DISTILLED-WATER MIST CHAMBER FOR PROPAGATING GREENWOOD CUTTINGS

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A misting chamber utilizing distilled water may prove practical where tapwater is unsuitable for propagation of plant cuttings. Such a chamber (fig. 1) was built at the Southern Hardwoods Laboratory, Stoneville, Miss., where sodium and iron compounds in the tapwater quickly clog nozzles and coat greenwood cuttings, sometimes killing young shoots. The chamber, which has a standard humidifier as its major component, is also useful in other applications requiring control of mist composition- -nutrient and fungicidal solutions, for example.

A galvanized metal pan 9 feet long, 3 feet wide, and 8 inches deep was placed on a greenhouse bench and covered with a 1-foot-high frame of light wood. The frame was divided into three hinged sections for ease of access. The tops of these sections were covered with light polyethylene sheeting, and the sides with a single thickness of. cheesecloth. A humidifier (Model 42-L, Standard Engineering Works, Pawtucket, R. I.) was

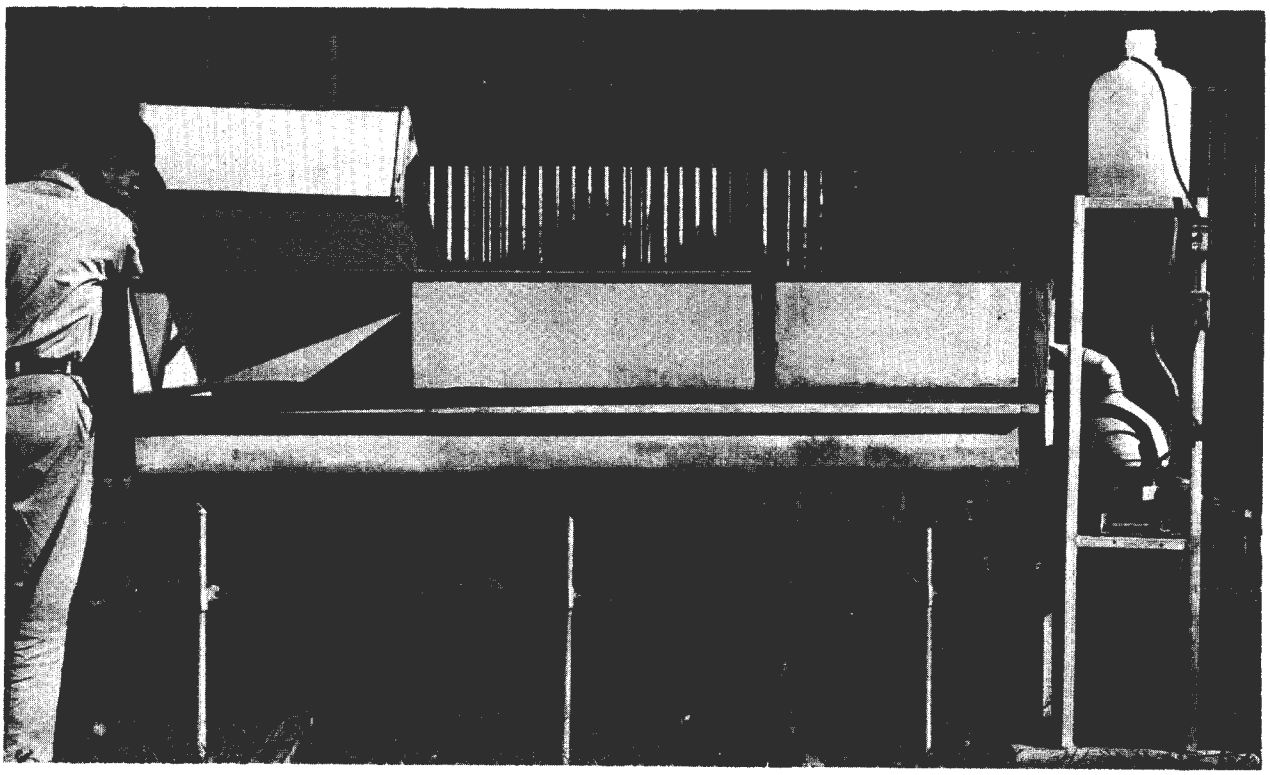

Figure 1.--A distilled-water mist chamber for propagating greenwood cuttings. Humidifier attached at right provides mist. Three hinged covers fitted with sides of cheesecloth and tops of polyethylene sheeting retain mist over the metal pan holding cuttings.

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attached to this chamber, as shown in the figure. Distilled water or nutrient or fungicide solutions are supplied by gravity from a 5-gallon carboy above the humidifier. A time switch controls the misting cycle. Total cost of all chamber components including the control mechanism is approximately $170.

The humidifier fills the chamber with water particles much finer than those emitted by commonly used misting nozzles. Water consumption under continuous operation is 2 quarts per hour. During the summer of 1962, temperature of the mist at the outlet of the humidifier was approximately 10^0 F. lower than temperature of the water in the carboy, which ranged from 75° to 100° F. Evaporation from the cheesecloth and the reduction in the temperature of water when it was atomized by the humidifier kept air in the chamber at 92^0 F. or less, even when greenhouse air temperatures were as high as 118° F.

Juvenile greenwood cuttings of cottonwood, sweetgum, willow oak, and Nuttall oak have been rooted in the chamber, with coarse sand for a medium. Some cottonwood cuttings developed roots within 4 days. Oak and gum cuttings have remained healthy and turgid during propagation periods as long as 5 weeks. Continuous mist was necessary during day-light hours on hot August days.