FOLIAGE FEEDING TESTS OF *EUCRYPTORRHYNCHUS BRANDTI* (HAROLD) (COLEOPTERA: CURCULIONIDAE), A POTENTIAL BIOLOGICAL CONTROL AGENT OF THE TREE-OF-HEAVEN, *AILANTHUS ALTISSIMA*

Nathan J. Herrick, Scott M. Salom, Loke T. Kok, and Thomas J. McAvoy

Virginia Polytechnic Institute and State University, Blacksburg, VA 24061

ABSTRACT

Ailanthus altissima (Mill.) Swingle, tree-of-heaven, is a species native to China and North Vietnam. It was first introduced into the United States in the 1700s and is now distributed and invasive throughout much of North America where it out-competes native vegetation. The invasiveness of tree-of-heaven is primarily attributed to the lack of natural enemies in North America, its aggressive invasion of newly disturbed areas, tolerance of extreme conditions, and allelopathic properties. Mechanical and chemical controls are current tactics used for suppression, but implementation is costly, and can be as much as $8,750/ha.

Biological control was initiated in 2004 as a potentially sustainable tactic for tree-of-heaven suppression. The weevil, *Eucryptorrhynchus brandti* (Harold) was identified in China and imported for quarantine testing as a possible biological control agent. We conducted adult choice and no-choice feeding tests on foliage of tree-of-heaven in 2007 and 2008 to determine the host specificity of this weevil. Twenty-nine nontarget plant species from 14 families that are taxonomically, economically, and/or ecologically related to tree-of-heaven were tested. Results, to date, indicate that *E. brandti* feeds significantly more on foliage of tree-of-heaven when compared with all test plants. Mean range of feeding on North American *Ailanthus altissima* was 32.5 ± 22.2 to 106.5 ± 16.0 mm^2/adult/day (± SD) in no choice tests, with significantly reduced feeding on *Simarouba glauca* DC, Paradise tree (7.7 ± 6.7 mm^2/adult/day), and *Leitneria floridiana* Chapman, Corkwood (47.6 ± 20.8 mm^2/adult/day). The mean range of feeding by *E. brandti* on all other test species was 0.0 to 3.3 ± 5.0 mm^2/adult/day. These data are helping to guide us on which species to focus on for *E. brandti* developmental tests. At this time, *E. brandti* appears to be a host-specific herbivore.