

MIST BOOMS FOR PROPAGATING PLANTS

DALE DEPPE

*Spring Meadow Nursery
Grand Haven, Michigan 49417*

All of us are interested in mist systems. As propagators, we have learned that misting is one of the most critical elements in the rooting of cuttings. Our intense love-hate relationship with the mist nozzle has caused a few gray hairs in many of us. Also, I think more cuttings have died because of over or under misting than any other reasons. If you have ever been involved in the design of a mist system or have learned to live with someone else's mistakes, you'll like the mist boom concept.

A mist boom, as we call it at Spring Meadow Nursery, is actually a traveling irrigator. Traveling irrigators were developed to water seeded plug trays in the bedding plant industry. A long greenhouse can be watered or misted so that each plug cell or cutting receives the same amount of water because the spray pattern is exactly the same all along the width of a boom. Uniformity is the key in producing quality bedding plants and also for us in using a mist system.

A mist boom is identical to the spray boom on the back of a field sprayer, except the mist boom travels down the length of the greenhouse riding on a set of rails or tracks. It pulls a hose for water and an electric cord for power. By adjusting the travel speed and using different sized nozzles, the spray volume can be changed to meet the needs of any propagator.

Let's talk about mist nozzles for a moment. What is it that you presently use? Is it Flora-Mist foggers, Spray Stakes, Perfect nozzles, Eddy Mist nozzles, or the Spraying System's 1/4E10? Whichever brand you use, try and explain to someone how a nozzle that sprays in a circle can be used to mist a square propagation bed. When we design a system with circle pattern misters, we design for overlap in the spray so that every cutting is misted. Actually, most of our cuttings receive anywhere from two to four times the required mist in order to ensure that all of the cuttings get some mist. We have all had problems with mist coverage which are usually solved by adding more nozzles or by running the mist system longer than needed. After the cuttings decay, we start to lighten up our media and improve our drainage in order to match the water usage.

A traveling mist boom has a flat fan nozzle. This nozzle has a pattern that is 28 in. wide at a 20 in. height above the cuttings. With nozzles 14 in. apart, the mist pattern is 100% overlap. Every square inch of propagation bed receives the same water volume. Every cutting receives the same mist. Every cell in a plug tray produces a uniform rooted cuttings.

But, what about water usage? As your propagation area increases and you add more mist nozzles, all too soon the water pump is inadequate, and the water tank is under sized. As you add zones, you have to be sure the zones cycle after each other because if more than two or three come on at the same time, the water pressure falls to the point where mist coverage is reduced. At Spring Meadow Nursery, 6000 sq ft of propagation area required 64 gallons of water in one mist cycle. Now with the traveling boom, 10,000 square feet of propagation area only requires 8 gallons of water in one mist cycle. In addition, the mist boom sprays continuously for two minutes to complete one cycle.

Controls for misting cycles are the standard time clock type. A 24 hour clock is used to turn the system on and off. A one-hour clock is used for starting the mist cycle. If you prefer, there is a photo cell available that will adjust mist cycles based on light intensity.

A traveling mist boom can be installed by you in almost any type of greenhouse. Economics would dictate that if the greenhouse is wider and longer, the cost per square foot would be reduced. At Spring Meadow Nursery, our total system cost is approximately \$0.60/sq ft. At some other nurseries, that cost is well below \$0.40/sq ft. Compared to the cost of mist nozzles, time clocks, solenoid valves, and line strainers in our old system, the traveling mist boom is more cost effective.

A traveling mist boom moves from one end of the greenhouse to the other end on a pipe rail or track. The pipe rails are suspended from the top of the greenhouse. The mist boom moves along the pipe rails on rubber wheels above the propagation area. The speed of travel is changed by moving the drive belt from one pulley to another or with variable speed motors.

The water supply for our traveling booms is connected at the center of the greenhouse. A hose cage holds the hose and allows it to move back and forth with the boom. When the boom is at either end of the greenhouse, the hose is extended to its full length. As the boom returns down the greenhouse, a hose cage system keeps the hose up and out of the way. Advantages of locating the hose in the center include reducing the length of hose required by one-half, and less loss of water pressure. An alternate method is for the water supply to be connected at one end of the greenhouse. In this case, the hose length is equal to the greenhouse length. The hose is looped many times and hangs from rollers attached to the pipe rail. As the boom travels, the hose becomes fully extended. As the boom returns, the hose will bunch up and be stored at one end of the greenhouse. This method is cheaper than a hose cage and is very effective until the length of the greenhouse exceeds 200 ft.

At Spring Meadow Nursery, our misting area consists of two gutter-connect greenhouses; each 35 × 144 ft. Each greenhouse has a Growing Systems mist boom. In one house, we utilize the floor

space as misting area. In the other house, we have installed rolling benches and bottom heat. When laying out the misting area, the beds or benches should be perpendicular to the boom's travel. As the boom moves down the greenhouse, different beds or benches can be watered or not watered as needed. By installing the proper switching, it is possible to water one bed every 4 minutes while watering another bed every 6 minutes.

New applications for the traveling irrigator system continue to be developed. A small injector is now available. This injector rides along with the boom and is capable of applying fertilizer or pesticide. Toxic chemicals can be applied to the crop without personnel being present. High pressure fog traveling along with the boom promises to outperform even the best designed stationary system available today.

When planning changes to your present mist system or when making expansion plans, consider the advantages of a traveling boom mist system.

PROPAGATION OF ALPINES AND THEIR PRACTICAL USES

PRISCILLA GALPIN TWOMBLY

Oliver Nurseries

Fairfield, Connecticut 06430

Oliver Nurseries is a small retail nursery in Connecticut specializing in dwarf and rare plants, including dwarf conifers, azaleas and rhododendrons, alpines, and rock garden plants. Most of the alpines are propagated and grown on at the nursery. This paper will deal with what constitutes an alpine plant, their propagation, and where they can be used in the home landscape.

In the strictest sense, alpines are considered to be plants that grow above the timberline. They may be evergreen or deciduous shrubs, or they may be herbaceous perennials, but they are never annuals as the growing season is too short to manage a full life cycle in one season.

Alpines are characterized most often by foliage pressed very close to the ground, which is a result of the severe climate in the high mountains. In addition, their flowers are quite large in proportion to their foliage. In part this is because their foliage grows so slowly and is so tightly compressed that their flowers seem overly large against it. Occasionally, when an alpine plant is taken out of that severe climate and grown in a more temperate climate, the foliage expands and loosens up, and the flowers appear to be more in proportion