

NATURAL INFECTIONS OF *BEAUVERIA BASSIANA* IN *AGRILUS PLANIPENNIS* POPULATIONS IN MICHIGAN

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ABSTRACT

The emerald ash borer (EAB), *Agrilus planipennis* (Coleoptera, Buprestidae), is an invasive pest from Asia posing a serious threat to ash trees (*Fraxinus* spp.) in North America. Beetles have a 1- or 2-year life cycle completed entirely in association with ash trees. Since its discovery in 2002 near Detroit, MI, EAB has now spread over much of northeastern North America. Within these areas over 25 million trees have been killed.

The beetle is considered a minor and periodic pest in its native range, likely due to the presence of natural enemies and more resistant native ash species there. The potential of these natural enemies as biological control agents led to surveys in China, within the beetle's native range, and in Michigan, where it is most widespread in the United States. A survey of natural enemies conducted by Bauer and Liu from 2002 to 2006 in Michigan resulted in a collection of

fungal isolates including many of *Beauveria bassiana* (Ascomycota: Hypocreales) from late instar larvae and prepupae.

In this study we analyzed these EAB-derived isolates and compared them to ash bark- and soil-derived isolates to determine the sources of fungal inocula infecting EAB. Molecular analyses showed that most of the EAB-derived isolates clustered with soil and bark isolates from the same sites, indicating that beetles picked up indigenous inocula. Data also suggest that beetles carry the fungus from one tree to another. Furthermore, bioassay studies showed that representative isolates are pathogenic against EAB, and as virulent as a commercial strain. This suggests the potential of indigenous isolates as biocontrol agents.