

INTRASPECIFIC VARIATION IN *TSUGA* *CANADENSIS* FOLIAR CHEMISTRY

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ABSTRACT

Three groups of eastern hemlock (*Tsuga canadensis* Carr.) trees were analyzed to compare their chemical composition and the potential for naturally occurring resistance to hemlock woolly adelgid (*Adelges tsugae* Annand; HWA). Potentially resistant ‘parent’ trees located in southern Connecticut were compared with rooted propagules from those same trees and control trees located in northern Vermont (outside of the current range of HWA infestation). For trees in each of the three groups, the cations Ca, P, K, C and N were quantified

and terpenoid profiles were developed using SPME and GC/MS. There was no significant variation in terpenoid profiles between the three groups of hemlock trees. Propagules retained elevated levels of Ca and N from fertilization during propagation, suggesting that their chemical composition does not mirror the parent trees. The potentially resistant ‘parent’ trees had higher levels of K. This may impart some level of tolerance/resistance to HWA and explain their persistence in hemlock forests that have been decimated by HWA invasions.