

## EVALUATION OF RESISTANCE OF ASIAN AND EUROPEAN ASH SPECIES AND CULTIVARS TO EMERALD ASH BORER (*AGRILUS PLANIPENNIS*)

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Since its discovery in Michigan in 2002, the emerald ash borer (EAB) (*Agrilus planipennis* Fairmaire) has been a devastating exotic invasive pest of North American ash trees (*Fraxinus* spp.), killing millions of urban and rural ash trees. Many communities have lost or risk losing many valuable ash trees, and as part of reforestation efforts, it is imperative that new *Fraxinus* taxa less susceptible to EAB be developed. To identify possible *Fraxinus* taxa less susceptible to EAB, we performed a series of no-choice (NC) feeding bioassays with 24 different species and cultivars of Asian and European ash between 2009 and 2017. Ash studies included laboratory NC adult leaf feeding studies, and laboratory and field larval colonization studies. The Asian ash taxa *F. chinensis*, *F. chinensis* var. *rhynchophylla*, *F. mandschurica*, and *F. mandschurica* var. *japonica* were the least preferred in the NC leaf feeding studies, with similar results found in the larval colonization studies. Of the European ash taxa tested, *F. angustifolia*, *F. excelsior*, *F. pallisae*, and *F. longicuspis* were the least preferred by adult EABs. Field evaluation of these same Asian and European taxa, exposed to a natural EAB population in an arboretum tree breeding nursery, was consistent with the aforementioned studies. In addition, since elm (*Ulmus*) is mentioned in the literature as a potential EAB host, we conducted adult NC leaf-feeding and larval colonization studies to determine the relative susceptibility and preference for elm taxa by EAB. Field and laboratory studies revealed that none of the 11 elm taxa tested were susceptible to feeding by adult EABs and were not colonized by larvae. To date, overall, six Asian and three European species appear to be less suitable and/or preferred for adult feeding and larval colonization by EAB and may have potential for use in future ash breeding programs.

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