Overwintering of Potted Liners©

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INTRODUCTION

The over-wintering in the potted liner stage of production has frustrated many a nurseryman. With less soil as a buffer from extreme temperatures and a smaller plant with less carbohydrate reserves, the task is quite difficult. At Griffith Propagation Nursery we approach this task through both physical and physiological means.

Physical Means. In 1998, we decided to build greenhouses or cold frames for all of our liners. Prior to that, only about 50% of our liners were under greenhouse protection. The cost of building these additional 40 to 50 structures was significant. However, we feel that the decrease in losses from the cold, wind and excess moisture has come close to paying for the structures in just 2 years.

Each greenhouse is covered with 4-year 6-mil poly and 55% shade cloth. The structures have sideboards located 2 ft off the ground that run the length of the house. This gives us the ability to raise or drop the plastic throughout the winter. Given the temperature variation of a Georgia winter, we feel that this is imperative. One of our major concerns is heat build-up on sunny February and March days that might initiate breaking dormancy. It is not uncommon to raise and lower the sides twenty times during the late winter and early spring.

Physiological Means. The condition of liners going into dormancy is very important. You want the plant to be strong and healthy but at the same time not vigorously growing. When you produce between 150 to 200 different genera, species, and cultivars of trees, woody ornamentals and perennials, the task seems impossible. Listed below are a few guidelines used to prepare liners for winter, maintaining them during winter and when come out of dormancy.

WINTER PREPARATION

- Use short-term, slow-release fertilizer (30- to 45-day release).
- Stop all granular fertilizer by 1 Oct.
- If fertilizer is needed after 1 Oct., use a liquid feed.
- Do not prune liners after mid-September.
- Cover greenhouse by the end of October and raise the sides.

WINTER MAINTENANCE

- Keep liners on the dry side.
- Water thoroughly before extreme cold.
- Raise sides during stretches of warm, sunny days.
- Do not use minimum heat unless temperature drops into mid-teens.

MAINTENANCE AFTER DORMANCY

- Raise sides and open doors except in extreme cold.
- Be prepared to raise and lower sides daily, if necessary.
- Use minimum heat and portable propane heaters on freezing nights once lines have broken dormancy.

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©

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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 an 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°C (16 to 22°F) and a top hardiness of –15 to -29°C (5 to –20°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