

Tradition left behind in fight vs. elm disease

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the chances that Dutch elm disease will gain a foothold are greatly reduced.

Not everyone agrees, however.

"We're getting away from the traditional concept of spraying for bark beetles," said Dr. Douglas Caldwell of Davy Tree Expert Co. Caldwell said the high concentrations of insecticide prescribed for large trees like elms pose potential exposure problems for workers, and could lead to liability due to drift. What's more, said Caldwell, elimination of bark beetles appears to be unnecessary as long as the fungus is attacked directly with the application of trunk-injected fungicides.

The most widely used fungicide is Arbotect, manufactured by Merck. Another fungicide, Lignasan, has been discontinued by DuPont, but its active ingredient is now available from ERI under the name Elm Fungicide. Both fungicides are applied via macro-injection, whereby a large hole is drilled in the base of the tree, a tank is fastened with a harness, and dilute fungicide is fed into the tree either by gravity or by low-pressure injection.

Alamo, a newer fungicide from Ciba Turf and Ornamental Products, is available in both macro and micro-injection formulas. The new micro-injection system consists of individual, self-contained units that are inserted in small holes drilled in a tree's flare roots.

After a light tap from a hammer, the units are pressurized and the fungicide (about 10 milliliters compared to the 10 gallons used in macro systems) is injected into the tree.

Once applied, "You can basically walk away from it," said Dr. Doug Houseworth, manager of technical support at Ciba, "whereas with the macro system you've got to baby-sit it." Company officials estimate the micro-injection units save six to seven hours of labor per tree over macro-injection methods.

All three fungicides are most effective when used as a preventive treatment.

In nationwide tests on more than 8,000 healthy trees treated with Elm Fungicide, according to ERI, less than two percent were lost to Dutch elm disease. Studies on Alamo conducted by Dr. R. Jay Stipes of Virginia Polytechnic Institute yielded similar results.

The fungicides can also be used to treat infected trees, provided the disease is caught early, typically when trees show 20 percent or less crown symptoms. Under these circumstances, ERI reports a success rate of 54 percent for Elm Fungicide.

Current research in Stipes' lab focuses on comparing the efficacy of micro- and macro-injection techniques, including how well the fungicide is transported through the tree and how long it remains active. While Stipes has not directly compared Alamo and other fungicides, he said he feels that Alamo does less damage to the tree itself. He reports having applied as much as six times the

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Scientists attempting to improve friendly virus

New fungicides and resistant elm cultivars may make their job easier, but when it comes right down to it, arborists are still fighting the battle against Dutch elm disease the old-fashioned way: one tree at a time.

Is there any hope for a tactical strike that would wipe out Dutch elm disease altogether?

A cursory survey of the scientific literature reveals a possible answer in the December 1993 issue of the British magazine *Geographical*. It reported that scientists have isolated a naturally occurring virus that infects the Dutch elm fungus and significantly reduces its potential to cause disease. Efforts are underway to

tinker with the virus, making it more effective.

The ultimate goal is to release a fortified virus into the wild where, theoretically, it would spread quickly, taming the once-deadly fungus. This is an exciting prospect, but don't expect to see the virus on the shelf at the local garden center any time soon. While the concept is certainly intriguing and appears technologically feasible, much work remains to be done.

In addition, any modified virus is certain to face formidable regulatory hurdles, since federal regulations are notoriously — and, perhaps, appropriately — strict in cases involving genetic engineering.

— David M. Rose

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