ABSTRACT

Leonard , O. A., D. E. Bayer, and R. K. Glenn. 1974. **Control of tree roots.** Weed Science 22: 520-522.

Roots in sewers and drains cause problems that are of considerable economic significance. Several authors have reported on the chemical control of such roots by soaking them in a herbicide solution for varying periods of time or by spraying the roots directly. In addition, they reported the results of studies with a variety of herbicides using these techniques for killing tree roots. They concluded that the most promising chemicals for this purpose were metham and dichlobenil.

This report will present results using foam to apply metham and dichlobenil for the control of roots in sewer lines. In addition, the results of treatment on the distribution of labeled assimilates within the plant will be presented. Although large woody plants are difficult to work with for conducting such studies, the results do indicate physiological effects of these treatments.

Metham applied alone or in combination with dichlobenil in foam, was effective in killing roots of eucalyptus or willow. An air-aqueous (19 to 1) foam of these herbicides was at least 20 times as effective as the aqueous mixture alone. Killing of the root with metham was rapid and extended above the lower treated portion, with the extent of necrosis resulting from translocation of the herbicide varying with concentration of metham that was used. The amount of the root killed with dichlobenil was limited to the treated area regardless of concentration. Four weeks were required to control the larger roots. Root killing with metham proceeded via both the aqueous and vapor phases. Results from labeling trees with Carbon 14 indicated that neither translocation nor accumulation were greatly affected by metham or dichlobenil except in the tissues actually killed. However, transport and accumulation into untreated roots were reduced for a few weeks by dichlobenil. Similar results were obtained with cotton treated with dichlobenil.

Soaking, spraying, and foam methods all have their own favorable and unfavorable aspects. Soaking requires the most herbicide and labor, but treatment can be accurately controlled; the solution can move through cracks or openings in the tile, killing all roots contacted. Spraying requires the most expensive equipment. Roots in the tile openings or cracks are not killed unless they are directly connected to roots that are sprayed. Although a very high concentration of herbicide is required for effective control by spraying (perhaps 80,000 ppmw metham and 800 ppmw dichlobenil), the actual quantity of herbicide used is much less than with soaking. Foam is a new method of application under extensive field trial. Both the quantity of chemical and amount of labor required are less with foam and the percentage of roots killed promises to be as good as or better than for either the soaking or spraying method. The main disadvantage to the foam appears to be the difficulty of controlling the distribution of foam in the sewer lines. Several pounds of pressure are required to force foam into the lines, and foam may be forced up service lines further than desired. However, a system of easily reachable clean-outs that can be temporarily plugged would solve this problem.

In conducting lathhouse research aimed at the control of roots in drains, the experimental procedure should relate realistically to the field problem. Some of the problems that should be considered are as follows: 1) Roots in the sewer lines grow in air, not in water; therefore, the roots to be treated should be grown in moist air. 2) Since roots in lines are of various sizes (often greater than 5 mm diam), some roots of more than 5 mm diam should be present. 3) Since the purpose of treatment is to kill roots in cracks and joints in the tile as well as in the lines, roots should be killed for a limited distance beyond that actually treated. 4) Since killing a root by a chemical can be slow (as with dichlobenil) quick tests for detecting viability of tissue may be of limited value. 5) The chemical must be nonexplosive and must not produce hazardous toxic vapors because some homes are not vented.