

A HIGHLY EFFECTIVE TREE INJECTION METHOD USING IMIDACLOPRID FOR THE CONTROL OF EMERALD ASH BORER (*AGRILUS PLANIPENNIS*)

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Abstract

The objectives of this experiment were to determine the comparative uptake, translocation of imidacloprid and resultant efficacy following early or late season stem injections.

Fifty green ash trees located in a residential area of Windsor, Ontario and ranging from 7 to 26 cm dbh, were injected with an experimental 5% formulation of imidacloprid (ITIS) using Systemic Tree Injection Tubes (STIT) at a dosage of 0.25 g/cm dbh on either 25 June or 17 September 2003. Efficacy was evaluated both in terms of controlling emerald ash borer (EAB) and with respect to protection of high value trees. Approximately 1 year post treatment, comparative assessments of adult emergence, exit holes on branches and trunks, crown die back, foliar density and epicormic shoots were made for both treated and untreated trees on the site. Based on these key response parameters, excellent control

of EAB and effective protection of the injected trees was observed 1 year following early season injections. Although the late season injections appeared to provide less control of EAB, protection from crown dieback was good.

Quantitative analysis of imidacloprid concentrations in critical foliar and stem tissues upon which adult and larval life stages of EAB feed respectively confirmed that uptake and translocation of imidacloprid was rapid resulting in exposure concentrations well in excess of toxicity thresholds for both adults and larvae within 7 days of treatment. Following early season treatments, imidacloprid concentrations remained above toxicity threshold levels throughout the 83-day sampling period. Foliar concentrations observed in the spring following late-season treatments were comparatively lower but still well in excess of toxicity thresholds for EAB adults.