Effect of Quaternary Ammonium Compound Dips on Rooting of *Rhododendron catawbiense* 'Boursault'

M. L. Daughtrey, W. S. Clark, and M. T. Macksel
Cornell University Cooperative Extension, 39 Sound Avenue, Riverhead, New York 11901

Local nurserymen have expressed interest in using anti-microbial treatments on woody cuttings prior to mist propagation, in order to control pathogens inadvertently introduced to the propagation area on cuttings collected from outdoor-grown stock Few fungicides are registered for dip treatment, and those available often do not control a broad spectrum of pathogens. Before pursuing efficacy studies, we thought it important to determine whether anti-microbial substances used as dips were non-phytotoxic. A previous study examined the effect of different concentrations of Physan 20 (now Whitmire's PT 2000 Green-Shield), Phyton 27 and Banrot 40WP on the rooting of azalea and rhododendron (Clark and Daughtrey, 1990). In that study, we observed a tremendous amount of natural variation in root development among cuttings in a population. Therefore, in our 1991 study, we increased the number of replications, and were careful to block against variation in cutting diameter.

Cuttings of *Rhododendron catawbiense* 'Boursault' harvested 9/25/91 were sorted into size categories to maximize uniformity within replications, and wounded on both sides of the base. Groups of 20 cuttings were then given a 1-min dip treatment before the ends were touched to 3% IBA powder. The dip treatment solutions were various concentrations of Green Shield (Whitmire Research Laboratories, Inc., St. Louis, MO), which contains two quaternary ammonium compounds as active ingredients. Cuttings were stuck into 70% peat-30% perlite medium in #50 Pro-tray flats, and arranged in a randomized complete block on one greenhouse bench. There were 10 replications of each treatment. Cuttings were rooted under intermittent mist; temperatures ranged from 18 to 27°C (65 to 80°F). The rooting category (stage of root development) was recorded for all cuttings on 12/1/91.

RESULTS

None of the treatments had a significant effect on the proportion of the cuttings which initiated roots (Category 3) or developed small root systems not yet filling the container (Category 4) (Table 1) within two months. Treatment at the 400 ppm rate did appear to be conducive to the development of a large root system (Category 5) in a small percentage of the population. There was a great deal of individual variability in root development, even in the control treatment.

Table 1. Effect of Green Shield treatments on root development in *Rhododendron catawbiense* 'Boursault' cuttings

Ammonium chloride conc. (ppm)	Root development categories[1]					
	1	2	3	4	5	Sum of 3, 4,& 5
0	1.6a[2]	9.2a	4.5a	3.7a	0.8a	9.0a
50	0.9a	8.4a	4.4a	4.1a	1.7ab	10.2a
100	1.0a	8.3a	3.9a	4.3a	2.1ab	10.3a
200	1.7a	7.6a	4.9a	4.5a	1.1ab	10.5a
400	1.6a	9.4a	3.5a	2.9a	2.3b	8.7a

[1] Root development categories: 1=no callus, 2=callus only, 3=5 or-less roots initiated, 4=more than 5 roots initiated plus secondary root development, 5=root system extensive, filling the plug.

[2] Values represent mean number of cuttings (out of a possible 20) ın each developmental stage for 10 replications of each treatment; values followed by the same letter are not significantly different (Fishers Protected LSD, p=.05)

CONCLUSION

Green-Shield cutting dips did not inhibit rooting of *R. catawbiense* 'Boursault' within the concentration range tested. Although Green-Shield is not labeled for direct application to plants, it is labeled for use on hard, inanimate surfaces in the greenhouse. Disinfecting flats, benches, and work surfaces with Green-Shield should not have any negative effects during plant propagation.

LITERATURE CITED

Clark, W. S., M. Daughtrey, and **M. Macksel** 1990. *Dips for control of propagation* diseases. Long Island Horticulture News. July pp. 1-2.