

SOIL INJECTION WITH MODIFIED ROOT PRUNER

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An effective injector for the application of liquid soil treating chemicals to nursery seedbeds was developed for our use through the assistance of W. J. Randolph, Research Engineer of the Iowa Conservation Commission.

The basic carrying unit for this injector is the lateral root pruner described by Wycoff.¹ To this unit we added a spray manifold with a plastic tube leading to each coultter. By the side of each coultter is a wheel cleaner supported by bolting to the coultter frame (fig. 1). Behind the cleaning blade and attached to it is a section of .25-inch galvanized pipe. These additions were made for an approximate cost of \$100, including labor and material.

When this cleaner-pipe unit is in place it provides a passage for the small plastic tube through the galvanized pipe to the base of the coultter. The fumigant is pumped into the manifold by a power take-off pump. It then passes through a flow regulator orifice at each manifold outlet, through the plastic tube to the trailing end of the galvanized pipe, and is released into the seedbed at that point.

The entire machine is carried on the 3-point hitch of a tractor (fig. 2). As the coultters are moved forward through the prepared seedbed the fumigant is injected at a depth of 4 to 6 inches. We use a 5-inch spacing between coultters while fumigating rather than the 6 inches needed for root pruning.

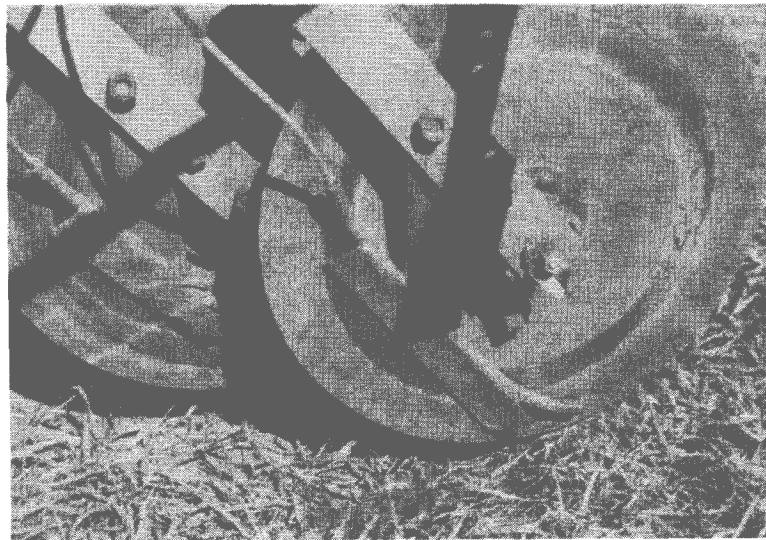


Figure 1.--Wheel cleaner with galvanized pipe bolted in place. Small plastic tubing leads into top of pipe.

¹ Wycoff, Hugh B. Lateral Root Pruner. Tree Planters Notes 38: 23, illus. Oct. 1959.

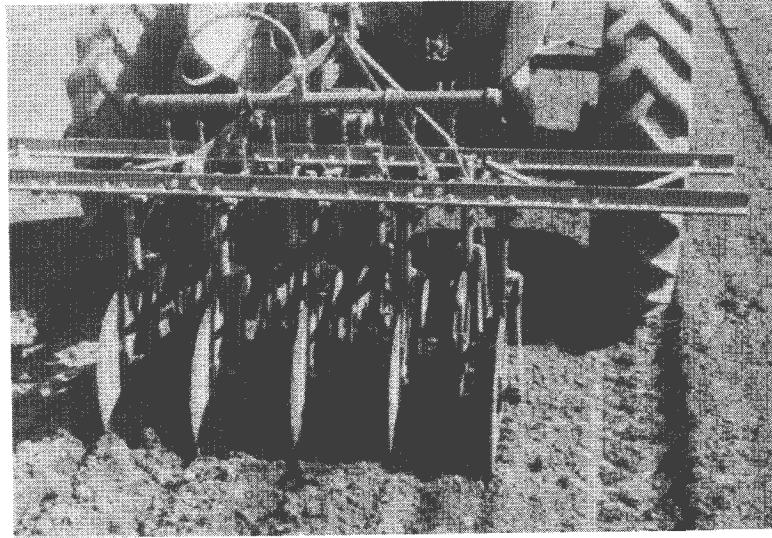


Figure 2.--Soil injection machine in operation. Note spray manifold and plastic tubes leading to the coulters.

The coulters tend to cut or roll over straw and similar trash with a minimum of fouling. The slit made by the coulter closes partially as the machine moves forward, thus permitting a time interval between chemical application and final seedbed surface sealing by rolling and watering.

Chemical injection has proved rapid and effective with this dual-purpose machine. Although our experience has been with soil fumigant injection, liquid fertilizers or soil insecticides could conceivably be applied in a similar way.