

**FIELD PERSISTENCE AND EFFICACY OF THE FUNGUS  
*BEAUVERIA BASSIANA* AGAINST THE EMERALD  
ASH BORER, *AGRILUS PLANIPENNIS***

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**ABSTRACT**

The emerald ash borer (EAB), *Agrilus planipennis* (Coleoptera: Buprestidae), was first discovered in 2002 near Detroit, MI, probably arriving in solid wood packing materials on cargo ships from Asia. Since then, the beetle has spread over much of northeastern North America. Within these areas more than 25 million ash trees (*Fraxinus* spp.) have been killed by EAB. Adult beetles feed only on foliage but the key damage is inflicted by larvae feeding on the inner bark of ash trees. Tunneling by a sufficiently high number of larvae effectively girdles the tree resulting in death.

As part of our multi-year study on the development and use of the entomopathogenic fungus *Beauveria bassiana* (Ascomycota: Hypocreales) against the EAB, we are determining persistence of the fungus sprayed on ash trees and leached into soil. Fungal inocula present on ash bark

and leaves, collected at 30 min, 7 days and 14 days after spraying, were quantified by use of culture based (semi-selective medium) and molecular (real-time PCR assay) methods. In addition, we conducted bioassays using EAB adults to determine whether the level of inocula persisting in the field were sufficient to affect beetle survival on treated foliage or bark.

Our results showed that the fungus persisted for at least 2 weeks on both leaves and bark and caused mortality in beetles exposed to treated samples. Inocula remained on bark, however, at higher concentration than on leaves after 2 weeks and even increased after week 1, indicating that the fungus may have multiplied. These results suggest that pre-emergent sprays on ash trunks could be a practical means to target adults during emergence or oviposition.