

## MICROFOAM USE FOR WINTER PROTECTION — YOUR FIFTH OPTION

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Cold temperatures and wind are the most obvious problems of winter but when choosing our overwintering techniques there are other factors we should consider: First is the plant and its limitations in coping with fluctuating temperatures during the winter months; second is the climate and the frequency in which temperatures range above or below the average norms. Of all our problems in wintering plants the latter is the most dangerous and most difficult to handle. After examining these factors we can then choose the method or methods of winter protection best suited for our given locations.

There are five options for winter plant protection available to us today:

1. Do nothing at all.
2. Place plants pot-to-pot.
3. Place plants pot-to-pot and cover them with white poly or white poly plus shade cloth — then tack down.
4. Put plants in overwintering structures.
5. Lay plants down and cover with a microfoam insulation blanket first; follow with white poly, then seal air tight.

Why consider microfoam or an insulation blanket as a viable option for winter protection? What are its advantages and disadvantages?

There are three advantages:

1. It minimizes the range between the daily high and low temperatures within that microclimate. It accomplishes this in three ways:

- a. The insulation blanket helps moderate radiant and conduction heat losses by night — and gains by day.
- b. The system is sealed air-tight, therefore gives 100% wind protection. It is obvious this stops desiccation of plant material, but what may be overlooked is that it also stops the loss or gain of heat by means of convection due to the winds.
- c. The system utilizes the benefits of geothermal energy more than any other system in use today. Within the

enclosure the ground below provides warmth by night and helps cool the system by day. Ground temperature remains at about 57°F in our locality.

2. The system is removed from production areas after the winter season is over. There are no structures to work around during the growing months.

3. It is an inexpensive method of overwintering. Cost ranges from 4 to 16 cents per unit, depending on plant size, based on a 5-year product life. Labor to cover and uncover is included in this cost.

The two disadvantages to this method of winter production are: (1) potential buyers cannot inspect nursery stock when covered in this fashion. However, some buyers are impressed with your care of the plants; (2) one cannot inspect the plant material for potential problems without some measure of difficulty. I have found there is very rarely a need to look at the plants during the time they need to be covered. If the plants are in good nutritional condition, we have little or no leaf drop after covering.

The questions now are, "What are the potential problems or hazards when adapting this method of winter protection," and "What can be done, if anything, to resolve these problems?"

The first problem could be standing water, which would result from poor drainage on site. Wintering areas must have a good drainage capability.

The second problem could be fungi resulting from areas of poor drainage or excessive moisture on and around the plants when they are initially covered. We water thoroughly 2 days ahead, which allows almost 2 days for plants to drain. **DO NOT COVER PLANTS WHEN A DEW OR FROST IS PRESENT; DO NOT COVER PLANTS ON RAINY DAYS; DO NOT COVER PLANTS WITH A GREAT DEAL OF ORGANIC LITTER ON BLACK PLASTIC.** Everything should be dry but the medium in the pots. We use plastic rather than gravel. The plastic helps prevent excess humidity and condensation due to evaporation of water that seeps into the enclosure from surrounding areas.

A third problem could be rodents of various types. The use of poison baits can help if one suspects this to be a problem, but the best defense against rodents is site selection. Open areas where little or no natural cover exists is a deterrent to rodents. No self-respecting rodent is going to be caught in open areas. **DO NOT USE THIS METHOD OF WINTER PROTECTION IN WOODED AREAS.** During the 7 years in

which we have used this system, less than 1% of the stock lost its salability for spring shipment.

Questions that are frequently asked are: "When do you start covering?" and "When do you uncover your plant material?" There is a simple rule of thumb we use. For covering plants determine the average frost date in the fall, add 45 days, and this is the date to start covering. For example: Our average frost date is October 15, hence we can start covering December 1. The plants are dormant when we cover them, and we ship them dormant. That way they come into bloom at the normal time for the area where they are to be sold and used. The fact that they are dormant also makes shipping easier.

When we cover the plants we first make sure any leaves and litter are removed from the area. We then move plants together and lay them flat heading in opposite directions. We do not double stack. When we finish the bed size has been reduced from 40 × 52 ft. to 24 × 45 ft. We buy white poly in 28- × 100-ft. rolls, which we cut into 28- × 50-ft. pieces. The microfilm comes in 6½ × 250-ft. rolls which we cut to 6½ × 45 ft. We use 4 sheets of microfilm to cover each bed. White poly is then placed over the microfilm. We do not want holes in this as we want the entire bed to be sealed. We hold the poly with dirt shoveled over the edges, which helps keep out rodents. The plants are not damaged by snow accumulation, and there is no structure to fall due to snow or wind. We are now using a material manufactured by a company in High Point, N.C.<sup>1</sup> We feel we can use this material for 6 yrs. with careful handling, although costs are figured on 5-yr. life expectancy.

As to uncovering, determine what your average frost date is in the spring. Ours is April 15; we subtract 45 days from that date, which means we start uncovering around March 1. At that time we pull back the white poly, remove the microfilm and store it, and stand the plants up. We leave the poly sealed on the west side so that it can be easily pulled over the plants in case of a late cold.

In conclusion, my nursery is in the most northern sector associated with the IPPS Southern Region, and my need for overwintering using insulation blankets is greater than the average. It is not uncommon to have unseasonably warm temperatures one week and bitterly cold temperatures the next. But I do believe there are possible areas in which growers farther south may benefit from using this system. The system would be ideal for plants that are marginally hardy for your

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<sup>1</sup> Guilford Packaging and Fiber, Inc., Box 2643, High Point, North Carolina 27261. Phone: 919-889-7167.

location, or plants like *Ilex cornuta* whose root systems are extremely susceptible to damage from temperatures in the 20's F. It may also be helpful in preventing premature bud swelling on flowering shrubs due to unseasonable warm temperatures. It is important to consider carefully your own geographic location. If you have tried this system and found that plants do not go dormant, try covering later and uncovering earlier.

## APPLYING FUNGICIDES TO ORNAMENTALS THROUGH OVERHEAD IRRIGATION

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Fungigation, the injection of fungicides into the irrigation system, has been used to apply soil drench treatments for root-rot diseases for several years. It has recently been effective against foliar diseases as reported by Lambe (1). Several forms of fungicides — emulsifiable concentrates, such as Subdue 2E; flowables, such as Daconil 2787; and wettable powders, such as Benlate and Dithane M-45, have been applied through the irrigation system with little problem.

Our application technique is simple, since we irrigate from ponds. A hole is drilled and threaded into the suction pipe close to the centrifugal pump. A ½-in short pipe nipple and valve are installed, being careful to avoid any air leakage through the valve or pipe fittings, which can cause a loss of pump prime. A pipe may connect the valve permanently to a holding tank, or a hose may be attached and simply submerged into a bucket of fungicide solution, as shown in Figure 1.

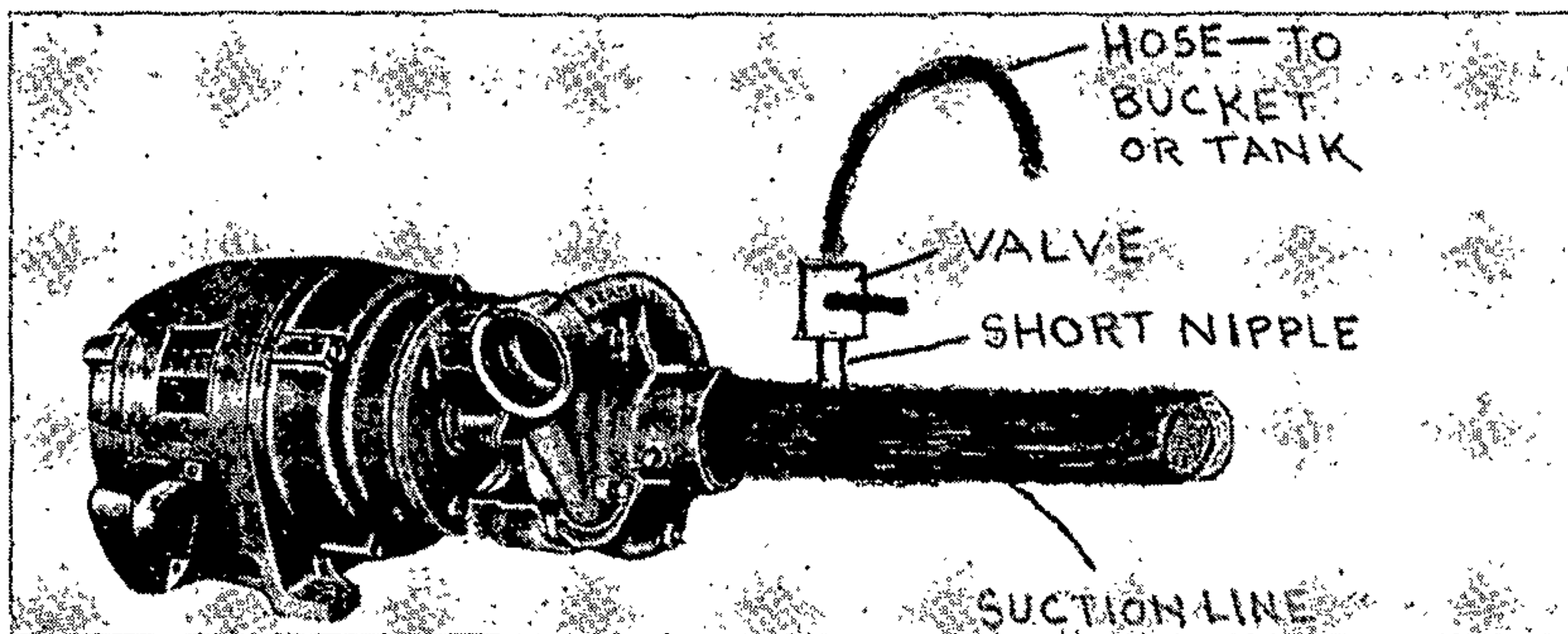


Figure 1. System used for injecting pesticides into overhead irrigation system.