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UPDATE ON THE TREE INJECTION METHOD TO CONTROL TREE RE-GROWTH¹

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A project to control tree re-growth was initiated in the early 1960's. The Edison Electric Institute (EEI) contracted with Battelle Memorial Institute to conduct experiments. Many chemicals and combinations of chemicals were tried. Out of this scrutiny naphthalene acetic acid (NAA) was selected as the best.

Conclusions were drawn after 10 years of work.

1. New candidate chemicals should be looked at.
2. A more economical method should be found to apply the material.

In 1973 EEI became interested in the control of woody re-growth of trees and asked the Electric Power Research Institute (EPRI) to put a project on its agenda; EPRI agreed. The Ornamental Plants Laboratory at Delaware, Ohio, a research arm of the ARS, was contracted with to perform the necessary research to (1) find a suitable chemical and (2) find a better and more economical method of application. Dr. Charles Wilson was

appointed Project Manager. Dr. Wilson in turn appointed two plant pathologists, a chemist, and an agricultural engineer to man the research team.

From the beginning in 1973, the effort was to put the chemicals into the tree by the injection method using from 100 to 400 pounds per square inch pressure.

Problems were encountered:

1. Shape and size of the injection tool.
2. Depth of injection hole.
3. Pressures best suited.
4. Dutch elm disease often would kill the tree before chemicals could work.
5. Trees were killed because of too concentrated a chemical or too much volume.
6. Foliage decline (due to a number of reasons).
7. Tree decay at the point of injection.

The Agricultural Engineer has done a fine job of redesigning the proper tools to do the job. He is presently working to simplify and perfect the tools to do the injection work.

¹Presented at the International Shade Tree Conference in Detroit, Michigan in August 1975.

During 1974 the project suffered a setback; Dr. Charles Wilson resigned from the project for personal reasons. This left the project without his expert guidance. However, since Dr. Wilson only moved to OARDC in Wooster, Ohio, his experience is still available to the project.

The project was fortunate to obtain the services of Dr. Galen Brown, who was knowledgeable and familiar with all phases of the work. Soon his presence was felt as a guiding hand. Since that time, much progress has been made.

During the winter months of 1974-75 considerable work was done on silver maple and sycamore seedlings in the greenhouse. In these experiments, the chemist isolated specific chemicals from a number of trade-name products. The information gained from this phase was valuable in determining which chemicals to use in the spring of 1975 for the field experiments.

The field experiments in spring and summer of 1975 were conducted on land owned by The Ohio Power Company. Data were obtained on 15-year-old silver maple and American sycamore located on old spoil banks.

The original injection method was used along with a new portable injector perfected by Dr. Galen Brown. The portable injector seemed to work quite well. Three different treatments were placed in injection holes to determine the length

of healing time required. The results of this portion will be evaluated after leaf fall in 1975.

Data on vertical height and foliar decline were obtained from observations at three-week intervals on trees treated in 1973, 1974, and 1975.

Maleic hydrazide treatments continued at three-week intervals until mid-July when the chemical was changed to SADH.

A test is now in progress on silver maple seedlings using a commercial formulation of 3' (trifluoromethyl sulfonamido)-p-acetotoluidide, diethanolamine salt (9.7 g/l - .0097 g/l, 5 ml/seedling) and a commercial formulation of 2,3-dihydro-5,6-diphenyl-1,4-oxathiin (7.2 g/l - 0.0072 g/l, 5 ml/seedling).

Development and testing has been discontinued with the punch injector due to the extensive damage at the point of injection. A new portable injector has been designed and used on a number of trees with no apparent damage to the tree. It is hoped that figures will prove this to be the final injector to use after some refinement and simplification.

We of the Steering Committee are looking forward to additional breakthroughs on the problems mentioned to date.

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ABSTRACT

Newman, C.J. 1975. **Semi-mature tree transplanting—one man's view of techniques today.** *Arboricultural Journal* 2(8): 324-329.

The traditional technique for stiffening a root-ball is to place it on top of and lace it to a stout board, having first wrapped it with hessian to contain and lightly compress it. The author has now reversed this technique by changing the 'board' into a flat circular steel 'frame' which is placed on the top side of the root-ball instead of under it. Stout ratchets at 20 cm intervals around the 'frame' tension wide terylene straps (like car safety belts) which hug the root-ball to the 'frame' and compress it as well. With from six to 24 such straps each tensioned to one ton, even light sands are temporarily compressed to something approaching sandstone. This wrapping and stiffening takes place before the root-ball is moved and in fact the connecting girdle chain at the base of the ball sets up a shear-plane effect so that the 'framed' root-ball can be dislodged without the old style labour of undercutting. At the planting site the 'frame' is removed only when the ball is exactly set, thus avoiding the second incidence of collapse when the old style board is slid from under the root-ball. The hessian wrap has been seconded to the role of bridging the gaps between the straps, and it is normally removed and reused.