

Innovation Lab for Integrated Pest Management

Leveling the playing field in the fight against *Parthenium*

Two biological agents are damaging the invasive weed parthenium in the Amhara Region of Ethiopia. Large tracts of farmlands and pastures in Ethiopia are infested by the invasive weed *Parthenium* (*Parthenium hysterophorus*). *Parthenium* reduces yields of major crops and replaces valuable pasture species, decreasing livestock productivity. *Parthenium* also makes people sick, causing both skin and respiratory allergies, and displaces native plant species, damaging the region's biodiversity.

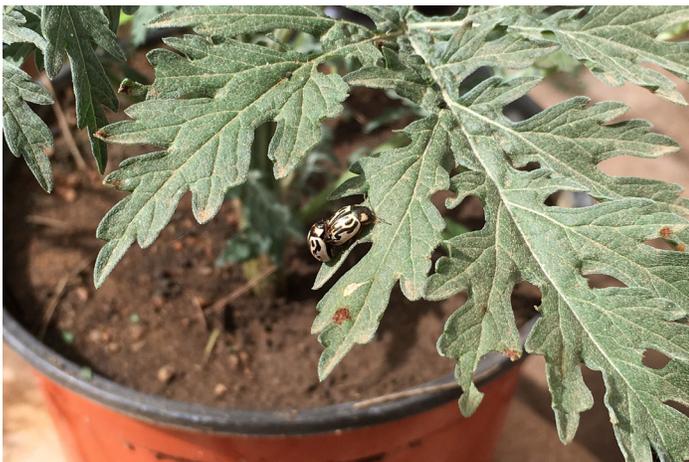
In order to combat this weed, a project led by Virginia State University and funded by USAID through the Feed the Future Innovation Lab for Integrated Pest Management at Virginia Tech has released two bioagents, the leaf-feeding beetle (*Zygogramma bicolorata*) and stem-boring weevil (*Listronotus setosipennis*). On June 20, 2017, thousands of adult *Zygogramma* and hundreds of *Listronotus* were released at several parthenium-infested sites around the town of Finote Selam.

By mid-August 2017, the bioagents were thriving and damaging *Parthenium*. The *Zygogramma* kills *Parthenium* by defoliating its leaves while *Listronotus* inflicts damage to the weed from inside by burrowing its stem. In addition, native vegetation is starting to make a comeback as *Parthenium* is weakened.

Zygogramma has also moved from the release site to nearby *Parthenium*-infested fields to feed on the weed. *Listronotus* also started to damage nearby *Parthenium* plants. At the new sites, staff observed larva and newly emerged adults of *Zygogramma*, indicating that the bioagent is reproducing and new generations are in action against the invasive weed.

The effect of *Zygogramma* on *Parthenium* seen at Finote Selam (altitude 6000 ft) are similar to what was observed in Wollenchiti (altitude 4700 ft) after the release of this bioagent in 2016. In Wollenchiti, *Zygogramma* fed on parthenium on the spot it was released near a railway track and then moved to nearby bean and teff fields that were infested by the weed. *Zygogramma* defoliated *Parthenium* without touching the bean and teff crops, showing it only attacks the weed and it is safe to other plants.

However, this is just the beginning of the effort to manage *Parthenium* using natural enemies in Amhara and other regions of Ethiopia. It will require releasing large number of adults of the bioagents at multiple sites in different parts of the country over several years. This biocontrol program will require patience and effort over several years to be successful, but the potential for sustained control of *Parthenium* in Ethiopia is very promising.



The leaf-eating beetle, *Zygogramma*, on a *Parthenium* leaf.



A technician at the biocontrol rearing site in Wollenchiti, Ethiopia with a *Parthenium* plant