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ROOTING GHENT AZALEAS UNDER PLASTIC

GHENT azaleas have long been admired for their spectacular blooms in late May. The group, however, has never risen to prominence in this country, chiefly because of the difficulties encountered in propagating these plants asexually. They must be asexually propagated to maintain the desirable characteristics of the many varieties; none of the Ghent azaleas can be reproduced true to name from seeds.

Attempts were made in 1951 to propagate some varieties from softwood cuttings. The results were highly discouraging. Not only did a large percentage of the cuttings fail to root, but the few that did root failed to survive the first winter. Most Ghent azalea varieties are propagated by layering in European nurseries.

The introduction of polyethylene plastic has changed these discouraging results. Softwood cuttings of Ghent azalea varieties are now rooted successfully, with vigorous resulting growth.

Rooting Procedure

The cuttings are rooted under wire frames covered with a polyethylene plastic. The frames are constructed of turkey wire, No. 9 gauge, with 2x4-inch squares. (Note illustration shown.) The wire is bent to allow a 10-inch distance from the surface of the medium to the inside top of the wire. Frames are four feet long, with the width determined by the width of the bench used.

After the cuttings have been placed in the medium, they are flooded in with water and the frames are placed over them. The medium is never pounded. After this, the ends and sides of the frames are covered completely with sheets of 2-mil. polyethylene plastic. This same type of structure can be used equally well over flats of cuttings. Whatever kind of structure is used, the plastic must be completely sealed.

A mixture of one-third sand, one-third peat and one-third ground Styrofoam has proved to be the best rooting medium. The cuttings not only root more

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heavily, but also produce a uniform root system. The type of peat used in this combination is optional. The Arboretum has used many kinds and has found no great difference in results among them.

This rooting mixture is heated by a lead-covered cable, thermostatically controlled. The thermostat is set to turn on the current at 72 degrees F., but only at night, since in the daytime there is sufficient heat beneath the polyethylene plastic. The everyday temperature outside the greenhouse is high and the heat builds up accordingly. On many days the median temperature is 85 to 95 degrees F., a factor which aids in the successful rooting of Ghent azaleas.

Timing

Before the introduction of polyethylene plastic, it was necessary to wait until the new growth had set a terminal bud and had begun to harden off before the cutting material could be collected, because the softer, more succulent cuttings would wilt. Now, however, by use of polyethylene covers to maintain conditions of high relative humidity, it is possible to collect the cutting material from soft, succulent growth.

Prior to the use of polyethylene plastic covers, cuttings of Ghent azaleas were not collected until late July or early August, when growth had matured to a point at which it could be kept from wilting under open bench conditions. This was accomplished by shading the cuttings with newspaper or cheesecloth and syringing them manually at least once every hour.

The procedure, however, did not give good results. The cuttings rooted poorly, since they were taken so late in the season, and the few that did root, died during the first winter. (See Table I.)

Now it is possible to collect the cutting material in late May or early June. Collected at this time, the cuttings not only root faster, but also root more heavily, because of the soft growth used. (See Table II.) Once the cuttings are rooted, every attempt is made to stimulate new vegetative growth. This helps in the successful overwintering of Ghent azaleas and can be accomplished successfully by using artificial lights.

Artificial Lights

After the potting operation, the azaleas are placed on an open bench under a single row of 100-watt incandescent lights. The lights are spaced two feet apart in the row and 15 inches above the level of the bench; the benches themselves are 32 inches wide. The lights are operated in the following manner:

At 5 p.m. the lights are turned on and left on all night until 8 a.m. One can eliminate the overlap of artificial light and normal daylight by using a time clock. The plants are kept under the row of lights for approximately two months. During this period, the terminal buds break dormancy and produce two to eight inches of new growth. This new growth is then hardened off, and the cuttings are overwintered in a cold pit, where the temperature is 35 to 40 degrees F.

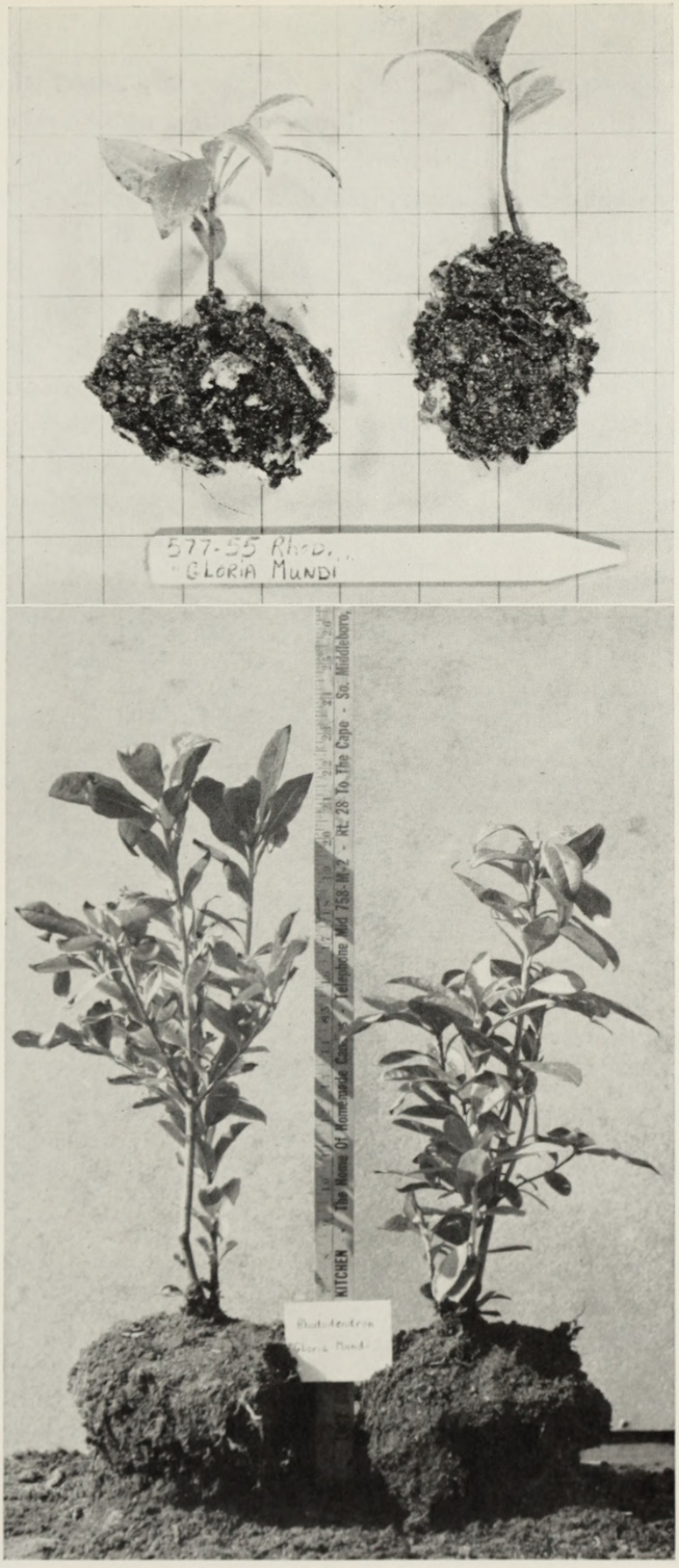

PLATE I

Upper: Type of root system obtained on cuttings under a polyethylene plastic cover.
Lower: Two-year-old cuttings of variety 'Gloria Mundi.'

Cutting Procedure

The cutting material is collected in late May or early June, whenever the new growth is two or three inches long — long enough to make a cutting. Cuttings are placed immediately in polyethylene plastic bags, which contain a small quantity of moistened sphagnum, and stored in a refrigerator at 40 degrees F. until they are used, sometimes five to seven days.

One prepares the cuttings for rooting by stripping the leaves from the bottom inch and making a fresh cut at the basal end. Once the basal end has been recut, the cutting is dipped first into water and then into the hormone powder, Hormodin No. 3. Whether or not wounding is advisable depends upon the condition of the cutting material. When soft, succulent material is used, the value of wounding is questionable. However, when firmer cutting material is collected in July and August, a wound is definitely beneficial.

Once treated with Hormodin No. 3, the cuttings are placed in the sand, peat and Styrofoam medium, where they take from two to three months to root. When rooted, they are potted into $2\frac{1}{2}$-inch standard pots and placed on a bench under artificial lights.

Conclusions

1. The asexual propagation of Ghent azaleas is definitely feasible when polyethylene plastic is used.

2. The use of artificial lights is a necessity if these varieties are to be overwintered successfully in commercial quantities.

3. The use of a wound on soft, succulent cuttings is not necessary.

4. A medium of sand, peat and Styrofoam, mixed in thirds by volume, produces a more uniform root system than a half-and-half mixture of sand and peat alone.

Roger Coggeshall

Note:—This article appeared in *The American Nurseryman* for June 1, 1958. Many have shown a marked interest in the subject, so it is reprinted here with the permission of the publisher and the author, who wrote the article while still propagator at the Arnold Arboretum.

PLATE II

Polyethylene-covered Propagating Bench.
Upper: With wire supports. *Lower:* Completely sealed.

Table I.—Rooting Results Obtained with Open-Bench Type of Propagation.

	Cuttings			Results			
Variety	*No. of Cuttings*	*Date Taken*	*Treatment*	*Rooted*	*Callused*	*Dead*	*Date*
[2] Rhod. 'Gloria Mundi'	50	7/1	Hormodin #2	12	32	6	11/26
[2] Rhod. 'Gloria Mundi'	50	7/29	Hormodin #3 plus wound on one side	43	4	3	9/18
[1] Rhod. 'Narcissiflora'	50	5/22	Hormodin #2	0	—	50	6/17
[1] Rhod. 'Pallas'	50	5/22	Hormodin #2	0	—	50	7/11
[1] Rhod. 'Raphael de Smet'	50	5/22	Hormodin #2	0	—	50	7/12
[2] Rhod. 'Raphael de Smet'	50	6/18	Hormodin #2 plus wound on both sides	31	6	13	9/18
[2] Rhod. 'Raphael de Smet'	50	7/29	Hormodin #3 plus wound on one side	29	13	8	11/26

[1] The cuttings wilted and died due to insufficient humidity.

[2] All the rooted cuttings failed to grow the following spring. In many cases the roots were alive, but the tops were dead.

Table II.—Results Obtained with Polyethylene Plastic Cases.

		Cuttings			Results			
Variety	*Lot No.*	*No. of Cuttings*	*Date Taken*	*Treatment*	*Rooted*	*Cal-lused*	*Dead*	*Date*
[3] Rhod. 'Charlemagne'		200	5/28	Hormodin #3	104	12	84	8/29
[3] Rhod. 'Davisi'		100	5/24	Hormodin #3	91	6	3	8/22
[2] Rhod. 'Gloria Mundi'		65	7/22	1% Indolebutyric Acid in Talc	58	5	2	9/20
[3] Rhod. 'Gloria Mundi'		150	6/16	Hormodin #3	125	19	6	10/18
[3] Rhod. 'Gloria Mundi'		100	6/18	Hormodin #3	80	6	14	10/19
[3] Rhod. 'Josephine Klinger'		200	5/28	Hormodin #3	149	7	44	8/29
[1] Rhod. 'Narcissiflora'	1	50	5/27	1% Indolebutyric Acid in Talc	46	2	2	8/12
	2	50	5/27	Hormodin #2	48	2	—	8/12
	3	50	5/27	Chloromone (full strength)	46	1	3	8/12
	4	50	5/27	Control (no treatment)	16	9	25	8/12
[3] Rhod. 'Narcissiflora'		200	5/28	Hormodin #3	136	14	50	9/23
[1] Rhod. 'Pallas'	1	50	5/27	1% Indolebutyric Acid in Talc	40	—	10	8/12
	2	50	5/27	Hormodin #3	43	4	3	8/12
	3	50	5/27	Chloromone (full strength)	33	1	16	8/12
	4	50	5/27	Control (no treatment)	24	18	8	8/12
[4] Rhod. 'Raphael de Smet'		145	6/16	Hormodin #3	83	50	12	10/17
[3] Rhod. 'Raphael de Smet'		143	6/18	Hormodin #3	109	32	2	9/18

[1] The cuttings in Lots 1, 2 and 3 had approximately the same size root system. The root systems in Lot 4 were very poor.

[2] The cuttings were taken too late in the year. Heavier and faster rooting would have been obtained if the cuttings had been taken earlier.

[3] These cuttings were taken at the optimum time.

[4] The rooted cuttings had very large root systems (3″ in diameter). The cuttings were left in the medium too long.

Coggeshall, Roger. 1960. "Rooting Ghent Azaleas Under Plastic." *Arnoldia* 20(1), 1–7.

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