Bronze Birch Borer

Agrilus anxius Gory
Coleoptera: Buprestidae

Akers, R. C.; Nielsen, D. G. 1984. Predicting *Agrilus anxius* Gory (Coleoptera: Buprestidae) adult emergence by heat unit accumulation. Journal of Economic Entomology 77: 1459-1463.

Objective: To develop a degree-day model of adult *A. anxius* emergence to improve the timing of treatment applications.

Abstract: Bronze birch borer, *Agrilus anxius* Gory, is a severe pest of white-barked birches, *Betula* spp., in North America. Stressed trees in urban settings are particularly susceptible to *A. anxius*, but infestations also occur in forests. Larvae, known as flathead borers, tunnel into the trunks of trees and consume the cambium and phloem before emerging as adults from D-shaped exit holes. Infestations result in the girdling of the cambium and symptoms include a gradual progression of canopy thinning and branch dieback from the upper crown towards the base of the tree. Severely weakened trees die, but some may survive with reduced aesthetic value.

Pheromone traps are not available for *A. anxius* or other buprestids. Management of buprestid species typically consists of insecticide sprays applied in the spring, based on calendar date, to the bark of susceptible trees before the adult females oviposit. Larval *A. anxius* chew through the chorion directly into the wood beneath, so insecticides must be applied to the trunks before oviposition to exploit this small window of larval vulnerability. However, insecticide applications based on calendar date do not consider unusually cool or warm spring weather that may alter adult emergence. The timing of spray applications against *A. anxius* can be improved through the use of a degree-day (DD) model with a base temperature of 10ºC that predicts adult emergence. Research conducted in Ohio, USA, indicated that 10% of adult *A. anxius* emerge when the mean degree-day accumulation reaches 235.7DD. Insecticides should be applied at that time for this pest.

Sampling Procedure: Begin monitoring degree-day accumulation on 1 April using a base temperature of 10ºC. Expect 10% of adult *A. anxius* to emerge when the mean degree-day accumulation reaches 235.7DD. Insecticide treatments should be applied to the bark of white-barked birches when temperatures reach this threshold.

Note: This model was developed for use in Ohio, U.S.A., and may not be accurate for other regions. Use with caution until validated in other areas.