

## Propagating *Rhododendron* Species by Cutting and Seed®

### Dennis Bottemiller

Rhododendron Species Botanical Garden, PO Box 3798, Federal Way, Washington 98063-3798  
E-mail: dennis@rhodygarden.org

The Rhododendron Species Foundation (RSF) is a nonprofit organization dedicated to the conservation, research, acquisition, evaluation, cultivation, public display, and distribution of *Rhododendron* species. The Foundation provides education relating to the genus and serves as a unique resource for scientific, horticultural, and general gardening communities worldwide.

The RSF will use the following means to achieve this mission:

- Acquire and maintain as comprehensive a collection of *Rhododendron* species as possible.
- Conserve *Rhododendron* species through the cultivation and distribution of selected forms and documented wild-collected material as obtained in the field and by other means.
- Support the Rhododendron Species Botanical Garden — a living plant museum and effectively designed garden for the display and cultivation of rhododendron species along with other plants with which they associate.
- Provide information, education, and support of research for persons interested in the genus *Rhododendron*.

The Rhododendron Species Foundation was established in 1964 by a small group of *Rhododendron* enthusiasts who were interested in growing and learning about species rhododendrons. They began by obtaining scions from collections existing in the United Kingdom from the early collectors of Asian plants. These were grown in a private garden in Salem, Oregon, but by 1974 the collection had grown too large and needed to be moved. The group approached George Weyerhaeuser, and he agreed to lease land to them for the purpose of establishing the botanical garden on the Weyerhaeuser Corporate headquarters campus, where the collection resides today in Federal Way, Washington.

As a growing number of people became interested in species rhododendrons the Foundation established a membership. As a member, one could purchase cuttings rooted from the collection of “wild” rhododendrons to grow in one’s home garden, thus the propagation program was begun and a nursery operation necessary.

In the early days it was difficult to get plants that were the real species because there were a great number of open-pollinated seedlings in cultivation masquerading as species plants. As a result, most of our propagation took place from a limited pool of verified plant material as cuttings. In recent years, access to unexplored and under-explored regions in Asia, mainly China, has been expanded, and RSF has sponsored and been a participant in many expeditions in search of new plant material and has met with great success. As a result of this success our propagation program has grown to include seed growing as well as cutting propagation, and I will give a brief overview of the methods we use to accomplish our plant production goals.

Nursery production provides material to replenish the collection and provides backup plants to be kept in reserve in case of losses in the garden. The nursery also supplies plants for sales through our twice-yearly catalog as well as for our

on-site sales area. About 40% of our production is from cuttings and 60% from seed, mostly collected in the wild, but a small percentage is hand-pollinated seed from our garden.

Cutting production is used for selected plants, especially good forms or good sellers that can be easily produced by this method. We also use cuttings to produce clonal material for collection backup plants. Because the genus *Rhododendron* encompasses everything from tropical epiphytes to alpine tundra plants and because our mandate is to grow them all, propagation is not entirely straightforward. We do, however, use fairly standard equipment and cutting methods, and our main variables are timing and scion treatment.

Our facility is a 35-ft × 48-ft Nexus greenhouse with concrete floor, active cooling, and a computer-controlled climate, including shade. Cuttings are rooted on bottom heat and mist in 6-inch-deep plastic mesh-bottom flats filled with a coarse peat and perlite mix. Our cutting year begins with deciduous azalea softwood in early April and ends with semi-ripe cuttings in October or November. We have 25 years of cutting records, the last 10 of which are in Microsoft Access database and are easily looked up to help me remember what should happen when and to aid in experimentation. Many rhododendrons have a very narrow window of opportunity for rooting, so our propagation record keeping is a vital tool for optimizing production.

We do up to 20,000 cuttings per year with a success rate ranging from 100% all the way to 0%. We propagate approximately 500 species of *Rhododendron*, many of which have dozens of cultivars, so we do small numbers of many different plants. This complicates production slightly and means that we must keep meticulous records in order to keep track of propagation results and production inventory. Cutting methods and treatments are quite ordinary, although I insist on the use of sharp knives instead of pruners for making end cuts and wounding to minimize tissue crushing on the more difficult-to-root species. We use liquid rooting hormone on the soft azalea and tropical cuttings, because the powdered form seems to encourage rotting on these types. I begin a weak liquid feed as soon as rooting begins and continue until they are ready for transplant. The rooted cuttings are removed from propagation flats and moved into 2<sup>7</sup>/<sub>8</sub> inch square by 5<sup>1</sup>/<sub>2</sub> inch deep band pots. They are weaned from heat and mist, then moved outside to hoop houses to grow and wait potting into 1-gal containers the following spring.

A more recent addition to our propagation scheme is growing wild-collected seed. Our curator, Steve Hootman, has led many seed collection trips to Southwest China and Northeast India in the past 10 years and has brought back several new introductions as well as some reintroductions of plants that have not been collected in the past 50 to 100 years. This has increased the genetic diversity of rhododendrons in cultivation and will help in developing better garden plants through breeding programs, which many people in the Northwest are involved in.

Early on, we suffered a few miserable failures mostly related to the medium we were using for germination. Now that we figured a few things out (and built a new and better greenhouse) we are having very good success with seed growing.

We begin by sowing in 2<sup>1</sup>/<sub>2</sub> inch-square shallow pots in mesh flats so they can be bottom watered and drained by dunking in a water tray and then lifting them out to drain. These pots are filled with live sphagnum that has been run through a <sup>3</sup>/<sub>8</sub> -inch screen and then seeded directly on top. All are placed in closed flats with clear lids on bottom heat, and most germinate within 2–3 weeks. As the first true

leaves appear we begin treating them to liquid fertilizer, soaked up from the bottom of the flats every week. We begin pricking out 8–12 weeks after germination and line the seedlings out into shallow flats and let them continue on bottom heat. By late spring many of the species are ready to move into the same band pots we use for the rooted cuttings, and they are transplanted, taken off heat, and hardened off for a few weeks and moved to hoop houses outside for spring potting the following year. Using live sphagnum has solved our main problems with germination, which were a medium that stayed too wet and fungus gnat larvae. It has created a couple of other problems that are easier to live with: the seedlings must be grown fast enough to prick out before the sphagnum dies and turns to muck and there are always weed seeds in it. The weeds consist mainly of *Drosera rotundifolia*, *Carex* sp., and an occasional *Ledum*, all of which are easily distinguished from the *Rhododendron* seedlings. Overall, the benefits of live sphagnum moss have outweighed the problems.

In the past few years with this method we have been able to produce plenty of plant material to supply the demands of our catalog sales and the other outlets thorough which we sell our rhododendrons.