

Balsam Twig Aphid

Mindarus abietinus Koch

Homoptera: Aphididae

Kleintjes, P. K.; Lemoine, E. E; Schroeder, J.; Solensky, M. J. 1999. Comparison of methods for monitoring *Mindarus abietinus* (Homoptera: Aphididae) and their potential damage in Christmas tree plantations. *Journal of Economic Entomology* 92: 638-643.

Objective: To compare methods for determining infestation levels of *M. abietinus* in Christmas tree plantations.

Abstract: The balsam twig aphid, *Mindarus abietinus* Koch, causes distortion and loss of needles on balsam fir, *Abies balsamea* (L.), Christmas trees. This study, conducted in balsam fir Christmas tree plantations of central Wisconsin, compared two sampling methods (beating discs and visual counts of infested shoots) to monitor aphid densities and make informed decisions regarding control.

The beat disc method was most effective at detecting *M. abietinus* before and during budbreak, while the visual count method was most effective after budbreak. A minimum of 15 trees in each stand was the recommended sample size for both methods. For monitoring purposes, growers should sample before budbreak by using the beat disc method, and limit insecticide applications to trees with greater than two fundatrices per sample.

Sampling Procedure:

Beat disc method: Use a 53.4-cm² circular beating disc for sampling aphid numbers. Each disc consists of a piece of black velvet glued to the inside of a 17 cm diameter plastic embroidery ring. Place the ring within the outer mid-crown of each tree and beat the foliage five times with a gloved hand to dislodge insects onto the disc. Aspirate all aphids and place in vials containing 70% ethyl alcohol for later identification and tally. Conduct the sample at or before budbreak (i.e., mid-May in this study). Beat samples should be processed immediately to ensure proper timing of control measures in the current year.

Visual count method: Count the number of infested and uninfested shoots on a 20 cm long mid-crown branch on each of 15 trees previously unsampled. Calculate the proportion of infested shoots. The visual count sample should coincide with the peak of wingless, spring females (i.e., late May), winged adults (i.e., early June), and after egg laying (oviposition) has occurred (i.e., early July). On the last sample date, count and record the number of shoots with no curling, slight curling (needles slightly twisted) or extensive curling (permanent).

After shoots emerge and become infested, visual counts of infested shoots are reliable indicators of future damage. For current year control decision-making, growers should monitor aphid populations by the beat disc method and apply registered insecticides when high infestation levels occur (i.e., greater than two or three fundatrices per sampling disc).