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UPDATES FROM "BIOLOGICAL CONTROL OF THE INVASIVE WEED *PARTHENIUM HYSTEROPHORUS* IN EAST AFRICA" PROJECT

Large tracts of farmland and pastures in the whole of eastern Africa including Ethiopia are infested by the invasive weed parthenium (*Parthenium hysterophorus*). Parthenium reduces yields of valuable crops and replaces important pasture species, decreasing livestock productivity. Parthenium also causes human health issues, including both skin and respiratory allergies, and displaces native plant species, damaging the region's biodiversity. In order to combat this weed, a project led by Virginia State University and funded by USAID through the Integrated Pest Management Innovation Lab at Virginia Tech has released two bioagents, the leaf-feeding beetle (*Zygogramma bicolorata*) and stem-boring weevil (*Listronotus setosipennis*) in Ethiopia and Uganda.

Starting on the afternoon of September 30, 2019, thirty-two participants from Ethiopia, Kenya, South Africa, USA, and Uganda gathered at Arba Minch to discuss accomplishments of the project and plan its activities for the coming year. Attendees included a USAID Mission representative, IPM IL management personnel from Virginia Tech, faculty and administrators from 3 Ethiopian Universities, and representatives of national and regional research institutions. Area agricultural extension agents, plant health clinic staff, farm managers and scientists from Kenya, South Africa, and Uganda also participated in the meeting.

There were several presentations on the performance of *Zygogramma* and *Listronotus* against parthenium in Ethiopia, South Africa, and Uganda. The accomplishments and challenges faced by the Parthenium Project in introducing, rearing, and releasing the two biocontrol agents in Ethiopia was discussed in detail. Several speakers also outlined the important role local partners played in the success of the project. At the Tuesday morning meeting, plans were drawn on how to advance the goal of the project and involve local implementers in carrying out specific objectives.

During the Tuesday afternoon meeting, participants visited fields around Arba Minch where *Zygogramma* and *Listronotus* were released in 2017, 2018, and 2019. *Zygogramma* and *Listronotus* were released in the compound of the Southern Agricultural Research Center in 2017. As seen on Tuesday, October 1, the beetle diapaused in the soil during the dry seasons over the last two years and has emerged when it rains each year to feed on parthenium. This shows that the beetle has established at this site. *Zygogramma* has spread from the initial release spot and has damaged parthenium in the adjacent field. The area that was infested with parthenium two years ago is now overgrown with the natural vegetation. Larvae of *Listronotus* was also detected in stems of parthenium in one section of the Research Center where adults of this weevil were released in 2017.

In another field, *Zygogramma* was released on a dense parthenium stand in September 2018. One year later, only dry parthenium has remained on the same spot. Visitors on October 1 were able to see the spread of *Zygogramma* to the adjacent field where they saw larvae and adults of the beetle on young parthenium seedlings far from the adults that were released a year ago. The beetle is

moving to nearby fields where there is still green lush parthenium. In this field, too, *Zygogramma* survived the dry season in the soil and emerged when it rained to reproduce and damage the weed. Meeting participants also saw a field in a commercial farm where *Zygogramma* was released on

July 2019. Damage to parthenium was clearly visible on the tall parthenium stand. Larvae and adults of the beetle were feeding on newly emerged parthenium seedlings. The beetle has spread throughout the one-hectare field within two months of its release. The group finally stopped at the Arba Minch Plant Health Clinic compound to see where *Zygogramma* is reared in a greenhouse. The facility produces *Zygogramma* adults for release in the surrounding farms. Staff at the facility described the ongoing rearing activity to the visitors. The meeting ended after the visit to the Plant Health Clinic Center.

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UNIVERSITY OF MINNESOTA 2019 DISTINGUISHED LEADERSHIP AWARD FOR INTERNATIONALS GOES TO DR. SILVIA A. PEREYRA

Dr. Silvia A. Pereyra is a Principal Research Scientist at Uruguay's National Institute for Agricultural Research (Instituto Nacional de Investigación Agropecuaria, INIA). She completed her M.S. and Ph.D. in Plant Pathology at the University of Minnesota (2000, 2005). Dr. Pereyra has emerged as a leader in agricultural research in her native Uruguay. Her career has delivered tangible benefits to farmers in South America and has had significant impact in many parts of the developing world. As an example, she is internationally recognized for her research on *Fusarium* head blight of wheat and barley and *Ramularia* leaf spot of barley. She has contributed to the development and release of 10 varieties of barley and six varieties of wheat. Some of these have been deployed around the world to increase productivity and protect against plant diseases that cause high crop losses. This is especially important in developing countries, where barley is often a main crop and key to food security.

Dr. Pereyra has maintained strong ties to the University of Minnesota (UMN), developing collaborative research projects with the small grains pathology and barley breeding programs. She has been instrumental in sustaining a long-established collaborative relationship between UMN and INIA, and she has served as a host for UMN graduate students completing internships in Uruguay.

Dr. Pereyra has made significant contributions to the professional societies for plant pathologists. She has been a member of the American Phytopathological Society since joining as a graduate student and has served two terms as the President of the Uruguayan Phytopathological Society (SUFIT). She has also served as a Councilor regionally for SUFIT and on an international level for the International Plant Pathological Society.
In naming Dr. Pereyra a recipient of the Distinguished Leadership Award for Internationals, the selection committee recognizes her outstanding contributions to the field of agriculture in South America and around the world.
The Distinguished Leadership Award for Internationals is an annual University-wide award for alumni, former students, and friends of the UMN who have distinguished themselves in their post-university work as leaders in their professional careers. This award is jointly sponsored by the Global Programs & Strategy Alliance and the University of Minnesota Alumni Association (UMAA). In the field of plant protection, this award was previously given to Michael Wingfield (South Africa) in 2016, Paul Ming Hsien Sun (Taiwan) in 2005, and Abdelaziz Lagnaoui (Morocco) in 2003.

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TRAINING ON BIOCONTROL OF THE FALL ARMYWORM IN NIGER

The Feed the Future Innovation Lab for Integrated Pest Management projects that a chemical-free solution is key to long-term management of the fall armyworm. In Niger in July, the team helped support a training focused on biological control of the invasive pest hosted by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), University of Maradi in Niger, and the National Institute for Research on Food and Nutrition (INRAN). The Food and Agricultural Organization (FAO), the CGIAR Research Program on Grain Legumes and Dryland Cereals, and the Technologies for African Agricultural Transformation (TAAT) Sorghum and Millet Compact also supported the training.
The IPM Innovation Lab sent participants from Cambodia, Vietnam, Nepal, and Bangladesh to attend the training in Niger in an effort to catalyze cross-continental knowledge and information exchange. Also in attendance were participants from Ghana, Togo, Senegal, Mali, Burkina Faso, Benin, Democratic Republic of the Congo, Cote d'Ivoire, Cameroun, Sudan, and Niger.
Maize is a staple crop in both Africa and Asia. The technology of mass rearing and releasing natural enemies is easily transferrable to more than one country and continent, and is economically

and environmentally sound. The fall armyworm attacks hundreds of plant species beyond maize, and the technology is viable for those crops as well.
In 2018, in collaboration with ICRISAT and the International Centre of Insect Physiology and Ecology (*icipe*), the IPM Innovation Lab helped find two natural enemies of the fall armyworm, *Telenomus* and *Trichogramma*, which attack the eggs of the pest. The two natural enemies occur in both Asia and Africa.
The training covered status and identification of the fall armyworm, mass production of *Telenomus* and *Trichogramma*, best laboratory practices, scouting for egg and larval natural enemies in the field, and field release. Also covered was using both artificial and natural diets for mass production and case studies of successful biological control, especially the use of natural enemies against the pearl millet head miner in the Sahel.
Upon return from the training, participants have already applied the knowledge gained for establishing their own biological control programs—in Vietnam and Nepal, for instance, participants have conducted a basic survey for parasitoids of fall armyworm in the field and have begun preparations for rearing them in the lab.

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IAPPS Mission: to provide a global forum for the purpose of identifying, evaluating, integrating, and promoting plant protection concepts, technologies, and policies that are economically, environmentally, and socially acceptable.

It seeks to provide a global umbrella for the plant protection sciences to facilitate and promote the application of the Integrated Pest Management (IPM) approach to the world's crop and forest ecosystems.

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