

## PROPAGATING AND COOLING WITH FOG

DOUG TORN

*Buds & Blooms Nursery, Inc.*

*7501 US 29 North*

*Brown Summit, North Carolina 27214*

In April, 1988 Buds & Blooms Nursery purchased a fogging machine. Our decision was based on the fact that we had begun producing our own tissue-cultured rhododendron and mountain laurel plants. We could not get satisfactory results using mist and tents in our climate.

At the nursery we have eleven double-poly propagation houses that are 14 x 96 ft. They are all vented using a W. W. Grainger 24-in. exhaust fan and a 37 x 63 in. Acme intake shutter. Both of these units are controlled by a thermostat set at 80 to 85 °F. We use two layers of 40% white shade cloth over these houses when propagating. This is available from V-J Growers Supply. In the winter these houses are heated with Modine gas-fired heaters.

Two of the eleven propagation houses are used as fog-houses for tissue-cultured plantlets. In these greenhouses we use ½ in. copper tubing suspended from the center purlin which is approximately 7 ft. from the floor. We used eight nozzles in the first house, spaced 10 ft. apart. The nozzles were attached (pointing down) at 30-degree angles away from the tubing with every other nozzle aimed in opposite directions. In the second fog-house we set up, we used nine nozzles and placed all of them facing straight down rather than on a 30-degree angle, which we find to be superior.

We also have a fog line outside the greenhouse with 10 fog nozzles running the width of the house behind the air-intake shutter. When the exhaust fan is running, these 10 fog nozzles create a large cloud of fog which is pulled through the greenhouse. This additional cloud of fog helps to cool as well as humidify the hot, dry air being pulled through the house that normally tends to dry out the plants near the air-intake shutters.

The fog system we purchased is a Mee 1000. The fog nozzles are made of stainless steel and have an impact pin that breaks up the water into much finer particles than something like a Baumac ULV nozzle, or an oil-burner nozzle that some folks use for fogging. These nozzles also have a replaceable filter built into them. The system is engineered to run at 1000 PSI, however, we have overloaded it with extra nozzles and it is currently running at about 700 PSI. We find the system still runs satisfactorily and continues to produce an ultrafine fog.

The system is controlled by a humidistat set at 95%. We have found that the placement of the humidistat will greatly affect the frequency of the running time of the fog system. The best placement of the humidistat for us is at the air-intake shutters. With the placement of the humidistat next to the air-intake shutter, the fogging machine will run most of the time on hot sunny days. This will keep a cloud of fog steadily pulled through the greenhouse so that mild temperatures are maintained.

We have also hooked up a Dosmatic Injector to the water input side of the fogger and use it for injecting bromine and fertilizer into the fog.

After installing this fog system for our tissue-culture plantlets, we saw that it may also be helpful and practical to use fog for cooling, in combination with intermittent mist, for all our propagation. This is especially true since much of our propagation is taking place during the summers when it is very hot—90 to 100°F.

Currently we are using the fog/mist combination in five houses to propagate cuttings of azalea, rhododendron, and pieris. We adapted the use of the fog to help cool and humidify our cutting propagation houses by placing a fog line with 10 nozzles behind the air-intake shutters, just as we did in our fog houses. However, inside we continued to use intermittent mist rather than fog. By doing this we helped cool down the greenhouse immensely and greatly reduced our misting intervals. On an average summer day, the mist intervals will be only once an hour for 10 sec. and, on a very hot day, we might reduce it down to every 30 min. for 10 sec. We are using a Phytotronics misting controller and EGT misting nozzles that are available from Hummert Seed Co. and other horticultural suppliers.

Some benefits of this fog/mist combination are that it will hold temperatures in the 80s even on the hottest summer day. We also found less incidence of disease, probably due to the reduced misting intervals. Another big advantage about this combination is that each system acts as a backup for the other should one fail.

We feel that the combination of fog for cooling and humidifying, along with intermittent mist and the use of white shade cloth has helped our propagation tremendously. It creates what we feel is the perfect environment for propagation: warm, but not hot temperatures, and a humid but not wet greenhouse. We have also cut down on production time, increased our rooting percentages, and produced stronger, healthier plants with the use of this system.