

## MODERN NURSERY IRRIGATION

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The Beauregard Nursery has one of the newest and most unique irrigation systems now being used by any forest tree nursery. The system and controls are set up to be automatic.

In the fall of 1958, our consulting engineers recommended the system to us for installation at the new nursery. They had seen it work on small acreages and were sure it would suit our purpose on a larger area. The system was planned, devised, blue-printed and then constructed.

The source of water supply is a 350-foot-deep well. It is pressurized by the 500-gallon per minute turbo-jet pump and powered by a 60-horse electric motor. The pump discharges at 78 pounds pressure into an 11-inch diameter transite main pipe. All under ground mains are constructed of transite material. As the distance from the pump increases, the size of the main reduces, to maintain pressure, to diameters of 6 and 4 inches.

Under ground lateral lines are made of plastic pipe, reducing in diameter from 2 to 1-1/2 inches. The risers are 1-inch diameter galvanized pipe and are mounted with a sprinkler head (rainier No. 860) that is capable of spraying 1-inch of water every 3 hours. The sprinkler heads are spaced on a 60 x 56-foot pattern to provide even distribution of the irrigation water over the entire 50 acre production area.

A series of lateral lines are connected by submains and are operated by automatic valves. They operate hydraulically and the control is connected to the electric time clocks. Each sub-main covers a distance of 2-1/2 acres and 2 are operated simultaneously, allowing coverage of 5 acres at one time. The valves controlled by the electric time clock will irrigate at any desired time interval, from 5 minutes to 3 hours. After completing a cycle the time clock shuts off the power supply to the pump.

The automatic irrigation system has a built in alarm clock and is termed "moisture detection system." The system being used is the electrical resistance method perfected by Dr. Bouyoucos. The soil block is constructed of gypsum and two electrodes and when buried reacts as soil. Fluctuations of moisture in the block affect the amount of gypsum in solution, which in turn determines the electrical resistance.

A series of these blocks are evenly stationed throughout the production area, assuring adequate sampling for true soil moisture reading. Each station is connected to the auto control panel by under ground electric cable. The moisture readings are computed at the control panel by means of the Bouyoucos Bridge. The readings are converted to percentage of moisture. This is done by oven-drying soil samples taken in correlation with the resistance readings. These readings permit the irrigation system to maintain the field water level between seedling wilt point and field capacity.