

**U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Biocontrol Talking Points
April 5, 2013**

New Biocontrol Release Policy for *Spathius agrili*

- The U. S. Department of Agriculture's Animal and Plant Inspection Service (APHIS) and Forest Service (FS) initiated a biological control effort shortly after the emerald ash borer (EAB) beetle was detected in Michigan in 2002. Federal foreign exploration in The People's Republic of China (PRC) identified three potential biological control agents—*Spathius agrili*, *Tetrastichus planipennisi* and *Oobius agrili*.
- Following host range testing in PRC and the United States, an Environmental Assessment (EA) was prepared outlining the risks and benefits of releasing these three parasitoids. Based on host-specificity testing conducted in the field in PRC and in laboratory studies in the United States, the three parasitoids are acceptably host-specific and are not expected to attack other insect species besides EAB, although there may be incidental attack of other *Agrilus* species.
- The EA was available during a 60-day public comment period. Forty-one comments were received; thirty in favor and eleven opposed. No critical issues were raised during the comment period. APHIS prepared a Finding-Of- No-Significant-Impact, and with the State of Michigan approved the release of the parasitoids in July of 2007. Limited releases also took place in 2008.
- Since 2009, the EAB Biological Control Program has been rearing non-native stingless wasps for programmatic and ongoing research releases in EAB-impacted States.
- All three wasp species have been recovered from release sites in Michigan and Ohio. *Tetrastichus* and *Oobius* have been regularly recovered and documented more than one year after release. Although *S. agrili* appears to establish after the first winter, its populations substantially decrease in the second winter or are not recovered at all.
- One possible explanation for the uncertain performance of *S. agrili* is climate incompatibility. *Spathius agrili* was collected from Tianjin, China (39th parallel north) which is at the southern limit of the EAB distribution in China. The climate in Tianjin is a better match for the central region rather than the northern region of the United States.
- Because of the disappointing recovery of *S. agrili* at northern release sites, the EAB Biological Control Program will no longer provide *S. agrili* for programmatic releases in areas above the 40th parallel north. A limited number of *S. agrili* research releases will continue as we study the situation. *Tetrastichus* and *Oobius* releases will continue in Michigan, Minnesota, Wisconsin, the northern areas of Indiana, Illinois, Missouri, New York, Ohio, Pennsylvania, and coastal areas from New Jersey northward through the New England states.

- The Program chose the 40th parallel rather than the 39th because the climate matching data are imprecise. It adopted a conservative approach to be more inclusive regarding eligible locations for *S. agrili* releases. Moving forward, the Biocontrol Program will only recognize whole counties—if any portion of a county falls on or below the 40th parallel north, that county is eligible for *S. agrili* releases.
- *Spathius agrili* releases will continue where current data suggests it is more likely to establish and perform well. Release and evaluation efforts in these areas, particularly in Kentucky, Missouri, Tennessee, Virginia and West Virginia have been more recent and performance of *S. agrili* is not yet known.
- Monitoring will continue at sites both north and south of the 40th parallel north where *S. agrili* has been released, and we will continue to evaluate any new results or recoveries as we move forward.

Biological Control Program Overview

- In 2009 the EAB Biological Control Production Facility was established at Brighton, Michigan to mass-rear the three approved exotic parasitoids and potentially other natural enemies as they become available in the future. The Biocontrol facility supported parasitoids releases in Michigan, Ohio, Indiana, Illinois and Maryland.
- USDA continues to research and support biocontrol of EAB as a long-term strategy in the United States. In 2010, EAB biocontrol releases took place in Indiana, Illinois, Kentucky, Maryland, Michigan, Minnesota, Ohio, and West Virginia.
- Parasitoid release sites are established across a range of EAB densities, ash species, and environs to determine the conditions under which each species is most effective. Results at the different sites will help determine the locations for mass-releases in subsequent years and potentially for establishing locations for field insectaries.
- USDA and States officials, along with the PPQ EAB National Program Management collectively determine release sites for EAB biocontrol. State cooperators secure permits and agree to follow standardized release and monitoring protocols. Cooperators also agree to monitor release sites for parasitoid establishment for a minimum of three years following each release.
- The biological control production facility is dedicated to the mass rearing of three EAB parasitoid wasps; *Spathius agrili*, *Tetrastichus planipennis* and *Oobius agrili*. These wasps are stingless, very small insects that attack either the emerald ash borer beetle egg or larvae. The wasps cannot sting humans or pets and pose no risk to human health.

Spathius agrili parasitize EAB larvae by drilling through the bark and laying up to 20 eggs on its host. The hatching parasitoid larvae feed and develop on the EAB larva, resulting in its death. *S. agrili* has a long ovipositor enabling it to attack larvae in ash trees of varying size.

Tetrastichus planipennis also attacks EAB larvae. The life cycle of *Tetrastichus* is similar to that of *S. agrili* however the female lays eggs inside EAB larvae where the parasitoid larvae grow, eventually killing their host. Because of its short ovipositor, *Tetrastichus* targets larvae in ash trees with a diameter of 5 inches or less.

Oobius agrili are the smallest of the wasps and prey on EAB eggs. When *Oobius* locates an EAB egg in the bark crevices, it injects its own egg inside the egg where it will hatch, grow and kill the host egg.

- EAB and its natural enemies are difficult insects to mass-rear. Therefore the challenges of rearing the wasps will limit their availability for releases. However as rearing methods improve and production increases, the goal is to provide natural enemies for releases in infested states on a priority basis.
- Early on, parasitoid production was modest and biocontrol releases were limited to select States—the production of the three stingless wasps was less than 20,000 female insects. In contrast, today the Brighton facility supplies 275,000 parasitoids for release in 14 States. State program partners monitor releases in Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and Wisconsin.
- The EAB Biological Control Program continues to refine its methods, systems and protocols. The Program continues to support research and study to optimize its capacity for parasitoid rearing and releases. The USDA's Animal and Plant Health Inspection Service (APHIS), Forest Service (FS) and Agricultural Research Service (ARS) are working together to develop and evaluate biological control of EAB as a long-term management strategy in the United States.