From Forest Nursery Notes, Summer 2009

35. Restoration techniques for landscape soils damaged by construction. (ABSTRACT). Layman, R. M., Day, S., and Harris, J. R. HortScience 44(4):1033. 2009.

revealed significantly reduced average root length and surface area. The greatest decrease in root length occurred 8 WAT by Pendimethalin (55%), followed by Quinclorac (40%), Dithiopyr (25%), and Oxadiazon (25%). The greatest decrease in surface area occurred 8 WAT by Pendimethalin (60%) followed by Quinclorac (40%), Dithiopyr (35%), and Oxadiazon (35%). Twelve WAT root length was not as severely affected. The data showed a decrease in length by Dithiopyr (40%) followed by Pendimethalin (20%), Oxadiazon (5%), and Quinclorac (0%). Twelve WAT root surface area was not as severely affected. However, data showed that Dithiopyr had the greatest reduction (40%) followed by Pendimethalin (35%), Oxadiazon (3%), and Quinclorac (0%). This study shows that the PRE's tested have a negative influence on hybrid bermudagrass root parameters well into the growing season.

9:15–9:30 am

Restoration Techniques for Landscape Soils Damaged by Construction

Rachel M. Layman
Virginia Tech, Blacksburg, VA; ralayman@vt.edu

Susan Day
Virginia Tech, Blacksburg, VA; sdd@vt.edu

J. Roger Harris*
VPI & SU, Blacksburg, VA; rharris@vt.edu

Land development is accompanied by construction activities that damage soil structure, remove organic matter, and subsequently can reduce tree survival and establishment, slow growth rates and reduce ultimate canopy cover. Soil rehabilitation protocols are needed to assist arborists, landscape contractors, landscape architects, developers and planners to recommend and implement effective soil improvement methods that allow maximum root development and growth for urban and landscape trees. This study evaluates several specific soil rehabilitation protocols to determine their effects on soil physical properties, tree establishment, root development, and other growth parameters for five tree species on a graded and heavily compacted site. This represents the second year of a long-term study that will evaluate whether increasing access of roots to lower soil regions will enhance carbon sequestration in the soil and contribute to soil biogenesis. Twenty-four 4.6 × 18.3 m plots were installed in 2007 on a 1980 m^2 field site comprised of Shottower and Slabtown loam soils. Control plots were left undisturbed while remediation plots were scraped and graded according to common construction protocols. Subsoil compaction to an average bulk density of 2.0 g/cm^3 was initially achieved following topsoil removal with 8 passes of a 4,800 kg sheep's foot vibrating riding compactor. Protocols under evaluation consist of combinations of topsoil replacement, amendments and mechanical loosening techniques: Undisturbed (no topsoil removal, no compaction, no amendments), Minimum Effort (topsoil surface application), Enhanced Topsoil (topsoil application and rototilling), and Profile Rebuilding (compost amendment, subsoiling with excavator to a depth of 60 cm, topsoil application and rototilling). Six replications of each treatment are installed in a completely random design with five deciduous tree species in each experimental unit. Bulk densities throughout the soil profile 9 months after treatment installation are characterized. After one growing season, Profile Rebuilding resulted in a 112% to 223% greater increase in trunk cross-sectional area than the average of the other treatments. Height increase, photosynthesis rates, and rooting depth are also described. This long-term study site will allow assessment of the effects of mechanical loosening and incorporation of organic matter on the soils' ability to provide ecosystem services (e.g. support vegetation, intercept rainfall, promote groundwater recharge, sequester carbon, etc.) over time.

Specified Source(s) of Funding: Tree Fund

9:30–9:45 am

Landscape Performance of 'Razzle Dazzle' Crape Myrtles

Allen Owings*
LSU Ag Center, Hammond, LA; aowings@agctr.lsu.edu

Edward W. Bush
LSU Ag Center, Hammond, LA; ebush@agcenter.lsu.edu

C. Allen Broyles
LSU Ag Center, Hammond, LA; cbroyles@agcenter.lsu.edu

Three gallon containers of 'Razzle Dazzle' crape myrtles ['Ruby Dazzle' (pink blooms with bronze-red foliage), 'Cherry Dazzle' (cherry red blooms), 'Snow Dazzle' (white blooms), 'Dazzle Me Pink' (pink blooms) and 'Raspberry Dazzle' (raspberry red blooms)], 'Chickasaw' crape myrtle and 'Pocomoke' crape myrtle were planted in late Summer 2006 in full sun landscape trials at Burden Center, a LSU AgCenter agricultural experiment station in Baton Rouge, LA (USDA hardiness zone 8B, AHS heat zone 8). Plants were placed in raised rows of Oliver silt loam soil (normal pH 6.2) approximately five feet apart in a randomized complete block design with each cultivar replicated three times. Supplemental irrigation was provided as needed via a drip system. Plants were fertilized in March 2007 and 2008 with Sta-Green Nursery Special 12-6-6. Pine straw mulch was maintained at a depth of two inches refreshed two times annually. Hand weeding, glyphosate and Amaze pre-emergent granular herbicide were used for weed control. Plants have not been pruned, pinched, or deadhead from the initial planting time through 2008. In addition, fungicides and insecticides were not been applied. Visual quality ratings based on a scale from 1 to 5 (1 = dead, below average landscape performance, 3 = average landscape performance, 4 = above average landscape performance, 5 = superior landscape performance) were taken monthly from April–November 2007 and monthly from April–November 2008. *Cercospora* leaf spot ratings were taken in October 2007 and October 2008 based on a scale from 1 to 6 where 1 = no leaf spot, 2 = 1% to 10% foliage with leaf spots, 3 = 11% to 25% foliage with leaf spots, 4 = 26% to 50% foliage with leaf spot, 5 = 51% to 75% foliage with leaf spot, and 6 = 76% to 100% foliage with leaf spot. Height measurements were taken in October 2007 and October 2008. 'Pocomoke' had the tallest overall height. Among the 'Razzle Dazzle' group, 'Snow Dazzle' and 'Raspberry Dazzle' were the tallest plants, followed by 'Cherry Dazzle', 'Dazzle Me Pink', and 'Ruby Dazzle'. Leaf spot was not observed on 'Raspberry Dazzle'. Leaf spot was slight on 'Ruby Dazzle' and moderate on 'Dazzle Me Pink', 'Cherry Dazzle', and 'Snow Dazzle'. Quality ratings were highest for 'Raspberry Dazzle', 'Cherry Dazzle', and 'Pocomoke'.

Specified Source(s) of Funding: Hatch Funds, State Funds, Louisiana Nursery and Landscape Association

9:45–10:00 am

Comparison of Root Measurements for Kentucky Bluegrass Sod Establishment

Steven Borst*
LSU AgCenter, Baton Rouge, LA; sborst@agcenter.lsu.edu

Jeffrey Beasley
LSU AgCenter, Baton Rouge, Louisiana; jbeasley@lsu.edu

Edward Bush
Louisiana State University, Baton Rouge, LA; ebush@agctr.lsu.edu

Ron E. Strahan
Louisiana State University AgCenter, Baton Rouge, LA; rstrahan@agcenter.lsu.edu

Sod establishment is often gauged utilizing dry weight measurements even though other root parameters such as root length have been shown