



RESEARCH REPORT

Researchers develop computer program to aid in urban tree management

Colleges of Agriculture at

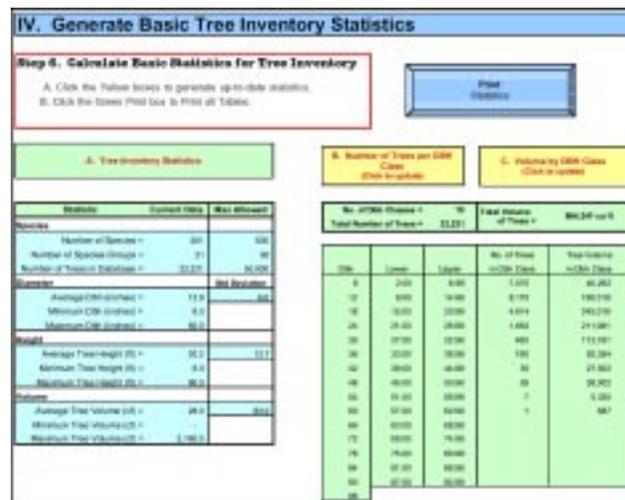
Norman Pillsbury, Natural Resources Management Department
California Polytechnic State University, San Luis Obispo

Executive Summary

This project culminated in the development of the Community and Urban Forest Inventory and Management program (CUFIM), a new Excel-based computer program that enhances urban foresters' control over their tree inventory. It also allows unprecedented options to determine volume of anticipated tree removals and estimates of their dollar value. The program allows users to store and maintain up to 500 tree species and 50,000 tree records. Each record contains the following fields: tree sequence number, tree record number, species code, removal status, species name, species group, tree dbh, tree height, tree volume, including a breakdown of volume by branch diameter size, and 10 user-defined variables that can be easily inputted by the user. Each species that is added to the database is also assigned a species group code. This is used to calculate tree volume information. CUFIM comes with 19 built-in species groups and allows for a total of 50 groups by the user. If new species groups are to be entered, their local or standard volume coefficients must also be entered as described in this report.

Three separate functions are available for ease in adding, changing or deleting tree records. Basic tree statistics such as number of species, size of database, averages of dbh,

height and volume as well as total volume and volume by diameter class are available. Several spreadsheets are devoted to estimating tree volume and value from trees that would be removed from the forest each year. Options include limiting



Left: Sample CUFIM screen which allows users to generate basic statistics for tree inventory.

CALIFORNIA STATE UNIVERSITY, FRESNO

CALIFORNIA POLYTECHNIC STATE UNIVERSITY, SAN LUIS OBISPO

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

CALIFORNIA STATE UNIVERSITY, CHICO



CALIFORNIA POLYTECHNIC STATE
UNIVERSITY, SAN LUIS OBISPO

Project Director

Norman Pillsbury, Professor
Natural Resources Management Department
California Polytechnic State University,
San Luis Obispo
Phone: (805) 756-2271
Email: npillsbu@calpoly.edu

Co-Investigator

Samantha Gill, Professor
Natural Resources Management Department
California Polytechnic State University,
San Luis Obispo
Phone: (805) 756-2602
Email: sgill@calpoly.edu

ARI Administration

California Agricultural Technology Institute
California State University, Fresno
2910 E. Barstow Ave. M/S OF115
Fresno, CA 93740-8009
Phone: (559) 278-2361
Fax: (559) 278-4849
ARI Website: ari.calstate.edu

ARI Executive Director

Joe Bezerra, Director of Operations
California Agricultural Technology Institute
California State University, Fresno

Published by the

California Agricultural Technology Institute
California State University, Fresno
March 2004
ARI Pub. #02-3-032

the range of diameters, as well as the species of tree that would be included and/or excluded in volume calculations. The program is designed for beginners, but as skill levels increase, a number of advanced options are also available.

A number of different kinds of tables can be printed that provide a hard copy of the database and summarize the number of trees and volume by diameter class. Biomass value can also be assessed through three different approaches.

The documentation and notes provide assistance to the user including suggestions for setting up the database, the recommended precision of measurement units, and diameter and height class interval requirements. A number of examples are included to illustrate main points.

Major Accomplishments

CUFIM allows unprecedented options to determine volume of anticipated tree removals and estimates of their dollar value. This program allows users to store and maintain up to 500 tree species and 50,000 tree records. To date, no tree inventory program allows the management flexibility that is available through this program.

Impact Statements

California communities and cities, using this program, can now market their biomass for wood products and show an income from the woody resource rather than only a cost for maintenance and disposal.

Acknowledgements

Funding and administrative support for this project was provided by the California State University Agricultural Research Initiative (ARI), administered by the California Agricultural Technology Institute at California State University, Fresno. Additional support was provided by the California Department of Forestry and the United States Department of Agriculture.

For More Information

This research report contains summarized results of Norman Pillsbury's study entitled "Application of Urban Tree Volume Equations to Determine Biomass in Community Forests," ARI Project No. 00-3-036. (Research Focus Area: *Biodiversity*). To view and/or obtain a copy of the complete final report, or to obtain additional information about this or other research projects, visit the ARI website at ari.calstate.edu. For information on projects specific to Cal Poly San Luis Obispo, visit the Cal Poly ARI website at ari.calpoly.edu.

The Agricultural Research Initiative (ARI) is a California State University (CSU) multiple campus collaborative partnership between the CSU colleges of agriculture and the state's agriculture and natural resources industries and allied business communities. ARI provides public funds that are matched with industry resources to fund high impact applied agricultural and natural resources research, development, and technology transfer, as well as related public and industry education and outreach. ARI projects and programs improve the economic efficiency, productivity, profitability, and sustainability of California agriculture while providing for consumer sensitive and environmentally sound food and agriculture systems and fostering public confidence in food safety and agricultural research and production systems.