

Eastern Spruce Gall Adelgid

Adelges abietis (Linnaeus)

Homoptera: Adelgidae

Fidgen, J. G.; Teerling, C. R.; McKinnon, M. L. 1994. Intra- and inter-crown distribution of the eastern spruce gall adelgid, *Adelges abietis* (L.), on young white spruce. *Canadian Entomologist* 126: 1105-1110.

Objective: To determine both the intra- and inter-tree distribution of *A. abietis* on young white spruce, *Picea glauca* (Moench.) Voss., that were open-grown or undergoing crown closure.

Abstract: The eastern spruce gall adelgid, *Adelges abietis* (Linnaeus), forms pineapple-shaped galls on the shoots of white and Norway, *P. abies* L., spruce. When populations are high, they cause shoot deformation and reduced growth. In most cases, the damage is negligible except in Christmas tree plantations or ornamental trees where aesthetic losses render trees unmarketable. Extensive sampling was conducted to determine the within and between tree distribution of *A. abietis* so that an efficient sampling scheme could be developed. The trees sampled in this study were 1-4 m in height and from 9-15 years old.

Adelgid galls were found mainly on lateral shoots within the mid-crown of open grown trees. After crown closure, most galls were found in the upper crown, above the point where branches of adjacent trees overlapped. The inter-tree distribution of *A. abietis* did not differ significantly from the negative binomial distribution, indicating a high degree of aggregation among trees. Therefore, a stratified random sampling plan using the first 20 lateral shoots of an open grown, mid-crown branch was recommended for monitoring *A. abietis* populations.

Sampling Procedure: Select every fifth to tenth tree in every fifth to tenth row systematically in the area of concern, and inspect mid-crown branches for presence of *A. abietis*. Because *A. abietis* populations are usually clumped, a mid-crown branch of each adjacent tree should also be assessed (i.e., eight neighboring trees adjacent to the sample tree). On each tree, select either a west- or south-facing open-grown, mid-crown branch and count the number of *A. abietis* galls in the first 20 lateral shoots examined. Express *A. abietis* damage as the percentage of lateral shoots infested per tree.

Note: The sample unit was designed primarily for use in Christmas tree plantations or forests less than 15-years-old.