Emerald Ash Borer Q&A's
March 2011

Q. Is EAB a problem in its host country?
A. In Asia, EAB is not abundant, considered only a periodic pest. In fact when a researcher from USA initiated a study to compare the genetics of EAB in Asia to that in North America, he was not able to find many specimens, particularly in Japan. Some beetles were found in China and it was determined that the EAB in North America is genetically similar to that in Beijing, China.

Q. Are ash species in China affected by EAB in that country?
A. Emerald Ash Borer originated on the Asian continent along with Asian species of ash. Following eons of beetle and tree coexistence, Manchurian ash and other Asian species evolved resistance to the beetle. Only when under environmental stress do the trees succumb to the beetle. (*Quote from Dr. Eric Rebek, Oklahoma State University, cited in Ontario Arborist Nov/Dec 2010)*

Q. Can we grow Asian ash in North America?

A. Manchurian ash has been distributed through the nursery trade. In the 1960's, the cultivar "Manchana Ash" was selected by the Morden Research Station, Morden, Manitoba. Mancurian ash was also crossed with North American black ash, cultivated for use as in landscaping and windbreaks around farms.

The Manchurian grows into a denser oval form with age It has been highly tolerant of urban pollution and makes an excellent landscape tree in moist areas, especially along roads and ditches where a good amount of water can be available. In recent years, Manchurian ash has demonstrated susceptibility to insects like cottony ash psyllid and western ash bark beetles. They also do not tolerate high pH soil and may be susceptible to late spring frost.

Q. Can breeding programs introduce Asian resistance to North American ash species?
A. The USDA has been conducting research on hybridization of resistant Asian ash species with North American ash species to generate novel ash hybrids that retain the EAB resistance. A longer-term goal of this research is to generate EAB resistant ash trees that retain all the characteristics of the native ash species and maintain only the minimum portion of the Asian species required to maintain EAB-resistance.

Efforts at hybridization have focused on crosses between Chinese ash and American white ash (*F. chinensis* and *F.americana)* or American green ash (*F.pennsylvanica)* and between Manchurian ash and American black ash (*F. mandshurica* and *F. nigra)*. The problems that need to be overcome are the relatively low seed yield and incompatibilty in breeding.

American researchers are currently studying and breeding 6 species of Asian ash including Korean, Chinese, Pax's, Chinese flowering ash and island. In Windsor, there are still some blue ash that demonstrate a level of tolerance to EAB invasion. The development of an EAB resistant ash would be fantastic and further research in Canada would be welcomed, however such a success will not save the 860,000 estimated ash in Toronto or the many billions of ash trees in North America that are immediately threatened.

Q. Are there natural controls?
A. "Because EAB is from northeast Asia, U.S. and Chinese scientists have been searching for EAB and its natural enemies in that region since 2003. In Asia, EAB population densities are relatively low due to the combined effects of EAB-resistance in Asian ash species, scarcity and patchiness of forests, and the EAB natural enemy complex." In spite of these difficulties, three promising parasitoid species have been discovered, including two larval parasitoids (*Spathius agrili* and *Tetrastichus planipennisi*) and an egg parasitoid (*Oobius agrili)*

Potential biological control agents are subject to rigorous host specifity testing, designed to assess the risk to non-target species. "After careful analyses by US federal and state regulatory agencies in conference with university, federal, and state researchers, it was determined the three EAB parasitoids posed no significant risk to native wood borers or their environs." Permits were approved for release.

In 2007 the small scale release of these three parasitoids were conducted in Michigan. More substantial releases happened in 2008 and 2009. All three released parasitoids were recovered from around the sites of release in subsequent years, meaning that the three species were able to successfully reproduce and overwinter in southern Michigan. Researcher continue to monitor long term establishment of these parasitoids and their impact on the EAB. Establishment of an introduced organism is subject to a lag time when population development is slow. At this point it is unknown when or if the parasitoid populations will expand to control the EAB. A 5 year plan (2010-2014) is proposed for field tests.

A government funded Biological Control Production Facility in Brighton, MI was designed to produce EAB parasitoids for field release. "These small parasitic wasps must be reared in EAB eggs or larvae, which are produced or harvested from bolts of EAB-infested ash trees felled in nearby woodlots. Although the parasitoids are reared and stockpiled throughout the year for release during the field season, the rearing methods are time and labor intensive. At the present time, production of EAB eggs and larvae limits the number of parasitoids that can be produced. Thus, demand for biological control agents is likely to exceed production for the foreseeable future."

"Scientists will also continue to explore the U.S. and Asia for additional EAB natural enemies for possible use in the EAB biological control program. Most recently, a new species of *Spathius* was discovered attacking EAB larvae in Korea and Russia, where temperatures are colder than in Tianjin, China, where *S. agrili* was collected."

Studies of native (North American) natural enemies have found the level of parasitism to be low, meaning that while they offer some natural control, it is not enough to have a significant effect on the population development. Some native entomophagus fungi have been found attacking EAB. This may be an indication that some native parasitoids and predators are learning to attack EAB.

Quotes from
http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/downloads/EAB-FieldRelease-Guidelines.pdf)