

Nitrogen Nutrition of Containerized *Cupressus arizonica* var. *glabra* 'Carolina Sapphire'

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Nature of Work: A study was conducted to determine the influence of N concentration on growth of containerized 'Carolina Sapphire' smooth Arizona cypress.

Containerized, rooted stem cuttings of 'Carolina Sapphire' smooth Arizona cypress [*Cupressus arizonica* var. *glabra* (Sudw.) Little 'Carolina Sapphire'] grown in calcined clay were fertilized daily for 16 weeks with a complete nutrient solution containing 0, 20, 40, 80 or 160 mg N/liter supplied as ammonium nitrate. Plants were grown in a glass greenhouse under natural photoperiod and irradiance with day/night temperatures of 27 ±5C (80 ±9F) /21 ±5C (70 ±9F). The experiment was a randomized complete block design with 10 single-plant replications. All nutrient solutions were adjusted to pH 6.0 using 1N H₂SO₄. Eight hundred ml of nutrient solution was applied daily at 0900 HR to each container. No other irrigation was needed throughout the study.

At treatment initiation, plant heights and stem diameters were taken at the surface of the substrate. Initial heights and stem diameters were 22 cm (8.7 in) and 2.3 mm (0.09 in), respectively. After 16 weeks, plant heights and stem diameters were measured. Data were subjected to regression analyses. The analyses showed statistical significance for growth measurements only if the nontreated control (0 mg N/liter) was included. Therefore, the nontreated control was excluded from the regression analyses and a linear contrast was utilized to test for differences between a pooled N treatment effect and nontreated control.

Results and Discussion: Plant heights and stem diameters were not affected by N rate suggesting that 20 mg N/liter was adequate for maximizing growth (Table 1). Nitrogen fertilization increased heights and stem diameters by 71% and 56%, respectively, compared to the nontreated controls (0 mg N/liter).

Significance to the Nursery Industry: 'Carolina Sapphire' smooth Arizona cypress is a versatile, fast growing evergreen tree which can be utilized as a specimen plant, an attractive screen or as a Christmas tree. Since its introduction in 1987, interest and subsequent demand for this cultivar have increased, accompanied by a need for information related to container production. Maximum shoot growth were realized by daily application of a complete nutrient solution containing 20 mg N/liter. Rates of N > 20 mg/liter did not stimulate additional growth.

Table 1. Effect of N concentration on height and stem diameter of 'Carolina Sapphire' smooth Arizona cypress.

Nitrogen concn. (mg/liter)	Height (cm)	Stem diam. (mm)
0	28	3.4
20	49	5.0
40	42	4.8
80	48	5.5
160	51	5.6
<u>Significance^z</u>		
Linear	NS	NS
Quadratic	NS	NS
N rate vs. control ^y	***	***

^zNS, *** Nonsignificant or significant at $P \leq 0.001$, respectively. Zero rate not included in the regression analysis.

^yLinear contrast. N rate = pooled nitrogen treatment. Control = 0 mg N/liter.