ARBORICULTURE & URBAN FORESTRY
Volume 43, Issue 3, May 2017
Formerly the Journal of Arboriculture, 1975 – 2005 (Volumes 1 – 31)

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Abstract. Over the last 30 years, researchers have begun to employ biomechanical principles to understand the stability of urban trees. This review concentrates on literature pertaining to trees in temperate urban landscapes, but also includes relevant work from other disciplines and climates as appropriate. The load-bearing capacity of a tree depends on its size and shape and the material properties of its wood. As the trunk and branches increase in diameter, their load-bearing capacity increases. Material properties (e.g., moduli of elasticity and rupture) describe intrinsic wood stiffness and strength, which influence deflection under load and load-bearing capacity, respectively. In wood, material properties vary in relation to a variety of factors, including the direction of loading, moisture content, and tree age. Wood decay reduces a tree's load-bearing capacity. Although practitioners have developed guidelines to assess its effect, existing guidelines should be investigated, refined or rejected on the basis of rigorous scientific testing. Static load tests have been developed to address this question, as well as investigate the likelihood of uprooting, which accounts for up to 35% of tree failures. While much has been learned, many questions remain about the static load-bearing capacity of trees growing in urban landscapes.

Key Words. Allometry; Biomechanics; Decay; Literature Review; Material Properties; Modulus of Elasticity; Modulus of Rupture; Soil-Root Plate; Static Load Tests.

Abstract. *Ulmus americana* (American elm) was an important urban tree in North America prior to the introduction of the Dutch elm disease pathogen in 1930. Subsequently, urban and community forests were devastated by the loss of large canopies. Tree improvement programs produced disease tolerant American and Eurasian elm cultivars and introduced them into the nursery industry. However, consumer acceptance was slow. The National Elm Trial was established to evaluate commercially available taxa of elm across the United States. Established at 16 locations, these plantings monitored survival and growth, as well as disease and insect pressure for 7 to 10 years. 'Morton' elm had >90% survival, while 13 cultivars averaged 70% to 90%, and five cultivars ranged from 25% to 69% survival. Trunk diameter growth by location ranged from 0.5 cm/year (Colorado, U.S.) to more than 2.0 cm/year (Iowa, U.S.). By taxa, trunk diameter growth ranged from a low, by 'JFS Bieberich' elm (0.7 cm/year), to a high by 'New Horizon' elm (1.7 cm/year). Scale insects were minor issues at most trial locations, except Colorado, where scales contributed to the death of several cultivars. Performance ratings (scale 1 to 5) ranged from 2.7 for 'JFS Bieberich' elm to 4.5 for 'New Horizon' elm. Based on the ratings, the preferred cultivars of American elm were 'New Harmony' and 'Princeton', and the preferred cultivars of Asian elm were The Morton Arboretum introductions and 'New Horizon'. These findings will help green-industry professionals determine what elm cultivars will perform the best in different regions.

Key Words. Chalkbark Elm; Japanese Elm; Lacebark Elm; Scotch Elm; Siberian Elm; Smoothleaf Elm; Tree Evaluation; *Ulmus carpinifolia*; *Ulmus glabra*; *Ulmus japonica*; *Ulmus parvifolia*; *Ulmus propinqua*; *Ulmus pumila*; *Ulmus wilsoniana*; Urban Forestry; Wilson Elm.

Abstract. The methods for appraising urban trees and municipal inventories in use today are expensive and require quantitative and qualitative variables with a high measurement cost. They are mathematically formulated from at least one tree-size variable to define a tree-size value. Researchers present a statistical methodology to analyze tree-size variables applied in appraisal methods for urban trees. A multivariate analysis method was carried out in order to obtain the lowest number of variables that explain the greatest variability of urban trees with no multicollinearity problems. The study was applied to urban trees in the City of Santiago del Estero, Argentina. The variables that showed the lowest collinearity were age and canopy area. The work includes a discussion of the use of correlated variables in appraisal methods for urban trees.

Key Words. Arboriculture; Multivariate Analysis; Tree-Size Value; Tree Appraisal; Tree Value.

 ISSN:1935-5297