Plant growth regulators effective on trees to reduce annual trimming expenses

Recent tests have shown chemical plant growth regulators to be useful on trees.

Chemical manufacturers and utility industry consultants are enthusiastic that the regulators will greatly reduce annual trimming costs, which can total $700 million.

The newest plant growth regulators are chemicals that inhibit the synthesis of gibberellin, the natural hormone responsible for plant growth, according to Paul Johnston, vice-president of Environmental Consultants, Inc. (ECI), of Southampton, Pa.

ECI began testing tree growth regulators in 1982 while developing methods to inject chemicals directly into trees under pressure. "If applied properly," says Johnston, "growth chemicals can reduce gibberellin production by as much as 85 percent. The chemicals don't totally shut off the production of gibberellin. (But) growth is dramatically reduced without harming the tree."

Mature trees must be trimmed every one to three years on average, depending on region, species and local growing conditions. The ideal growth regulator will slow plant growth and extend the time interval required to trim trees and shrubs without harming the plant.

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New compound is working

Prunit is a new compound developed by Valent U.S.A. Corp. (formerly Chevron Chemical Company). It has shown "excellent growth control characteristics on 21 species of trees," according to Raymond R. Bruns, recently retired from Union Electric Co. of St. Louis. The tests were conducted in Missouri, Illinois and Iowa.

Bruns says field tests indicate Prunit can extend trimming intervals by two years or more in some tree varieties with "very little, if any, phytotoxicity problems."

In commercial applications, as described by Johnston, crews drill holes

Tree species, location and weather conditions can affect the growth response of chemical growth control products.

into tree trunks at selected spacings. Holes about $3/16$ inches in diameter are drilled from 2 to $2\frac{1}{2}$ inches long into active sapwood at slightly downward angles. "The trick," says Johnston, "is to get the holes as close to the actively conducting xylem tissue as possible."

Pressurized injector probes then force the growth regulator into the tree.

Depending on the time of year, tree species and growing conditions, Prunit can begin reducing growth in four weeks, Johnston says.

"Further field trials and evaluations are required to determine optimum injection site spacing rates, depth and angle of bore holes, timing of injection, and other factors for each tree species.

"If everything in the application process goes well," says Johnston, "you will get good results from trunk injection.

"In most tree species, we're typically seeing about a 50 percent reduction in branch and twig elongation the first year after treatment with Prunit. In some cases, growth control is well over 80 percent."

But the variables of tree species, location and weather conditions must be considered, for the effect they can have on growth response of Prunit and other chemical growth control products. Johnston says the trim cycle can be extended from two to five or more years.

Despite evidence that chemical growth regulators pose minimal health risks when used properly, Johnston says utilities have been slow in committing to a chemical growth control program.

Take note of the variables

"Utilities are beginning to compare chemical control costs with conventional mechanical trimming practices, says Johnston: "We're beginning to get enough data to project when trees should be treated, how long the growth response will last and how much trimming costs can be reduced."

Johnston estimates that a typical utility with a $9 million, three-year trimming budget could possibly save as much as $300,000 by using growth control chemicals to extend the trim cycle by one year.

If the cycle could be extended for three to five years, Johnston calculates a potential savings of $840,000.   **LM**