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Abstract. The physical, chemical, and biological constraints of urban soils often pose limitations for the growth of tree roots. An understanding of the interrelationships of soil properties is important for proper management. As a result of the interdependence of soil properties, the status of one soil factor can have an effect on all others. Preventing soil damage is most effective and preferred. Cultural practices, such as cultivation and mulching, can be effective in improving soil properties. Soil additives, such as biostimulant products, have not proven to be consistently effective through research. The management challenge is to provide an urban environment that functions like the natural environment.

Key Words. Biostimulants; Bulk Density; Cation Exchange Capacity; Mechanical Resistance; pH; Soil Oxygen; Soil pH; Soil Salt; Soil Water; Temperature.

Abstract. Knowledge of tree dynamic properties is important to improve one's ability to assess tree risk. Pull-and-release tests were performed on 16 *Acer rubrum* L. 'Florida Flame' trees in summer and winter over a two-year period, and natural frequency and damping ratios were calculated. One year prior to testing, trees were designated as either excurrent or decurrent and pruned to impose that form. During summer tests, trees were pruned to maintain designated form, and tests were performed before and after pruning. Trees were then systematically dissected to measure morphological and allometric characteristics. Excurrent trees had a higher natural frequency than decurrent trees in summer and winter, and pruning in summer increased the frequency of excurrent trees more than decurrent trees. Tree form and pruning had little effect on damping ratio. Decurrent trees had a larger percent of their branch mass in the top half of the crown than excurrent trees, which would subject them to larger wind-induced stress on their trunks and increase the risk of failure.

Key Words. *Acer rubrum*; Damping; Decurrent; Dynamics; Excurrent; Natural Frequency; Pruning; Red Maple; Tree Biomechanics.

Abstract. The purpose of this study was to evaluate the effects of buttress root pruning on tree stability and to compare different methods of correlating various root parameters to force levels. Ten plantation-grown *Acer rubrum* (red maple) trees were pulled to an angle of one degree from vertical with measured force, then roots were individually severed near the trunk and the pull tests were repeated until roots had been pruned from 50% of the circumference. Test trees had 6 to 10 buttress roots. There was a nearly direct linear relation between the number of roots removed and the force applied. When comparing four assessment methods to determine pull force change associated with root pruning, the method that had the greatest amount of variability explained by the regression was the comparison of the cross-sectional area of roots cut to the force. However, relating the percentage of buttress roots cut to the force provided only slightly less accurate information, and was more easily collected prior to tree removal.

Key Words. *Acer rubrum*; Buttress Roots; Likelihood of Failure; Pull Test; Red Maple; Root Cutting; Root Pruning; Root Stability; Tree Stability; Trenching.

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Abstract. Potassium phosphite is a widely used plant protection agent. However, a suite of phosphite formulations with alternative cation attachments (calcium, copper, silicon, zinc) are commercially available. The plant protective properties of these formulations have received little attention. This study evaluated five phosphite formulations for plant protection purposes against the foliar pathogen apple scab (*Venturia inaequalis*) under field conditions. In addition, a comparative analysis against the synthetic fungicide penconazole, which is widely used for apple scab control, was conducted. Greatest reductions in leaf and fruit scab severity were achieved by sprays of the synthetic fungicide penconazole. However, all phosphite formulations evaluated significantly reduced leaf and fruit scab severity at the cessation of the growing season. Within the phosphites tested, the greatest reductions in leaf and fruit scab severity were achieved in the order: copper phosphite > silicon phosphite > zinc phosphite > calcium phosphite > potassium phosphite > control. The advantages and disadvantages of these phosphite formulations for scab control are discussed.

Key Words. Apple Management; Apple Scab; Fungicide; Integrated Disease Management; Pathogen Control; Plant Health Care; Systemic Induced Resistance; *Venturia inaequalis*.