/Observations:

Itinerary:

December 11: Traveled to northern Virginia to spend the night for the morning flight.

December 12: Fly from U.S.A. to Addis Ababa, Ethiopia.

December 13: Arrived in Addis Ababa, Ethiopia.

December 14: Met Mr. Shitaye Eddissa, VSU's Parthenium Project Staff in Ethiopia. Travelled to Wollenchiti to meet the workers at the rearing facility and examine the statuses of the *Zygogramma* and *Listronotus* cultures. Suggestions 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. Oversaw the preparation for the workshop to be held on December 17, 2018 at Wollenchiti on the rearing of biocontrol agents. Traveled to Melekassa (EIAR's research center) to visit sites where *Zygogramma* and *Listronotus* were released in previous months. Examined several locations where the biocontrol agents were released.

December 15: Stayed in the hotel and prepared for the Workshop to be held on December 17.

December 16: December 16: Met Dr. Subramanyam Shanmugasundaram (Sundaram), Leader of the external review team for the IPM IL Projects and Dr. Tadele Tefera, Country Director of the International Centre of Insect Physiology and Ecology (ICIPE). A discussion was held about Dr. Sundaram's visits to IPM IL Project sites in Ethiopia.

December 17: Dr. Sundaram and Dr. Mersie along with partners from Kenya and Uganda traveled to the town of Wollenchiti where the biocontrol agents are reared. The workshop on the rearing of biocontrol agents was held at Wollenchiti from 9:00 am to 4:30 pm. Participants from Ethiopia included individuals from the Arba Minch Plant Clinic Center, Guji Zone Agricultural Office, EIAR and the Parthenium Project. At the beginning each participant introduced herself/himself. Dr. Sundaram explained the purpose of his trip to Ethiopia and the types of information he will be gathering about each project. Mr. Muluaem Mersha, Director of the Arba Minch Plant Health Clinic spoke the adverse impacts of parthenium in southwestern Ethiopia and the urgent need to abate its spread.

After the introductions, presentations were made by Shitayeterefe Edessa, Wondi Mersie, Richard Molo and Mellon Kabole. Shitaye Edessa gave progress report on the Parthenium Project in Ethiopia, Wondi Mersie covered the objectives of the Parthenium Project and made presentations on culturing/rearing parthenium, *Zygogramma* and *Listronotus* for release. Richard Molo made a presentation on the importance of controlling parthenium in Uganda and the on-going rearing of *Zygogramma* and *Listronotus* for release in the country. Mellon Kabole provided a progress report on the effort to get a permit from the Kenyan Government to introduce *Zygogramma* and *Listronotus* for rearing. The oral presentations lasted until lunch and in the afternoon the group went to the Wollenchiti bicontrol rearing facility. At the facility, Wondi Mersie introduced the staff and gave overall setup as well about the on-going activities at the site. Parthenium Project staff then showed the participants how *Zygogramma* and *Listronotus* are reared at the site. The demonstration included all the steps that are carried out daily in maintaining and multiplying the adults of both biocontrol agents. The participants asked many questions and staff answered all of them. After photo sessions and informal group discussions the meeting ended at 4:30 pm. After the meeting ended the team that came from Addis Ababa returned. Participants who came from Arba Minch and Guji took back *Zygogramma* adults with them to release on parthenium-infested fields in their respected areas.

The first eighteen individuals on table showing the **List of Contacts** (page 6) attended the workshop. Out of these, five were females and the other thirteen were male.

December 18, Travelled to Guder with partners who came from Kenya and Uganda 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. Parthenium Project staff demonstrated the rearing and upkeep of *Zygogramma* and *Listronotus* to the visitors. Held discussion with Dr. Mulugeta Negari, former Dean of the College of Agriculture and Veterinary Science. Met with staff at the rearing site and discussed the challenges they face. Delivered supplies brought from U.S. for the rearing site. Met Fula'a Gelana a laboratory technician at Ambo University, and visited where niger seed (*Guizotia abyssinica*) an oil crop taxonomically related to parthenium was planted and received *Zygogramma* adults in 2018. *Zygogramma* was released on five niger seed varieties to see

if there is any damage to this important crop by the beetle. So far the data showed no damage to the crop. Wondi Mersie and the visitors from Kenya and Uganda returned to Addis Ababa in the afternoon.

December 19: Traveled to Melkassa Agricultural Research Center with the partners from Uganda and Shitaye. At the Center, 4,400 adults of *Zygogramma* brought from Guder were released at two different locations. The Center receives irrigation from the nearby Awash River so it still has green parthenium. The partners from Uganda participated in the release and were briefed on how to select sites for bioagent release and take the necessary records. After the release the group stopped at parthenium-infested fields around the town of Bishofitu. Several suitable sites around agricultural fields were selected for future release. The group returned to Addis Ababa at 5:30 pm.

December 19: Mersie and Edessa went to Oromia Agricultural Office in Addis Ababa to confer with staff at the Crop Protection and Production Division. They discussed with officials about future collaboration with Parthenium Project in the release of *Zygogramma* and *Listronotus* in the Oromia Region. They met Mr. Dejjane Dirissaa, Director of Crop Protection and Production for the Regional Government of Oromia, Bureau of Agricultural and Natural Resources. Mr. Dejjane indicated that he will support the rearing and release of the two biocontrol agents throughout the Oromia Region. He agreed to write a letter to the Plant Health Clinic Centers in the Oromia Region.

December 21: Mersie met with Edessa to discuss about the implementation of Parthenium Project objectives throughout Ethiopia.

December 22: Mersie spent the day making phone calls to partners about the on-going work and plan for the coming season.

December 23: Mersie spent most of the day in the hotel working on his trip report.

December 24: Traveled back from Addis Ababa to U.S.

Training Activities Conducted: a workshop on the mass rearing of *Zygogramma* and *Listronotus* was held at Wollenchiti on December 17, 2018.

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:

| Name | Title/Organization | Contact Info (address, phone, email) |
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| Wondi Mersie | Principal Investigator, Parthenium Project, Virginia State University | Virginia State University, Petersburg VA USA; wmersie@vsu.edu 804-524-5631 |
| Subramarnyam Shanmugasundaram | Team Leader of External Reviewers for IPM IL Projects | Somerset, NJ 08873 Tel: 732-306-3158 Email: sundar19392004@yahoo.com |
| Richard Molo | Senior Researcher, National Research Organization (NARO) | National Research Organization (NARO), Kampala, Uganda Tel: 256772697622 richardmolo7@gmail.com |
| Okuta Solomon | Laboratory Technician, National Research Organization (NARO) | National Research Organization (NARO), Kampala, Uganda Tel: 256781255224 Okutasolomon18@gmail |
| Behaylu Tesfaye | Field Technician, Ethiopian Institute of Agricultural Research, Melkassa Research Center | Ethiopian Institute of Agricultural Research, Melkassa Research Center, Adama, Ethiopia Tel: 0922308580 tesfayeBehaylu2010@gmail.com |
| Yemane Wolde Yohanes | Field Technician, Araba Minch Plant Health Clinic Center | Araba Minch Plant Health Clinic Center, Arba Minch, Ethiopia Tel: 0916854324 yemanewolde@yahoo.com |
| Tenaw Yihunew | Extension Agent, Arba Minch, Ministry of Agriculture | Arba Minch, Ministry of Agriculture Tel: 0913821502 tenawyihunew@gmail.com |
| Biya Tadesse | Field Technician, Araba Minch Plant Health Clinic Center | Araba Minch Plant Health Clinic Center, Arba Minch, Ethiopia Tel: 0966895147 Biyatade2016@gmail.com |
| Mulalem Mersha | Director, Araba Minch Plant Health Clinic Center | Araba Minch Plant Health Clinic Center, Arba Minch, Ethiopia Tel: 0966895147 Mulu.mersha@yahoo |
| Habthmu Bulti | Extension Agent, Guji Zone Agricultural Office | Guji Zone Agricultural Office, Guji, Ethiopia habthmubulti@gmail.com |
| Awel Kosim | Extension Agent, Guji Zone Agricultural Office | Guji Zone Agricultural Office, Guji, Ethiopia habthmubulti@gmail.com |

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| Mellon Kabole | Senior Inspector Kenya Plant Health Inspectorate Service-Headquarters | Kenya Plant Health Inspectorate Service-Headquarters P.O. Box 49592-00100, Nairobi Office Tel: 0709891000,0709891277 mkabole@kephis.org |
| Shitayeterefe Edessa | Parthenium Project Staff | Parthenium Project, Wollenchiti, Ethiopia, Tel: 0911006814 shituambo@gmail.com |
| Asmaret TekleMariam | Technician; Ambo University; Guder Campus | +251912953028 |
| Mulu Haile Giorgis | Technician; Wollenchiti | |
| Demeku Zewdie | Technician; Wollenchiti | |
| Kassa Gurge | Technician; Wollenchiti | |
| Gebi Yedeelin | Technician; Wollenchiti | |
| Emawayush Mulet | Technician; Ambo University; Guder Campus | |
| Derartu Ebisa | Technician; Ambo University; Guder Campus | |
| Bekele Gelana | Technician; Ambo University; Guder Campus | |
| Mulugeta Negeri | Faculty member, College of Agriculture and Veterinary Science at Ambo University, Guder Campus | Ambo University, Ambo, Ethiopia Tel: +251911896296 negerimulugeta@yahoo.com |
| Fula'a Gelana | Technical Staff, College of Agriculture and Veterinary Science at Ambo University, Guder Campus | Ambo University, Ambo, Ethiopia Tel: +251920162113 gelana.au@yahoo.com |
| Tadele Tefera | Country Director, International Centre of Insect Physiology and Ecology (ICIPE) | International Centre of Insect Physiology and Ecology, ILRI Campus, Gurd Shola, P.O. Box: 5689, Addis Ababa, Ethiopia Tel: +251(0) 116172596 t.tefera@cgiar.org |
| Dejane Diriisaa | Director of Crop Protection and Production for the Regional Government of Oromia, Bureau of Agricultural and Natural Resources | Regional Government of Oromia, Bureau of Agricultural and Natural Resources Tel:+25111 3717455 oboanr@gmail.com |