



## Camellia Production with Improved Potting Mixes

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**Nature of Work:** Camellia plants are highly susceptible to numerous production problems related to poor substrate drainage. Improved aeration and drainage of the potting mix could improve plant health and reduce losses. Certain cultivars are difficult to produce while others are much easier to grow. Last year *Camellia japonica* 'Pink Frost' grew well in all mixes, although the mixes had significant differences in aeration and water holding properties.

Two *Camellia japonica* cultivars, Pink Perfection which is difficult to produce and April Tryst which is easy to produce were grown in full one gallon containers. Two and a quarter inch liners were potted on April 11, 2002. The substrate treatments were 1) 100% Bark, 2) 9:1 Bark:Sand, 3) 6:1 Bark:Sand, 4) 1:1 Bark:Mini Nuggets and 5) 9:1 Bark:Kaolin Clay. Amendments incorporated into the substrates included dolomitic lime at 4#/yd<sup>3</sup> and Osmocote 20-4-8 at 15#/yd<sup>3</sup>. Fifteen replicates of each treatment were randomized within cultivars. All plants were maintained under nursery conditions.

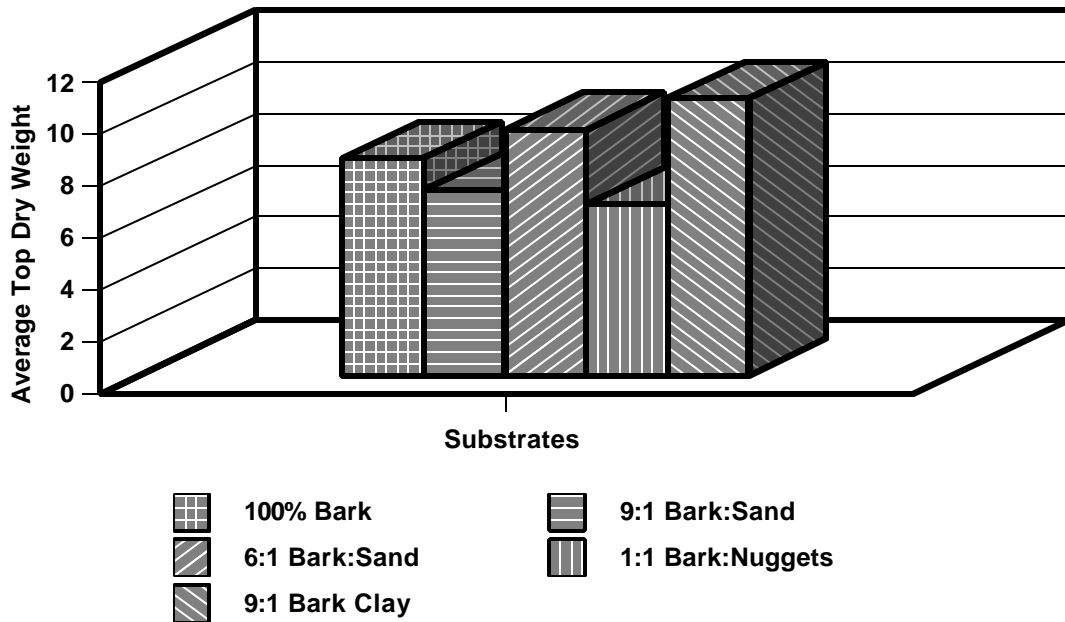
**Results and Discussion:** Pink Perfection was difficult to maintain. About 1/3 of the plants died due to camellia dieback. April Tryst had no plant loss. Plant tops were harvested on November 6, 2002 and dried. Top dry weights were recorded and statistical analyses was completed. Figure 1 and 2 illustrate the average top dry weights (g) for each treatment and cultivar. There were no statistically significant differences between the treatments for either cultivar. The variation in weight among plants within each treatment eliminated any statistical differences. The 1:1 Bark:Nuggets and 9:1 Bark:Sand substrates did produce the most growth in April Tryst, but not statistically better.

Evaluation of the physical properties (Table 1.) show a range of total porosity from 92 (Bark:Mini Nuggets) to a low of 82 (Bark:Sand 6:1). The available water in the substrates from high to low was Bark:Sand 6:1 and Bark:Mini Nuggets; Bark:Sand 9:1; Bark 100% and lowest Bark:Kaolin Clay 9:1. The Bark:Mini Nuggets substrate was expected to be lower and the Bark:Kaolin Clay 9:1 was expected to hold more available water. The Bark:Kaolin Clay 9:1 substrate appeared to remain as two separate components in the mix. The Kaolin Clay frequently leached from the drain holes in the bottom of the container, which over a season would change air and water retention characteristics.

**Significance to the Industry:** There was variation in the porosity and available water between the substrate treatments. The plant growth suggests the 1:1 Bark:Mini Nuggets and 9:1 Bark:Sand produced good April Tryst camellia plants. The control of the disease problems are important in camellia production and overshadowed the effects of the potting mixes as illustrate during this study.

| <b>Table 1. Physical properties of Camellia production substrates.</b>   |                  |           |                    |                 |                   |               |                   |
|--|------------------|-----------|--------------------|-----------------|-------------------|---------------|-------------------|
| *Substrates  | Total Pore Space | Air Space | Container Capacity | Available Water | Unavailable Water | †Bulk Density | ††Cation Exchange |
| PB<br>100%   | 88%              | 42%       | 46%                | 16%             | 30%               | 0.2           | 7.6               |
| BS<br>9:1  | 83%              | 35%       | 48%                | 18%             | 30%               | 0.3           | 5.2               |
| BS<br>6:1  | 82%              | 34%       | 49%                | 21%             | 27%               | 0.4           | 4.9               |
| BN<br>1:1  | 92%              | 39%       | 53%                | 21%             | 32%               | 0.2           | 8.1               |
| BC<br>9:1  | 85%              | 44%       | 41%                | 12%             | 29%               | 0.2           | 7.2               |
| * Substrates: PB=Pine Bark, BS=Bark:Sand, BN=Bark:Mini Nuggets, and BC=Bark:Clay.<br>†Bulk Density in g/cc.<br>††Cation Exchange Capacity in Meq/100 cm. |                  |           |                    |                 |                   |               |                   |

**Figure 1. Response of Pink Perfection Camellia to five production substrates.**



**Figure 2. Response of April Tryst Camellia to five production substrates.**

