

1. Placing windbreaks around azaleas in shade houses.
2. Jamming when we can; making beds as large as possible.
3. Wrapping with Kraft paper on the north and west sides only.

Knowing what to do, but not doing it, will not save your plants.

WINTER PROTECTION FOR CONTAINER-GROWN RHODODENDRONS

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A great hazard of growing container rhododendrons is that of loss due to winter cold. Young plants have been a very serious problem as the wood is more susceptible to tissue injury. In the absence of protection large numbers with one or two flushes of growth are either fully lost or highly depreciated in value due to bark splitting. Hardy cultivars with 4 or more flushes of growth do not have this problem in our operation but do suffer from tissue water deficiency if exposed to direct sunlight when the roots are frozen. The degree of this type of injury varies with cultivar and exposure. Older plants may also suffer from root damage. A fourth problem is that of frost injury to actively growing tissue on both young and older plants.

I have attempted to solve the first mentioned problem by having no plants with less than four flushes of growth to carry through the winter. My propagation is done in late June. In early November the rooted cuttings are potted out in South Florida and two or three flushes of growth occur by the end of April. The plants then return to North Carolina, hopefully after frost damage is past, and two or three additional flushes are added during the summer. This leaves only mature plants to be carried through the winter.

Rhododendrons tend to roll their leaves when temperatures are low. It seems that leaves of the more tender cultivars unroll before those of the hardier ones. As soon as the sun hits, the leaves unroll and begin transpiring rapidly while the stem and root are still frozen. Protection from direct sunlight is, therefore, essential and is provided by a six foot high snow fence mounted vertically and oriented east and west. During late November, December, January, and early February, a 12-foot shadow is cast on the north side of the fence. The plants in each bay are pushed up tight into the shadow. This has proven

to be ample shading to eliminate the leaf yellowing and leaf dehydration caused by the winter sun.

Root kill had not been a problem for the past 15 years until the winter of 1977. There have been winters with lower temperatures (-3°F) but none with as long a period when the roots were frozen. Few times have the root balls frozen solid. In 1977 they were frozen for 10 consecutive weeks. I have no solution for this problem without going to plastic house protection or mulching around the containers. Both are costly and are contrary to my method of operation.

Frost protection is provided by Rainbird sprinklers. At the Florida nursery the pump is actuated by a heating thermostat set at 33°F . During the winter of 1977 this functioned several times. During the worst freeze, the temperature was 27°F for 10 hours and 1/2 inch of ice was formed on the plants with no observable damage. In North Carolina the pumps are operated manually for frost protection.

Last year we also tried covering the plants with burlap. However, this was not too successful. We may have been late putting it on or may have left it on too long (mid-March). At any rate, it was not as effective as we had expected.

One additional problem we seem to have is that of hiring people who are conscientious about helping implement some of our procedures. Unfortunately, none of our methods prevented serious losses last winter.

WINTER PROTECTION OF NURSERY PLANTS: 1956-1977 SUMMARY

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Disastrous effects of freezes in the South in 1950, 1962-1963, and 1977, have stimulated research at the Ornamental Horticulture Field Station in Mobile. Results have often been skimpy due to lack of freezes. Usually, the experiments have been set up hastily when severe freezes were predicated or immediately thereafter.

The results of numerous laboratory and field tests have revealed the following facts regarding protection of container-grown plants from freeze injury:

1. The freeze rate varies with the type of potting mixture ingredients. The rate of freeze is fastest for sandy clay, inter-