VEGETATIVE PROPAGATION TRIALS OF EASTERN REDCEDAR AND ARIZONA CYPRESS IN THE GREENHOUSE

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A greenhouse study of the rooting potential of eastern redcedar *(Juniperus virginiana L.)* and Arizona cypress *(Cupressus arizonica* Greene) was recently completed at Lee Memorial Forest, near Bogalusa, La. Both species have potential as Christmas trees; however, they can be most difficult to produce in the nursery. Hence this study was set up, to determine the relative merits of vegetatively propagating these species in the greenhouse, using root hormone treatments.

Five root hormone treatments with four replications and two light regimes (7- and 14-hour photoperiod) were used. The root hormone treatments were as follows:

Treatment	*Chemical*
a. 5-second dip (basal inch)	3-indolebutyric acid and naphthalene acetic aicid (10,000 p.p.m.)
b. 15-second dip (basal inch)	3-indolebutyric acid and naphthalene acetic acid (10,000 p.p.m.)
c. 10-minute soak (basal inch)	3-indolebutyric acid (500 p.p.m.)
d. 18-hour soak (basal inch)	3-indolebutyric acid (20 p.p.m.). Retreated 45 days after initial treatment and each cutting received 3 longitudinal wounds on the basal inch. They were soaked for 10 minutes in 500 p.p.m. of 3-indolebutyric acid.
e. Check.	No chemical treatment.

Procedure

Cuttings 5 to 9 inches long were obtained from the upper two-thirds of the crown from a 9-year-old Arizona cypress and a 5-year-old eastern redcedar late in November 1966. Both trees selected had phenotypically desirable characteristics for use as Christmas trees. The cuttings were treated with the appropriate root hormone solution and placed in a coarse sand media on a 2-inch by 2-inch spacing. Twenty-two cuttings were used in each replication (11 under each light regime). A mistblower supplied moisture to the cuttings continuously from 8 a.m. until 1 p.m. daily.

The planting bed was divided so that half received diffused sunlight for about 7 hours daily. The other side received 14 hours of artificial light each day from four "plant-grow" fluorescent light bulbs (fig. 1). "Plant-grow" bulbs emit both long and short wavelengths, thus supplying the light requirements for the plants. This setup was accomplished by installing a wooden frame covered with cheesecloth over half of the bed. A plywood box housing the lights covered the other half. The light fixtures were hinged so that they could be lifted to inspect the cuttings (fig. 2). A thin plastic sheet protected the fluorescent bulbs from the moisture produced by the humidifier.

The temperature of the sand in the planting bed was maintained at a relatively constant 70° F. with thermostatically controlled heat cables.

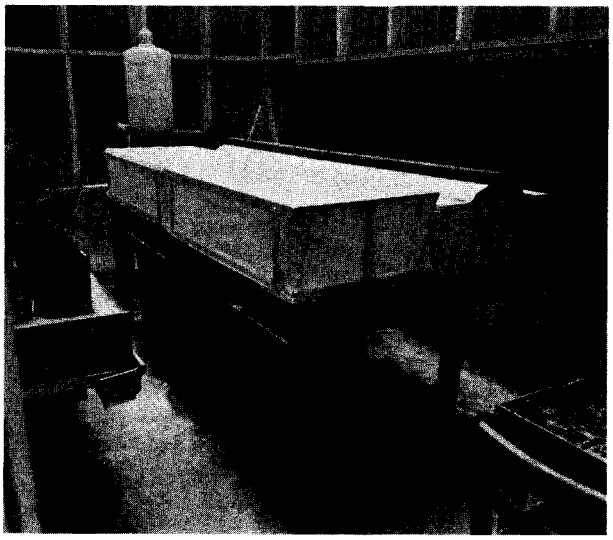

Figure 1.—Bed used for vegetatively propagating eastern redcedar and Arizona cypress.

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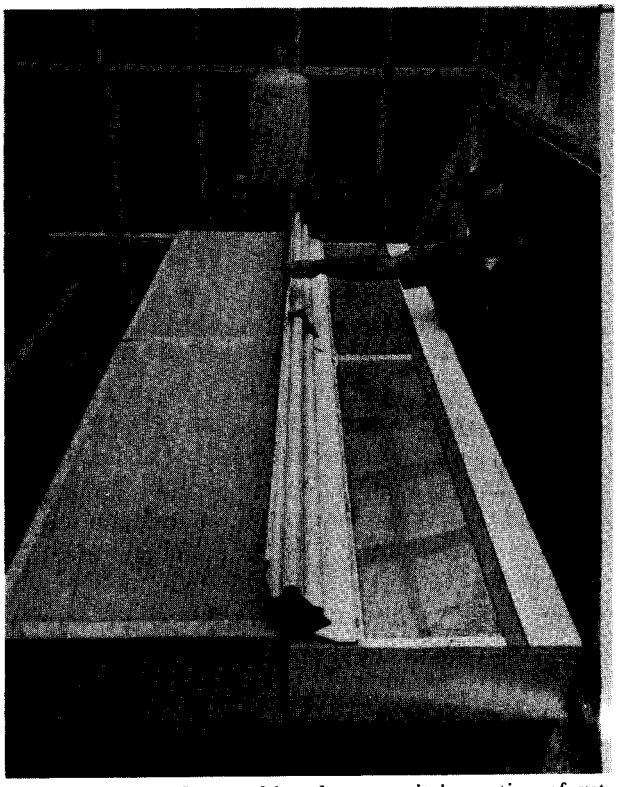

Figure 2.—Light fixtures hinged to permit inspection of cuttings in the 14-hour photoperiod compartment.

Results

In late May 1967, 6 months after initiation, the study was terminated and results obtained (table 1).

Discussion

The data (table 1) indicate that a greater percentage of the cuttings developed roots under the 7-hour photoperiod than under the 14-hour photoperiod. This was true for both species and was caused by an overabundance of soil moisture rather than improper light conditions. Many cuttings removed from the side of the planting bed that received the 14-hour photoperiod were dead at the ground line, and the outer bark readily slipped, indicating too much soil moisture. Both sides of the bed received the same amount of moisture initially from the humidifier; however, one side was covered with cheesecloth and readily lost some moisture to the outside air. The other side, which was covered with plywood, trapped and held the moisture and did not allow it to escape. Thus the sand became much wetter under the 14-hour photoperiod than it did under the shorter light regime.

TABLE 1.—*Percentage of rooted cuttings by root hormone treatment and photoperiod*

Treatment	Eastern redcedar		Arizona cypress	
	7 hours Pct.	*14 hours* Pct.	*7 hours* Pct.	*14 hours* Pct.
5 sec. dip	82	34	25	0
15 sec. dip	73	41	10	0
18 hrs. soak	68	18	0	0
10 min. soak	55	36	2	0
Check	55	30	0	0

The data were subjected to a standard t-test using paired replicates; no statistically significant differences were found between root hormone treatments. This was true for both species. Statistical comparison of the photoperiod data was not made since the overabundance of moisture in the 14-hour photoperiod was believed to invalidate these results.

Conclusions

The 5-second dip treatment in 3-indolebutyric and naphthalene acetic acid (10,000 p.p.m.) produced a greater percentage of rooted cuttings than the untreated checks. This treatment produced roots on 82 percent of the eastern redcedar cuttings.

Arizona cypress cutting did not root effectively with any hormone treatment. The best results were achieved with a 5-second dip in 3-indolebutyric and naphthalene acetic acid (10,000 p.p.m.). This method produced roots on 25 percent of the cuttings tested.