Ethiopia

Integrated Pest Management Innovation Lab country profile

Map courtesy CIA World Factbook

Population: 99.5 M
GDP per capita: $1,600
Feed the Future country? Yes
Involvement in this country since: 2009

Challenges:

- Threats from invasive species
- Drought and poor water management
- Low crop yield
- Environmental degradation

Related Projects:

1. Biological Control of Invasive Weed *Parthenium hysterophorus* in East Africa

Dissemination of knowledge and information has led to environmental safety awareness, reduced malnutrition (especially among women and children,) and higher economic benefits as a result of reduced pesticide applications.

2. Vegetable Crops IPM for East Africa

Focuses on implementing and disseminating IPM strategies to combat pests of vegetable crops in East Africa, such as tomato, onion, African eggplant, cabbage, chilies, and beans.

3. IPM for Rice, Maize, and Chickpea in East Africa

Focuses on implementing and disseminating IPM strategies to combat pests of staple crops rice, maize, and chickpea in East Africa.

Previous Accomplishments:

1. **Biological control agents released:** In July 2014, the bioagent *Zygogramma bicolorata* was released to control the invasive species *Parthenium hysterophorus*.
2. **Rearing bioagents:** Populations of leaf-feeding beetles (*Zygogramma bicolorata*) and stem-boring weevils (*Listronotus setosipennis*) were reared and increased under quarantine.
3. **Establishment of quarantine facility and breeding cages:** This project established the first official quarantine facility and weed biological control program and research facility in Ethiopia. It is now serving as a training center on the management of quarantine facilities and biological control, with 75 students and researchers already trained.
4. **Workshops held:** The project held workshops on *Parthenium* management for researchers and extension agents.
5. **Long-term training:** The project supported seven M.S.-seeking graduate students, three of them female, and trained five Ethiopians in South Africa in the rearing and testing of biological control agents and quarantine procedures.
6. **Awareness posters in multiple languages:** Posters to create awareness of the health impact of *Parthenium* were published in English, Amharic, Oromiffa, Tigrigan, and Somali.


African researchers and growers examine a stem-boring weevil (left). The weevil will be supplementing the efforts of a leaf-eating beetle, which was released in Ethiopia (right) to fight the invasive weed Parthenium.

Releasing a beetle to biologically control destructive, invasive weed

A devastating invasive weed known as *Parthenium* is making an unwelcome advance in countries around the world. In East Africa, it has been wreaking havoc—reducing crop yields, adversely affecting livestock production by taking over pastures and tainting the taste of cow's milk, damaging human health, and impinging on biodiversity. The weed, a native of Mexico and Central America, stowed away on shipments of grain that were part of food aid to Ethiopia in the 1970s. With no native enemies in Africa, it spread widely and has now become a huge problem. In the Ethiopian language of Oromiffa, it is called "faramsissa," meaning, "sign your land away." Researchers and scientists from the IPM Innovation Lab and its partner institutions determined that the most cost-effective, environmentally friendly way to control the weed would be to release biological control agents – or "bioagent." In this case, the bioagents are the leaf-feeding beetle *Zygogramma bicolorata* and the stem-boring weevil *Listronotus setosipennis*. Both feed only on *Parthenium.* The researchers and scientists are also evaluating two other bio-agents *Smicronyz lutulentus*, a seed-feed weevil, and *Carmenta sp*, a day-flying, clear-winged moth. As part of this work, the Innovation Lab established a quarantine facility in Ethiopia 2007—the only one of its kind in eastern Africa. This facility now allows local scientists to test insects that can then be used in biocontrol efforts.

Relevant Websites :

http://www.oired.vt.edu/ipmil/our-work/projects/parthenium-in-east-africa
http://www.oired.vt.edu/ipmil/our-work/projects/vegetable-crops-for-east-africa
http://www.oired.vt.edu/ipmil/our-work/projects/rice-maize-and-chickpea-in-east-africa

Local Implementers

Amhara Agricultural Research Institute (ARARI)
Ethiopian Institute of Agricultural Research (EIAR)
Haramaya University
Ambo University

Principal Investigators:

Wondi Mersie, Virginia State University
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