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Abstract. Soil water dynamics were studied in 100 street tree planting pits and in the soil surrounding five park trees. Volumetric soil water co tent and stem cross-sectional area increment were measured on both park and street trees. Different levels of irrigation were implemented on the 100 street trees. Winter assessments of soil wetness at field capacity showed that the water retention capacity was lower in street planting pits than in the park soil attributable to the rather coarse substrate used in the planting pits. High variability among street tree planting pits in regard to water retention capacity was determined and may be related to poor standardization of the substrates, but may also be affected by varying drai age conditions. The rate of water loss in the street tree planting pits was very high immediately after rainfall or irrigation and decreased expone tially during the first 10 days after water input. This was attributed to rapid drainage. The water loss rate in the park soil was on average slightly higher than in the nonirrigated control street pits but showed a more linear decrease over time. We concluded that the water loss in the park soil during summer was primarily driven by transpiration of trees (above 10 L/day [2.6 gal/day]), which complies with common Danish forest exper ence. The relationship between water loss and tree growth was reversed in the street tree planting pits. The street trees did consume water for growth, but growth and transpiration of the street trees were not a noticeably driving mechanism in the planting pit hydrology. The large vari tionin street tree increment is attributed to the variation among street planting pits in their ability to retain water. The faster the water loss rate, the slower the tree growth. Irrigation did not prevent final depletion of the soil water resource in planting pits, but irrigation elevated the water content for limited periods during the growing season and thereby enhanced tree growth. Besides the obvious possibilities for improved water balance by horizontal and vertical expansion of the rooting zone, we also suggest improving the water retention capacity of planting pit soil by adding clay nodules. Options for continuous monitoring of tree vitality and soil water content to optimize maintenance are discussed.

Key Words. Drainage; Irrigation; Park Trees; Soil Characteristics; Soil Water; Street Trees.

Abstract. *Xylella fastidiosa* is a fastidious, xylem-limited, insect-transmitted, bacterial plant pathogen with a wide host range that causes bacterial leaf scorch (BLS) in shade trees. BLS is a chronic disorder characterized by late season leaf scorch and dieback and is common in urban and suburban areas of the mid-Atlantic and southeast United States. BLS has been recognized since the 1980s and attempted treatments have included antibiotics and plant growth regulators. Application of paclobutrazol (PBZ), a diastereomeric triazole with both fungistatic and growth regulation properties, has been observed to alleviate symptoms of BLS, but it has not been established whether PBZ has a direct effect on the organism. In this study, we investigated the effect of PBZ on *in vitro* growth of two *X. fastidiosa* isolates. Our results showed no significant effect of PBZ on colony growth of *X. fastidiosa* at the manufacturers recommended rate of 20 g/mL^{-1}. However, significant reductions in bacterial growth were observed at a rate of 200 g/mL^{-1}, indicating that high levels of PBZ may have a direct effect on the growth of *X. fastidiosa*. This direct effect and growth regulator effects of PBZs suggest that PBZ may provide a promising treatment for BLS in shade trees.

Key Words. Bacterial Leaf Scorch; Oxytetracycline; Paclobutrazol; *Xylella fastidiosa*.

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Abstract. There is a growing need for society to use resources efficiently, including effective use of dead and dying trees in urban areas. Harves ing saw timber from urban trees is a high-end use, but currently, much urban wood ends up in landfills or is used for wood chips or biomass fuel. To assess the general feasibility of harvesting urban wood, a regional estimate of urban saw timber quantity, quality, and availability was deve oped for a 13-county area in southeastern lower Michigan, U.S. Conservatively, over 16,000 m^3 (560,000 ft^3) of urban saw timber is estimated to become available each year in the study area from dead and dying trees, enough to supply the minimum annual needs of five small sawmills. The quality of wood in urban softwoods was generally low but comprised only a relatively small portion (10%) of urban wood. Wood quality of urban-grown hardwoods was comparable to that found in forests in the region, although the absolute volume was nine times less. Although there are potential concerns with harvesting urban trees for saw timber such as low availability and poor wood quality, the results of this study suggestthat many of them may be unfounded.

Key Words. Saw Timber; Urban Forestry; Wood Products; Wood Recycling.

Abstract. A survey was conducted in six cities in the western United States whose electric utilities practice directional pruning for line clearance. Recipients' knowledge of and attitudes about tree care practices and issues, utility pruning, directional pruning for line clearance, and effects of a simple brochure about utility pruning were determined. Respondents cared a great deal about landscape trees but had not thought much about utility pruning. They felt that utility pruners care most about keeping lines clear but care less about the trees, that companies are poor at explai ing pruning to the public, and slightly disagree that large trees should be removed and replaced with small trees under lines. Those who had thought a lot about utility pruning were less trusting of those who do the pruning. The brochure increased trust of utility pruning personnel and the pe ception that they care about trees and greatly increased agreement that those personnel are highly trained professionals. Preference for topping over directional pruning was reduced by receiving a brochure, although topping still was preferred. Most supported line burial and were willing to pay higher rates for burial. Several recommendations are suggested for utilities and researchers, including the need for utilities placing an increased emphasis on communication with the public regarding these matters.

Key Words. Acceptability; Aesthetics; Directional Pruning; Electric Utility; Topping; Urban Forestry.

Abstract. Twenty birch genotypes were planted in the field in April 2002 to evaluate their survival and growth at Fayetteville and Hope, Arkansas, U.S., and to evaluate their response to two irrigation regimes at Fayetteville. After four growing seasons, the overall tree survival was 62% and 30% at Fayetteville and Hope, respectively. *Betula pendula* 'Trost's Dwarf', *B. ermanii,* and *B. albosinensis* were among genotypes with the lowest survival at both locations. *Betula populifolia, B. nigra* 'BNMTF', *B. nigra* 'Cully', and B. × 'Royal Frost' had greater survival after four growing seasons than the other birch genotypes investigated. *Betula nigra* 'BNMTF' and *B. nigra* 'Cully' were taller and had greater trunk diameter than the other surviving birch genotypes at both locations after four growing seasons. At the end of 2005, *B. utilis* var. *jacquemontii* was the shortest and had the smallest trunk diameter among the 18 surviving genotypes at Fayetteville, and *B. papyrifera* 'Uenci', *B. populifolia* 'Whitespire', *B. maximowicziana*, and *B. lenta* were the shortest and had the smallest trunk diameter among the 13 surviving genotypes at Hope. At Fayetteville, *B. nigra* and *B. davurica* had the greatest annual change in tree height in both 2004 and 2005, and B. *davurica* was among genotypes having the greatest annual change in trunk diameter in 2002, 2004, and 2005. At Hope, *B. papyrifera* had the greatest annual change in tree height in both 2004 and 2005, and *B. davurica* had the greatest annual change in trunk diameter in 2004. In 2005, annual change was not significant among birch genotypes at Hope. At Fayetteville, water-stress treatment reduced final tree height and trunk diameter in birch trees.

Key Words. Growth; Irrigation Regime; Survival.

Abstract. Previously planted extensively as a street tree, Bradford pear (*Pyrus calleryana* var. 'Bradford') has fallen out of favor because of its reputation for branch breakage. Despite this reputation, Bradford pear branch strength has never been tested. Prior studies on branch breaking have discounted the influence of branch attachment angle, suggesting that the ratio of branch to trunk diameter, or aspect ratio, is a better predictor of branch attachment strength. Twenty-six Bradford pear branches from 10 trees were broken by pulling them with a winch. To assess the effect of branch cross-sectional dimensions, breaking stress was calculated considering the branch cross-section as either an ellipse or a circle. Breaking stress was normalized by dividing it by the modulus of rupture measured on wood samples from each broken branch. The location of failure, either in the branch itself or at the branch/trunk attachment, did not affect breaking stress. Aspect ratio was a better predictor of branch attachment strength than branch attachment angle. Breaking stress calculated considering the branch cross-section as an ellipse was greater than when stress was calculated assuming the branch cross-section was a circle. Results are compared with previous studies and the importance of measuring branch cross-sectional dimensions is discussed.

Key Words. Branch Attachment Strength; Branch Breakage; Mechanical Stress.

Abstract. Arboriculture is a distinct industry that provides unique services to provide for the health and care of trees. It is a developing industry and this development leads to questions on how the industry is organized and operates. We define the industry, identify its size and growth pa terns, discuss its structure and organization, describe its operation in terms of pricing and competition, and analyze whether it is dominated by large or small firms. This analysis provides important information for regulation and other policies related to arboriculture. The four largest arboricultural firms account for only 4% of combined industry receipts and the industry comprises nearly 82,000 establishments, employs approximately 160,000 workers, and earns annual gross receipts of nearly $9 billion.

Key Words. Arboriculture Industry; Economic Structure; Industry Analysis; Utility Services; Vegetation Management.