

USE OF OVERHEAD IRRIGATION LINES TO APPLY LIQUID FERTILIZERS AND WEEDICIDES TO NURSERY BEDS

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The purpose of the following description and drawing is to explain how to apply liquid chemicals (fungicides, fertilizers, etc.) to nursery beds by injecting them directly into the overhead sprinkling lines. A venturi tube temporarily set into the overhead line makes such a practice simple and cheap. A tube of this kind is inexpensive and when set in the line and connected with hoses to a suitable tank of the chemical, it does its job automatically merely by the force of the irrigating water flowing normally through the lines. No outside source of power, pumps, or other moving parts are required.

At Shasta Nursery the device is used to apply allyl alcohol weed killer, but the device will work equally well with liquid fertilizers, fungicides, or other chemicals.

(Editor's note: The use of allyl alcohol as a weed killer has been discussed in other articles and is not repeated here. See Tree Planters' Notes Numbers 7 and 12, and the June 1952 Journal of Forestry, Volume 50, Number 6, page 470 for articles about allyl alcohol.)

The installation and operation of the venturi is as follows:

- (a) Load supply of chemical and the empty mixture tank on a vehicle and position it close to riser.
- (b) Disconnect overhead line from ell at top of the riser and install the venturi horizontally in the overhead line by means of unions, or nipple and union.
- (c) Connect venturi to mixture tank with two hoses. Close valve D, open valve C, and remove filler cap A. Turn on overhead line (open valve B). Mixture tank will fill with water to any desired level while overhead lines are operating. Shut off overhead lines when desired quantity of water is in mixture tank. (If using allyl alcohol be sure to do this before putting in alcohol.)

(d) If using allyl alcohol put on gas mask. Submerge in the mixture tank the hose from pump of the alcohol supply barrel and pump in desired amount of alcohol. (This under-water transfer of the alcohol is important for in this way this dangerous material is never exposed to the air, a vital safety precaution.) Remove hose and replace filler cap A.

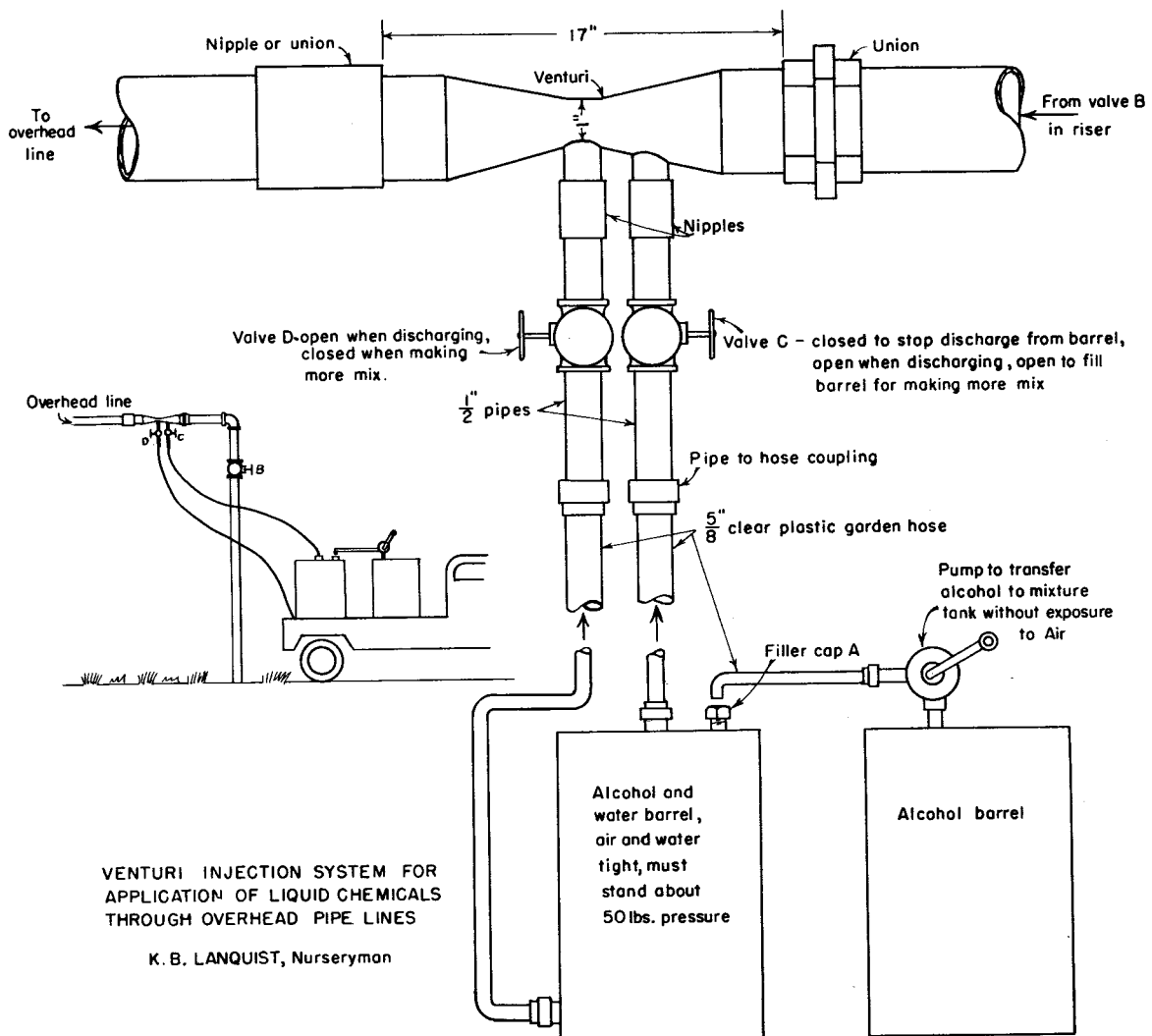
(e) Close valves D and C and turn on overhead line (open valve B.) Operate overhead line for a minute or two.

(f) Open valves C and D. Water flowing in the overhead line through the venturi will automatically suck the mixture from the tank and mix it into the irrigation water to be sprayed over the beds from entire length of line. About 30 minutes is required to inject 40 gallons of mixture.

(g) Closing valve C will stop discharge from mixture tank at any time without affecting flow of water through overhead line.

We bought our venturi from the Dragon Engineering Company, Oakland, California. The venturi and a 40-gallon mixture tank capable of withstanding 50 p. s. i. pressure cost about \$160. I do not know the current cost of the venturi alone, but since the principle involved is very old there is nothing patentable in this device and no doubt one could be made from aluminum, brass, or steel by any good local machinist for less than it cost us. The hoses should be of clear plastic to permit observation of flow.

The installation and removal of the venturi would be simplified if the overhead line were connected to the riser with a union instead of a nipple. Then it would be a simple matter to uncouple the union and install the venturi by unions at each end. This, of course, would require the permanent installation of a union at each riser. Unions cost us about \$2.00 apiece; hence to save expense we used but one union, plus the nipple already in place.



VENTURI INJECTION SYSTEM FOR APPLICATION OF LIQUID CHEMICALS THROUGH OVERHEAD PIPE LINES

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