Propagation of 'Carolina Sapphire' Smooth Arizona Cypress by Stem Cuttings: Effects of Growth Stage, Type of Cutting, and IBA Treatment

Hunter L. Stubbs, Frank A. Blazich, Thomas G. Ranney, and Stuart L. Warren
North Carolina

Nature of Work: 'Carolina Sapphire' smooth Arizona cypress [*Cupressus arizonica* var. *glabra* (Sudw.) Little 'Carolina Sapphire'] is a fast growing, attractive evergreen tree with considerable potential for use in the landscape and as a Christmas tree. Although interest and subsequent demand for this cultivar are increasing, supplies are limited due in part to propagation difficulties. Therefore, the following study was conducted to develop a protocol for propagation of 'Carolina Sapphire' smooth Arizona cypress by stem cuttings. Specifically, the influence of timing (growth stage), type of cutting, and indolebutyric acid (IBA) treatment on rooting were investigated.

Stem cuttings consisting of 30 cm (12 in) terminals or distal [terminal 15 cm (6 in)] and proximal [basal 15 cm (6 in)] halves of 30 cm (12 in) terminals were taken on three dates that represented three growth stages (semi-hardwood, hardwood, and softwood). Cuttings were treated with IBA in 50% isopropanol ranging from 0 to 16,000 ppm (1.6%) and placed under intermittent mist.

Results and Discussion: Regardless of cutting type and auxin treatment, cuttings rooted at each growth stage. Overall percent rooting was highest during the hardwood stage (70%), followed by the semi-hardwood stage (44%). Softwood cuttings exhibited the lowest overall rooting (33%). At each growth stage, the response to IBA in terms of percent rooting, root count, and root dry weight, was variable depending on cutting type. Rooting percentages $\geq$ 70% were attained at the semi-hardwood and hardwood growth stages, for particular treatment combinations. For example, semi-hardwood distal and proximal halves exhibited rooting of 72% and 75%, respectively, following treatment with 16,000 ppm (1.6%) IBA whereas rooting $\geq$ 83% was observed for hardwood distal halves treated with IBA ranging from 8000 (0.8%) to 16,000 ppm (1.6%).

Significance to Industry: Results indicate that stem cuttings of 'Carolina Sapphire' smooth Arizona cypress can be rooted at several growth stages. However, semi-hardwood and hardwood cuttings appear more amenable to rooting than softwood cuttings. Treatment of cuttings with IBA will stimulate rooting depending on growth stage and the type of cutting.