



CONTENTS

Scott Cullen

TREES AND WIND: A PRACTICAL CONSIDERATION OF THE DRAG EQUATION VELOCITY EXPONENT FOR URBAN TREE RISK MANAGEMENT 101

Abstract. Arborists and urban foresters are increasingly concerned with tree risk management. The aerodynamic drag equation is a potentially useful management tool. Some sources question the form of equation—specifically, the velocity exponent—that should be applied to trees. For the tree risk manager, concerned with public safety and legal liability, this is more than an academic curiosity. Uncertainty about the appropriate exponent questions the reliability of the conventional form. This paper reviews the literature, reports on modeling of both equation forms, and concludes that the conventional form—velocity squared—is appropriate for trees. Detailed analysis is presented for the researcher or advance practitioner. A summary explanation is provided for the typical practitioner.

Key Words. Aerodynamics; Biomechanics; Drag Equation; Trees and Wind; Tree Risk Management; Velocity Exponent; Wind.

Thomas B. Randrup

DEVELOPMENT OF A DANISH MODEL FOR PLANT APPRAISAL 114

Abstract. Inspired by the American Council of Tree and Landscape Appraisers, the Danish Tree Care Association (ISA's Denmark Chapter) initiated a group of national experts, representing various green-industry associations, in order to develop a common tree valuation model of specific relevance for Danish climate, culture, and traditions. The model (VAT03) has four primary factors: (1) a basis value, (2) health condition of the tree, (3) location of the tree, and (4) tree age. The new model establishes a value that is approximately 10 times higher than was past practice. However, tree values using this model are presumably lower than what can be assessed by other models. The model was introduced in 2003 and has already been used in several, and very different, court cases.

Key Words. Urban Trees; Value; Appraisal; Denmark.

Richard H. Yahner and Russell J. Hutnik

PLANT SPECIES RICHNESS ON AN ELECTRIC TRANSMISSION RIGHT-OF-WAY USING INTEGRATED VEGETATION MANAGEMENT 124

Abstract. The State Game Lands (SGL) 33 Research and Demonstration Area, Centre County, Pennsylvania, U.S., has been studied each year since 1953, making this 52-year old project extremely valuable as a source of information on the effects of mechanical and herbicidal maintenance on flora and fauna along an electric transmission right-of-way (ROW). A desired objective of integrated vegetation management on the SGL 33 Research and Demonstration Area is to create a diversity of plant species. In this paper, our objective was to document plant species richness among treatment units and in relation to wire and border zones on the SGL 33 Research and Demonstration Area. We noted the presence of plant species from late May through mid-August in both 2003 and 2004 and observed 125 vascular plant species in the 15 treatment units. The total number of species per unit ranged from a low of 35 species in a mowing unit to a high of 63 species in a basal lowvolume spray unit. Of the total number of plant species found on the right-of-way, 95 (76%) and 110 (88%) occurred in wire and border zones, respectively. In wire zones, the average number of plant species ranged from 31 in mowing units to 41 in stem-foliage spray units. In border zones, the average number of plant species varied from a low of 34 in mowing units to a high of 41 in handcut units. The proportion of exotic species did not vary appreciably between wire and border zones (19% and 22% of total, respectively) on the ROW. However, the three units adjacent to unpaved state forest roads with high rates vehicular traffic not only had the highest number of total species in the unit (55 to 63 species) but also the highest number of exotic species (13 to 16 species). Hence, vehicular traffic and roadside management may be responsible in part for the invasion of seeds or other means of plant dispersal to these units. Because units relatively isolated from state forest roads tended to have fewer exotic species, these sections of the ROW can serve as refugia for native flora.

Key Words. Exotic Species; Herbicides; Integrated Vegetation Management; Rights-of-Way; Species Richness; Tree Control; Vegetation.

Thomas J. Straka, Allan P. Marsinko, and Christopher J. Childers

**INDIVIDUAL CHARACTERISTICS AFFECTING PARTICIPATION
IN URBAN AND COMMUNITY FORESTRY PROGRAMS IN SOUTH CAROLINA, U.S. 131**

Abstract. This article reports the results of a 2003 statewide survey of South Carolina, U.S., residents concerning characteristics affecting participation in urban and community forestry programs. Results are intended to increase effectiveness of program planning and organization within state forestry commissions. Participants in urban and community forestry programs have strong feelings for the importance of these programs, and the majority (91%) expected continued participation. The majority of nonparticipants (71%) were unaware of the existence of these programs, and most (59%) did not know whether they would ever participate in future programs. Future considerations for the success of urban and community forestry programs in South Carolina need to focus on increased public awareness. Prior awareness of the program and participant's age significantly ($P \leq 0.10$) affected stated intentions to participate in the program.

Key Words. Urban and Community Forestry; Community Forestry; Urban Forestry; Tree Programs.

William Elmendorf, Todd Watson, and Sharon Lilly

**ARBORICULTURE AND URBAN FORESTRY EDUCATION
IN THE UNITED STATES: RESULTS OF AN EDUCATORS SURVEY 138**

Abstract. In June 2002, a 2-day arboriculture and urban forestry educator summit was hosted by the International Society of Arboriculture (ISA) at The Morton Arboretum in Lisle, Illinois, U.S. During the energetic discussions, differences in opinions between educators became apparent regarding curriculum content such as urban soils, utility forestry, tree care safety, and land use planning. Differences were also apparent in discussions regarding important research topics and educational tools. Because of the limited number of educators at the summit, a broad mail survey effort was funded by ISA in 2003 to better define issues and determine whether there were important correlations between the attitudes of arboriculture and urban forestry educators. This survey asked arboriculture and urban forestry educators in the United States their opinions about the importance and adequate provision of many skills such as pruning, climbing, urban forest management, land use planning, and volunteer management. The survey also asked questions about the ISA Certified Arborist program, educational program components, the nature of outside relationships, important research topics, and educational tools. In both descriptive statistics and a chi-square test of independence, results of this study provided evidence that there were very consistent attitudes about arboriculture and urban forestry educational topics across participants. Our findings also indicated that the traditional educational topics of arboriculture (such as tree planting and pruning) were considered very important by almost all participants, while the broader educational topics of urban forestry (such as land use planning and volunteer management) were considered less, or not, important by many of the participants. These results may indicate a lack of understanding of the importance of multiskills and broader educational topics in urban forestry by both arboriculture and urban forestry educators. This study's results also supported the importance of experience and the ISA Certified Arborist program in shaping positive attitudes about safety and the importance of understanding tree structure.

Key Words. Arboriculture; Certified Arborist; College; Components; Curriculum; Education; Educator; Green Industry; Research; Skills; Student; University; Urban Forestry.

E. Thomas Smiley

Research Note

ROOT GROWTH NEAR VERTICAL ROOT BARRIERS 150