



Tree Research and Education Endowment Fund

TREE Fund Report

Fall 2007

Special points of interest:

- Over \$190,000 awarded in grants in 2007
- TREE Fund assists students with travel expense reimbursement for TCI Expo
- Bandit to auction Chipper to benefit the TREE Fund
- \$9,000 awarded to Robert Felix Memorial Scholarship recipients

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A John Z. Duling Grantee provides an update

Root Hardiness of Trees and Shrubs Suitable for Container Planting in the Urban Landscape

By Nina Bassuk, Cornell University, Ithaca, NY

Your generous funding has helped us to address two major issues: the effect of container size, media type, and insulation on root-zone temperatures and the root hardiness of woody plant material. We have performed experiments both outside in containers and inside in a large ultra-low temperature freezer.

The results of these experiments far exceeded our expectations. With other variables held constant, the variation in the rate of chilling among four media types is statistically significant. Along with the exciting task of analyzing our already developed data, additional trials are being devised. We look forward to pursuing novel forms of insulation that could provide an even more temperature-modulated root zone for woody plants in containers.

Our root hardiness determination research is not as far along as our container experiments. Over the past year, an ultra-low temperature freezer has been modified for hardiness evaluations. This system has been designed to rapidly evaluate shoot and root samples for hardiness using differential thermal analysis (DTA). DTA relies on the heat-of-fusion (heat released as a solution changes from a liquid to a solid state) of the intracellular fluids. The temperature at which the exothermic reaction occurs provides an accurate

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16 Research Projects Funded, 3 Internationally

The TREE Fund reviewed 57 grant applications this year, requesting over \$890,000 in funding. We awarded \$197,941 to 16 projects. In addition, we initiated the management of the ISA Penn-Del Chapter grant: *Bacterial Leaf Scorch* at Rutgers University, by Dr. Anne Gould.

The TREE Fund continues to manage multi-year grants, in particular, the Hyland R. Johns grants which focus

on research priorities identified at the 2002 Research Summit. The John Z. Duling grants provide seed money for cutting edge research in arboriculture and urban forestry.

Look for the listing of the ten John Z. Duling Grant recipients on page 2 and the six Hyland R. Johns Grant recipients on page 3.

Summaries of research projects can be found on our website grants page at www.treefund.org.

Nina Bassuk Grant update

estimate of hardiness. Developing this system has been very difficult and we have overcome a number of design obstacles that impeded our fully functioning system. Throughout the coming year, quantitative measurements of root hardiness of woody plant root samples of several species will be tested to identify hardiness acclimation and de-acclimation.

Mitigation of root-zone temperature stress through container and

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medium selection, paired with root hardiness ratings, will give us the ability to accurately predict above-ground tree survival. Significant steps toward improving our ability to grow woody plants in containers have already been made and we are committed to further investigations. We look forward to continuing our research and are grateful for your financial support of these projects.



TREE Fund awards \$72,941 to John Z. Duling Grantees

Congratulations to the 2007 recipients:

Ash Root Collar Regeneration and Uptake of Merit Insecticide - \$7,500
Thomas Green, Fred Miller, and Gary Watson

The Influence of Synthetic Water Holding Polymers on Increasing Transplant Success of Trees - \$7,500
Glynn Percival, Univ. of Reading, U.K.

Effects of Mounded Mulch on Canker and Decay in Freeman Maples - \$7,500
Jeffery Gillman and Gary Johnson, Univ. of Minnesota

Assessing Field Level Cold Tolerance in Improved Genotypes of *Taxodium distichum* Tolerant of Alkaline Soils and Drought - \$7,441
Michael Arnold, Texas A&M

Impact of Imidacloprid on Disease Severity and Vector Recolonization in Oaks Susceptible to Bacterial Leaf Scorch - \$7,500
James Lashomb et. al., Rutgers University

Mycorrhizae and Drought Stress in New Urban Plantings - \$6,500
Grant Jones and Bal Rao, Davey Institute

The Comparative Cost-Benefit of Composted Greenwaste as a Mulch and Soil Amendment for the Improved Establishment Success of Municipal Tree Planting - \$7,000
David Marcus Bellett-Travers, Nottingham Trent University, U.K.

Improving Hazard Tree Diagnostic Tools for Arborists: How Well do Visual Observations of Fungal Fruiting Bodies Predict Extent of Wood Decay in Urban Trees? - \$7,000
Jason A. Smith, Univ. of Florida

Soil, Irrigation, and Production Factors Influencing Establishment of Container-Grown Trees at Various Planting Depths - \$7,500
Michael A. Arnold, Texas A&M

Is the Exotic Banded Elm Bark Beetle a Vector of the Dutch Elm Disease Pathogen? - \$7,500
W. R. Jacobi, Colorado State University

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