University of Kentucky College of Agriculture
New Crop Opportunities Center

Pruning Influence on Shoot Development with Container-Grown *Aesculus parviflora*

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Introduction

Aesculus parviflora (bottlebrush buckeye) has been awarded elite status by being named to several outstanding-plant lists or to state plant-recognition programs. Individual plants displayed in retail settings have not always had comparable sales appeal. Instead of irregular or tall lanky growth, it was thought that lower branched and more uniform plants would be more acceptable by the buying public. Research was established to evaluate stem number, placement, and length as influenced by pruning plants during production. Seeds were collected from *Aesculus parviflora* and planted on the University of Kentucky Horticulture Research Farm during the fall of 2000. The resulting seedlings (6 to 30 inches tall) were harvested in November 2001 and individually placed in 3-quart containers. Plants were overwintered in a 13 x 48-foot unheated Quonset house covered with opaque poly. During February 2002, 130 plants were divided into three groups of 40+ plants. Three treatments consisted of unpruned stems, stems cut back to within 2 inches of the substrate line, and stems cut back to within 6 inches of the substrate line. Data were analyzed by analysis of variance using the General Linear Models Procedure (SAS).

Results and Discussion

During June 2002, data were collected as new stem counts originating from two positions on the remaining plant: originating above substrate line or from the base or below the substrate line.

The average number of shoots per plant was determined by averaging the count from two positions on the plant (above and below the substrate line) (Table 1). Unpruned plants showed apical dominance within the population. This resulted in the fewest shoots per plant (0.81) as many terminal buds continued to elongate without producing many additional shoots either above or below the substrate line. Pruning encouraged additional bud break whether pruned at 2 or 6 inches. Plants pruned at 6 inches had more of the stem remaining and thus had more buds. This yielded more total shoots (1.97) than plants pruned at 2 inches (1.58) (Table 1).

Plants pruned at 2 inches produced more shoots below the substrate line (1.90) than above the substrate line (1.26) (Table 3). Plants pruned at 6 inches produced more shoots from above the substrate line (2.47) than below the substrate line (1.47) (Table 4). For shoots that were produced, pruning did not influence average new shoot length (Table 1). Average new shoot length (in.) on unpruned plants did not differ from lengths on plants pruned at 2 or 6 inches (Table 1). Average total shoot length did present differences among treatments. On unpruned plants, average total shoot growth from below the substrate line (13.00) exceeded shoot growth originating above the substrate line (4.67) (Table 2). For plants pruned at 2 inches, no difference occurred for shoot growth for the below (14.75) and above (12.37) substrate positions (Table 3). For plants pruned at 6 inches, average total shoot length above substrate level (15.28) was

statistically different from average total shoot length below substrate level (12.73) (Table 4).

Plants that were pruned did not produce flower buds, regardless of pruning height (data not shown). Unpruned plants did occasionally produce flower buds.

Significance to Industry

Plant branch height, compactness, and uniformity can be influenced by pruning *Aesculus parviflora* during container production practices. Pruning at 2 or 6 inches above the substrate line increased branching and improved the quality of the plant versus those unpruned. Pruning at 2 inches above the substrate line increased the number of stems arising from the base versus pruning at 6 inches. This should benefit the appearance of plants marketed in 3- or 4-quart container sizes. Work is continuing to see if either of these pruning heights will influence plant quality when it is moved to 3-gallon or larger production sizes. By achieving better quality in plant appearance through more stem development and lower branching, *Aesculus parviflora* may have better sales appeal at the retail level.

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Table 1. Average total number of shoots per plant (including above and below the substrate counts) and average length of those shoots for three pruning treatments on *Aesculus parviflora*.

Pruning Treatment	Number of Shoots [y]	Average Length of Shoots [z] (in.)
Unpruned	0.81 C	5.17 A
Pruned at 2 inches	1.58 B	5.93 A
Pruned at 6 inches	1.97 A	6.20 A

[y] Means with the same letter for each variable are similar at p = 0.01; n=260
[z] Means with the same letter for each variable are similar at p = 0.01; n=182

Table 2. Total number of shoots and average total shoot length produced at two positions on plants which were not pruned.[z]

Position	Number of Shoots	Average Total Shoot Length (in.)
Above substrate	1.30 A	4.67 B
Below substrate	0.32 B	13.00 A

[z] Means in the same column with the same letter for each variable are similar at p = 0.01; n=182

Table 3. Total number of shoots and average total shoot length produced at two positions on plants which were pruned at 2 in.[z]

Position	Number of Shoots	Average Total Shoot Length (in.)
Above substrate	1.26 B	12.37 A
Below substrate	1.90 A	14.75 A

[z] Means in the same column with the same letter for each variable are similar at p = 0.01; n=182

Table 4. Total number of shoots and average total shoot length produced at two positions on plants which were pruned at 6 in.[z]

Position	Number of Shoots	Average Total Shoot Length (in.)
Above substrate	2.47 A	15.28 A
Below substrate	1.47 B	12.73 B

[z] Means in the same column with the same letter for each variable are similar at p = 0.01; n=182