Fog Propagation of Rhododendron Using Bottom Heat

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Buds & Blooms is starting its 10th anniversary of growing and specializing in ericaceous plants. We also grow crapemyrtles, roses, pansies, and mums. We produce more than 300,000 plants annually on approximately 20 acres. About 80,000 of these are rhododendrons. We have used forced-air bottom heat for rooting rhododendrons from the start of the nursery. We chose this method because it was by far the cheapest method I knew of supplying bottom heat, and it is effective. We began using fog and fog in combination with mist for propagation in 1988 and feel it has improved our rooting percentage.

Our propagation houses are 14- × 96-ft double-poly quonset houses. They are vented with 24-in. exhaust fans and have 37-in. × 63-in. intake shutters that are thermostatically controlled. The houses are heated with 130,000 BTU Modine fan or blower-type gas-fired heaters. Two of our propagation houses have benches with bottom heat that can be used for propagation of rhododendrons.

Our benches are made of treated 2 × 4s and 2 × 6s with snow fencing on top. These frame benches are set on top of concrete blocks, which are standing up on end. A curtain of 6-ml poly is draped around the perimeter of the benches to hold in heat and force it upward towards the cuttings. The 130,000 BTU Modine Heaters supply bottom heat. The heaters have been retrofitted with a Y adapter to supply heat under each bench. To each side of the Y adapter we attach a poly ventilation tube prepunched at 10 o'clock and 2 o'clock to distribute the heat as evenly as possible under the benches.

We use a well-drained propagation medium that we blend ourselves, incorporating only lime. We do not incorporate fertilizer due to the length of time it takes rhododendrons to root. Incorporated fertilizer can easily burn off the roots as they begin to initiate. Our soil mix components and percentages are shown in Figure 1.

We begin taking rhododendron cuttings in mid to late-November after the last flush of growth is well hardened off but preferably before any extremely cold weather begins. We also wait until we finish winterizing and covering all of our poly houses, which can be as late as the first of December.

We take cuttings from the last flush of growth. We make the cut down to the next whorl of leaves to avoid leaving a stem that might get infected by disease. If the plant is a little leggy, we may make another cutting below the first, although rooting percentage may not be as good with the second. In some cases the last flush of growth may be a multiple flush due to pinching. In this case you can take any or all of these cuttings. These cuttings are probably the most desirable and tend to root the best. They are usually about the thickness of a pencil or a little smaller. Cuttings that are very large do not root as well as the smaller ones. Since we take rhododendron cuttings after the growing season, we can only take these cuttings from our one-year 3-gal plants that will be grown on for another year.

After taking the cuttings we bring them back to the heated shop area where they are prepared for sticking. The cuttings are cut to approximately 3 in. with a grafting

or budding knife, making this bottom cut at a 45 degree angle. We also remove all but 3 to 5 leaves depending on their size. If the leaves are very large and broad, we cut them by one-third to one-half to reduce transpiration. Next, the cuttings are wounded on either or both sides for a large cutting or one side for smaller cuttings. We no longer soak the cuttings in a fungicide solution such as captan or Benlate and have not seen any adverse result due to this change. At this time of the year it is cold and hard to dip cuttings.

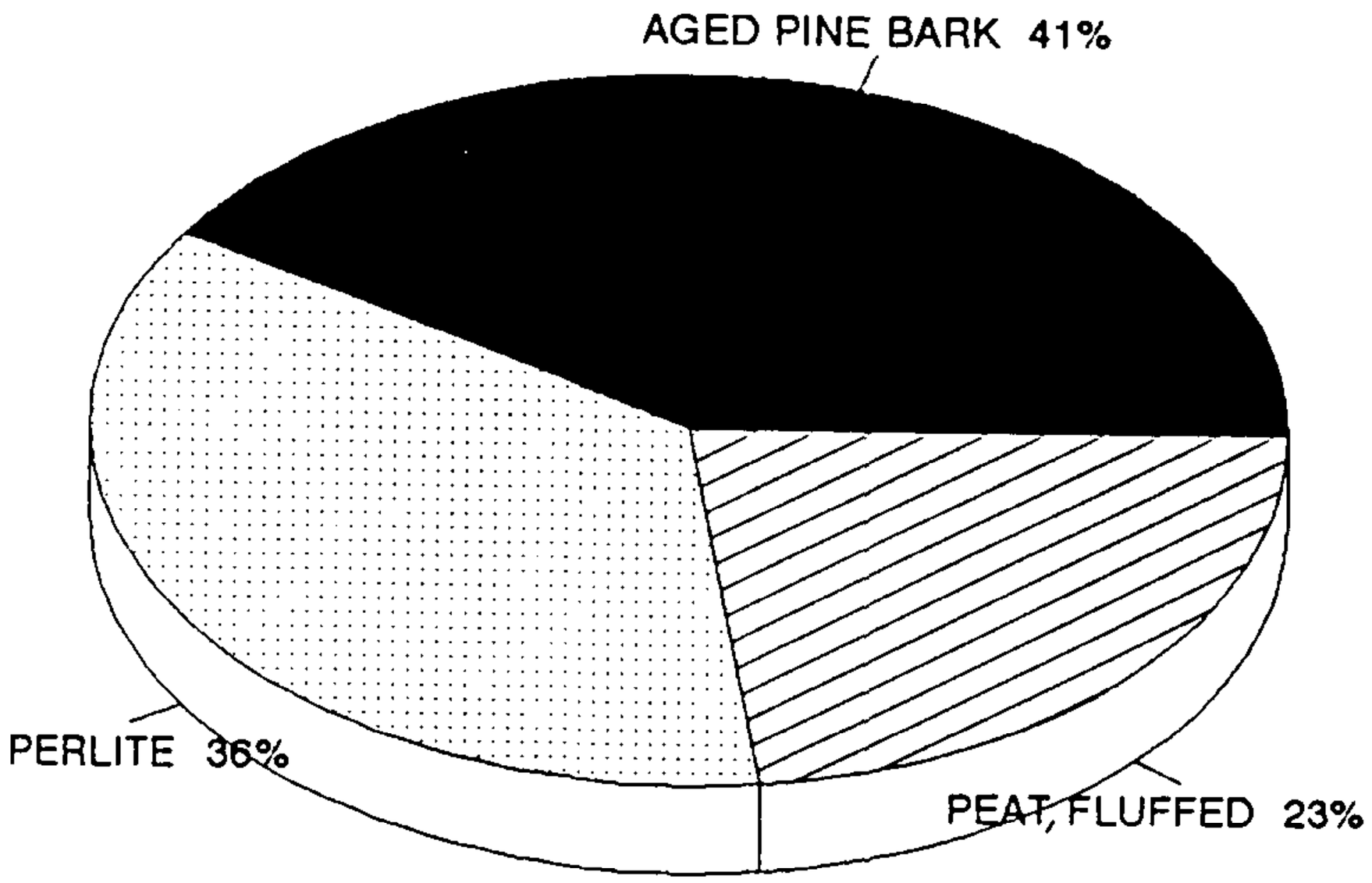

Figure 1. Propagation medium.

Our next step is to dip the cuttings in rooting hormone for approximately 5 sec. We have tried both the liquid and talc forms and various concentrations of different rooting hormones. We have found that a liquid combination of both KIBA and NAA gives us the best results. We use C-Mone K-Plus produced by Coor Farm Supply in Smithfield, North Carolina. This solution comes ready to use at 10,000 ppm KIBA and 5,000 ppm NAA or can be diluted for easier-to-root plants. To keep things simple, we use this formula for all of our cuttings. However, some cultivars of rhododendron that are very hard to root may take higher concentrations of hormones to root as well as the easier-to-root cultivars, so we are experimenting with 20,000 ppm KIBA and 5,000 ppm NAA. At this time we choose to buy liners of some of the hardest to root cultivars such as 'Scintillation' and 'Bessie Howells', rather than take up space in our propagation houses with cuttings that may root poorly.

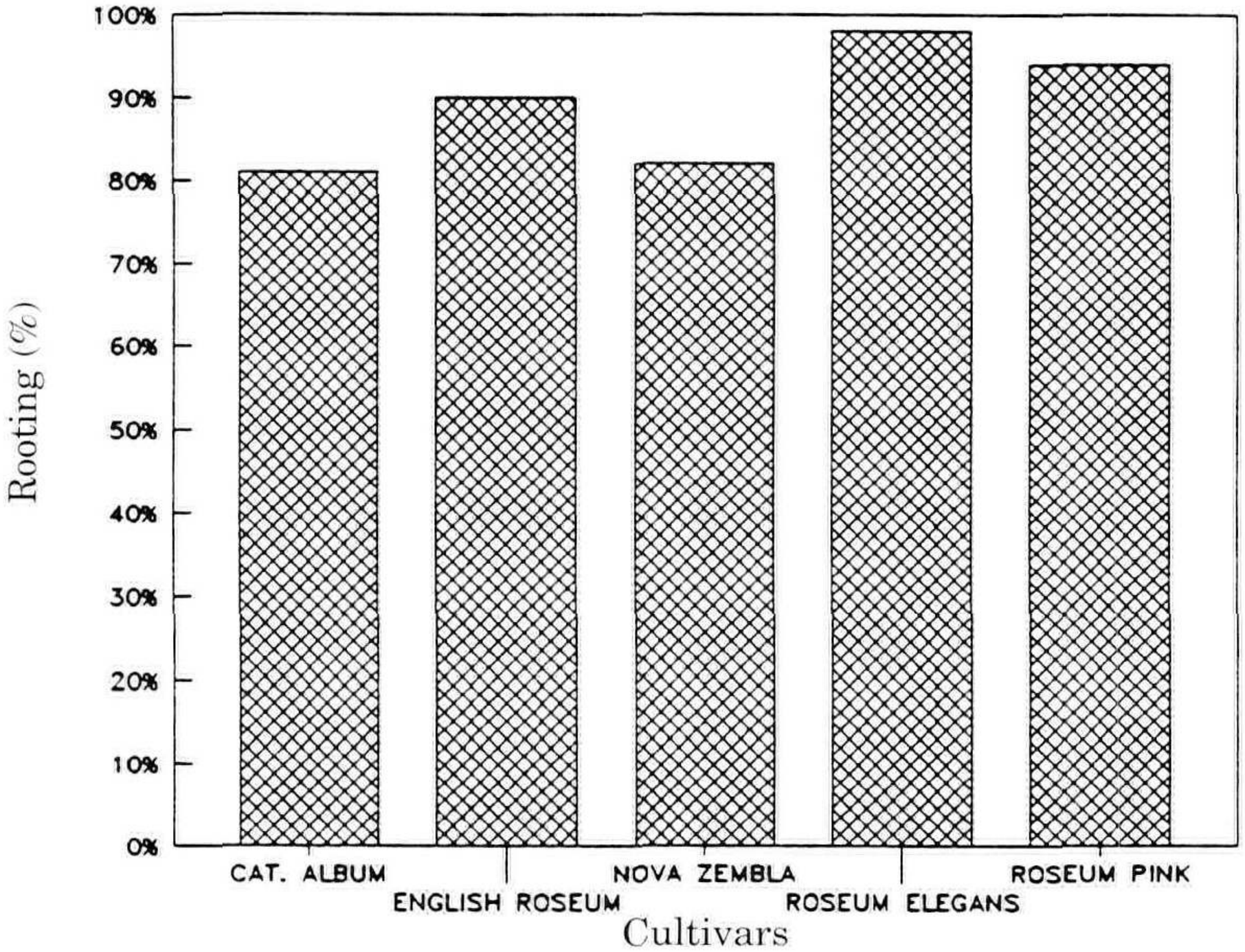

Figure 2. Rooting percent of five rhododendron cultivars using the system described in the text.

The cuttings are then direct stuck in 2¼-in. or 3-in. pots on raised heated benches and placed in either a fog house or a fog-mist combination house to begin rooting. I prefer the fog-mist combination as it is easier to control. We find dry spots with just fog. The thermostat for the bottom heat is soil controlled by a soil probe set at 70°F. We use bromine in line to control algae and perhaps help with disease. The rooting process starts with callusing, which can begin within a few weeks; however, it generally takes 8 to 12 weeks or longer for the cuttings to begin rooting profusely. Any that are still just callused are thrown away.

Looking at the overall picture, this system has both its advantages and disadvantages. This type of bottom heat can cause some dry spots and is not as even as some other sources of bottom heat. It will also keep the greenhouse hotter than necessary in order to keep the soil temperature at approximately 70°F. On the other hand, it is a relatively inexpensive means of heat, and it works, as can be seen in Figure 2.

In conclusion, this system has worked well for me the past 9 years. Although we have made many changes over these years to help improve efficiency, productivity, and quality, we have not seen any reason to change the type of bottom heat we have been using. This is not to imply this is the best or right way, but it is our way of propagating rhododendrons and it seems to work quite well for us.