

To look at the economics of the design, we will compare it with a conventional 30×96 foot double plastic walled propagation house. Bench space in both houses is the same. The conventional propagation house has 5400 sq. ft. of double layer plastic exposed, including an inflated roof. The pithouse has 2200 sq. ft. of triple plastic exposed, or 40.7% of the exposure of a conventional propagation house. The oil consumption in the winter of 1977-1978 amounted to 4860 gal. of #2 fuel in the conventional house, and 980 gal. of the same fuel in the pithouse, a savings of nearly 80%. Apparently the heat contributed by sub-frostline earth aids in maintaining proper temperatures.

In the pithouse, temperatures in spring and summer are easily controlled by fan and simple shading. For this we use 0.004 and 0.006 translucent white plastic left over from winter storage hoopouses. Because the temperature is so easy to control in the pithouse, we are able to have three crops of cuttings a year, whereas in the conventional propagation house, high temperatures make summer propagation impossible. Since it is so easy to keep the house cool, we have had excellent results propagating deciduous azaleas.

CHEMICAL AIDS IN ROOTING RHODODENDRON AND ILEX CUTTINGS

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After making and observing the rooting of *Rhododendron* cuttings for 30 years, it appears that cuttings made during the November-December period produce a better percentage of good rooted cuttings than to those taken at other times. It now also appears that soaking the cuttings in a sodium hydroxide (NaOH) solution at a pH of 10.5 for 20 to 30 minutes before sticking in the rooting medium, gives much better rooting and higher percentages. This concept was developed by C.I. Lee, J.L. Paul, and W.P. Hackett and presented at the Western Region IPPS meeting in 1975 (1).

After reading this paper, I decided to run a few tests on the value of soaking wounded cuttings of *Rhododendron* and *Ilex* in NaOH solutions at pH 10.5. Trials with *Rhododendron* cuttings were made November 11, 1977 using cuttings formed during the August growth period of 1977. The *Rhododendron* cuttings were double wounded and soaked for 20 minutes in the

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NaOH solution. The cuttings were next washed in tap water (pH 6.5) and treated with IBA in talc or isopropyl alcohol. No attempt was made to treat the cuttings with a fungicide.

The rooting medium consisted of a mix of Canadian sphagnum peat and propagation grade perlite (1:1). The mix was properly moistened, placed in a vapor proof case, and maintained at 72° to 75°F.

The NaOH increased the rooting percentage and quality with both talc and alcohol methods of auxin application (Table 1).

A second trial, not reported on here, was made in mid-July, 1978, using cuttings formed during June, 1978, and showed that fall cuttings respond better to NaOH than did spring cuttings.

Table 1. Rooting percentage of *Rhododendron* 'Nova Zembla' cuttings with and without NaOH pretreatment.¹

IBA ppm	Percent Rooted	Quality of Roots
No NaOH Treatment		
15,000 (in talc)	60	just acceptable
20,000 (in talc)	90	good, average
7,000 (in alcohol)	90	good, average
10,000 (in alcohol)	90	good, average
NaOH Pre-treatment — pH 10.5		
7,500 (in talc)	90	abundant, strong
10,000 (in talc)	90	abundant, strong
5,000 (in alcohol)	100	abundant, strong
7,500 (in alcohol)	100	abundant, strong

¹ Date of sticking, 11/9/77; potting, 1/2/78.

Ilex species, like most broad-leaved evergreens, do not produce multiple surges of growth in the same growing season. After most *Ilex* species have completed their season's growth and that growth has matured, they are ready to produce root initials when made into stem cuttings. The cuttings are quite difficult to root if they are not wounded and treated with IBA. When the *Ilex* 'San Jose' and 'James Esson' cuttings were treated in a 30 minute NaOH soak they rooted and had a rapidly growing root system in eight weeks.

LITERATURE CITED

1. Lee, C.I., J.L. Paul, and W.P. Hackett. 1976. Root promotion on stem cuttings of several ornamental plant species by acid or base pretreatment. *Proc. Inter. Plant Prop. Soc.* 26:95-99.

VOICE: How long do you predip with sodium hydroxide?

HARVEY GRAY: I can see no difference between 20 or 30 minutes.