As the rate of application of the Scott formulations increased, *Ficus* plant height, dry weight, visual rating, and leaf color improved. Joiner *et al.* (4) have suggested much higher rates of N for production of *F. benjamina* stock plants (2800 kg N/ha) and potted aclimatized *F. benjamina* L. plants (2650 kg N/ha) than reported in the current investigation. Differences in application rates are probably due to environmental conditions, especially solar irradiance. Joiner *et al.* (5) grew stock plants at 86.1-107.6 klux (approx. 8000-10,000 ft-c) and acclimatized plants at 37.7-64.6 klux (approx. 3600-6200 ft-c), whereas the present investigation used 21-44 klux (2,000-4,000 ft-c).

Significance to the Nursery Industry

Results of the current investigation indicate that satisfactory growth can be obtained in *Dieffenbachia amoena* and *Philodendron scandens* subsp. *oxycardium* grown at 22-44 klux (2,000-4,000 ft-c) with a single broadcast application every 4 months of Precise 12.0N-2.6P-5.0K (12-6-6), Scott Pro-Grow 25.0N-4.4P-8.3K (25-10-10) and several Scott trionized fertilizers applied at the rate of 675 kg/ha (588 lb/A) per year. Three applications per year of these fertilizers or Osmocote 14.0N-6.1P-11.6K (14-14-14) applied at the rate of 1200 kg/ha (1045 lb/A) will yield comparable growth in *Ficus benjamina* as soluble fertilizer applied every 2 weeks at the rate of 1582 kg/ha (1477 lb/A) per year. Fertilizer rates higher than 675 kg/ha (588 lb/A) may be needed to obtain similar results at higher light intensities. *Brassaia actinophylla* plants grew better when fertilized with higher N rates (1582 kg/ha, 1477 lb/A) supplied by water soluble fertilizer, however higher rates of controlled-release fertilizer should be tried on *Brassaia*. Mag-Amp 7.0N-17.4P-4.1K (7-40-6) performed poorly in this investigation and cannot be recommended for foliage plant fertilization. Further studies should be conducted on liquid urea as an N source in foliage plant fertilization.

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Effects of Selected Pruning Methods on Subsequent Growth of *Photinia* x *fraseri*[1]

Michael A. Dirr[2]
Department of Horticulture
University of Georgia
Athens, GA 30602

Abstract

Single-leader, container-grown *Photinia* x *fraseri* Dress were selected for height uniformity and left unpruned (UN), pruned to 4 nodes with leaves (4NL), 8 nodes with leaves (8NL), or pruned to 8 nodes with all leaves removed (8N). Visible buds were present following pruning at all nodes. Unpruned (UN) plants produced only 1.9 breaks per plant; 4NL-4.0 breaks; and 8NL-7.1 breaks. The 8N plants developed short lateral breaks, but these died by the fourth week. All plants in the 8N treatment were dead at the termination of the experiment. The UN plants produced 39 cm (15.4 in) of new shoot growth; 4Nl-46 cm (18in), and 8NL-60 cm (23.6 in). Quality of 4NL and 8NL plants was excellent.

Index words: *Photinia,* pruning, shoot growth

Introduction

Photinia x fraseri is one of the more popular hedging and screening plants in the Southeastern United States (3,5,6). It is used on the West Coast of the U.S., in Europe, Australia and New Zealand. Desirable characteristics include rich ruby-red new leaves, lustrous green mature foliage, fast growth, and ease of container and field production. Disadvantages are blatant commonality (5), *Entomosporium maculatum* leaf spot (4), and reported difficulty in rooting cuttings (1).

Apical dominance is strong and results in a single leader with an occasional lateral shoot (6). Pruning is

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[2]Professor of Horticulture.

necessary to produce a dense, compact plant in the nursery or landscape.

This study determined the effects of several pruning techniques on the growth of *Photinia* x *fraseri*.

Materials and Methods

Rooted cuttings growing outside for 2 months in a 100% bark medium in 15 cm (6.0 in) diameter standard plastic containers were selected for vigor and height uniformity. All plants were growing actively and had been fertilized 3 times per week with 200 ppm N [20N-8.8P-16.6K (20-20-20)].

Plants were moved to a greenhouse bench under natural photoperiod at 24°/18°C (82°/65°F) daylight/night temperatures. Plants were fertilized as described above during the experimental period.

Treatments consisted of no pruning (UN) and a resultant single-stemmed plant in an active state of growth; pruning to 4 leafy nodes with visible buds (4NL); 8 leafy nodes with visible buds (8NL); and 8 nodes without leaves but with visible buds present (8N).

Heights of all plants were taken at the beginning of the study and total linear shoot growth assessed as the difference between initial and final. Number of new breaks were counted for each plant. Weekly evaluations of bud break and shoot growth were taken. The experiment was a completely randomized design with 8 single plant replicates per treatment. The experiment was initiated on July 13 and terminated on August 29, 1983.

Results and Discussion

After 7 days, lateral buds had broken and shoots were elongating from the 4NL, 8NL, and 8N plants. No lateral breaks were visible on the UN plants. By the fifth week (Aug. 16), 5 of 8 plants in the 8N treatment were dead. Although buds broke and grew for a time, apparently there were insufficient carbohydrate reserves to sustain growth. All plants in the 8N treatment were dead at the end of the experimental period.

The UN plants continued to increase in height and produced an average of 1.9 lateral breaks and total height growth of 39 cm (15.4 in) (Table 1). The 4NL and 8NL plants produced 4.0 and 7.1 breaks and 46 and 60 cm (18 and 23.6 in) of shoot growth, respectively. Although the 4NL treatment was not significantly different from the UN treatment (Table 1), the aesthetic quality of the plant was dramatically affected (Fig. 1).

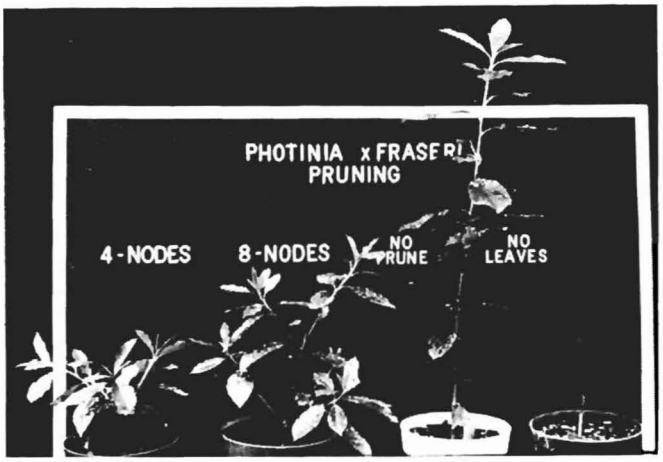

Fig. 1 **Growth and appearance of *Photinia* x *fraseri* as affected by no pruning, pruning to 4 leafy nodes, 8 leafy nodes, and 8 nodes with no leaves.**

The UN plants were tall and spindly while the 4NL plants were bushy and well-branched. Appearance is one of the most important criteria determining salability of landscape plants (2). Growth is strongly regulated by apical dominance and pruning is necessary to produce an aesthetically pleasing and salable plant.

Most of the buds of the 4NL (4.0) and 8NL (7.1) plants were released from apical dominance. The average length per break was 11.5 cm and 8.4 cm (4.5 and 3.3 in), respectively, while average length of the breaks from the UN plant was 5.3 cm (2.1 in). The reduced length per break of the UN plants reflects the influence of the apical region.

Photinia x *fraseri* that are leggy and open in landscape settings, when lightly pruned, develop a limited number of basal breaks (shoots). The release from apical dominance on larger plants does not appear to be uniform over the vertical length (6). This suggests pruning in stages during the production and landscape cycles may result in a more dense and uniformly branched plant.

Significance to the Nursery Industry

The results show dramatically that pruning *Photinia* x *fraseri* as a young container-grown plant results in an aesthetically superior plant. Excessive pruning that reduces the leaf area or number of leafy nodes will result

Table 1. Effects of selected pruning methods on subsequent growth of *Photinia* x *fraseri*.

Pruning treatment	*Number of breaks*[z]	*Total shoot length (cm)*	*Lateral shoot total length (cm)*
Unpruned (UN)	1.9 bc[y]	39 b	10 b
4 Leaf nodes (4NL)	4.0 b	46 ab	46 a
8 Leaf nodes (8NL)	7.1 a	60 a	60 a
8 Nodes without leaves (8N)	0.0 c	0 c	0 b

[z]Each value represents the mean of 8 plants.

[y]Mean separation within columns followed by the same letter or letters are not significant at the 5% level using Duncan's Multiple Range Test.

in reduced number of new shoots and reduced shoot length. Pruning to 8 leafy nodes where visible buds were present resulted in superior plants. This approach might be considered for other broadleaf evergreens such as *Ilex x attenuata* 'Foster's #2,' Foster's holly; *Ilex* 'Nellie Stevens', Nellie Stevens holly; *Prunus laurocerasus,* Cherry laurel; and selected *Rhododendron* species and cultivars. From a landscape maintenance aspect, *Photinia* x *fraseri* should be pruned at regular intervals, perhaps after 25 to 30 cm (10 to 12 in) of new growth, to produce a more desirable plant.

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Transplanting Success with Creosotebush (*Larrea tridentata* (D.C.) Cav.) from Native Stands[1]

J.L. Tipton and R.M. Taylor[2]
Texas A&M University Research Center
1380 A&M Circle
El Paso, TX

Abstract

The effects of season, root pruning, and transpiration reduction techniques (anti-transpirant spray with and without foliar pruning and foliar pruning alone) on percent survival and rank of creosotebush *(Larrea tridentata)* transplanted from a native stand were estimated. Only season had a significant impact on survival determined 6 months after transplanting. Survival was higher in spring, summer, and fall than in winter. With regard to shrub rank 6 months after transplanting, there was no significant advantage over the most economical treatment combination of not root pruned-foliar pruned. Within this combination the spring and fall transplants were superior to winter transplants with summer transplants intermediate.

Index words: drought tolerant, native shrubs

Introduction

Urban population has increased dramatically in the arid Southwestern United States since 1970, inflating the demand for municipal water and contributing to the depletion of limited ground water reserves. Landscape maintenance may account for 50% or more of total municipal water consumption in this area (2,8). Urban landscapes of native and adapted plants significantly reduce water consumption (2,8,12), but relatively few plant species are commercially available. A greater diversity of plant material is needed to enhance the attractiveness of urban desert landscapes.

Transplanting from a native stand can be integral to the commercial introduction of a new landscape plant, particularly if difficult to propagate (10). The most important factor in transplanting is maintaining the plant's water balance by reducing transpiration and increasing water absorption (6). Transpiration may be reduced with anti-transpirants and by maintaining a favorable root/shoot ratio through foliar pruning. Water absorption may be increased by prior root pruning to encourage rapid root regeneration and by insuring proper soil aeration.

The creosotebush, a native desert shrub with dark green foliage, bright yellow flowers, and showy white fruit, has been recommended as a landscape plant (3, 9, 11). It is, however, difficult to propagate and transplant. We conducted a study to determine methodology for successfully transplanting the creosotebush from native stands. The effects of season, root pruning, and transpiration reduction techniques on the percent survival and rank of transplanted shrubs were estimated. Since the creosotebush has been shown to be particularly susceptible to low soil aeration (7), we were especially concerned with this aspect of transplanting.

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[2]Assistant Professor and Associate Professor, resp.