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Michael J. Ellison

QUANTIFIED TREE RISK ASSESSMENT USED IN THE MANAGEMENT OF AMENITY TREES 57

Abstract. A system of tree risk assessment is proposed that expands concepts developed by others and enables a probability of significant harm to be applied to tree failure risk. By evaluating the components of a tree failure hazard and assigning to them estimates of probability, the proposed system enables the skilled tree inspector to calculate the product of those probabilities to produce a numerical estimate of risk. The use of quantification in the assessment of tree hazards enables property owners and managers to operate, as far as is reasonably practicable, to a predetermined limit of reasonable or acceptable risk.

Key Words. Risk Assessment; Tree Hazards; Safety; Target; Quantified Risk; Amenity; Saprophytic Habitat.

Glynn C. Percival and Gillian A. Fraser

USE OF SUGARS TO IMPROVE ROOT GROWTH AND INCREASE TRANSPLANT SUCCESS OF BIRCH (*BETULA PENDULA* ROTH.) 66

Abstract. Two field trials undertaken in 1999 and 2003 investigated the influence of a range of sugars applied as a root drench at 25, 50, and 70 g/L (3.4, 6.8, and 10.3 oz/gal) of water on root and shoot growth, chlorophyll fluorescence, photosynthetic rates, and leaf carotenoid and chlorophyll concentrations of birch (*Betula pendula* Roth.). Irrespective of concentration and year, the sugars galactose and rhamnose had no significant effects on tree growth or leaf photosynthetic properties. Application of the sugar maltose increased shoot and root dry weight in the 1999 trial but had no effect in the 2003 trial. Sucrose, fructose, and glucose increased shoot and root dry weight in both 1999 and 2003 trials; however, growth responses were influenced by the concentration of sugar applied. In many cases, sugar application increased the number of new roots formed by week 6 but had no significant effects on the length of existing roots or shoot growth. By week 24, increases in both root and shoot growth were recorded. Sugar feeding at 25 g/L (3.4 oz/gal) of water had no significant effect on leaf chlorophyll fluorescence, photosynthetic rates, or carotenoid and chlorophyll concentrations; however, sugar feeding at 50 and 75 g/L (6.8 and 10.3 oz/gal) of water reduced these values by week 6. At the cessation of the experiment, maximal increase in root and shoot growth was associated with a root drench of sucrose at a concentration of 70 g/L (10.3 oz/gal) of water in both 1999 and 2003 trials. Lower mortality rates recorded in sugar-treated trees indicate applications of sugars would aid in the survival of young birch trees following transplanting.

Key Words. Carbohydrates; Resource Allocation; Gene Expression; Transplant Shock; Chlorophyll Fluorescence; Photosynthesis; Chlorophyll; Carotenoid; Plant Vitality.

A.E. Gbadamosi and O. Oni

MACROPROPAGATION OF AN ENDANGERED MEDICINAL PLANT, *ENANTIA CHLORANTHA* OLIV. 78

Abstract. The effects of auxins and leaf size on the rooting of juvenile, single-node leafy stem cuttings of *Enantia chlorantha* Oliv. were investigated. Percentage survival of the cuttings differed among the auxins, their levels, and cutting leaf sizes. Half-leaf cuttings had the highest mean percentage survival of 70% under both naphthalene acetic acid (NAA) and the control followed by indole-3-butyric acid (IBA) (60%) and the combination of IBA/NAA with 40% survival. Among full-leaf cuttings, the control treatment and the combination of IBA NAA had a mean percentage survival of 100%, followed by IBA with 80% and NAA with 40%. Callusing of cutting was also affected by the different auxin treatments. Among the auxins and under full-leaf cuttings, the combination of IBA/NAA had the highest mean percentage of callused cuttings of 100%, followed by the control with 90%, while NAA had 40%. Callusing among the half-leaf cuttings was highest under the control and NAA (70%), while the lowest mean value of 30% was obtained under NAA. Rooting among the cuttings was affected by the IBA treatment only. Full-leaf cuttings treated with IBA at 50 ppm and the control treatment gave the highest percentage of rooted cuttings of 10% each. Auxin type, auxin concentration, leaf size, interaction between auxin type and concentration, interaction between auxin type and leaf size, and interaction between auxin concentration and leaf size had no significant effect on the percentage rooting of cuttings. Better survival and rooting rates under the control treatment, compared to those treated with rooting hormones at higher concentrations, imply that *E. chlorantha* can be propagated vegetatively at reduced cost, thus ensuring that this technology can be adopted with minimum capital to yield expected results.

Key Words. *Enantia chlorantha*; Half-Leaf Cuttings; Full-Leaf Cuttings; Auxins.

Laurence R. Costello, Katherine S. Jones, and Douglas D. McCreary
IRRIGATION EFFECTS ON THE GROWTH OF NEWLY PLANTED OAKS (*QUERCUS* SPP.) 83

Abstract. The effect of irrigation on the growth of containergrown oaks was investigated over a 4-year period. *Quercus lobata*, *Q. agrifolia*, and *Q. douglasii* were irrigated at three levels of reference evapotranspiration (0, 0.25, and 0.5 ET₀) after being established for 1 year at the University of California Bay Area Research and Extension Center in Santa Clara, California, U.S. Although no significant differences were found in trunk diameter growth for irrigation treatments after 4 years, growth of *Q. agrifolia* was significantly greater than *Q. lobata* and *Q. douglasii*. Root mass, shoot mass, and root distribution were measured for *Q. agrifolia*, and mean shoot:root ratio was found to be 2.6 to 1. Many roots of *Q. agrifolia* were found to develop with a stronger vertical than horizontal orientation, and root distribution was not significantly affected by irrigation treatments.

Key Words. Irrigation; *Quercus*; Planting.

C.J. Rooney, H.D.P. Ryan, D.V. Bloniarz, and B.C.P. Kane
THE RELIABILITY OF A WINDSHIELD SURVEY TO LOCATE HAZARDS IN ROADSIDE TREES 89

Abstract. Hazardous conditions in roadside trees are a constant concern for municipal arborists. Due to fiscal constraints, many municipalities desire an accurate and efficient method to inspect their tree populations. This case study shows that a windshield survey can be used to find hazardous conditions in roadside trees, using a simple system and an experienced Certified Arborist. In addition, the case study showed that the percentage of detected hazardous conditions increased as the conditions became more severe. The percentage of hazardous tree conditions found using a windshield survey in developed sample areas far exceeded those found in undeveloped sample areas.

Key Words. Windshield Survey; Hazard Trees; Municipal Forestry; Risk Management.

Michel Labrecque and Traian Ion Teodorescu

Research Note

**PRELIMINARY EVALUATION OF A LIVING WILLOW (*SALIX* SPP.)
 SOUND BARRIER ALONG A HIGHWAY IN QUÉBEC, CANADA 95**