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**Abstract.** Tree transplanting practices influence plant survival, establishment, and subsequent landscape value. The inability to adequately quantify effects of transplanting practices threatens long-term sustainability of landscape trees. Planting depth [i.e., location of the root collar relative to soil grade (soil surface)], is of particular concern for tree growth, development, and landscape performance. The authors of this study investigated the effects of planting depth and transplant season on landscape establishment of baldcypress [*Taxodium distichum* (L.) Rich.] and effects of planting depth and irrigation practices on landscape establishment of sycamore (*Platanus occidentalis* L.). Baldcypress planted above grade had reduced relative growth rate in height and diameter compared to those planted at or below grade during the first growing season, regardless of transplant season. Sycamore trees planted below grade had increased mortality and decreased growth compared to trees planted at grade or above grade, regardless of irrigation treatment. Even though trees of both species were grown under similar conditions, baldcypress was much more tolerant to belowgrade planting than sycamore. We suggest that this is related to the native habitat of both species, where baldcypress is frequently exposed to hypoxic conditions while sycamore is more prevalent on well-drained soils. Thus, it may be important to consider the native habitat of a species when evaluating the effect of planting depth.

**Key Words.** Cultural Practices; Landscape Installation; *Platanus occidentalis*; Relative Growth Rate; *Taxodium distichum*.

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### **Microbial Activity of a Clay Soil Amended with Glucose and Starch Under Live Oaks ..... 66**

**Abstract.** Research was conducted to investigate the effect of glucose and starch on soil respiration under live oaks. Soil from a field-grown tree nursery was amended with glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>), starch (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>)<sub>n</sub>, or a 50:50 mixture of both carbohydrates at increasing concentrations (0, 40, 80 and 120 g/L). Solutions were applied once as 10-L drenches within 0.5 m from the trunks of live oaks (*Quercus virginiana* P. Miller). In a companion study, soil samples treated with the same carbohydrates and concentrations were studied under laboratory conditions. Carbon dioxide evolution was significantly impacted by glucose and starch applications. Glucose applications caused a significant increase in soil respiration compared with the control within a week after application, and it lasted two to three weeks. Elevated soil respiration was most noticeable in the field experiment for starch treatments; however, the increase in soil respiration for higher concentrations (120 g/L) did not become apparent until the fourth week after application and lasted eight to nine weeks. This knowledge about the differing durations and magnitude of glucose and starch on soil respiration may be useful for developing carbohydrate application regimes for soils where increase respiration is desirable for managing urban trees.

**Key Words:** Carbohydrate Amendments; Soil Respiration; Sugars.

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Ram Pandit and David N. Laband

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**Abstract.** Trees cast shade on homes and buildings, lowering the inside temperatures and thus reducing the demand for power to cool these buildings during hot times of the year. Drawing from a large sample of residences in Auburn, Alabama, U.S., a statistical model was developed to produce specific estimates of the electricity savings generated by shade-producing trees in a suburban environment. This empirical model links residential energy consumption to hedonic characteristics of the structures, characteristics/behaviors of the occupants, and the extent and density of shade cast on the structures at different times of the day.

**Key Words:** Electricity Usage; Economic Value; Shade Density; Shading Time; Tree Shade.

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**Abstract.** To obtain the basic information needed to estimate the degree of decay from compressive strength measured using a Fractometer (CS), relationships between CS and the contents of chemical components were analyzed for *Magnolia* wood decayed by three types fungi (brown rot, white rot, and soft rot fungi) at various decay levels. Weight loss ratio was significantly, negatively correlated with CS in woods decayed by brown rot and white rot fungi. In addition, a relatively high correlation coefficient was recognized between CS and holocellulose or  $\alpha$ -cellulose content, except for wood decayed by soft rot fungus. The results obtained showed that Fractometer can detect the decrease of CS at relatively early stage of decay.

**Key Words.** Compressive Strength; Core Sample; Decay Degree; Fractometer; Wood Decay.

Glynn C. Percival and Kelly Noviss

**Evaluation of Potassium Phosphite and Myclobutanil Combinations for Pear Scab  
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**Abstract.** The purpose of this study was to investigate the use of potassium phosphite (Pi) alone and in combination with a reduced dose of synthetic fungicide (myclobutanil) to control pear scab (*Venturia pirina*) under field conditions. Irrespective of Pi and myclobutanil concentration, no leaf or fruit phytotoxic effects were observed throughout the 2006 and 2007 experiments. In both field experiments, Pi alone significantly reduced the incidence and severity of *V. pirina* on leaves and fruit compared to water-treated control with the degree of scab reduction similar to that of a reduced dose of myclobutanil. The efficacy of Pi at 20 ml per liter water in inhibiting *V. pirina* scab incidence and severity was superior than that of Pi at 10 ml per liter water and a reduced dose of myclobutanil in virtually all monthly assessments. Combining a reduced dose of myclobutanil with either Pi at 10 ml or 20 ml per liter significantly improved the efficacy of scab control compared to stand alone applications of each product at most monthly assessments. Data analyzed with Limpel's formula indicated a positive synergistic effect between Pi and a reduced dose of myclobutanil. Greatest reductions in *V. pirina* incidence and severity on leaves and fruit were, however, achieved by stand alone applications of myclobutanil at manufacturers recommended strength. Irrespective of year, crown volume, number of fruit per tree, and total fruit yield were higher in Pi and myclobutanil treated trees irrespective of concentration applied compared to water-treated controls. A combined mix of Pi with a reduced dose of myclobutanil proved effective in increasing crown volume, number of fruit per tree and fruit yield compared to stand alone applications of each treatment. Greatest increases in crown volume, number of fruit per tree and fruit yield were achieved by applications of myclobutanil at the manufacturers recommended strength. In virtually all cases, Pi combined with a reduced dose of myclobutanil induced positive synergistic effects on crown volume and fruit yield greater than their additive effects alone. Mean fruit weight per tree were in all cases higher in Pi and myclobutanil treated trees irrespective of concentration applied compared to water-treated controls, however, these differences were not statistically significant in all cases.

**Key Words.** Fungicides, Integrated Disease Management; Orchard Management; Pathogen Control; Plant Health Care; Synergism; Urban Landscapes.

Belinda B. Lambert, Steven J. Harper, and Stephen D. Robinson

**Effect of Container Size at Time of Planting on Tree Growth Rates for Baldcypress  
[*Taxodium distichum* (L.) Rich], Red Maple (*Acer rubrum* L.), and Longleaf Pine  
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**Abstract.** The ecosystem restoration and wetland mitigation industries are challenged with recreating vegetative communities at an accelerated rate, while at the same time remaining cost effective. These created systems are typically bound by permit conditions to meet certain tree growth criteria in a specified time frame, commonly five years. Stock sizes of container grown trees are generally #1, #3, or #7 (gallons). The purpose of this study was to determine the relative cost effectiveness of these planting sizes for three commonly used species and to assess whether they achieve common success criteria for height, percent survival, and percent cover. These three species are baldcypress [*Taxodium distichum* (L.) Rich], red maple (*Acer rubrum* L.), and longleaf pine (*Pinus palustris* Mill.). Based on the standard planting density of 174 trees/hectare, the most cost-effective size was #3 in all cases. All three sizes of baldcypress and red maple met the 3.7 m height criterion; no size of longleaf pine met the criterion. All sizes of all species failed to meet both the 85% survival standard and a theoretical minimum 50% cover calculated from canopy diameter measurements. If planting densities are increased to meet cover requirements and to offset mortality, container size #1 may be more favorable for baldcypress and red maple, but not for longleaf pine. The study was conducted in Pinellas County, Florida, U.S.

**Key Words.** Habitat Restoration; Permit Requirements; Success Criteria; Tree Growth; Wetland Mitigation.