

i-Tree: Linking Urban Forest Benefits, Costs and Management

Linking Benefits, Costs and Management — An Integrated Software Suite



i-Tree

What is i-Tree?

i-Tree is a USDA Forest Service state-of-the-art, peer-reviewed, urban and community forestry analysis and benefits assessment software suite. i-Tree integrates several inventory, analysis and forecasting tools.

The goal of i-Tree is to provide affordable, easy-to-implement tools for communities of all sizes to collect and analyze data on their community forests to promote and strengthen management efforts. i-Tree can be used by state forestry agencies, municipalities, non-profit organizations, or any private company interested in their community forest resource. Communities can use i-Tree to create new conservation partnerships aimed at quantifying and managing ecosystem services produced by urban forests.

Who is developing i-Tree?

Developed by USDA Forest Service Research and State and Private Forestry, and other cooperators, i-Tree will be offered free of charge to the public. The Forest Service, the National Arbor Day Foundation, and Davey Tree have entered into a Public/Private Partnership to disseminate and provide i-Tree technical support and training, taking advantage of their complimentary strengths in scientific research, marketing, business, training, education and existing partnership networks nationwide.

What will i-Tree do?

i-Tree is designed to be a complete software package for urban forest analyses. In addition to municipal tree inventory tools, the software suite's strength lies in its ability to quantify urban forest structure, function and value for both on- and off-street resources. Reports consist of graphs, charts, and tables that enable managers to legitimize funding, create program enthusiasm and investment, and promote sound decision making and management.

The suite of software products will enable communities to determine benefits, costs, and management needs of their urban forest.

Who should use i-Tree?

i-Tree was developed for municipal foresters, non-profit tree advocates, commercial arborists, environmental consultants, planners, and others with a vested interest in their community's urban forest. It will provide affordable, easy-to-implement inventory and analysis tools for those who might not otherwise have the monetary and technical means to inventory and analyze their community trees.

What makes i-Tree different?

While several commercial inventory and analysis applications exist, i-Tree is intended for communities and novice users who desire a low-cost alternative, before investing in commercial management-oriented tools. i-Tree is all-inclusive and adaptable to user needs—a single street tree, a neighborhood, or the entire urban forest can be analyzed. Management decisions can be made knowing that Forest Service research provides the scientific underpinning for results reported.

How does i-Tree work?

Users select the type of analysis to complete based on their particular need. Options include:

- Street tree inventory and analysis of species composition, size distribution, maintenance needs, and other structural components and indices.
- Benefit-cost analysis of a city's street tree program.
- Complete urban forest analysis that calculates structure, environmental effects, and value for all public and private trees.

Once selected, the appropriate protocols for data collection are configured for a handheld computer (Pocket PC). The user collects field data — or imports existing data — and the software runs the desired calculations.



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i-Tree and Its Components

i-Tree is designed to be a diverse, readily accessible software package to collect and analyze data on urban forest resources and will compliment, not compete with, other professional, private sector tree inventory and production software and services.

The software suite includes the following two urban forest analysis tools:

1. **UFORE** (Urban Forest Effects Model) is a computer model that calculates the structure, environmental effects and values of the entire urban forest. The model was designed to use standardized field data from randomly located plots or complete inventories. UFORE results are compatible with ArcView for display in Geographic Information Systems.
2. **STRATUM** (Street Tree Resource Analysis Tool for Urban forest Managers) is a street tree management and analysis tool for urban forest managers that utilizes simple tree inventory data to quantify the value of annual environmental and aesthetic benefits: energy conservation, air quality improvement, CO₂ reduction, storm water control, and property value increases. STRATUM allows users to incorporate management costs to produce a benefit-cost ratio for their resource.

In addition to the analysis tools, the following utilities are included:

- **MCTI** (Mobile Community Tree Inventory) is a basic tree inventory application that allows communities to conduct tree inventories and analyses at various levels of detail and effort. Data can be collected and entered into the program using paper tally sheets or a PDA. MCTI allows users to create new inventories or manage existing inventories.
- The **Storm Damage Assessment Protocol** provides a standardized method to assess widespread storm damage in a simple, credible, and efficient manner immediately after a severe storm. It is adaptable to various community types and sizes, and it provides information on the time and funds needed to mitigate storm damage.

The software suite will include the use of Personal Digital Assistants (PDAs) to collect data in the field.



- Hand-held *personal digital assistant* (PDA) programs to aid field data collection.
- *Plot and street segment selection* programs to determine where to collect field data for sample inventories.
- *Report writers* to generate reports, graphs, charts and tables for summarizing data and results.

Technical and field manuals will be available for i-Tree and each of its components. Technical assistance and training, including volunteer training and regional training workshops, will be provided by the Davey Resource Group to ensure that users receive all the support that they need to successfully use i-Tree.

Availability

A limited test-release of the prototype iTree suite will occur in the fall of 2005. A more fully tested and complete version, accessible from the web, will be ready for public release in 2006. At that time, toll free technical support and training programs will also be in place. As new programs are developed and tested, they will be added to subsequent versions of i-Tree.

Where can I get more information?

Visit the project website at www.itreetools.org or contact i-Tree staff at info@itreetools.org.

A cooperative initiative between:

