

---

## CONCLUSION

There is not a step by step manual for overwintering potted liners. Numerous decisions made from August to May will affect your winter survival rate. It is this constant decision making process that makes the nursery business both exciting and frustrating. Begin thinking and preparing for winter in the late summer and early fall and remember, Mother Nature can be quite unforgiving.

---

## Winter Protection at Schaefer Nursery®

### Milton Schaefer

Schaefer Nursery, P.O. Box 62, Winchester, Tennessee 37398

[email:mschaefer@schaefernursery.com; Web: schaefernursery.com]

We grow our plants as vigorously as possible. I have always contended that a plant that starts out growing strongly and is given proper nutrients and adequate water will continue to be a superior plant. We try to push our plants as quickly as possible, so as to produce a larger liner with a big, healthy, fibrous root system.

### HARDENING-OFF

Hardening-off refers to two different time periods in the physiological life of a plant. The first is as a plant changes from a nonrooted cutting to a rooted cutting, and is able to live and thrive on its own roots. This could more correctly be called *weaning* a plant.

Another definition of hardening-off is the physiological process of acclimating from an actively growing summer climatic condition to a dormant state capable of surviving winter conditions. Plants that have been pushed hard and have new summer growth, can present a real challenge to growers. This challenge is often exacerbated by fall climatic conditions that are abnormal.

Ideally we would like to have several light frosts followed by heavier frosts until our plants have defoliated naturally. Winter hardiness is a result of the physical processes within a plant that responds to the environmental cues of shorter day length and cooler temperatures. This is accomplished under clear, fall days with plenty of sunshine, and a cessation of active new growth. This natural abscission of the leaf and buildup of carbohydrate reserves in the root system is our goal — but can prove to be elusive. There is a delicate balance between growing a plant at its maximum potential and preparing a plant for the inevitable freezing weather.

### PROTECTING PLANTS

Because our plants are grown in soil, we need to protect them to their top hardiness zone instead of their root hardiness. Most plants we produce have a root hardiness of  $-9$  to  $-6^{\circ}\text{C}$  ( $16$  to  $22^{\circ}\text{F}$ ) and a top hardiness of  $-15$  to  $-29^{\circ}\text{C}$  ( $5$  to  $-20^{\circ}\text{F}$ ). If they were in containers on top of the ground, we would have to protect them to their root hardiness, i.e., they would have lost the insulating effect of the soil and would not be able to tolerate the lower temperatures.

Our plants genetically should be able to withstand any winter for our plant hardiness zone. Physiologically, because of their age and the production system we have been pushing them to reach their maximum potential, the rooted liners are unprepared for our normal winter conditions without additional protection. Our

goal in winter protection is not to prevent plants from getting cold, but to minimize temperature fluctuations.

We have used a variety of winter protection fabrics. Microfoam is probably the best, but it is also the most expensive. It is cumbersome and does not last more than a couple of years because sunlight makes it brittle and it breaks easily. We now use a plant blanket made by Specialty Covering and Supply, Inc. [P.O. Box 913, Nashville, Georgia 31639] which stores more easily and lasts longer. We wait until as late as possible, ideally after the leaves have abscised naturally, and cover our beds with this fabric along with a sheet of white, 3-mil polyethylene. We nail this with slats to the crossties that edge our propagation/liner beds. Usually we are covered by mid-November. When we have warm winter weather, we uncover the ends of the beds so heat does not build up inside the beds. This method keeps the plants cooler than the ambient temperature on a warm day and warmer than the ambient temperature on a cold day.

We uncover when we go to dig, grade, and ship the rooted liners. By mid- to late March we have begun having warmer temperatures and subsequently uncover most plants. If a late frost is predicted, we cover again, even if only for one night.