

prominent roots were well compartmentalized, but the holes on the flat side of the tree had extensive discoloration (Fig. 9). Decay was associated with some wounds.

Portland and Kennebunkport trees. Some of the trees from this collection had very small central cores of heartwood. Trees that received one injection treatment had very slight injury (Fig. 10). Trees that had large central cores of heartwood showed a different pattern: the wounds from a single treatment coalesced with the central core (Fig. 11). When the wounds penetrated older central columns of decay or even came close to them, the new column of discolored wood was much larger than those not near other internal defects (Fig. 12). Small pockets of decay were associated with a few holes.

Discussion

Injections repeated for several years caused severe internal injuries.

There was great variation among individual trees in their response to the injection wounds. The large amount of decay associated with the 3-year-old wounds in the Delaware trees indicates some of the problems that can arise from even a single treatment. The necrotic spots around other holes add to the problem.

When a tree is infected with the Dutch elm disease fungus, every reasonable treatment should be tried or the tree will die. But the use of injections for prevention of the disease poses some serious problems.

Until better methods are developed, we suggest the following guidelines when injections must be made: make holes as shallow as

possible, as few as possible to introduce the desired amount of material, as clean-edged as possible to reduce wound dieback that could lead to dead spots or cankers, as small as possible in diameter, as low as possible for the first treatment, and at least 18 inches above it for a second treatment, and inject on the ridges of roots, not in the depressions.

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ABSTRACT

Staley, J.G. and J. Dickson. 1977. **Transplanting tolerances of seven tree species.** Weeds, Trees and Turf 16(3): 18.

Although there is apparent universal knowledge of transplanting requirements for trees there are few reported articles on tree transplanting research. The purpose of this study was to expand knowledge of tree transplanting tolerances of various species of different sizes. Information was obtained on the following trees: bald cypress, green ash, Norway maple, red maple, sugar maple, pin oak and willow oak.