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Shuju Bai, William R. Chaney, and Yadong Qi

**WOUND CLOSURE IN TREES AFFECTED BY PACLOBUTRAZOL ..... 273**

**Abstract.** Experiments were conducted to investigate the effects of paclobutrazol on closure of wounds made through the bark or resulting from pruning branches in nine species of trees. The species studied were American sycamore (*Platanus occidentalis* L.), black walnut (*Juglans nigra* L.), European black alder (*Alnus glutinosa* L.), red oak (*Quercus rubra* L.), sweetgum (*Liquidambar styraciflua* L.), white ash (*Fraxinus americana* L.), white oak (*Q. alba* L.), white pine (*Pinus strobus* L.), and yellow poplar (*Liriodendron tulipifera* L.). Paclobutrazol was applied using either the soil drench or soil injection method. Circular wounds (2 cm [0.8 in.] diameter) were made in the bark on the main stem, and branches were pruned from treated and untreated trees at the time of paclobutrazol application in the spring. The rate of wound closure was determined one, two, and three growing seasons after treatment. The rate of bark wound closure was reduced in paclobutrazol-treated black walnut, European black alder, red oak, sweetgum, and white oak. There was no difference in the rate of closure of wounds in the bark of treated and untreated American sycamore, white ash, white pine, or yellow poplar. The rate of pruning wound closure was reduced in black walnut, European black alder, red oak, sweetgum, and white oak, but was not influenced by paclobutrazol treatment in white ash, white pine, or yellow poplar. The inhibitory effect of paclobutrazol on closure of both bark and pruning wounds in some species persisted at least 3 years.

**Key Words.** Bark Wound; Growth Retardant; Paclobutrazol; Pruning Wound; Tree Growth Regulator; Wound Closure.

Jan Lukaszkiwicz, Marek Kosmala, Magdalena Chrapka, and Jacek Borowski

**DETERMINING THE AGE OF STREETSIDE  
TILIA CORDATA TREES WITH A DBH-BASED MODEL..... 280**

**Abstract.** This paper evaluates the possibility of determining tree age based on diameter at breast height (dbh, taken at 1.3 m [4.3 ft]), using common lime (linden, *Tilia cordata*). We first identified and measured groups of trees growing in similar conditions (alleys and roadside trees) whose age was known. We developed a regression model describing the growth of trees over time. Plotting tree age against diameter yielded a correlation coefficient  $r^2 = 0.962$  and determination coefficient  $r^2 = 0.926$ . The resulting model was applied to unrelated groups of trees of known age. The difference between the actual age and mean age calculated with the model was less than 10%. The model was then compared to measurements taken with a Resistograph, with results being highly concordant. The model, although not meant for application to individual trees, might be useful in determining the age of common lime trees growing in alleys and along roads.

**Key Words.** Common Lime; DBH; Linden; Roadside Trees; *Tilia cordata*; Tree Age.

Michael R. Kuhns, Brook Lee, and Douglas K. Reiter

**CHARACTERISTICS OF URBAN FORESTRY PROGRAMS IN UTAH, U.S..... 285**

**Abstract.** Urban/community forestry programs in Utah, U.S., were studied; a questionnaire was sent to community forestry contacts in every incorporated community in the state in summer 2002. Respondents reported on program support, budget, management authority and practices, strengths and weaknesses, and training and information needs. Program support from residents, town officials, and employees was fairly strong, with 80% indicating some support. One-quarter of towns have a tree board and celebrate Arbor Day. Towns obtain assistance from nurseries or tree care businesses, Extension, and state forestry, in that order. Two-thirds of communities have a tree-related budget, with a mean budget of US\$44,000 and a median budget of \$3,000, averaging \$2.58 per resident and \$25.16 per tree. Total budget generally increased with population, but the smallest towns had the largest per capita and per tree budgets. Most towns spend enough to qualify for Tree City USA's requirement of \$2 per capita. The ratio of spending for maintenance versus planting increased from 0.6 for small towns to 4.1 for larger cities. Just under two-thirds of communities have forestry programs. The average number of public trees per town is about 2,300 (median 150), with numbers of trees increasing as population increased, but with trees per capita generally decreasing as population increased, ranging from 0.21 to 0.43 trees per person.

**Key Words.** Urban Forestry; Community Forestry; Program; Utah; Arboriculture; Characteristics; Volunteer.

P. Eric Wiseman and Christina Wells

**SOIL INOCULUM POTENTIAL AND ARBUSCULAR MYCORRHIZAL COLONIZATION OF *ACER RUBRUM* IN FORESTED AND DEVELOPED LANDSCAPES..... 296**

**Abstract.** Arbuscular mycorrhizal fungi (AMF) form a symbiotic relationship with numerous landscape tree species and can improve tree growth and environmental stress tolerance. Construction-related soil disturbance is thought to diminish AMF colonization of transplanted trees in newly developed landscapes. We gathered root, soil, and foliar data from red maples (*Acer rubrum*) growing in newly developed landscape sites and adjacent native forest sites to test two independent hypotheses: (1) landscape trees show lower levels of AMF colonization than forest trees, and (2) the AMF inoculum potential of landscape soils is lower than that of forest soils. Fine roots sampled from landscape maples had significantly lower AMF colonization than maples from adjacent forest sites (3% versus 22%). However, soil-sand mixtures made from landscape soils possessed greater AMF inoculum potential than those made from forest soils (10% versus 4%). Forest soils were more acidic and possessed less extractable P than landscape soils, and differences in AMF colonization between field and landscape maples appeared to reflect differences in soil chemical properties rather than in inoculum potential. The results of this study suggest that not all disturbed landscape soils are deficient in AMF propagules.

**Key Words.** *Acer rubrum*; Arbuscular Mycorrhizal Fungi; Mycorrhizae; Red Maple; Soil Acidity; Soil Disturbance.

E. Gregory McPherson and Jules Muchnick

**EFFECTS OF STREET TREE SHADE ON ASPHALT CONCRETE PAVEMENT PERFORMANCE..... 303**

**Abstract.** Forty-eight street segments were paired into 24 high and low-shade pairs in Modesto, California, U.S. Field data were collected to calculate a Pavement Condition Index (PCI) and Tree Shade Index (TSI) for each segment. Statistical analyses found that greater PCI was associated with greater TSI, indicating that tree shade was partially responsible for reduced pavement fatigue cracking, rutting, shoving, and other distress. Using observed relations between PCI and TSI, an unshaded street segment required 6 slurry seals over 30 years, while an identical one planted with 12 crape myrtles (*Lagerstroemia indica*, 4.4 m [14 ft] crown diameter) required 5 slurry seals, and one with 6 Chinese hackberry (*Celtis sinensis*, 13.7 m [45 ft] crown diameter) required 2.5 slurry seals. Shade from the large hackberries was projected to save \$7.13/m<sup>2</sup> (\$0.66/ft<sup>2</sup>) over the 30-year period compared to the unshaded street.

**Key Words.** Avoided Repaving Costs; Pavement Distress; Tree Benefits; Urban Heat Island.

William F. Elmendorf, Fern K. Willits, and Vivod Sasidharan

**URBAN PARK AND FOREST PARTICIPATION AND LANDSCAPE PREFERENCE: A REVIEW OF THE RELEVANT LITERATURE .....311**

**Abstract.** Blacks and Whites are important users of urban parks and forests, and race continues to be an important factor in urban park and forest participation and landscape preference. African Americans, more than Whites, prefer developed facilities and services; Whites more likely than Blacks prefer undeveloped and more nature-based settings. It is also reasonable to assume that racial discrimination can exist in the landscapes of urban parks and forests and affect decision making and participation. Urban forests and parks can be planned, managed, and maintained to foster diversity of racial and ethnic participation and relationships much in the same way they can foster biological diversity among flora and fauna. Today, it is vital for urban foresters and arborists to understand and respond to differences in the participations and expectations of these diverse users.

**Key Words.** African Americans; Attitudes; Behavior; Blacks; Discrimination; Ethnic; Landscapes; Marginality; Minority; Participation; Preferences; Urban Parks and Forests; Race; Subculture; Whites.

William F. Elmendorf, Fern K. Willits, and Vivod Sasidharan and Geoffrey Godbey

**URBAN PARK AND FOREST PARTICIPATION AND LANDSCAPE PREFERENCE: A COMPARISON BETWEEN BLACKS AND WHITES IN PHILADELPHIA AND ATLANTA, U.S..... 318**

**Abstract.** Previous research has documented the existence of differences in the attitudes and behaviors of Blacks and Whites in American society toward urban parks and forest areas. However, many of these studies were carried out a decade or more ago and/or most focused on specific parks or localized areas. Data from a recent survey of residents in two metropolitan areas in the eastern United States allowed for updating of this research record. Using analysis of variance and covariance, consideration was given to racial differences between Blacks and Whites, regional differences between cities, and the effects of various socio-demographic characteristics on residents' park preferences and participation. Racial differences were similar to those reported by previous researchers, and these differences did not vary markedly between the two metropolitan study sites. These distinctions, combined with racial differences in subjects' expressed willingness to volunteer time to develop/maintain local park settings, suggest the importance of understanding the differing perspectives and actions of multi ethnic user groups in urban park and forest management and maintenance.

**Key Words.** African American; Discrimination; Ethnic; Landscapes; Mail Survey; Marginality; Minority; Race; Subculture.