

A Model for Sustainable Management of Brazilian peppertree, *Schinus terebinthifolius* (Anacardiaceae), in the Greater Everglades

**James P. Cuda**<sup>1</sup>, Edward A. Hanlon, Jr.<sup>2</sup>, and William A. Overholt<sup>3</sup>

<sup>1</sup>Entomology & Nematology Department, University of Florida, IFAS, Gainesville, FL, USA

<sup>2</sup>Southwest Florida Research & Education Center, University of Florida, IFAS, Immokalee, FL USA

<sup>3</sup>Biological Control Research & Containment Laboratory, University of Florida, IFAS, Ft. Pierce, FL USA

Brazilian peppertree, *Schinus terebinthifolius* Raddi (Anacardiaceae), is an aggressive, rapidly colonizing invasive weed of disturbed habitats, natural communities and conservation areas in peninsular Florida. Once established, Brazilian peppertree quickly displaces the native vegetation, often forming dense monocultures that reduce the biological diversity of plants and animals in the invaded area. This invasive shrub is considered an important invader of the Everglades National Park, and poses a significant threat to ongoing Greater Everglades's restoration efforts. Herbicides and mechanical or physical control practices (e.g., cutting, burning and flooding) are routinely used often in combination for controlling existing Brazilian peppertree stands, but these conventional methods are expensive, labor intensive and provide only temporary control due to the plant's regenerative capacity. Furthermore, non-selective chemical and mechanical controls are unsuitable for sensitive natural areas (e.g., coastal mangrove forests) because they can have negative effects on non-target species and increase water pollution. Minimizing the use of herbicides and other non-selective control practices is needed to maintain the integrity of the Everglades ecosystem. The objective of this research/demonstration project is to provide land managers with a predictable IPM strategy for addressing the Brazilian peppertree problem. A model system was developed that integrates natural processes such as biological control (top-down effect) with interspecific plant competition and allelopathy (bottom-up effect) to provide an environmentally sustainable, cost effective, and permanent solution to the Brazilian peppertree problem in Florida. The overall goal is to shift the successional dynamics of public and privately owned lands in the Greater Everglades currently dominated by Brazilian peppertree towards more desirable plant communities where the plant is reduced to a minor component of the flora. Adopting this IPM model will minimize herbicide use and improve wildlife habitat in plant communities of the region currently dominated by Brazilian peppertree.

- Conservation organizations and land managers in south Florida consider the management of Brazilian peppertree a high priority because it poses a significant threat to regional Everglades restoration efforts authorized by CERP.
- Critical ecological processes that direct plant community dynamics to the detriment of Brazilian peppertree are identified in the model and can be modified to produce predictable results.
- Natural regulating factors such as competition and allelopathy from the native wax myrtle, *Myrica cerifera* L., can be manipulated to increase their impact on Brazilian peppertree control, and host specific biological control agents will be introduced to restrict seed production and reduce the vigor of new seedlings and regrowth from treated stumps. The stem and flower attacking thrips *Pseudophilothrips ichini* (Hood) was recommended for field release by the federal interagency Technical Advisory Group in May 2007. The naturalized

South African seed wasp *Megastigmus transvaalensis* Hussey attacks the drupes of Brazilian peppertree. Seeds that are damaged by the developing wasps fail to germinate.

- The key elements for sustainable management of Brazilian peppertree in the Greater Everglades are designed disturbance, controlled colonization, and controlled species performance.

**Reference:**

Cuda J. P., A. P. Ferriter, and V. Manrique (eds.). 2006. Florida's Brazilian peppertree management plan, 2nd edition: Recommendations from the Brazilian peppertree Task Force, Florida Exotic Pest Plant Council, April 2006. Available at <http://ipm.ifas.ufl.edu/reports/BPmanagPlan.pdf>.

Contact Information: James P. Cuda, Entomology & Nematology Dept, PO Box 110620, IFAS, University of Florida, Gainesville, FL 32611-0620 USA, Phone: 352-392-1901, Fax: 352-392-0190, Email: [jcuda@ufl.edu](mailto:jcuda@ufl.edu)