

PROPAGATION OF RHODODENDRONS BY CUTTINGS: VARIATIONS UTILIZED IN THE WILLAMETTE VALLEY OF OREGON

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The Willamette Valley of Oregon is approximately 50 miles wide. Salem is located in the middle, some 60 air miles from the Pacific Ocean and 50 miles south of Portland. Walls of the valley are formed by the Coast Range on the west with a ridge crest of approximately 3000 feet above sea level; to the east the Cascades rise to approximately 5000 feet above sea level.

Rainfall in the valley ranges from 35 to 45 inches; 70% of our rain falls during the months of November through March with only 6% during the three summer months.

Only five times since weather records began in 1892 has 0°F or lower been observed; highs of 100°F or more seldom occur. There is a range of about 28°F between January, our coldest month, and July our warmest. The mild temperature, long growing season, approximately 6½ months, and plentiful moisture are ideally suited for a wide variety of nursery stock, particularly rhododendrons.

The variations in rhododendron propagation that will be discussed are from six different nurseries, all with rhododendrons as their main emphasis. The combined resources account for a production in excess of ½ million cuttings a year. Most are fellow members of the International Plant Propagators' Society.

Glenn & Darolen Sorum, Sorum's Nursery, Sherwood, Oregon.

Sherwood is about 30 miles north of Salem.

The propagating structure is set in the full sun. The base is built up from ground level 5 or 6 inches, the frame structure is of 2 × 4 wood or lighter to cast the least amount of shading. Sorum's propagate in flats, the heat cable is strung on the base and set at 72° to 74°F, with the flats placed directly on top.

The framing is low enough to conveniently reach over and down to pick up a flat. There is a mist system on a clock timer which mists to moist, then repeats after the leaves dry. The frame structure sides are wrapped with clear poly to contain the mist from wind; the top is open to the sky. In some beds they have insulated under the heat cable with a foil-covered

2½ in. poly board. This is covered with plastic, then the heat cable and flats. They feel this is a worthwhile conservation method for electric usage.

Sorum's start propagating in early July. Cuttings are trimmed, leaf area reduced and trimmed double or single cut depending on cultivar. Cuttings are washed but not sanitized; they are stuck in a ½ coarse peat, ½ perlite mix in flats. They feel it is important to firm cuttings when stuck, then watered well. After that they sprinkle can with a systemic fungicide (Benlate).

Ted Van Veen and Kathy Van Veen, Van Veen Nursery, Portland. Timing of cuttings at Van Veen's is early July through early September, with the exception of R. 'PJM', which is taken in late November after leaves have darkened.

Sanitation to forestall any possibility of fungus or disease is emphatically adhered to at this nursery. All items that may come in contact with the cuttings, i.e. clippers, gloves, table-top, knives, burlap, are sanitized with a hospital sanitizer — Physan 20-a, 1:10 solution. All cuttings are washed with a Physan mix (3 oz. to 4 gal. water) using a 1:16 Syphonex forceful spray, then drained on clean mesh of a washing bin.

They remove all flower buds, hanging leaves, and damaged parts from each cutting. They cut only leaves that are extremely long.

They wound the cuttings with a clean sharp knife. A standard cutting should be about 2 in. long. They cut the base at a 45° angle and make the wound itself about 1 in. long and just deep enough to expose the cambium.

For most cuttings Hormodin #3 is used; for dwarfs and lepidotes a 1:10 solution of Dip & Grow is used.

Preferably, cuttings are prepared and stuck the same day. If there is a need to hold processed cuttings they are stored in 40°F cool room in containers with clean, damp burlap.

They utilize a planting stick (board with wooden dowels) which marks bed row and allows each cutting a 2 in. square. The bed mix is 60% peat, 30% perlite, and 10% sand, steam sterilized and replaced each year. All greenhouses are thoroughly cleaned before each crop.

The following morning the beds are well watered so the rooting medium comes in good contact to the cutting; a short time later Wilt Pruf is applied.

Van Veen greenhouses vary in types of structures and heat source. Most are beds set up with the rooting medium in the beds. In some, the cuttings are put into wooden flats. All utilize heat beneath the cuttings and have electronic leaf con-

trol mist systems. The houses are heavily shaded with white wash; a look to the sun through the covering should not cause a person to squint. For approximately the first two months, the cuttings are watered each morning with the leaf control mist system on from 11 a.m. to 7 p.m., depending upon the weather of the day. The greenhouse tops are open all night until mid-September or until temperatures at night remain in low 40's F.

The bed temperatures are kept at 72 to 78°F. They expect callusing within 1 to 2 weeks, rooting within 2 to 4 months.

Jack and Lurlyn Long, J & L Nursery, Silverton, Oregon.

J & L Nursery is approximately ten miles north-east of Salem.

This is the latest state of the art in propagation — at this point experimental, though looking good so far.

The house is 44 × 96 fiberglass walls, low raisable panels at each end for air circulation, no added fanning or cooling. The roof is double poly with a fan to create air space between the layers. The floor area has 7000 ft., ¾ in. poly pipe with a gravel top. The propane-fired hot water boiler is so controlled that the house floor is kept within one degree of the setting, 70 to 72°F.

The house has three air condition controls: 1) time, 2) humidistat, and 3) temperature. The boiler controls the evenness of floor temperature and the water control has a filtration of particulants, pressure booster, and injection system of a chemical to suspend any minerals that may cause fogger orifice blockage. Each fogger line in the house is rated to withstand the 600 lbs. pressure; it is a poly pipe with brass fittings. Each line has a reverse pressure drain so each line drains all water between activation.

Cuttings are taken from early July through August and September. Only the amount that can be handled that day are taken — early in the morning. Cuttings are washed and sanitized with Physan, then rinsed.

Leaves are removed back to the top whorl (3 to 5 leaves), stems shortened, stems wounded with ½ to 1 in. cut; some cultivars are double cut. Leaves are not shortened. Cuttings are dipped in a 1:5 solution of Dip & Grow for 5 to 20 seconds.

Flats filled with 2 in. pots are then filled with a rooting mix of 1 part bark, 2 parts peat, and 2 parts pumice. This is mixed by loader scoops which averages out 2 cubic yards. This mix is not sanitized. The cuttings are stuck in the individual pots and well soaked, with no further watering.

In the house the timer is for “on” from 6 a.m. to 10 p.m. in

the summer, with the humidistat set at 95%. The temperature control (which will override all) is set at 90°F. Later, and at shorter days, the timer is set for 8 a.m. to 6 p.m. It is off at night; 85% humidity is used. At this point the cuttings look excellent; the rooting percentage and quality of roots will be the final answer.

Adrian and Dorothea Olson, A & D Olson Greenhouse, Silverton, Oregon

Olson's Greenhouse is located about 20 miles east of Salem.

They use heat cables set at about 70°F, a rooting mix of 50% coarse peat and 50% perlite. They take their cuttings in October and November, refrigerate them in plastic bags until they are ready to prepare them for the bed. The preparation is quite like the majority as to size and trimming of cuttings. In talking with them we found they used no particular sanitary safeguards. This may be due to the lateness in the season and the lower temperature. Sanitation problems may be encountered more during the earlier warm weather propagation.

Olsons utilize an 18-hour soak for their cuttings; 150 ppm IBA is used with cuttings banded in groups of 25. In this method the cuttings should be held at normal room temperature (70°F) so the cuttings will take up the solution. If the area the cuttings are to be placed into is cool and moist the amount of IBA taken up may not be enough. This method is explained in Leach's, "Rhododendrons of the World".

Dr. Herbert and Betty Spady, Honsuchachac Rhododendron Gardens, Salem, Oregon

Honsuchachac Rhododendron Garden is approximately 10 miles east of Salem.

The Spady's use a modified Nearing frame system with no heat. The frames are set on top of the ground with about 10 in. of bark protection. The frames are somewhat A-shaped with the opening side facing true north so no direct sun is on the cuttings. The frames are made of redwood and all surfaces facing north are painted white for best light reflection.

The frames are placed in the brightest and lightest position available (no shade). The frames are thoroughly cleaned and a sterilant is used, rinsed, and dried before new rooting medium is added — to a depth of about 6 in. Old bark, taken from the middle of a year-old pile, is the rooting medium used now, though other combinations have worked well.

Cuttings are taken as early as possible in the new growth season, trimmed, wounded, and Wood's Rooting Compound is used. Sometimes "Wiltpruf" is used if the cuttings are very

young. Cuttings are watered about once a week during hot summer months, but only every two or three weeks during cold or wet periods.

Rooting takes place in 2 to 3 months for most smaller-leaved cultivars, but up to 2 years for the most difficult-to-root.

W. June and Herb Brennan, Brennan's Farm, Salem, Oregon

Our farm is ten miles northwest of Salem.

I propagate in a poly hoop style house with table high beds. I use a bark dust base of 2 in. topped with 4 in. of a peat (4 cubic foot bale), perlite (3 to 4 cubic foot sacks) mixture.

Depending on the cultivar I start taking cuttings in mid to late June and like to be finished by the first week or so in September.

The propagation house, which is situated in the protection of trees, runs north and south with the west side and over the top covered with shade cloth. The house has doorways at each end that can be opened or closed for better ventilation. I use no heat but have a mist system that is manually controlled.

On preparing the cuttings for the bed, the unwanted leaves are removed. I usually retain the top 3 to 5 leaves on smaller-leaved cuttings with no further leaf reduction; on larger-leaved cuttings the leaf area may be trimmed back by over half. I use a utility knife with replaceable blade for wounding and trimming. Most cuttings I double wound; some smaller leaf or known easy rooters I may single wound. As the cuttings are prepared they are dropped into a pail of clear water, then lifted out, put into poly bag with a bed label and refrigerated until I have acquired enough to stick them down in the propagating bed.

All cuttings go through a bleach water bath as they are put into the beds. The bath (1 cup bleach to 1 pail of water) receives all cuttings, including the label, so everything is as clean as possible at the latest moment. Each cutting is shaken of excess water and dipped into a talc (8000 ppm IBA rooting hormone — Hormodin 3). To the rooting hormone I add 1 teaspoon Benlate per 2 oz. I feel this helps forestall fungus damage.

I wear rubber gloves during this last procedure as I have found the bleach irritates my hands.

The cutting is dipped into the rooting hormone to cover over wounded area, the excess talc is tapped off, then stuck in the bed to cover the wounded area by $\frac{1}{2}$ to $\frac{3}{4}$ in. of rooting medium. The mist system is set on and may run 5 to 10

minutes to help settle the cutting. (I do not heavily water them in). After the beds are filled I usually only mist for a couple minutes morning and evening, unless there are some exceptionally hot days.

IN SEARCH OF NEW PLANTS: PLANT INTRODUCTION, METHODS, AND APPLICATION

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The frost-free regions in the northern parts of the North Island of New Zealand have been a challenge to many horticulturists in the past century, as the climate in this zone has unique qualities, being without extremes in temperature. This allows plants of both a tropical and temperate type to be grown in close relationship.

In early times, pioneers introduced both food bearing and ornamental plants into New Zealand, from the mother country — England. Most of these early introductions thrived, although some of the temperate fruits did not thrive in northern regions of the country, due to lack of winter chilling. In the last fifty years, many new plants have been introduced, mainly those that grow well in this sub-tropical region. The Kiwifruit, brought into New Zealand in the first decade of this century, has only become a commercial success in the last twenty years. Other lesser known fruits have also become commercial fruits in New Zealand, such as the feijoa, (*Feijoa sellowiana*), the tamarillo, (*Cyphomandra betacea*), the pepino, (*Solanum muricatum*), and many species of citrus. There are still many plants, unknown in New Zealand, that warrant introduction and evaluation. The author has been directly involved in plant introduction since 1976.

Why more plant introduction? Early plant explorers who travelled to foreign lands were hampered by difficult transportation and inadequate collection facilities. Places visited were often pristine, presenting an enormous challenge to collect the many unknown plant forms. Today a reverse situation exists, where transportation is instant, and plants may be sent over large distances in a relatively short time. What is alarming however, is that many natural plant habitats are rapidly disappearing, as the rate of plant removal and clearing increases every year. In spite of modern communications there are many