

URBAN TREE RESEARCH IN THE SOUTH¹

by Donald L. Ham

Urban trees, shade trees, ornamental trees, landscape trees, urban forestry — regardless of the terminology, trees in close proximity to man's living environment are an important asset. However, this variable terminology is, in itself, one of the greatest obstacles to obtaining information on urban tree research in the South. Coupled with, and perhaps one of the major reasons for, the variable terminology are the many disciplines and research facilities conducting investigations pertaining to urban trees.

Disciplines involved with urban tree research include forestry, horticulture, entomology, plant pathology, agronomy, recreation, agricultural economics, genetics, biology, and agricultural engineering. Research is being conducted by private companies, private and state universities, experiment stations, and several state and federal agencies. Such diversification can only lead to confusion and over-sight when attempting to identify current urban tree research.

This compilation of current or recently completed research should not be viewed as being complete. With sufficient interest, it could become the nucleus for a more comprehensive listing.

Urban tree research in the South can be categorized into eight general subject areas. Project titles and/or brief descriptions of research, principal investigator(s), and institutions are listed below.

I. Pathology

1. *Antibiotic injections control elm phloem necrosis*; **T.H. Filer, Jr.**; Forest Service, U.S.D.A., Stoneville, MS.
2. *Role of various fungi and environmental conditions in live oak decline and possible methods of control*; **R. Lewis, Jr. and T.H. Filer, Jr.**; Forest Service, U.S.D.A., Stoneville, MS.
3. *Destruction by canker stain in midsouth sycamore stands*; **F.I. McCracken**; Forest Service, U.S.D.A., Stoneville, MS.

4. *Lethal yellowing of palms*; **R.E. McCoy, D.L. Thomas, and J.H. Tsai**; University of Florida ARC.
5. *Endothia canker on pin oak and live oak*; **R.J. Stipes**; Virginia Polytech. and S.U.
6. *Mimosa wilt—fungus biology*; **R.J. Stipes**; Virginia Polytech. and S.U.
7. *Evaluation of systemic fungicide(s) and different application techniques as treatments for Dutch elm disease*; **R.J. Stipes**; Virginia Polytech. and S.U.
8. *Mimosa wilt—fungus biology*; **W.J. Stambaugh and J. English**; Duke University
9. *White pine "sudden death"*; **W. Witcher**; Clemson University
10. *Relationship between environmental stress and pitch canker of landscape pines*; **W. Witcher and B.R. Fraedrich**; Clemson University.

II. Environmental effects

1. *Effects of excessive soil fill associated with home construction*; **W.J. Stambaugh and P. Gruber**; Duke University.
2. *Effects of fertilization in alleviating air pollution*; **D.L. Ham and W. Witcher**; Clemson University
3. *Time-lapse photography of tree conditions in newly developed residential area*; **J.R. McGraw**; N.C. State University.

III. Entomology

1. *Field observations on the seasonal behavior of the hemlock woolly aphid*; **J. Weidhaas**; Virginia Polytech. and S.U.
2. *Evaluation of Disparlure formulations for gypsy moth control*; **C.W. McComb**; Maryland Dept. of Agriculture
3. *Evaluation of Orthene Mediacaps for control of eastern tent caterpillar and fall webworm*; **A.I. Walker**; Bartlett Tree Research Laboratories

¹ Presented at the Southern Chapter meeting of the International Society of Arboriculture in March 1977.

IV. Tree breeding and selection

1. *Cytogenetics, breeding, and evaluation of shade trees*; **F.S. Santamour, Jr.**; U.S. National Arboretum
2. *Field evaluation and observation of new shade tree selections*; **P. Normandy**; Bartlett Tree Research Laboratories
3. *New landscape plants for Texas*; **E.L. McWilliams**; Texas A&M
4. *Factor affecting the propagation, production, establishment, and maintenance of urban trees*; **C.E. Whitcomb**; Oklahoma State University
5. *Evaluation of flowering fruit trees for the urban landscape*; **R.P. Lane**; Georgia Agric. Extension
6. *Propagation and evaluation of ornamental trees for use in Georgia*; **T.S. Davis**; Georgia Agric. Exp. Station
7. *Factors affecting the desirability of forest trees for landscaping*; **T.S. Davis**; Georgia Agric. Exp. Station
8. *Shade tree cultivars*; **H. Van de Werken**; University of Tennessee

V. Influence on urban environments

1. *An ecological systems approach to community noise abatement*; **B.K. Huang**; N.C. State University

VI. Social aspects

1. *Substitutability of urban open space, for forest and rural areas*; **H.K. Cordell**; N.C. State University

VII. Inventory

1. *Time-interval multiband remote sensing for analyzing urban forested areas*; **J.O. Lammi**; N.C. State University

VIII. Economics aspects

1. *Factors affecting utilization and expansion potential for ornamental plants and turf*; **T.D. Phillips, C.O. Box and L.A. Estes, Jr.**; Mississippi State University; and **M.B. Badenhop**; University of Tennessee

obtaining research information, a lack of urban tree research in the South or both. Success in retrieving current research information on urban trees appears to depend on several factors:

1. A personal knowledge of on-going projects.
2. An awareness of individuals involved with urban tree research.
3. A comprehensive ability to utilize computerized information retrieval systems.

Success in using the first two approaches is time consuming and largely limited by the interests and professional discipline of the inquirer. Very excellent research of individuals that are not widely known is often overlooked as a result. The computerized retrieval system appears ideal. In an attempt to have as complete a research listing as possible for this presentation, I made a very broad, comprehensive (I thought) request through the U.S. Department of Agriculture's Current Research Information System. I received a list of ten research projects, eight of which were pertinent!

What is the solution? Obviously, a clearinghouse for current research information is needed, but the means of establishing a workable system is not a readily evident. One possibility would be to have one appropriate researcher or extension employee in each state compile and maintain a comprehensive research list for his state. If the Forest Service initiates an active urban forestry research program, it may develop a mechanism for compiling a general list of pertinent research projects. Some type of research information clearinghouse needs to be established soon. If we wait for the perfect system, we will never start.

Do we need more research? Yes! Our knowledge of tree genetics and selection, maintenance, protection, pests, soil-water-air relationships, utilization, and social and environmental benefits is still in its infancy. In addition, we cannot depend totally on research from other regions of the country. For example, tree species, pest problems, soils, and weather conditions vary from other areas of the country and even within the southern region.

General areas warranting investigation include:

This limited list is indicative of the difficulty in

1. Physiological and environmental stresses — The effects of air pollution, construction, heavy clay soils, salt spray, and drought are only a few examples.
2. Tree fertilization — How does fertilization affect susceptibility to insects and disease organisms? What are the best formulations and application techniques for various soil types?
3. Pest control — The basic biology of many tree pests is poorly understood. New control materials and application techniques are needed.
4. Tree selection — Coordinate tree selection programs.
5. New diagnostic equipment.
6. Social and recreational aspects.

Urban tree research in the South is needed and justified, and the expertise is available. Our efforts must be expanded and coordinated. Research is expensive, however. As professionals, each of us must be willing to persuade legislatures, foundations, private companies, and other funding agencies of the necessity of arboricultural research. Urbanization and population in the South are expanding at breakneck rates. Research can enable the arboriculture profession to meet the challenge of this growth. Each of you can be instrumental in the growth of arboricultural research!

*Department of Forestry
Clemson University
Clemson, South Carolina*

WHY CHARGE A FEE? ¹

by **Kenneth D. Meyer**

Thank God for trees. A fitting theme for an organization devoted to preserving trees. Our present belief that trees are important evolved over a long period of time. Four thousand years ago Emperor Shun of China ordered both sides of the 2500 mile long Yellow River cleared of trees to produce more crop land which would ultimately bring him more tax money. He ordered his chief forester to set fire to the trees which was dutifully done. For one year all went well and the emperor was acclaimed. But then, the melting winter snow eroded the soil, hot summer winds dried the soil, winds further eroded it, streams leading to the Yellow River silted-up and the Yellow River flooded. To this day the Yellow River is known to the people of China as "China's Sorrow." They have developed the belief that "The spirits of the forest are taking revenge."

A forest is a multitude of trees interrelated with one and another and having its own unique ecosystem. To most of you here today, I am sure that a single tree is more important to you than

those miles of forest were to Emperor Shun. We have more knowledge of the importance of trees. We have a greater realization of the benefits derived from trees. We have more information regarding the care of trees.

The accumulated volumes of literature on trees over the past 4,000 years are far too extensive for any single human to read in his lifetime. Yet many of you have devoted a great amount of time studying trees. With few exceptions your interest has turned into a livelihood, and if like mine, a very beautiful and rewarding livelihood. Yet, I am jealous. I am jealous of the information I have acquired on trees over the years. As much as I love to talk about trees and their care, I feel cheated if I am not compensated for my knowledge. And strangely enough, I believe the people I talk to feel cheated if they do not think well enough of my talents to compensate me for them.

¹ Presented to the Western Chapter, ISA, in May of 1976.