DECIDUOUS AZALEAS FROM CUTTINGS

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If the limited use of deciduous azaleas in the landscape is ever to be overcome, it can only be brought about with handsome, healthy, long-lived plants, and these can only be developed from rooted cuttings Seedlings are no substitute for named clones, grafting produces a short-lived plant and one which lives for only the briefest span in fringe areas where growing conditions are somewhat or totally adverse to the requirements of the plants, layering in any form is slow to provide plants in quantity. In addition, layered plants in too many cases develop long naked stalks while attached to the stool plant, which later make ungainly specimens.

Outlined herein is the method used at Rochelle Park, New Jersey which has performed with consistent success these many years. Each step is described in full and in the exact sequence it occurs.

The rooting takes place in a modified Nearing frame. As many of you know this frame is an outdoor Wardian type enclosure the approximate size of two hotbed sashes placed end to end, partitioned in the middle forming two separate units, with a superstructure overhead excluding all direct rays of the sun. Blueprints for its construction and details for its operation can be obtained from Mr. David Leach or myself.

Into each of the two units in a frame are emptied and levelled, three bushels of shredded commercial peat moss. On top of this is added two bushels of shredded commercial peat moss thoroughly mixed with two bushels of washed coarse masonry sand. This too is carefully levelled Thinly spread over this is ¼ inch of coarse masonry sand which prevents the peat moss from floating with watering. Into this medium the cuttings are set They are spaced approximately 2½ inches apart in the row and the rows are approximately 1½ inches wide allowing about 3-400 cuttings per unit. Cuttings are never crowded so that leaves overlap to any extent. In rooting, carbohydrates plus nitrogenous substances are required, which are synthesized in the leaf. Hormones alone are not the answer It is necessary therefore, on inserting the cuttings, that they be so arranged that each leaf receives the maximum amount of light

In Rochelle Park, deciduous azalea cuttings are taken beginning the latter part of May and extending through the middle of June, depending on the season, and the age and location of the stock plants. The cuttings on stock plants growing in full sun mature before those grown in semi-shade. The exception are those cuttings which break at the base of the current season's flowers. Precise timing in taking the cuttings, heretofore directly linked with success or failure, does not appear to be vital and cuttings may be taken from the same plant at intervals of a week or more with good results The stem growth of a deciduous azalea is a continuous elongation which does not ripen simultaneously along its entire length. The new stem of a deciduous azalea is strigose. As the wood of the stem matures, beginning at its point of origin, and advancing toward the growing tip, the bristles grad-

ually vanish and give way first to a light colored smooth bark, which later transforms to a woody, rough brown bark.

In preparing a cutting it is essential not to use the woody or smooth part of the stem. The later in the season the cutting is made the more decisive this fact becomes Cuttings are usually 4 inches long, slightly larger or smaller bearing no influence on rooting, with usually three leaves-trimmed, if they are too large. Trimming leaves is reputed to weaken cuttings but I have never noticed any ill effects from the practice Two inches or less of the cutting are inserted in the medium so that the bottom leaf barely rests on the sand. If cuttings are placed deeper in the medium the base of the cutting will protrude down into the soggy peat, at times causing it to rot

On all cuttings the terminal bud or growing tip is pinched off and I cannot stress too strongly the critical significance of this step for I consider it of vital importance in the overall success of rooting and subsequent growth the following spring. It is established fact that indoleacetic acid is synthesized in the growing tip and upper leaves and then transported to other parts of the plant. Indoleacetic acid being an aid to rooting, it would appear that removing this apical bud, and upper leaf or two when succulent, would have an inimical effect on rooting. But this is not true. It does not impair rooting, but to the contrary it augments the process, unreasonable as it may seem Of equal significance is the almost immediate expansion of the axillary buds, clearly visible within a week or 10 days after removal of the terminal. A spur-like shoot or shoots is often produced at these leaf axils in the rooting beds. But whether or not shoots are produced, these swollen axillary buds are the points of origin from which growth commences the following spring.

Before inserting in the rooting medium, all cuttings are soaked for about 15 hours, exact timing having no noticeable effect on rooting, in 3-indolebutyric acid, 75 ppm with the exception of the yellow flowered azaleas which are treated with a 50 ppm solution. For some reason the yellows are more sensitive to treatment and may burn in the 75 ppm solution if the wood is slightly immature for cuttings The cuttings are not wounded as would be the case in preparing large leaved rhododendron cuttings. Half inch wire mesh is placed over pyrex glass trays filled with solution, and into this the cuttings are set No special enclosure or other conditions are provided for the soaking of the cuttings. Trays are placed indoors or out in a semi-shaded location. On being removed from the trays the cuttings are immediately wrapped in either wet burlap or polyethylene to prevent drying, and then as soon as possible set in the rooting frames The cuttings are set in holes made with a template. Cuttings are watered in, not tamped. The rooting medium is drenched until a layer of water ¼ to ½ inch deep momentarily covers the sand The glass is then fitted tightly over the cuttings and left undisturbed until the next watering in about a week There is ample water if, on inspecting the frames in the morning, water has condensed on the undersurface of the glass. Water once each week the first month whether or not there is apparent need In draining off through the medium the water draws down a fresh supply of oxygen essential in rooting. Depending on the amount of sunshine and condition of the

cuttings, many cuttings will strike roots after 4 weeks. By the beginning of August virtually all will be rooted. At this time watering is withheld and the plants are removed from the rooting frame between the latter part of August and the beginning of September. It is best to wait until the evenings become cool, before transplanting the cuttings. No effort is made to force growth on the cuttings at this time. Such an attempted alteration of the innate cycle of the little plants and the disruption of the normal metabolic processes taking place at this time in preparation for dormancy, is most unwise. Over aeons of time, these plants have adapted themselves to their environment. One of the requisites for survival was to cease growing in late summer and make the necessary physiological adjustments for winter. And it is a discreet plantsman who shows respect for the laws of nature. The method herein described does not require any late-season forcing or other unnatural conditions, to insure the start of growth the following spring. This, of course, is the most important aspect of propagating deciduous azaleas. The greatest problem has always been to induce the cuttings to start into growth the following spring after they have been rooted The procedure described in this paper eliminates this problem

Cuttings are transplanted from the rooting bins into 14 x 20 x 4″ cedar flats, 24 cuttings per flat. The flatting medium consists of 2 parts shredded commercial peat moss, 1 part sifted or shredded top soil, and ½ part Michigan peat moss In this mixture a strong root system has its genesis and the cuttings develop into young plants able to withstand a winter outdoors. The medium is friable so that it will not remain soggy after drenching rains, as would be the case if the percentage of soil equalled or exceeded that of the peat Also the physical structure, chemical and mineral composition of the mixture are similar to that in the planting beds into which the cuttings are to be later moved in the spring, so that the shock of moving will be reduced to a minimum. Many propagators use 100% commercial peat moss as a flatting or potting medium for newly rooted cuttings, but I consider such treatment not to be in keeping with the best interests of the plants. Biologically, nutritionally, and minerally it is a poor medium for roots. Although large root masses form these roots often fail to leave the peat upon transplanting into soil. In addition the peat ball remains intact for many years, holding excessive moisture during periods of prolonged rainfall.

After being flatted the cuttings are placed in a double lined cinder-block frame running north and south. The frame used at Rochelle Park is about 50 ft. long and 12 ft. wide with a ridge pole about 1 foot higher than the sides This rise allows ample drainage after the glass is set in place, yet the incline is so slight that the sun's rays in early morning reflect off the glass with a minimum warming of the frame. The object of having two rows of cinder block is for insulation so that temperature fluctuation during the winter is held to a minimum. The height of the frame is determined by the four courses of 8 inch blocks set up without mortar. The dirt floor of the frame on which the flats are set, is ground level. While it would appear to be advantageous to use a deep pit for overwintering, our present location makes this impossible.

Once set in the overwintering frame in late August or early September, the plants are shaded with lath admitting about 50% sunlight. At this time no glass is used. In early October the lath shading is temporarily removed, glass is placed over the cuttings and the shading replaced Each sash is propped open a few inches at this time The purpose of the glass being to keep off the autumn rains, allowing the soil sufficient time to dry and become aerated before freezing weather sets in. Any excessive active absorption of water at this time of the year, when drastic temperature fluctuations are common, followed by a freeze, could cause the bark of the little plants to split. The soil therefore, is permitted to dry to a point where the leaves of the cuttings actually flag for want of water. When this condition exists the plants are sprinkled only lightly so the leaves again regain their normal position and appearance.

The beginning of November the glass is closed tightly on the frame and left undisturbed until the end of the year, at which time the lath shading is again temporarily removed and a sisal-craft paper covering is placed over the glass. The lath shading is then replaced to hold down the sisal-craft. The paper covering prevents the direct rays of the sun from entering the frame and causing wide temperature changes during the open days of winter. It remains in place until mid-March Such a covering does not place the inside of the frame in total darkness Cracks in the cinder blocks, and glass imperfectly seated allow enough light to enter that the inside of the frame has the appearance of dull twilight.

In mid-March before the sun and warmer weather warm the inside of the frame the sisal-craft paper is removed and the glass is again ventilated This ventilation prevents overheating and stimulation that might occur during successive clear days the latter part of March The beginning of April, as the weather permits, the glass is removed, and the plants are bedded out, mulched and shaded. Bedding out this early in the season produces a substantially larger root system by fall and a second growth (the same year) two to three times larger than would be the case if the bedding were postponed until late April or early May. In climates warmer than that of Rochelle Park bedding-out can begin at a much earlier date, weather permitting.

The first season the little plants do not receive any commercial fertilizer, yet many attain a height of a foot or more. These are generally cut back in fall or the following spring to insure a sturdy well ramified plant. The second season growth is made under lath but the young plants are transplanted into the sun in the fall of the second year or before growth begins the following spring.

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MODERATOR WARNER: Thank you, Mr Leach. I am glad that this paper has been presented.

I noticed we are running exactly a half hour behind, which isn't too bad, considering the number of speakers. On the other hand, I do not think it will allow us any time for questions.

Without further ado, I will turn the meeting back to President Hugh. We hope that this probably minor dissatisfaction and enthusiasm for asking questions can be carried over into another year

PRESIDENT STEAVENSON: Thank you very much, Zo, for that masterful job. I can understand why you were elected mayor. I can't understand why they let you go.

I think we can now proceed with our business meeting with dispatch.

The meeting recessed to reconvene in the Annual Business Meeting (See page 11).

EIGHTH ANNUAL BANQUET

The Past President, Mr Hugh Steavenson, and the newly elected President, Mr Roy M. Nordine, presided at the annual banquet

Highlighting the banquet was the presentation of a Life Membership and Plaque to Dr F L Skinner, Dropmore, Manitoba, Canada, for his outstanding work in the field of plant propagation

Following a period of entertainment, Dr. Seymour Shapiro, Brookhaven National Laboratory, Upton, Long Island, New York presented a graphic discussion of Radio-active Materials, Bud Regeneration and Root Growth

(*Editor's Note*): For further reading attention is called to Dr. Shapiro's article appearing in *The Physiology of Forest Trees*, 1958, edited by K. V. Thimann. pages 445-465 Roland Press Company, New York.

The Eighth Annual Meeting of the Plant Propagators Society adjourned sine die at 10 00 P.M.