



Potential Pot Design for Nursery Soil Reduction

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Background:

Georgia nurseries use an ever increasing amount of pine bark for special soil mixes each year. These special soil mixes are a major cost factor in nursery production. However, many shrubs, perennials, and other plant roots are not utilizing the full soil potential of their containers by the time of sale.

Purpose of study:

To determine by maintaining container size, but altering container soil volume, if soil amounts may be reduced without adversely affecting plant growth and development.

Study design:

In Treatment I, three 20 oz. plastic bottles were used to alter the interior design of each three-gallon pot and reduce the volume of potting mix normally needed to fill the pot. The bottles were spaced equal distances within the pot. The amount of soil mix replaced by the plastic bottles ranged from 37 - 39% by volume. In Treatment II, the control series, pots were filled entirely with soil mix. In both treatments McCorkle's standard bark/sand mix with amendments was the soil mix used.

Liners were planted on July 18, 2000, and harvested on November 12, 2001, for a growing period of 480 days. This extended time period provided for maximum root growth to develop within the pot.

Plants used were:

Clethra alnifolia L. 'Hummingbird'
Ilex X 'Nellie R. Stephens'
Ilex X 'Oak Leaf'
Osmanthus fragrans

Evaluation:

There was no significant difference in the top dry weight of any of the four plant types grown using the bottle treatment and standard pot treatments. See Tables 1-4.

Significance to the Industry:

With the increasing cost of soil mixes to the nursery industry this research suggests that redesigning pots may reduce the amount of soil mix used. This research shows that quality plants can be grown with 37% less soil in the pots.

Table 1. <i>Clethra</i> 'Hummingbird' Dry Weight		
Treatment	Mean Dry Weights(g)	Non-Significant Range*
Bottles inserts in pots	485.3	A
Standard pots	504.8	A

*Numbers within columns followed by the same letter are not statistically different based upon Tukey's HSD means separation test and P=0.05

Table 2. <i>Ilex</i> 'Nellie R. Stephens' Dry Weight		
Treatment	Mean Dry Weights(g)	Non-Significant Range*
Bottles inserts in pots	224.5	A
Standard pots	255.1	A

*Numbers within columns followed by the same letter are not statistically different based upon Tukey's HSD means separation test and P=0.05

Table 3. <i>Ilex</i> 'Oak Leaf' Dry Weight		
Treatment	Mean Dry Weights(g)	Non-Significant Range*
Bottles inserts in pots	265.5	A
Standard pots	287.3	A

*Numbers within columns followed by the same letter are not statistically different based upon Tukey's HSD means separation test and P=0.05

Table 4. *Osmanthus fragrans* Dry Weight

Treatment	Mean Dry Weights(g)	Non-Significant Range*
Bottles inserts in pots	303.9	A
Standard pots	342.8	A

*Numbers within columns followed by the same letter are not statistically different based upon Tukey's HSD means separation test and P=0.05