

## Deep Roots Are Harming Trees

By Gary Watson

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Deep or buried root systems have been causing problems for arborists for decades. Though it is often referred to as “planting too deep,” the cause of buried root systems is not limited to the planting process. At times, no one knows what caused the problem or how it should be solved, but one thing is clear—many landscape trees are dying.

The dead and dying trees are evident most rapidly on sites with heavy soils and poor drainage. More troubling is the knowledge that on more moderate sites, the effects might not be manifested for years, including some root diseases. Some trees do not decline and die, but are just stressed and grow slowly, requiring greater care and reducing the benefits provided by the urban forest.

It is a problem for the whole green industry. Propagators, growers, landscape architects, landscape contractors, urban foresters, and arborists must all participate in solving it. This is a unique opportunity to form a truly national coalition to address this important problem.

In 2003, The American Nursery and Landscape Association (ANLA) and the International Society of Arboriculture (ISA) joined together in requesting “that Morton Arboretum organize and host a green industry working group to discuss and reach a consensus on an industry response to the issue of tree decline and death in the landscape due to being planted too deeply...”

An industry-wide working group was established in response to this call, and currently includes representatives of ANLA, ISA, American Society of Landscape Architects (ASLA), Associated Landscape Contractors of America (ALCA), Tree Care Industry Association (TCIA), and the American Society of Consulting Arborists (ASCA). Discussions with propagators, growers, landscape architects, landscape contractors, urban foresters, and arborists have revealed causes contributing to deep root systems at every step of the process—from propagation and nursery production to planting and maintenance in the landscape.

The group is now focusing on two areas: developing a Best Management Practice (BMP) based on information currently available, and promoting research to fill in the extensive gaps in our current knowledge base.

The BMP must address many issues. How deep should the structural roots be planted on a small tree? If they are too close to the surface, will excessive surface roots develop someday? How should differences in species and site be accounted for in this recommendation? If soil is removed from the top of the root ball, will the newly exposed trunk or root shank tissue be more likely to develop damage from extreme heat and cold? Under what circumstances might root collar excavation improve the health of established trees?

A great deal of research needs to be done. Luckily, interest among researchers is growing rapidly. Ten researchers have expressed interest in participating, and some are already initiating projects. Some of these projects are focusing on aspects of nursery production and planting, with hopes of preventing future problems. Others are attempting to determine how extensive the problem is in existing landscapes, and what remedial action may be beneficial.

Four researchers have already received funding for their projects from the Tree Research and Education Endowment (TREE) Fund and the Horticultural Research Institute (HRI). The working group is hopeful that additional projects will be funded from these sources over the next two

years. The National Urban and Community Forestry Advisory Council (NUCFAC) recently awarded a \$109,937 grant to Gary Watson, the working group Chair. The grant will be used to help coordinate the efforts of coalition researchers and to provide partial funding for several of the research projects.

*Coalition Researchers (as of July 2004):*

Douglas Airhart, Tennessee Tech University

Michael Arnold, Texas A&M University

Susan Day, Virginia Polytechnic Inst. & State University

Ed Gilman, University of Florida

J. Roger Harris, Virginia Polytechnic Inst. & State University

Gary Johnson, University of Minnesota

Gary Kling and David Williams, University of Illinois

T. Davis Sydnor and Richard Rathjens, Ohio State University

Gary Watson, The Morton Arboretum

Also noteworthy is the 2004 revision of the ANSI Z60.1 American Standards for Nursery Stock, scheduled to be released later this year. The ANSI Z60.1 will include text and illustrations specifying that a tree's root flare must be near the surface of the root ball. According to the revised standard, root ball measurements will now be defined relative to the position of the root system, not just the soil surface. In the past, these measurements could have been taken from considerably above the root flare.

Significant steps have been taken towards developing a carefully constructed, comprehensive solution to buried root systems and their associated problems. Because the entire green industry is working together to find a solution, it will hopefully be one the whole green industry can embrace.