Tree Chemistry Database

Introduction

The Tree Chemistry Database is designed to be a comprehensive and searchable relational database of C, N, P, K, Ca, Mg, Mn, and Al concentrations in aboveground tree biomass compartments. The complete database contains all published nutrient values that could be located for tree species in the Northeastern United States. The data are entered into linked Microsoft Access[1] tables. This format enhances efficiency and allows users to individualize queries to extract tree chemistry values.

Using the Database

The complete Tree Chemistry Database is included on this CD-ROM, which accompanies the *Tree Chemistry Database (version 1.0)* General Technical Report. The three database versions provided, Microsoft Access 97, 2000, and 2002, contain identical information. Users should select the version appropriate to their software packages. The database and documentation also are available online (http://www.hubbardbrook.org/treechem/index.htm).

A basic understanding of Microsoft Access is required to use the database. For answers to specific questions, access the Microsoft Access help file or http://support.microsoft.com/.

In the Tree Chemistry Database, data for each record are stored in multiple tables. Dividing data between tables minimizes the repetition of common information. For example, one citation may provide information on multiple sites. Rather than repeat all of the citation information for every site, that citation is linked to each site with an ID number. To view a table in the open database, select *Tables* from the Objects menu at the left of the screen, then select the desired table.

Microsoft Access *Queries* recombine data from separate tables by "joins" on parameter fields shared between tables. In the Tree Chemistry Database, fields like *Citation ID* and *Site ID* are used to join tables. Queries can be used to retrieve specific information from the database without retrieving the entire record. This process is described in more detail in the GTR. To modify an existing query, open the query, and then select *design* from the View menu.

Queries are the easiest way to extract data from the Tree Chemistry Database. Query results can be exported in multiple formats, including dBASE, Lotus, and Microsoft Excel[1], and analyzed or used directly. To export a query, highlight (but do not open) the desired query. From the File menu, select export. Be sure to choose the desired file type when exporting the file. The same procedure can be followed to export tables if users prefer to work with the data in a format other than Access.

[1] The use of trade, firm, or corporation names in this report is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the U.S. Department of Agriculture or Forest Service of any product or service to the exclusion of others that may be suitable.

Many parameters have been included in the database to help identify the appropriate subset of the data that is relevant to the user. For example, a user might choose only data from trees sampled in the Northeastern United States, or trees that are over a certain age. Factors that can be selected to limit the dataset include region (e.g., the Northeast or eastern Canada), forest health, land use (e.g., past cultivation or plantations), stand age, species, and DBH. Not all database entries have values for every database parameter; missing values are entered as "9999".

The Tree Chemistry Database contains several sample queries that can be used as references or modified according to user needs. The following are several sample queries of the Tree Chemistry Database: **Query 1**: Aspen bark and bole Ca, Mg (query of a single species); **Query 2**: Sugar maple, elevation>200 (single species, limited elevation); **Query 3**: Sugar maple, longitude>75 (single species, limited longitude); **Query 4**: Declining (all species with declining forest health); **Query 5**: Glaciated (all species on glaciated sites); **Query 6**: Land use (all species with similar land use); **Query 7**: Other nutrients reported in study citations (Study Description table query); **Query 8**: Nutrient values from the initial database (Study Description table and Nutrients table query); **Query 9**: Multiple species limited by age, forest health, and region. The queries are described in greater detail in the *Tree Chemistry Database (version 1.0)* GTR.

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