PN-ABC-118

LADS 2.0

Information and Decision Support System Version 2.0

User's Manual

Forestry/Fuelwood Research and Development (F/FRED) Project

Multipurpose Tree Species Network Research Series

This series includes papers, reports, and manuals produced or supported by the Forestry/Fuelwood Research and Development Project (F/FRED). Publications in this series are available for distribution to MPTS network members and other selected individuals and institutions.

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financed by the U.S. Agency for International Development

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INTRODUCTION

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THE F/FRED PROJECT & IADSS

F/FRED PROJECT

The Forestry/Fuelwood Research and Development (F/FRED) Project, funded by the U.S. Agency for International Development (USAID), is designed to help scientists address the needs of small-scale farmers in the developing world for fuelwood and other tree products. F/FRED is implemented by the Winrock International Institute for Agricultural Development, a private, nonprofit U.S. organization. The Global Research Unit is under a subcontract with the Research Corporation of the University of Hawaii.

ACKNOWLEDGEMENTS

The F/FRED Information and Decision Support System (IADSS) 2.0 represents the collaborative efforts of the F/FRED Global Research Unit in Maui, Hawaii, the F/FRED Coordinating Unit in Bangkok, Thailand, the F/FRED Project Management Office in Arlington, Virginia and the many individuals within and outside the F/FRED research network.

The Soil Database was developed jointly with the International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT) Project and with assistance from the Soil Management Support Services (SMSS). The National Soil Survey Laboratory of the U.S. Soil Conservation Service (SCS) provided the international pedon descriptions and analyses information.

The Climate Database was developed with data from the Plant Production and Protection Division of the Food and Agriculture Organization (FAO) of the United Nations.

The F/FRED Models (FMOD) data analysis and graphics package was developed by Dr. David Allen, University of Kentucky in cooperation with the Global Research Unit.

The *IADSS 2.0 User's Manual* was edited by Sharon Balas.

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INTRODUCTION TO IADSS

IADSS VERSION 2.0

IADSS is a menu-driven microcomputer software package designed to help scientists manage information about multipurpose tree species (MPTS) and their potential for producing fuel, fodder, and other tree products. It can be used by individuals with little or no previous training in computers or database management.

IADSS consists of related databases and decision support programs that organize, store, retrieve, and analyze research data and information on MPTS field trials, literature, specialists, socioeconomic studies, soils, and climates.

The IADSS system is based on a modular approach to system design and its main components are database management and application programs. The components are designed to "stand-alone" and can be added to or deleted from the system to meet the needs and resources of individual researchers.

A unique feature of IADSS is its ability to link information between its databases for analysis. The links between the experiment databases and others containing weather, soil, and climate data will permit scientists to analyze the impact of weather on a network experiment while retaining the ability to access regional weather information independently of experiment data.

As a relational database system, IADSS is a useful tool for predictive modeling. MPTS modeling efforts use systems analysis to predict the transfer of improved technologies from research sites to small farms. By simulating the complex processes that determine tree production, predictive models can assist decision makers. Program managers can use models to compare management systems and quantitatively assess trade-offs between site productivity and sustainability. With information about the environmental and soil conditions of a farm site, an extension agent may simulate growth and production for tested species to clarify a farmer's planting and management alternatives.

SYSTEM REQUIREMENTS

The F/FRED Information and Decision Support System (IADSS) is distributed for use with PC-DOS and should be used on fully IBM-compatible microcomputers.

To use IADSS, you will need the following hardware configuration, in addition to the program disks.

HARDWARE REQUIREMENTS

- IBM PC/XT/AT, or any fully IBM-compatible microcomputer system, with:
  - one hard disk (20 Mb recommended, 8 Mb free)
  - 640 Kb RAM installed (500 Kb free)
  - one 360K DS/DD (double sided/double density) drive (for installation and backup)
  - an EGA card (Enhanced Graphics Adapter) or compatible

- A graphics monitor (color is optional)

- A graphics printer (optional but highly recommended)

NOTE: Computers with MDA (monochrome display adapter) or CGA (color graphics adapter) boards may be used, but users may experience some washed out displays or snow on the screen.

SOFTWARE REQUIREMENTS

- DOS (Disk Operating System), with one of the following:
  - PC-DOS V3.1 or higher
  - MS-DOS V3.2 or higher

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THE IADSS PACKAGE

Your IADSS 2.0 package should contain:

- The IADSS 2.0 Program disks (twenty-four, 5-1/4" diskettes)
- The *IADSS 2.0 User's Manual*

If you are missing any of the above items, contact:

The F/FRED Global Research Unit
Winrock International
1611 N. Kent St., Suite 600
Arlington, VA 22209
U.S.A.

OVERVIEW OF IADSS

This chapter covers basic terminology, key conventions and commands, and guidelines for using the IADSS programs.

TERMINOLOGY

Form

This term refers to the Experiment Database Information, Measurements, Observations and General Measurements data entry screens for Forms A-U. Each form consists of one or more records (or part of a record) and contains different types of data.

Record

A single record is composed of data for a single entity. For example, in the Site Descriptor experiment data forms, a single record is usually equivalent to one form. In the Measurement experiment data forms, one record may be associated with data for one weather station, or one plot or one month, etc. In the Abstract database, a record is equivalent to one Abstract entry which could be as long as seven pages.

Data Entry Fields

This term refers to the highlighted areas on screen where data may be entered with the keyboard. These highlighted areas are distinguished by being in color contrast to the normal screen display. That is, if the screen display is light characters on a dark background, the highlighted areas will be dark on light. After entering data into a data entry field, press the [Enter] key and the cursor will be positioned in the next data entry field. The entered data is not saved until <Ctrl-W> is pressed.

Field Types. Data entry fields may be numeric, alphanumeric, or date. Numeric fields accept only numbers; alphanumeric fields accept letters and numbers; and date fields accept dates only in the mm/dd/yy (month/date/year) format. Characters that do not conform with the field type will not be accepted and will not appear in the data field. For example, if you pressed the [A] key to enter data into a field requiring a two-digit number, the letter 'A' will not appear on screen, the cursor will remain in the field, and pressing the [Enter] key will not move the cursor to the next field.

Data-checked Fields. In some data entry fields, the data are checked by the program as they are entered. If invalid data has been entered, the cursor will not move to the next field when the [Enter] key is pressed. In these fields, press the [F1] key for a help message on valid data entry.

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GUIDELINES FOR DATA ENTRY

1. Use the scrolling highlighted bar menu to select an option. Press the cursor keys ([↑][↓] arrow keys) to position the bar on the desired item and then press the [Enter] key to select the item. An example of a scrolling bar menu can be found in the Experiment Database main menu.

2. Press a key that is highlighted in the bottom portion of a screen to select an option. If a key is available for a screen, the key's label (i.e., [F2], <Ctrl-W>) will be displayed in yellow (on color monitors) and in bright white (on monochrome monitors). The [S]earch, [M]odify, [D]elete, [A]dd, [B]rowse, and [F2]=Output functions (see the section entitled "Operation Functions" in this chapter for descriptions of these functions) are further examples of keys selected with this method.

3. To enter data and specify search criteria, enter filenames for disk output, and record ranges for output, enter the information with the keyboard and then press the [Enter] key.

4. Press the [Esc] key anytime in IADSS to move one screen back from the one presently displayed on the monitor. You may press the [Esc] key as many times as is necessary to return to a particular screen.

   The [Esc] key is also used to exit the operation functions [A]dd, [D]elete, [S]earch, [B]rowse, [M]odify and [F2]=Output (see the section entitled "Operation Functions" in this chapter for a description of these functions).

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SPECIAL KEYS AND KEYSTROKES

Below is a summary listing of the special keys and keystrokes for use in IADSS and a brief description of the function of each. Not every key listed here is available in every screen. If active, the key(s) will be highlighted in the bottom portion of a screen. Keyboard keys are designated by square brackets (e.g., [F1]). Keys to be used in combinations are designated by angle brackets. For example, <Ctrl-W> means to press the [W] key while pressing down the [Ctrl] key.

```
      [Esc] - ABORT procedure
            - EXIT screen and go to previous screen
            - CLOSE Help window
              <Ctrl-Q> and <Ctrl-[> - SAME as [Esc] key
  <Ctrl-W> - SAVE a newly created or modified record
            - START program execution
              <Ctrl-End> - SAME as <Ctrl-W>
    [Enter] - CONFIRM menu selection or data entry into field

       [F1] - Get on-screen HELP information
       [F2] - OUTPUT to a printer or create an ASCII file
  <Ctrl-Y> - DELETE a record

  [Page Up] - Move UP one screen (page)
[Page Down] - Move DOWN one screen (page)
              <Ctrl-R> - SAME as [Page Up]
              <Ctrl-C> - SAME as [Page Down]
        [N] - Move to NEXT record
        [P] - Move to PREVIOUS record

[←] [↑] [↓] [→] - MOVE on-screen cursor
              <Ctrl-D>/<Ctrl-L> - SAME as [→]
              <Ctrl-S>          - SAME as [←]
              <Ctrl-E>/<Ctrl-K> - SAME as [↑]
              <Ctrl-J>/<Ctrl-X> - SAME as [↓]
 [Backspace] - ERASE entries to left of cursor
            - <Ctrl-H> - SAME as [Backspace]
   [Delete] - ERASE entries at the cursor
   [Insert] - Enter data IN BETWEEN other data
     [Home] - Moves cursor one word FORWARD or to next data field
            - In Experiment database, DISPLAYS experiments
      [End] - Moves cursor one word BACKWARD or to previous data field

<Ctrl-Home> - SELECT a data entry option in Experiment database
       [F3] - RETRIEVE another experiment for on-screen display
```


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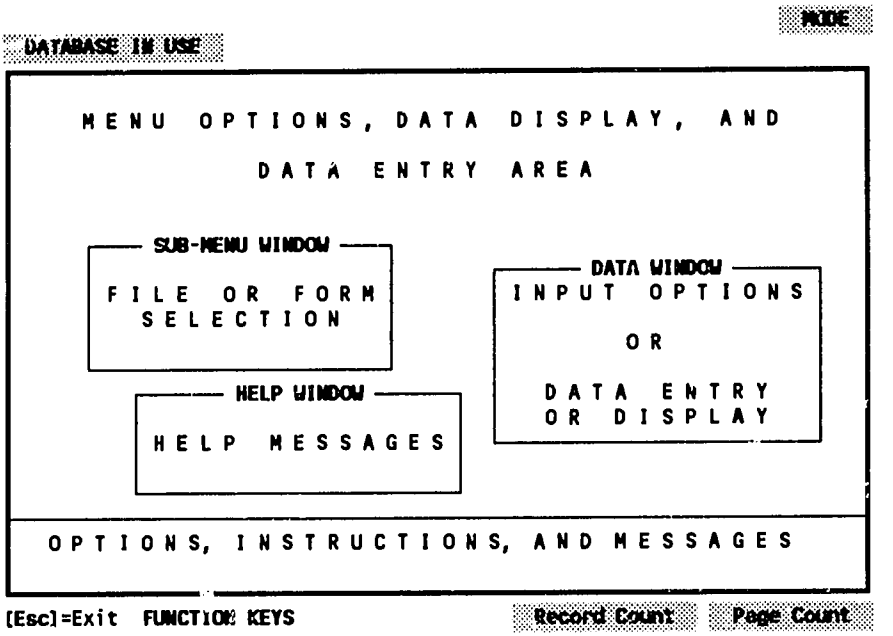
SCREEN FEATURES

Common features found in most IADSS screen are presented below.



Database In Use

At the top left of the screen, an indicator will display one of the following.

- The current database file in use.
- The option selected from the IADSS Master menu.
- The form selected from a sub-menu, (in the Experiment Database menu).

Mode

At the top right on the screen, an indicator displays the current program operation: SEARCH, ADD, MODIFY, DELETE, or BROWSE.

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Menu Options, Data Display, and Data Entry Area

The area at the top of the screen will display menu options, or data, or data entry fields.

Windows

Windows may open anywhere on the screen and are used to display any of the following.

- A form selection sub-menu. Found in some Experiment Database screens.
- A file selection menu. Found in the Browse option screen of selected IADSS databases.
- Data entry. Found in some Experiment Database measurement screens where a window will open into which you can enter additional data.
- A lookup table for data entry options. Found in the Add or Search option screen of some databases.
- A data display window. Found in the Climate Database.
- A help window. Opens when [F1] is pressed during data entry.

Options, Instructions, and Messages

The area at the bottom of the screen will display the operational options, or instructions for data entry, or system/error messages. In some cases, data entry may be done in this area.

Function Keys

The area at the bottom-middle left of the screen will display function keys that are active. For example, [F1]=Help.

Record Count

At the bottom-middle right of the screen, an indicator will show the current record being displayed on screen, as well as the total number of records in the active data file.

Page Count

At the bottom-right of the screen, an indicator will show the current page being displayed on screen, as well as the total number of pages in the record or form.

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[Esc] = Exit
Indicates that the [Esc] key is active. This key can be used at any point in IADSS to abort the current operation or exit a program module. Use it also to close Help windows on the screen.

ERROR MESSAGES

If a program error should occur while using IADSS, an error message and number will appear on the lower portion of the screen. After an error message, press any key and you should return to the IADSS Master menu. Some general error problems are listed here. For a more detailed listing, refer to "Appendix C" in the "Installation" chapter of this *User's Manual.*

1. An error message such as "insufficient disk space", caused by limitations of the user's computer system, must be corrected by the user. If the hard disk is full, free up enough disk space before restarting IADSS. The amount of disk space needed depends on the amount of data to be entered.

2. Errors in data entry, such as duplicate data or invalid values, will cause the system to display an error message. Read the message and correct the entry. The program will not save the data if such errors are not corrected.

3. If there is a program error, you might want to copy the error number and message and send it to the F/FRED Project, along with information about the circumstances in which the error occurred. If the problem can be duplicated and corrected, then F/FRED will send you information regarding the problem.

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OPERATION FUNCTIONS

IADSS uses six major operation functions to allow manipulation of information and data in its databases. A function key must be highlighted in the bottom portion of the screen before it can be used. The function keys available for each database are listed in that database's introductory chapter.

[A]dd

The Add function allows you to enter new data into the database. Press the [A] key and the data entry fields for that screen will be highlighted. After entering data or information press <Ctrl-W> to save the entries.

[S]earch

The Search function allows you to locate record(s) in the database that need to be modified, deleted, or printed. Depending upon the search criteria you specify, you can search for all the records in the database for a particular form or a specific record or records.

Press the [S] key and data entry fields for entering search criteria will be displayed on the screen. Leave these blank to select all records. Press <Ctrl-W> to begin the search. Records found matching the search criteria will be displayed (or if none were found, a message "record not found" will be displayed). You can modify, delete, or output the record(s) displayed.

[M]odify

The Modify function allows you to change information or data entered in a record.

1. If the record you want to modify is currently on screen and you have used <Ctrl-W> to save the entries, then press the [M] key and use the cursor keys to move to the highlighted data entry field you want to change. Enter the new data and press <Ctrl-W> when you have finished modifying the record.

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2. If you want to modify another record(s) in the database, you must first perform a [S]earch (see "[S]earch" section) to locate and retrieve the record(s) to be modified. Press the [M] key. Follow the instructions in #1.

[D]elete

The Delete function allows you to remove an entry in a record or an entire record from the database.

1. If the record you want to delete is currently on screen and you have used <Ctrl-W> to save the entries, then press the [D]elete key and use the cursor keys and the [N] and [P] keys to highlight the record you want to delete. (If the record is one form, then all the entry fields in the record will be highlighted.) Press <Ctrl-Y> to delete the highlighted record. If you press the [Esc] key before pressing <Ctrl-Y>, no record will be deleted and the delete function will be exited.

2. If you want to delete another record(s) in the database, you must first perform a [S]earch (see "[S]earch" section above) to locate and retrieve the record(s) to be deleted. Press the [D] key. Follow the instructions in #1 above.

[B]rowse

The Browse function allows you to quickly view records contained in the database. It does not allow you to do any other operation. This function is not available for every database in IADSS. Press the [B] key and records contained in the database file will be displayed.

If you are in a database with multiple data entry forms and therefore multiple files, a submenu will be presented in which you can specify the file you wish to view and, if applicable for a file, the manner in which you want the record in the file sorted. Press <Ctrl-W> when you have completed your entries in the submenu.

When the file is presented on screen, a highlight menu bar will be positioned over one record. Use the following keys to move through the file.

- Use the [←] and [→] arrow keys to scroll the fields, to the left and the right, if the file displayed contains more fields than can be presented on one screen.
- Use the [PgUp] and [PgDn] keys to move the highlight bar up or down one full screen.
- Use the [↑] and [↓] arrow keys to move the highlight bar up and down.
- Use <Ctrl-PgUp> and <Ctrl-PgDn> to move the highlight bar to the first and last records.

Output

The Output function allows you to produce a printed copy of data, and /or create an ASCII file of the information displayed on the screen.

1. If the data record you want to output is currently on screen and you have used <Ctrl-W> to save the entries, then press the [F2] key and either press the [P]rinter key; or the [F]ile key (for ASCII file output); or the [B]oth key to produce both a printed copy and a file.

   For those forms which have more than one way of being printed (e.g., data level entry options: plot, tree, stem), dialogue windows and/or submenus will be presented. Enter the required information and then specify [P] or [F] or [B].

2. If you want to output another record(s) in a database, you must first perform a [S]earch function (see "[S]earch" section above) to locate and retrieve the record(s) to be output.

Other

Other function keys are available in specific databases in IADSS. These keys are described in the first section of each database chapter.

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Information and Decision Support System Version 2.0

INSTALLATION and PROGRAM GUIDE

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Chapter 1
INSTALLATION

This chapter describes the steps necessary to install IADSS on your hard disk. It is recommended that your have at least a 20MB hard disk. Although IADSS requires only 8 Mb of free space on the hard disk for its programs and files, you will need extra free space for information and data you enter into the system.

IADSS PROGRAM DISKS

IADSS 2.0 consists of six components, all of which are contained on the program disks. Besides these six components, there is an installation program found on the "INSTALL" disk.

Table A lists the disk names (which correspond to the component name) and the number of disks for each component. Take a moment to check that every program disk is contained in your IADSS package. For components having more than one disk (e.g., "Experiment Database"), the disks are labeled by name and number. For example, the nine Experiment Database disks are labeled EXPERIMENT DATABASE DISK 1 of 9, EXPERIMENT DATABASE DISK 2 of 9, etc. See Appendix B in this section for a complete listing of the files contained on each disk.

Table A. IADSS 2.0 DISTRIBUTION DISKS

Disk Name/Component Name	Number of disk(s)
INSTALL	1
EXPERIMENT DATABASE	9
SOIL DATABASE	3
CLIMATE DATABASE	3
MPTS SPECIALIST DATABASE	2
ABSTRACT DATABASE	5
F/FRED Models (FMOD)	1

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Before Starting

Before you begin IADSS program installation, turn on your computer and make sure you have everything you need (see the "Introduction to IADSS" section for a description of requirements).

Make backup copies of the distribution disks using the DOS "DISKCOPY" command. You will need as many blank diskettes as there are distribution diskettes. [Enter] means press the key marked 'Enter'.

If you have only one floppy disk drive and its drive letter is A:, at the DOS prompt C:\> type '**DISKCOPY A: A: [Enter]**'. If you have two floppy disk drives and their drive letters are A: and B:, at the DOS prompt C:\> type '**DISKCOPY A: B: [Enter]**'. Follow the instructions that will appear on the screen. The "source" diskette is the IADSS diskette you want to copy and the "target" diskette is one of your blank diskettes.

Store the original disks in a safe place. The copies are your working disks. If they should become damaged or destroyed, use the original disk to restore IADSS.

DOS Prompt

If, when you turn on your system, the DOS prompt looks like this: C>, change this prompt to the C:\> prompt. To do this, type '**PROMPT PG [Enter]**' as shown:

C>PROMPT PG [Enter]

The DOS prompt on your screen should now be the C:\> prompt, the backslash (\) indicating a subdirectory.

Configure Your System

A CONFIG.SYS file must be created to set up the necessary configuration for your computer system. Each time you start DOS, DOS searches the root directory of the drive it was started from for the file named CONFIG.SYS.

Your CONFIG.SYS file must have the following commands:

FILES = 22
BUFFERS = 20

for the program to work properly. The 'FILES =' command tells your computer how many files can be open at the same time. The 'BUFFERS =' command tells your computer how much memory to use for input/output buffering. If you need help to create or add these statements to a CONFIG.SYS file, refer to Appendix D in this section.

IADSS INSTALLATION

The following instructions assume your hard disk is located in drive C: and the floppy disk drive being used for installation is drive A:.

You may install IADSS in one of the two following ways.

1. Use the IADSS Install program. One of the program disks you received is labeled INSTALL and contains a user-friendly installation program. Instructions for using this disk will be found in this chapter in the section entitled "Using The Install Program."

2. Experienced DOS users may use DOS commands for IADSS installation. Instructions will be found in Appendix A. Refer to your DOS Manual for information on the use of the MD (make directory), CD (change directory), and COPY commands.

WARNING: Installing IADSS 2.0 to a directory that already has a previous version of IADSS will result in data being lost. This is because installing IADSS 2.0 copies empty data files supplied with the system diskettes and does not copy any data from existing files.

USING THE INSTALL PROGRAM

1. Insert the diskette labeled INSTALL into drive A:. If drive A: is not the current drive, make it so by typing **'A: [Enter]'**.

2. At the A:> prompt type **'INSTALL [Enter]'**. The following screen will appear.

```
IADSS Ver. 2.0 INSTALLATION

This installation program will install the needed files on
your hard disk to run the IADSS system.

INSTALLATION for IADSS Version 2.0

!!!!! WARNING !!!!!
This installation program will install IADSS Version 2.0 with NEW
data files. DO NOT install to a directory that already has a version
of IADSS. This could cause existing data to be erased.

Press any key to continue...
```

3. The default hard drive and directory is C:\IADSS. If you wish to change this drive and directory, enter the drive and directory where you want to install the system in the highlighted area shown in the screen below.

For example, you could type 'D:\IADSS2' to install the system in the hard disk drive D in a subdirectory, IADSS2.

If you want the system installed in the default drive and directory, C:\IADSS, leave the input field blank and press the [Enter] key.

```
IADSS Ver. 2.0 INSTALLATION

Disk drive and Directory name:
Blank = default ( C:\IADSS )

Enter the disk drive and directory of where IADSS
is to be installed.  Note that the directory name
is restricted to a directory 1 level from the disk
drive root.  For example  D:\IADSS2.

[Esc]=Abort
```

4. The IADSS Component menu (shown below) will be displayed listing the six IADSS components available for installation and the amount of space (in bytes) each requires.

5. Select the component(s) you want installed by using the arrow keys to move the highlight bar until the component you wish to select is highlighted. Then press the [Enter] key. (You may select as many components as you want at this time.) After each selection, a small triangular marker will appear to the left of the selected component. In the example screen below, the Experiment Database component has been selected and the highlight bar has been placed on FMOD Data Analysis.

```
IADSS Ver. 2.0 INSTALLATION

                    Installing IADSS to: C:\IADSS
                                Bytes free: 7735364
          IADSS Component Menu
  ► Experiment Database      (3,023,000 bytes)
    FMOD Data Analysis         (254,000 bytes)
    Soil Database            (1,229,000 bytes)
    Climate Database           (869,000 bytes)
    MPTS Specialist Database   (463,000 bytes)
    Abstract Database        (1,389,000 bytes)

[↑],[↓] = Move Highlight
[Enter] = Select highlighted IADSS component
[Ctrl-W] when Finished selection.

Select the IADSS components to install
You may select more than 1
```

The drive and directory where the system will be installed is displayed at the upper right corner and is designated with 'Installing IADSS to:'.

The available space on the hard disk (in bytes) is displayed below the drive and directory. The sum of the space (in bytes) required by the components you select must total less than the available space on the hard disk.

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6. Press <Ctrl-W> when you finish selecting the IADSS components you want installed and want to start the installation.

7. The following screen will appear, displaying the components you selected and prompting you to insert the IADSS component disks. Insert the IADSS diskettes having the same name as the component(s) you selected. For example, for the components selected in the screen below, the nine (9) EXPERIMENT DATABASE diskettes and the one (1) FMOD diskette will need to be inserted.

```
IADSS Ver. 2.0 INSTALLATION

                    STATUS REPORT

Experiment Database
Data Analysis Package (FMOD)

Replace Installation diskette in disk drive with IADSS diskette
Press any key when ready...

[Esc]=Abort
```

As each IADSS diskette is being read and copied to the hard disk, the program will display the message:

copying program file...

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After the files are copied from a diskette, the following message will appear:

Place next IADSS disk in disk drive
Press any key to continue...

Insert the next IADSS component diskette. The above message will continue to appear until the Install program determines that all the files needed for the component you have selected have been copied. When a selected component has been completely installed, a triangle marker will appear on the screen next to the component. The Install program ends automatically when all necessary disks have been inserted and copied.

Check Files

After using the program, you may want to look at Appendix B which lists the files for each of the subdirectories of IADSS. Refer to these listings to verify that all the files for the component(s) you selected have been properly installed.

Restart

If you are unable to complete the installation for any reason, you can restart the installation from the beginning. Any files previously installed will be overwritten. Two simple reasons for installation failure may be powerline problems or the hard disk did not have enough memory to accommodate all the files. Other possible reason for installation problems and possible corrective action can be found in Appendix C.

Error Report

If the program is aborted for any reason, an error report file, ERRORLOG.TXT, will be saved on the hard disk. View this file to determine which files were not copied.

Chapter 2
IADSS PROGRAM EXECUTION

RUN IADSS

After you have installed the programs, databases, and indices on your hard disk you are ready to begin.

Before starting, be sure you have read the "Overview of IADSS" chapter in the "Introduction" section on the conventions and screen features used in IADSS.

At the DOS prompt, C:\>, type '**CD IADSS [Enter]**', which will log you into the subdirectory containing IADSS. If you have installed IADSS in a different subdirectory, at the DOS prompt type 'CD' and the subdirectory name to get to that subdirectory.

At the DOS prompt, C:\IADSS>, type '**IADSS [Enter]**', and program execution will begin.

IADSS MASTER MENU

The system will display the following IADSS master menu which shows the ten components of the IADSS system. To choose one of the options, use the [↑] and [↓] keys to move the highlight bar to the desired option. Then press the [Enter] key or the letter key corresponding to the desired option.

```
F/FRED INFORMATION AND DECISION SUPPORT SYSTEM 2.0

                    <<  M A S T E R   M E N U  >>

                    A - EXPERIMENT DATABASE
                    B - FARM AND VILLAGE FORESTRY DATABASE
                    C - SUMMARY DATABASE
                    D - MPTS SPECIALIST DATABASE
                    E - ABSTRACTS DATABASE
                    F - SPECIES DATABASE
                    G - SOIL DATABASE
                    H - CLIMATE DATABASE
                    I - DAILY WEATHER DATABASE

                    1 - DATA ANALYSIS PACKAGE (FMOD)

Use [↑] or [↓] to highlight desired item. Press [Enter] to begin
program execution. To quit, press the [Esc] key.

[Esc]=Quit, [F1]=Help
```

Database Options

Select the option, "D - MPTS Specialist Database," "E - Abstracts Database," "G - Soil Database," or "H - Climate Database" from the IADSS Master menu to display on screen the Main menu for that database. Select "1 - Data Analysis Package (FMOD)" to display the Statistical Analysis and Graphics Program menu.

Experiment Main Menu

If you select the "A - Experiment Database" from the IADSS Master menu, the following Experiment Database Main menu will appear. When you highlight one of the options presented in this menu, a window will open to the right of the menu. This window will list forms or additional options that will become available to you if you select the highlighted option by pressing the [Enter] key. For example, if the "Experiment Information" option is highlighted, a window listing the Forms, A-K in this option will appear as it does in the sample screen below.

```
F/FRED EXPERIMENT DATABASE

                                        ------- FORMS --------
                << M A I N   M E N U >> A-> Institution
                                        B-> Cooperator
                                        C-> Trial Site
                                        D-> Socioeconomic
                EXPERIMENT INFORMATION  C-> Climate
                MEASUREMENTS            F-> Soil
                OBSERVATIONS            G-> Preparation
                GENERAL MEASUREMENTS    H-> Description
                                        I-> Factors/Treatments
                DATA ANALYSIS           J-> Planting
                UTILITIES               K-> Species

Use [↑] and [↓] to highlight desired item.  Press [Enter] to begin program
execution.

[Esc]=Exit, [F1]=Help
```

Thus, by selecting the "Experiment Information" you will be able to enter data into Information Forms A-K.

Submenus

After selecting an Experiment Database Main menu option by pressing the [Enter] key, the submenu will be presented. The forms/options on the submenu are the forms/options that were displayed in the Main menu window.

EXIT IADSS

To exit IADSS, and return to the operating system, you must first return to the F/FRED Master menu. You may return to the Master menu at any point in the program by pressing the [Esc] key a sufficient number of times (the number varies depending on where you are in the program).

Appendix A
INSTALLING IADSS USING DOS

The following instructions will enable you to create subdirectories on your hard disk for the IADSS program and files and to copy the programs and files to your hard disk using DOS commands. It is assumed that you want IADSS installed on hard disk C: and in a subdirectory named 'IADSS'. This method of installing IADSS is faster than using the Install program.

CREATE SUBDIRECTORIES

1. At the DOS prompt C>, type '**CD**' and press the [Enter] key.

   This logs you on to the root directory of the hard disk drive.

2. At the DOS prompt C:\>, type '**MD IADSS**' and press the [Enter] key.

   This creates a subdirectory, with the name IADSS.

3. At the DOS prompt C:\>, type '**CD IADSS**' and press the [Enter] key.

   This logs you into the newly created subdirectory, named IADSS and the DOS prompt should be C:\IADSS>.

4. At the DOS prompt C:\IADSS>, type the following lines, pressing the [Enter] key after each line.

   MD EXPT
   MD FMOD
   MD SOIL
   MD CLMT
   MD SPCL
   MD ABST

   This creates the subdirectories for the IADSS components.

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COPY PROGRAMS AND FILES

Use the DOS COPY command to copy the programs and files from the system disks to their respective subdirectories on your hard disk, as instructed below. Press the [Enter] key after each entry.

1. To copy the file IADSS.EXE from the INSTALL disk into C:\IADSS type:

   COPY A:IADSS.EXE C:\IADSS

   with the disk inserted in drive A:.

2. To copy all the files from the EXPERIMENT DATABASE disks into C:\IADSS\EXPT, type:

   COPY A:*.* C:\IADSS\EXPT

   for each of the 9 disks inserted in drive A:.

3. To copy all the files from the F/FRED MODELS (FMOD) disk into C:\IADSS\FMOD, type:

   COPY A:*.* C:\IADSS\FMOD

   with the disk inserted in drive A:.

4. To copy all the files from the SOIL DATABASE disks into C:\IADSS\SOIL, type:

   COPY A:*.* C:\IADSS\SOIL

   for each of the 3 disks inserted in drive A:.

5. To copy all the files from the CLIMATE DATABASE disks labeled into C:\IADSS\CLMT, type:

   COPY A:*.* C:\IADSS\CLMT

   for each of the 3 disks inserted in drive A:.

DATABASE disks into C:\IADSS\SPCL, type:

COPY A:*.* C:\IADSS\SPCL

for each of the 2 disks inserted in drive A:.

7. To copy all the files from the ABSTRACT DATABASE disks into C:\IADSS\ABST, type:

COPY A:*.* C:\IADSS\ABST

for each of the 5 disks inserted in drive A:.

Check Files

After using DOS to install IADSS, you may want to look at Appendix B which lists the files for each of the subdirectories of IADSS. Refer to these listings to verify that all the files have been properly installed.

Restart

If you are unable to copy all the necessary files for any reason, refer to Appendix B to determine which files have not been copied. You may then selectively copy the missing files.

Problems

Some common installation problems and possible corrective actions can be found in Appendix C.

Appendix B
IADSS LIST OF FILES

A complete listing of IADSS files installed on your hard disk can be found by using the DOS DIR (directory) command. This Appendix lists the IADSS subdirectory name, the files which should be in that IADSS subdirectory, and the installation diskette where the file may be found. Use this list to check that all the files for each component you have selected have been installed on your hard disk. If any files are missing, insert the component disk and use the DOS DIR command to see if the file is found on the disk. If it is, follow the instructions found in Appendix A to install the missing file(s). If it is not, contact the F/FRED Project.

For the Soil Database and Abstract Database, several of the data files were too large to fit on one disk and thus were split and stored on two disks. When you install these databases, the files should appear in your subdirectory as two files. When, however, you first run the Soil and Abstract Database programs, the two split files will be joined into one and will thereafter appear in the subdirectory listing under one name. For example, the ABSTRACT data files BIB1.DBF and BIB2.DBF will be listed as BIB.DBF after running the Abstract Database program.

For the Soil Database, the Abstract Database and the MPTS Specialist Database, the index files will be created when these programs are run for the first time. These index files are not on the installation diskettes.

IADSS SUBDIRECTORY

The following listing assumes IADSS was installed on hard disk C: in a subdirectory called IADSS.

Subdirectory	contains files	from diskette
C:\IADSS	IADSS.EXE	INSTALL

NOTE: Also listed in the IADSS subdirectory will be the subdirectories for the IADSS components you have installed. If you installed all six components, these subdirectories will be listed when you use the DOS DIR command. In this case, the listing would appear as shown below.

```
C:\IADSS>dir

 Volume in drive C is
 Directory of  C:\IADSS

.            <DIR>      10-24-89  10:51a
..           <DIR>      10-24-89  10:51a
ABST         <DIR>      10-24-89  10:52a
SPCL         <DIR>      10-24-89  10:52a
CLMT         <DIR>      10-24-89  10:52a
SOIL         <DIR>      10-24-89  10:52a
EXPT         <DIR>      10-24-89  10:52a
FMOD         <DIR>      10-24-89  10:52a
IADSS    EXE    15296  10-17-89   9:28a
        9 File(s)   7514112 bytes free

C:\IADSS>
```

ABSTRACT DATABASE

These files are in the Abstract Database subdirectory and are from diskettes labeled ABSTRACT DATABASE.

Subdirectory	contains files	from diskette number
C:\IADSS\ABST	BIBMAIN.EXE	1 of 5
	ERROR.TXT	1 of 5
	BIB1.DBF	2 of 5
	BIB2.DBF	3 of 5
	ABS1.DBF	4 of 5
	ABS2.DBF	5 of 5

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MPTS SPECIALIST DATABASE

These files are in the MPTS Specialist Database subdirectory and are from diskettes labeled MPTS SPECIALIST DATABASE.

Subdirectory	contains files	from diskette number
C:\IADSS\SPCL	SPECMAIN.EXE	1 of 2
	ERROR.TXT	1 of 2
	MAILIST.DBF	2 of 2

CLIMATE DATABASE

These files are in the Climate Database subdirectory and are from diskettes labeled CLIMATE DATABASE.

Subdirectory	contains files	from diskette number
C:\IADSS\CLMT	CLIMMAIN.EXE	1 of 3
	CLDATA01.DBF	2 of 3
	CLDATA02.DBF	2 of 3
	CLDATA03.DBF	2 of 3
	CLDATA04.DBF	2 of 3
	CLDATA05.DBF	2 of 3
	CLDATA07.DBF	2 of 3
	CLDATA08.DBF	2 of 3
	CLDATA09.DBF	2 of 3
	CLDATA10.DBF	2 of 3
	CLDATA11.DBF	2 of 3
	CLDATA12.DBF	2 of 3
	ERROR.TXT	2 of 3
	CLIMATTR.DBF	3 of 3
	CLIMCTRY.DBF	3 of 3
	CLIMSTAT.DBF	3 of 3
	CLDATA01.NDX	3 of 3
	CLDATA02.NDX	3 of 3
	CLDATA03.NDX	3 of 3
	CLDATA04.NDX	3 of 3
	CLDATA05.NDX	3 of 3
	CLDATA07.NDX	3 of 3
	CLDATA08.NDX	3 of 3
	CLDATA09.NDX	3 of 3
	CLDATA10.NDX	3 of 3
	CLDATA11.NDX	3 of 3
	CLDATA12.NDX	3 of 3
	CLIMATTR.NDX	3 of 3
	CLIMCTRY.NDX	3 of 3
	CLIMSTAT.NDX	3 of 3

SOIL DATABASE

These files are in the Soil Database subdirectory and are from diskettes labeled SOIL DATABASE.

Subdirectory	contains files	from diskette number
C:\IADSS\SOIL	SOILMAIN.EXE	1 of 3
	PROFLAYR.DBF	2 of 3
	SOILMAIN.OV1	3 of 3
	PROLAYR1.DBF	3 of 3
	PROFHEAD.DBF	3 of 3
	SCSCODES.DBF	3 of 3
	COUNTRY.DBF	3 of 3
	SORDER.DBF	3 of 3
	SUBORDER.DBF	3 of 3
	SUBGROUP.DBF	3 of 3
	SOILVAR.DBF	3 of 3

EXPERIMENT DATABASE

These files are in the Experiment Database subdirectory and are from diskettes labeled EXPERIMENT DATABASE.

Subdirectory	contains files	from diskette number
C:\IADSS\EXPT	EXPTMAIN.EXE	1 of 9
	INFOMAIN.EXE	1 of 9
	MEASMAIN.EXE	2 of 9
	MEASMAIN.OV1	3 of 9
	OBSMAIN.EXE	4 of 9
	XYMAIN.EXE	5 of 9
	XYMAIN.OV1	6 of 9
	INFOMAIN.OV1	6 of 9
	ANALYSIS.EXE	7 of 9
	UTILMAIN.EXE	8 of 9
	UTILMAIN.OV1	9 of 9
	ERROR.TXT	9 of 9
	FORMA.DBF	9 of 9
	FORMC.DBF	9 of 9
	FORMD.DBF	9 of 9
	FORME.DBF	9 of 9
	FORMH.DBF	9 of 9
	FORMI1A.DBF	9 of 9
	FORMI1B.DBF	9 of 9
	FORMI2.DBF	9 of 9
	FORMI3.DBF	9 of 9
	FORMK.DBF	9 of 9
	FORML1.DBF	9 of 9
	FORML2A.DBF	9 of 9
	FORML2B.DBF	9 of 9
	FORML2C.DBF	9 of 9
	FORMM1.DBF	9 of 9

Subdirectory	contains files	from diskette number
C:\IADSS\EXPT	FORMM2.DBF	9 of 9
	FORMNO.DBF	9 of 9
	FORMN1.DBF	9 of 9
	FORMN2.DBF	9 of 9
	FORMNF1.DBF	9 of 9
	FORMNF2.DBF	9 of 9
	FORMO1.DBF	9 of 9
	FORMO2.DBF	9 of 9
	FORMP1.DBF	9 of 9
	FORMP2.DBF	9 of 9
	FORMQ.DBF	9 of 9
	FORMR.DBF	9 of 9
	FORMS.DBF	9 of 9
	FORMT.DBF	9 of 9
	FORMU.DBF	9 of 9
	FORMX.DBF	9 of 9
	FORMX1.DBF	9 of 9
	FORMX2.DBF	9 of 9
	FORMY.DBF	9 of 9
	FORMY1.DBF	9 of 9
	FORMY2.DBF	9 of 9
	HELP.DBF	9 of 9
	ID.DBF	9 of 9
	NETWORK.DBF	9 of 9
	NTWKLINK.DBF	9 of 9
	SPECIES.DBF	9 of 9
	FORMA.NDX	9 of 9
	FORMI1A.NDX	9 of 9
	FORMI1B.NDX	9 of 9
	FORMI2.NDX	9 of 9
	FORMI3.NDX	9 of 9
	FORMK.NDX	9 of 9
	FORML2A.NDX	9 of 9
	FORML2B.NDX	9 of 9
	FORML2C.NDX	9 of 9
	FORMM1.NDX	9 of 9
	FORMM2.NDX	9 of 9
	FORMM2P.NDX	9 of 9
	FORMNO.NDX	9 of 9
	FORMN1.NDX	9 of 9
	FORMN1P.NDX	9 of 9
	FORMN2.NDX	9 of 9
	FORMN2P.NDX	9 of 9
	FORMNF1.NDX	9 of 9
	FORMNF2.NDX	9 of 9
	FORMNF2P.NDX	9 of 9
	FORMO1.NDX	9 of 9
	FORMO2.NDX	9 of 9
	FORMO2P.NDX	9 of 9
	FORMP1.NDX	9 of 9
	FORMP2.NDX	9 of 9
	FORMP2P.NDX	9 of 9
	FORMQ.NDX	9 of 9
	FORMQP.NDX	9 of 9

Subdirectory	contains files	from diskette number
C:\IADSS\EXPT	FORMR.NDX	9 of 9
	FORMS.NDX	9 of 9
	FORMT.NDX	9 of 9
	FORMU.NDX	9 of 9
	FORMX.NDX	9 of 9
	FORMX1.NDX	9 of 9
	FORMX2.NDX	9 of 9
	FORMX2P.NDX	9 of 9
	FORMY.NDX	9 of 9
	FORMY1.NDX	9 of 9
	FORMY2.NDX	9 of 9
	FORMY2P.NDX	9 of 9
	HELP.NDX	9 of 9
	NETWORK.NDX	9 of 9
	NTWKLINK.NDX	9 of 9
	SPECIES.NDX	9 of 9

F/FRED Models (FMOD)

These files are in the FMOD subdirectory and are from the diskette labeled 'F/FRED MODELS (FMOD).

Subdirectory	contains files	from diskette number
C:\IADSS\FMOD	FMOD.EXE	1 of 1
	ATT.BGI	1 of 1
	CGA.BGI	1 of 1
	EGAVGA.BGI	1 of 1
	HERC.BGI	1 of 1
	IBM8514.BGI	1 of 1
	PC3270.BGI	1 of 1
	GOTH.CHR	1 of 1
	LITT.CHR	1 of 1
	SANS.CHR	1 of 1
	TRIP.CHR	1 of 1

NOTE: The .BGI files designate graphics drivers and only one is needed. The one you need depends on the type of graphics adapter and monitor you have on your computer. All the drivers have been included so that you may be able to install the system in several computers with different display systems. Unused drivers may be deleted.

NOTE: The .CHR files are font files and at this time only the TRIP.CHR is used. However, future updates of this program may utilize the other fonts so they are included here for future use. The unused fonts, however, may be deleted.

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Appendix C
INSTALLATION PROBLEMS AND SOLUTIONS

If you have problems installing the system using the Install program or using DOS commands check the following:

DOS PROBLEMS

Error message	Problem/Solution
"Insufficient disk space"	Your hard disk does not have enough bytes free. Check the hard disk requirements in this manual's "System Requirements" section, and make sure your hard disk has enough bytes free.
"Unable to create directory"	You have tried to create a directory (MD) that already exists.
"Invalid drive specification"	When specifying a disk drive letter, you specified a disk drive that does not exist. For example you typed E: when your computer had only disk drives A, B, C, and D.

NOTE: When copying files from the floppy disks, make sure you are in the correct directory. If you are not in the correct directory, files will be copied to the wrong directories and IADSS will not be able to find them.

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INSTALL PROGRAM PROBLEMS

Error message	Problem/Solution
"Not enough memory"	Your computer does not have enough memory (RAM) free. This could be caused by too many Terminate and Stay Resident (TSR) programs or drivers (.SYS) programs, such as Virtual Disk (VDISK) programs, or cache programs that may reserve RAM in your computer. To free RAM remove these programs and drivers.
"Wrong version of DOS"	Your computer is using the wrong version of DOS. Check the DOS requirements in this manual's "System Requirements" section. To check the version of DOS your computer is using type VER.
"Disk does NOT have enough space"	Your hard disk does not have enough bytes free. Check the hard disk requirements in this manual's "System Requirements" section. Make sure your hard disk has enough bytes free.

Appendix D
CONFIGURE SYSTEM FILE

The CONFIG.SYS file is the first file read by the operating system when your computer is turned on. This file contains instructions for configuring your computer system in a particular way.

If the file is not found, the computer will be set to its default values.

WARNING: IADSS 2.0 WILL NOT WORK WITH THE DOS DEFAULT SETTINGS.

To create the CONFIG.SYS file to IADSS specifications do the following.

CREATE CONFIG.SYS

1. At the C> prompt, type "CD\" and press the [Enter] key.

2. At the C:\> prompt, type "COPY CON CONFIG.SYS" and press the [Enter] key.

3. Enter the following statement lines, pressing the [Enter] key after each line:

   FILES = 22
   BUFFERS = 20
   ^Z

   ^Z is the end-of-file marker. It is usually created by pressing [F6]. If that does not work, it can also be created by pressing [Z] while holding down [Ctrl].

4. When the file is created, the screen will display the message " #1 file(s) copied" and the C> prompt will reappear.

5. Turn off the computer, then turn it back on again to have the CONFIG.SYS command take effect.

Information and Decision Support System Version 2.0

EXPERIMENT DATABASE

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Chapter 1
INTRODUCTION

PROGRAM DESCRIPTIONS

The Experiment Database is the prime residence for experiment minimum data sets. The main modules of the Experiment database control information, measurement, observation, data analysis, and utility functions.

Experiment Information

This module allows you to access Experiment Database Forms A-K. In these forms you can define data, enter experiment design information, treatment factors/levels, and site-specific data (location, socio-economic conditions, soil, climate and management). You can also edit, delete, display, and print the experiment data contained in these forms.

Experiment Measurements

This module allows you to access Experiment Database Forms L-Q. In these forms you can record height, diameter, tree form, foliage and wood biomass, as well as daily weather, soil and tree-litter measurements. You can also edit, delete, display, and print the experiment data contained in these forms.

Experiment Observations

This module allows you to access Experiment Database Forms R-U. In these forms you can record phenology, damage, and irrigation methods and log experiment observations. You can also edit, delete, display and print the experiment data contained in these forms.

General Measurements

This module allows you to access Experiment Database Forms X and Y. In Form X you can define and enter up to 12 additional variables of either numeric or nominal data not provided for in the other measurement forms. In Form Y you can define and enter up to six pairs of wet- ant dry-weight data not provided for in the other biomass measurement forms. You can also edit, delete, display and print experiment data contained in these forms.

Data Analysis

This module allows you to select experiment data from the measurement and information forms to create analysis data sets. The data sets created can be used as input to FMOD (see *FMOD User's Manual*) for immediate analysis or as text files that can be edited for use with other data analysis programs.

Utilities

This module has five functions which allow you to delete, back up and restore large blocks of data from the database, reindex the database index files, and group experiments within the database.

FUNCTION KEYS

The function keys available in the Experiment Database are as follows.

[A]dd	-	Enter data or information into a form.
[S]earch	-	Specify search criteria to locate a particular record(s) in the database.
[D]elete	-	Remove record(s) from the database.
[M]odify	-	Update and change data and information contained in record(s) in the database.
[B]rowse	-	View the contents of the database file. For some Experiment forms, a submenu will be presented in which you may specify the manner in which the records are to be sorted.
[F2]	-	Output a data form to the [P]rinter or a text [F]ile or [B]oth.
[F3]	-	Change to another experiment or enter a new experiment.

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MODULE SELECTION

Select "A - Experiment Database" from the F/FRED Master menu. To access Forms A-U, select the module option from the Experiment Database Main menu which contains the forms you need. See following screen.

```
F/FRED EXPERIMENT DATABASE

                                        ------- FORMS --------
                << M A I N   M E N U >> A-> Institution
                                        B-> Cooperator
                                        C-> Trial Site
                                        D-> Socioeconomic
                EXPERIMENT INFORMATION  C-> Climate
                MEASUREMENTS            F-> Soil
                OBSERVATIONS            G-> Preparation
                GENERAL MEASUREMENTS    H-> Description
                                        I-> Factors/Treatments
                DATA ANALYSIS           J-> Planting
                UTILITIES               K-> Species

Use [↑] and [↓] to highlight desired item.  Press [Enter] to begin program
execution.

[Esc]=Exit, [F1]=Help
```

To view the forms contained within a module, move the highlight bar to a module option. A window listing the forms will appear to the right of the highlighted option (see screen above). Select an option by pressing the [Enter] key. The submenu shown in the window will then appear on screen. For example, to access any of the forms, A-K, highlight the "Experiment Information" option and press the [Enter] key.

EXPERIMENT ID

In the Experiment Database, data sets for each experiment are stored and retrieved by an Experiment ID. This ID is a unique combination of two letters and two digits.

Whenever you enter a new experiment in the Experiment Database, you must enter an ID code.

The two letters of the ID are called the "Institution ID" and should reflect, in a unique way, the name of the institute conducting the experiment.

The two digits of the ID define the experiment, and usually indicate a particular site or trial/test number.

Example ID

TK-02. This Experiment ID uniquely identifies the institute, Kasetsart University ('K' of the code), in Bangkok, Thailand ('T' of the code) and is for experiment #2 ('02' of the code).

IF-21. This experiment ID uniquely identifies the institute, Forest Research & Development Center ('F' of the code), in Indonesia ('I' of the code) and is for experiment #21 ('21' of the code).

Enter New ID

If no experiments have been entered previously into the database, do the following after selecting Experiment Database from the F/FRED Master menu.

1. When the Experiment Database Main menu is presented, highlight and select the "Experiment Information" module.

2. The Experiment Database Information submenu will be presented.

```
EXPERIMENT DATABASE INFORMATION

                    << S U B  M E N U >>

                    FORM
                      A-> Institute Information
                      B-> Cooperator Information
                      C-> Trial Site Information
                      D-> Site Descriptor - Socioeconomic
                      E-> Site Descriptor - Climate
                      F-> Site Descriptor - Soil
                      G-> Experiment Site Preparation
                      H-> Experiment Description
                      I-> Experiment Factors/Treatments
                      J-> Experiment Planting
                      K-> Tree Species

Please enter the Experiment ID:
Press <Ctrl-W> to begin program execution.

[Esc]=Exit, [Home]=Show IDs
```

3. At the bottom of this screen, enter your unique experiment ID in the highlighted data entry field by typing in the two letters that are your institute's ID. Then type in (without entering a space or the hyphen) the two digits representing the experiment for which you will enter a data set.

   NOTE: If your institute has not used IADSS before, select the Institute ID letters with care. This ID should always be used by everyone in your institute entering data sets into the Experiment Database and must be unique from other institutions using IADSS.

4. Press <Ctrl-W>. The Experiment ID code will appear at the top right of the screen, and all data entered into the Experiment Database will become part of the data set for that Experiment ID.

Change Experiment ID

If an experiment data set (or data sets) currently resides in the database, when you highlight and select any of the four information modules from the Experiment Database Information submenu, the following window will be presented in the form screen.

```
EXPERIMENT DATABASE INFORMATION                                ID: TK-01
<< S U B - M E N U >>

                FORM

  You are currently in the experiment:
    ID  : TK-01
    Name: 1987 Humid/Sub-humid Zone Network Trial
    Principal Investigator: BHUMIBHAMON, SUREE
    Planting date (mm/dd/yy): 10/15/87

  Press [F3] to change experiment or
  any other key to continue...

                K->Tree Species

Use [↑] and [↓] to highlight desired item.  Press [Enter] to begin program
execution.
[Esc]=Exit, [F3]=Change Experiment
```

The Experiment ID displayed in this window will be the ID of the experiment last worked on by a user in the Experiment Database. If you want to work with this ID, press any key and the program will continue.

To enter data for a new experiment or to change to another experiment residing in the database, do the following.

1. Press the [F3] key. The bottom portion of the screen will display the same highlighted data fields as seen in the example screen shown in the section in this chapter entitled "Enter New ID".

2. Enter the Experiment ID code. If you want to enter data for an experiment already residing in the database and do not remember or know its ID, press the [Home] key for a listing of all Experiment Database IDs.

3. Press the [Enter] key and select a form and the function you wish to use.

   NOTE: It is not necessary to complete all data entries for an experiment at one time. As long as you save your data entries before you exit the database, you can, at a later date, continue entering the data set for the experiment by entering its experiment ID as described in the section "Change Experiment ID".

SAME INSTITUTE/DIFFERENT EXPERIMENT

Once you have entered an ID for your institute and completed Form A, Institute Information, whenever after you enter that ID (e.g.,'TK'), the Experiment Database program will complete Form A with the same data you first entered into Form A. You may change this information using the [M]odify function.

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Chapter 2
INFORMATION FORMS A - K

INTRODUCTION

This chapter describes and explains the screens presented for Forms A-K, when "Experiment Information" is selected from the Experiment Database Main menu.

Information Forms A, B, C

These forms contain, respectively, institution; cooperator and trial site; and weather station information.

Site Descriptor Forms D, E, F

These forms contain, respectively, socioeconomic; climate; and soil descriptors of the trial site data.

Experiment Forms G, H, I, J

These forms contain, respectively, experiment site preparation; descriptive; factors/treatment; and planting data.

Species Form K

This form contains information about the tree and seeds used in an experiment.

Highlighted areas on the screens for Forms A-K indicate where data may be entered. Press the [Enter] key after each entry. Press <Ctrl-W> to save all entered data. If you need assistance while in a form, press the Help Key, [F1], and messages giving additional information will be presented.

NOTE: If you use the [Esc] key in a data set form after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

SUBMENU FOR FORMS A-K

After selecting the "Experiment Information" module option from the Experiment Database Main menu and entering, if necessary, an Experiment ID, the following submenu will appear. Move the highlight bar until the form you want is highlighted and then press the [Enter] key.

```
EXPERIMENT DATABASE INFORMATION                                ID: TK-01

                          << S U B M E N U >>

                    FORM
                     A->Institution Information
                     B->Cooperator Information
                     C->Site Information
                     D->Site Descriptor - Socioeconomic
                     E->Site Descriptor - Climate
                     F->Site Descriptor - Soil
                     G->Experiment Site Preparation
                     H->Experiment Description
                     I->Experiment Factors/Treatments
                     J->Experiment Planting
                     K->Tree Species

Use [↑] and [↓] to highlight desired item.  Press [Enter] to begin program
execution.

[Esc]=Exit, [F3]=Change Experiment
```

Form I Submenu

When Form I is selected, a second submenu (shown below), will appear.

```
SUBMENU
  1-> Treatment Factors and Level
  2-> Treatment Combinations
  3-> Experiment Design
[Esc]=Exit,[↑],[↓]=Move, [Enter]=Select
```

Select Forms I-1, I-2, and I-3 (Option 1, 2, 3, respectively) from this submenu by moving the highlight bar to the desired form and then pressing the [Enter] key.

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```
FORM A: Institution Information                                   ADD

                                                          ID: TK-01
  Institution Name: Faculty of Forestry, Kasetsart University

   Mailing Address: Faculty of Forestry
                    Kasetsart University
                    50 Paholyothin Road
                    Bangkhen, Bangkok 10903
          Country: Thailand

            Telex: 21957 RECOFTC TH      Cable:

        Telephone: 579-0171

              Fax:

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM A: INSTITUTION INFORMATION

If the first two characters of the Experiment ID assigned to each experiment at that institute are the same, information for Form A needs to be entered only once for each institute. For example, if for the institute XY, a user assigns "XY" as the first two characters of every experiment ID (e.g., XY-01, XY-02, XY-03, etc.), then every Form A, after the entry of the XY-01 information, will be completed by the program.

Institution Name

Enter the name of the institution conducting the experiment. A specific department or division can be added for clarity. Acronyms should follow the complete spelling of names and should be enclosed in parentheses.

Mailing Address

Enter the complete street address with information adequate to deliver packages and messages, as well as a post office box or other information needed to deliver regular mail; include intra-city zip or other codes, if relevant.

Country

Enter the complete, unabbreviated name of the country in which the experiment is being conducted.

Telex, Cable, Telephone & Fax

Enter full codes; include all international, country, and city codes.

```
FORM B: Cooperator Information                                   ADD

                                                              ID: TK-01
  Principal Investigator Name;
      Family: Bhumibhamon          First: Suree
  Other Researchers:
            Vimal Thavorn
            Damrong Piptumttanakul

   Institute Name:

         Address:

         Country:
           Telex:                  Cable:
       Telephone:
             Fax:

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM B: COOPERATOR INFORMATION

Principal Investigator Name

Enter the name of the individual responsible for the experiment.

Other Researchers

Enter the names of other scientists participating in the experiment.

Institution and Address of Principal Investigator

If the institution is different from that described in Form A, enter the name and address of the institution with which the principal investigator is affiliated.

```
FORM C: Trial Site Information                                   ADD

                                                          ID: TK-01
Site Name: LAO KRATING PLANTATION
Site ID  : LAOKR01

Elevation (m): 150          Aspect (degrees from North): -9
Latitude  (deg): 13  (min): 30    Direction (N,S): N
Longitude (deg): 101  (min): 32   Direction (W,E): E

Trial Site Topography
   Slope Gradient (percent): 3
   Slope Position (U=upper, M=middle, L=lower): M

General Topography
   Slope Gradient (percent): 3
   Length of Slope (1= <100m, 2=100-500m, 3= >500m): 2

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM C: TRIAL SITE INFORMATION

Site Name

Enter the name of the site. This name must be used for only one location in the country.

Site ID

Enter a unique ID, with a maximum of 7 characters. It is suggested that you use the first five letters of the site name plus two digits.

NOTE: When you enter the Site Name, the program will enter, as a default, the first five characters of the Site Name into the Site ID field. You may then enter two digits after these 5 characters, or if you wish, enter another ID.

Elevation

Enter the site elevation above mean sea level, in meters.

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Aspect

Enter the direction toward which the topography of the experiment area faces, measured clockwise from due north. For example, due east is 090, south is 180, west is 270, and north is 360. If the topography is level, enter 0 (zero).

Latitude & Longitude

Enter degrees, minutes, and direction (from the equator for latitude and from the Greenwich meridian for longitude).

Trial Site Topography

Slope Gradient. Enter average slope (in percent) of the trial site as a whole. If there is no slope, enter 0 (zero).

Slope Position. Determine and enter the position on which the trial site lies when it is divided and classified into upper, middle, and lower thirds. If the slope gradient is 0, leave the position blank.

General Topography

Slope Gradient. Enter the average slope (as a percent) of the area surrounding the experiment. If there is no slope, enter 0 (zero).

Length of Slope. Enter one of the listed codes for length of slope:

1 = <100m, 2 = 100-500 m, or 3 = >500m.

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```
FORM D: Site Descriptor - Socioeconomic                                  ADD

                                                                    ID: TK-01
 Village Name: BAN LAD KRATING      Village ID: BAN LAD

 Land Ownership (P=Public, R=pRivate): P

 Proximity of nearest village (km): 2  nearest household (km): 1
 Proximity of nearest public road (km): 0
 Primary surrounding land use (C=Crop, F=Forest, P=Pasture): F
   Three most common species:          1.
                                       2.
                                       3.

 Grazing pattern adjacent to plot (T=Tended, U=Untended): U
 Extent of animal damage (N=Nil, L=Little, A=Appreciable)..: N

 Plot Area Protection (Y/N) Fencing: Y  Guards: Y  Agreement: Y
 Plot observation by researchers/guards (D=Daily, W=Weekly, B=Biweekly): B

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM D: SITE DESCRIPTOR - SOCIOECONOMIC

Village Name

Enter the name of the village. If possible, use the village name found in the Farm and Village Forestry Database. If it is not listed there, use the village closest to the experiment site.

Village ID

Enter a unique ID code. It is suggested you use the first seven letters of the village name.

NOTE: When you enter the Village Name, the program will enter, as a default, the first seven characters of the Village Name into the Village ID field. To keep the default ID, press the [Enter] key, or if you wish, enter another ID.

Land Ownership

"Public" (P) means belonging to any unit of the government. "Private" (R) means belonging to any individual, family, or privately-owned business organization. Enter 'P' or 'R'.

Proximity of Nearest Village, Household and Public Road

Enter the distance (by trail or road), in km, to the nearest occupied village and house and the distance to the nearest public road.

Primary Surrounding Land Use

Enter 'C', 'F', or 'P' to designate the principal use of the land surrounding the experiment area at time of recording.

Grazing Pattern

Enter 'Tended' or 'Untended'. Classify grazing pattern as 'tended' only if livestock movement is adequately controlled, either by a person or a fence.

Extent of Animal Damage

Enter the option, 'N', 'L', or 'A', which best describes the amount of damage due to livestock.

Plot Area Protection

Enter either 'Y' for yes or 'N' for no for the three protective measures.

Plot Observation

Enter 'D', 'W', or 'B' to designate the frequency of observation visits to the experiment area.

FORM E: Site Descriptor - Climate ADD

ID: TK-01

Climate Station Name: LAO KRATING PLT.
Climate Station ID : LAO KRA Years of Record: 10
Latitude (deg): 13 (min): 30 Direction (N,S): N
Longitude (deg): 101 (min): 32 Direction (W,E): E
Elevation (m): 150 Distance from Experiment Site (km): 5.0

Mo	MaxT(C)	MinT(C)	Precip(mm)	Mo	MaxT(C)	MinT(C)	Precip(mm)
Jan	35.1	14.1	55	Jul	36.6	22.4	149
Feb	37.2	19.0	22	Aug	35.6	23.0	200
Mar	39.6	19.4	51	Sep	36.0	22.4	242
Apr	39.6	22.8	71	Oct	35.6	21.4	219
May	38.5	24.7	102	Nov	36.3	17.4	36
Jun	36.5	23.1	97	Dec	35.5	13.3	-9
				Mean			

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM E: SITE DESCRIPTOR - CLIMATE

Climate Station Name

Enter the name of the nearest or most useful climatological station with more than six years of records.

Climate Station ID

Enter a unique ID code. It is suggested you use the first seven letters of the station name. If the name has less than seven letters, leave the remaining spaces blank.

NOTE: When you enter the Climate Station Name, the program will enter, as a default, the first seven characters of the Climate Station Name into the Climate Station ID field. To keep the default ID, press the [Enter] key, or if you wish, enter another ID.

NOTE: If the same Climate Station is used for different experiments, use the same Climate Station ID. This allows you to link your experiment with a Climate Station already defined in the database for another experiment. If the station name, ID, and data have already been entered into the database, then in Form E you only need to enter the Station ID and press <Ctrl-W>. The program will then complete the form from the information contained in the database for that ID.

Years of Records

Enter the number of years records have been kept at the named station.

Latitude and Longitude

Enter degrees, minutes, and direction of station (from the equator for latitude and from the Greenwich meridian for longitude).

Elevation

Enter the elevation of the station, in m, above mean sea level.

Distance from Experiment Site

Enter the straight-line distance, in km, of the climatological site from the experimental area.

Temperatures and Precipitation

Enter the long-term, monthly mean maximum (MaxT) and minimum (MinT) temperatures, in degrees Celsius. Enter the mean monthly precipitation, in mm.

Calculating Mean Monthly Temperatures. If the long-term monthly means for the station are not available, their calculation requires two steps, as follows.

1. Calculate the monthly means for each year. For each month of each year, sum the values (maximum and minimum temperature) for every day recorded. Divide each sum by the number of days recorded (a maximum of 31). Repeat for all available or desired years, but at least seven years should be calculated.

2. Calculate the long-term mean temperature. For each month, sum the values (maximum and minimum temperature) for all the years. Divide each sum by the number of years of records for that month. Enter the mean MaxT and MinT values in Form E.

Calculating Mean Monthly Precipitation. If the mean monthly precipitation values are not available, calculate them as follows.

1. Sum the total precipitation for each month of each year for the life of the station. Use at least seven years of data.

2. Divide each month's sum by the number of years of records. Enter the mean precipitation values for each month in Form E.

NOTE: IADSS will calculate the annual mean temperatures and total precipitation from the entered data.

CAUTION: Mean monthly maximum and minimum temperature and mean monthly precipitation are used in the Data Analysis program. Therefore, if you do not have actual data, leave these fields blank.

```
                                                                    ADD
FORM F:  Site Descriptor - Soil

  Soil Pedon ID: S87FN87                                          ID: TK-01
  Soil Classification (Family Level of Soil Taxonomy):
       Clayey-skeletal, Kaolinitic Isohyperthermic Oxic Paleutult

  Soil Order: Ultisol
  Soil Moisture Regime...(by Soil Taxonomy):
  Soil Temperature Regime(by Soil Taxonomy): Isohyperthermic
  Soil Parent Material: Residuum from Shale Material
  Soil...        SURFACE                    SUBSOIL
     Texture.: Clay loam                   Clay
     Drainage: Well drained                Well drained
     Color...: Brown to dark brown         Yellowish Brown
     pH......:
  Depth to impermeable layer (cm):
  Special Problems (acidity, erosion, salinity):
      Erosion slightly,0.5

 Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM F: SITE DESCRIPTOR - SOIL

Soil Pedon ID

Enter the assigned 7-character Soil Pedon ID Number if analyzed by the U.S. National Soils Survey Laboratory. If not, leave blank.

Soil Classification

Enter the soil classification using the Soil Taxonomy classification system (use the soil family level, if possible). If an alternative system is used, specify the system in the "Special Problems" field.

Soil Order

Enter a soil order. Choose one of the following soil orders.

Soil Order		Description
Alfisol	-	Soils with a clayey B horizon and exchangeable (Ca+Mg+K+Na) saturation greater than 50% calculated from neutral NH4OAc-CEC.
Ultisol	-	Soils with a clayey B horizon and base saturation less than 50%. They are acidic, leached soils from humid areas of the tropics and subtropics.
Oxisol	-	Oxisols are strongly weathered soils but have very little variation in texture with depth. Some strongly weathered, red, deep, porous oxisols contain large amounts of clay-sized Fe and Al oxides.
Vertisol	-	Dark clay soils containing large amounts of swelling clay minerals (smectite). The soils crack widely during the dry season and become very sticky in the wet season.
Mollisol	-	Prairie soils formed from colluvial materials with dark surface horizon and base saturation greater than 50%, dominating in exchangeable calcium.
Entisol	-	Soils with little or no horizon development in the profile. They are mostly derived from alluvial materials.
Inceptisol	-	Young soils with limited profile development. They are mostly formed from colluvial and alluvial materials. Soils derived from volcanic ash are considered a special group of Inceptisols.
Aridisol	-	Soils of acid region, such as desert soils. Some are saline.
Spodosol	-	Soils with a bleached surface layer (A2 horizon) and an alluvial accumulation of sesquioxides and organic matter in the B horizon. These soils are mostly formed under humid conditions and coniferous forest in the temperate region.
Histosol	-	Soils rich in organic matter such as peat and muck.

All soil orders listed, with the exception of Spodosols, occur in tropical regions. Ultisols and Oxisols are the most abundant soils in the humid tropics, whereas Alfisols soils occur widely in the sub-humid and semi-arid regions.

Soil Moisture Regime

Enter one of the following soil moisture regime.

Regime	Description
Aquic	- In most years, the soil is saturated with oxygen-depleted water at some season of biologic activity, but the water table may be lower in another season.
Udic	- In most years, the soil moisture control section is never dry in any part for as long as 90 cumulative days, but it is not aquic.
Ustic	- In most years, the soil moisture control section is dry in some part for more than 90 cumulative days, but it is dry for less than half the growing season in all parts in the temperate or middle latitudes. In the tropics or lower latitudes, the moisture control section is moist in some part for more than 90 consecutive days in most years, but may be dry in all parts for more than 90 days, or even for more than 180 days, cumulative.
Xeric	- In six or more years out of 10, the moisture control section is continuously moist for more than 45 days in all parts in winter and is continuously dry in all parts in summer for more than 45 days, and the soil temperature is thermic, mesic, or frigid.
Aridic/Torric	- In most years, the soil moisture control section is dry in all parts more than half the growing season and is not moist in some part for as long as 90 consecutive days during the growing season.

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Soil Temperature Regime

Enter one of the following soil temperature regime. The soil temperature regimes are categorized by mean annual soil temperature.

Regime		Description
Pergelic	-	< 0 degrees Celsius (permafrost or dry frost is present)
Cryic	-	0 to 8 degrees Celsius
Frigid	-	0 to 8 degrees Celsius (warmer than cryic summer temperatures)
Mesic	-	8 to 15 degrees Celsius
Thermic	-	15 to 22 degrees Celsius
Hyperthermic	-	> 22 degrees Celsius

In tropical and subtropical areas, where the mean winter and summer soil temperatures generally do not differ by more than 5 degrees Celsius, the 'iso' prefix is added to the nomenclature of the warmer temperature regimes. For example, Isopergelic.

Soil Parent-Material

Enter the soil parent-material as determined by a soil taxonomy specialist. If detailed information is not available, enter one of the following:

Igneous, Sedimentary, Metamorphic, Unconsolidated.

Soil Texture

Enter the soil texture. If laboratory information is not available, enter one of the following:

Sandy, Loamy sand, Sandy loam, Loam, Silt loam, Clay loam, Light clay, Heavy clay.

Soil Drainage

Enter the soil drainage. If detailed information is not available, enter one of the following:

Well drained, Moderately drained, Poorly drained, Seasonally waterlogged.

B'

Soil Color

Enter the soil color. If detailed information is not available, enter one of the following:

```
White, Grey, Yellow, Orange, Red, Brown, Black, Mottled.
```

Soil Depth (to impermeable layer)

Enter the soil depth (to impermeable layer). If detailed information is not available, enter one of the following:

```
< 25cm, 25-50cm, 50-100cm, > 100cm.
```

Ph Level

Enter the PH level. If actual measurements are not available, enter one of the following:

```
< 4.5, 4.5-6.0, 6.1-7.5, > 7.5.
```

Special Problems

Describe any soil conditions that may affect the experiment.

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```
FORM G: Experiment Site Preparation                                   ADD

                                                                  ID: TK-01
Existing Vegetation (density and species composition):
     Plantation of Melia azedarach was burned previously and poor
     growing stock remain.

Method of Clearing (sequence of operations):
     Cut down big tree with chainsaw, all stumps were removed
     with buldozer, land was cleared afterward.

Residue (I=incorporated, R=removed, B=burned, M=mulched, P=piled): R
        (% of surface free of residues after preparation):  0 %

Method of Soil Cultivation (sequence, depth and type of implements):
     Ploughing with tractor was done 3 times prior to the
     planting, to the depth of 50 cm.

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM G: EXPERIMENT SITE PREPARATION

Existing Vegetation

Describe the vegetation on the experiment site (species, composition, and density) as it existed immediately before site preparation.

Method of Clearing

Describe the sequence of operations for removing existing vegetation from the experiment site. Describe any improvements to site drainage.

Residue

Enter the letter code (I,R,B,M,P) that best describes what was done with the surface residue. Enter the surface percentage free of residue at the time of planting.

Method of Soil Cultivation

Describe the type(s) of soil cultivation done after clearing the experiment site and up to the time of planting.

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```
                                                                    ADD
FORM H:  Experiment Description

                                                          ID: TK-01
  Experiment Name: 1987 Humid/Sub-humid Zone Network Trial
  Objective:
      To evaluate the F/FRED Project's priority species under
      three management regimes in multi-location trials.

  Experiment Design:
      A randomized complete block design with four replications.
      The treatment design is a 3*2*3 complete factorial with
      factors of species, genotype, and cutting management.

  Plot Dimensions (m)  7 by 14

  Tree Spacing (if constant for all plots);
      Between Rows (m):  2        Within Row (m):  1

  Weather Station ID: LAD11      Distance from Weather Station (m):  1

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM H: EXPERIMENT DESCRIPTION

Experiment Name

Enter a short, descriptive experiment title not exceeding 40 characters, including spaces.

Objective

Briefly describe the objectives of the experiment. See example in above screen.

Experiment Design

Describe the experimental and treatment design and number of replications used in the experiment. See example in above screen.

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NOTE: Throughout the Experiment forms, the term "replication" means a repetition of plots with the same treatment. For example, if there are two (2) experimental factors (species and genotype) with two levels of species and two levels of genotype, then the number of treatments would be four (2 X 2). If an experimenter uses eight (8) plots, then ideally each treatment will be replicated twice (that is, each treatment will be applied in two plots), and the number of replications will, therefore, be two (2).

Plot Dimensions

Enter the dimensions of the plot, as length by width, in meters.

Tree Spacing

If the same nominal spacing is used for all plots, enter distance between rows, and between trees within rows in meters.

Weather Station ID

Enter a unique five-character code, consisting of three letters and two digits. It is suggested you use the first three letters of the weather station name and then two digits.

NOTE: The weather station identified in this form must be part of the experiment installation; it is not the climate station.

NOTE: When the same station has been used for another experiment, use the same Weather Station ID.

Distance from Weather Station

Enter the straight-line distance, in meters, from the station to the nearest point of the experiment area.

```
FORM I-1: Treatment Factors and Levels                                  ADD

                                                                    ID: TK-01
  Factor_A
          Name: SPECIES
   Description: MPTS species for humid environment zone

     Level of SPECIES        Description
     ----------------- ----------------------------------------------
         ACACAURI          Acacia auriculiformis
         ACACMANG          Acacia mangium
         LEUC_SPP          Leucaena species

 Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM I-1: TREATMENT FACTORS AND LEVELS

Form I has three input screens: Form I-1, I-2, and I-3. When you select Option 1 from the Form I submenu (see the section in this chapter entitled "Submenus for Forms A-K"), this screen appears.

Factor

IADSS allows up to five treatment factors or variables to be entered. Each factor or variable must be assigned a letter using the letters A to E consecutively. The various categories of each factor, as well as actual quantitative levels, are termed 'levels' in this system. That is, species x, y, and z are levels, as are applications of 10, 30, and 40 kg/ha.

Name

Enter the name of the treatment factor, such as species, cutting management, or spacing. The factor name must start with a letter, must not exceed eight characters in length, and should not contain a space (the system eliminates blank spaces between characters).

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Description

Enter a brief description of the treatment factor named. See example screen on previous page.

Level Name and Description

Enter a name for each level. The level name must not exceed eight characters in length, and should not contain a space (the system will automatically eliminate blank spaces between characters). Since some commercial analysis programs require the level name to start with a letter, it is suggested you use a letter in this position, even for quantitative levels (e.g., 10kg/ha = A10k) if you plan to use one of these programs.

When you have entered all the levels and descriptions for a factor, press <Ctrl-W>. The program will save the data and then present the Factor screen again. Enter the next factor (by letter), its name description and the factor levels and descriptions. Press <Ctrl-W>. When you have completed entering all factors and saved the last factor data, press the [Esc] key to return to the submenu.

NOTE: To add more levels than the eight allowed on this screen, use the [A]dd option by pressing the [A] key and then enter the same factor code (i.e., A, B, etc.). You will then be presented with blank highlighted fields for "Level" and "Description". Enter the level names and descriptions. Press <Ctrl-W> when finished.

Example

Following is an example of a 3-factor (Factors A, B, and C) experiment with three levels for Factor A, two levels for Factor B, and three levels for Factor C. It can be generalized for any number of factors and levels. This example will also be used in Form I-2.

Factor A, SPECIES, with its three levels could be described as follows:

Level Name	Level Description
ACACAURI	Acacia auriculiformis
ACACMANG	Acacia mangium
LEUC_SPP	Leucaena species

Factor B, GENOTYPE, with 2 levels (two, genotype/species) could be described as follows:

Level Name	Level Description
AURI_PNG	Besback-Balamuk, Papua-New Guinea
AURI_QLD	Morehead River, Queensland, Australia
DIVE_156	Psyllid resistant-K156
HYBR_KX3	L.leucocephala K8 x L.diversifolia K156
MANG_PNG	Boite, Papua-New Guinea
MANG_QLD	Iron Range, Queensland, Australia

Factor C, Cutting Management, with its three levels could be described as follows:

Level Name	Level Description
CONTROL	No cutting management
POLLARD	Cut tree stems at 2 m height at 24 months
PRUNING	Remove material lower 1/2 of h at 18 mo.

NOTE: Factor and level names must be entered in Form I-1 before Form I-2 can be completed.

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FORM I-2: Treatment Combinations ADD

ID: TK-01

Treatment	Factor Levels SPECIES	GENOTYPE	CUT_MGMT
1	ACACMANG	MANG_QLD	CONTROL
2	ACACMANG	MANG_QLD	POLLARD
3	ACACMANG	MANG_QLD	PRUNING
4	ACACMANG	MANG_PNG	CONTROL
5	ACACMANG	MANG_PNG	POLLARD
6	ACACMANG	MANG_PNG	PRUNING
7	ACACAURI	AURI_QLD	CONTROL
8	ACACAURI	AURI_QLD	POLLARD
9	ACACAURI	AURI_QLD	PRUNING
10	ACACAURI	AURI_PNG	CONTROL
11	ACACAURI	AURI_PNG	POLLARD
12	ACACAURI	AURI_PNG	PRUNING

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM I-2: TREATMENT COMBINATIONS

When you select Option 2 from the Form I submenu (see the section in this chapter entitled "Submenus for Forms A-K"), the above screen will appear.

Treatment

For each treatment - that is, for all combinations of treatment factor and level - assign an alphanumeric identifier (see screen above under "Treatments"). The identifier cannot exceed eight characters in length.

Factor Levels

The factor names entered in Form I-1 will be displayed as columns heads. In the screen above, these are SPECIES, GENOTYPE, and CUT_MGMT. In the columns under each factor name, enter the levels defined in Form I-1 for each factor (see screen above). These are the treatments. Treatments may be entered in any desired order and they will then be arranged in ascending order, by treatment identifier.

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For one-factor experiments, the treatment combinations will be the levels of the one factor.

For factorial experiments, the number of possible treatment combinations will be the product of the number of levels for each of the factors. For example, in the example used here, there are 18 treatments: 3 (levels for Factor A) X 2 (levels for Factor B; i.e., 2 genotypes/species) X 3 (levels for Factor C) = 18. These are shown below.

Treatment	SPECIES	GENOTYPE	CUT_MGMT
1	ACACMANG	MANG_QLD	CONTROL
2	ACACMANG	MANG_QLD	POLLARD
3	ACACMANG	MANG_QLD	PRUNING
4	ACACMANG	MANG_PNG	CONTROL
5	ACACMANG	MANG_PNG	POLLARD
6	ACACMANG	MANG_PNG	PRUNING
7	ACACAURI	AURI_QLD	CONTROL
8	ACACAURI	AURI_QLD	POLLARD
9	ACACAURI	AURI_QLD	PRUNING
10	ACACAURI	AURI_PNG	CONTROL
11	ACACAURI	AURI_PNG	POLLARD
12	ACACAURI	AURI_PNG	PRUNING
13	LEUC_SPP	DIVE_156	CONTROL
14	LEUC_SPP	DIVE_156	POLLARD
15	LEUC_SPP	DIVE_156	PRUNING
16	LEUC_SPP	HYBR_KX3	CONTROL
17	LEUC_SPP	HYBR_KX3	POLLARD
18	LEUC_SPP	HYBR_KX3	PRUNING

FORM I-3: Experiment Design

ADD

ID: TK-01

Plot	Treatment	Rep	Plot	Treatment	Rep	Plot	Treatment	Rep
1	3	1	13	11	1	25	16	2
2	9	1	14	12	1	26	2	2
3	18	1	15	5	1	27	12	2
4	7	1	16	1	1	28	11	2
5	15	1	17	17	1	29	5	2
6	8	1	18	10	1	30	8	2
7	2	1	19	17	2	31	13	2
8	6	1	20	6	2	32	14	2
9	13	1	21	9	2	33	18	2
10	16	1	22	4	2	34	15	2
11	14	1	23	7	2	35	3	2
12	4	1	24	10	2	36	1	2

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM I-3: EXPERIMENT DESIGN

When you select Option 3 from the Form I submenu (see the section in this chapter entitled "Submenus for Forms A-K"), the above screen will appear.

Plot Numbers

Enter a number for each plot, composed of digits and/or letters of up to three characters in length. Do NOT begin a plot number with a zero.

Treatment Number/Name

Enter the treatment number (see Form I-2 under "Treatment") for each plot.

Replication Numbers

Enter a replication number composed of digits and/or alphanumeric characters up to two characters in length.

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A replication is a repetition of plots with the same treatment (see "Experiment Design" under the section in this chapter entitled "Form H: Experiment Description"). It should not be confused with samples (e.g., trees) within a plot.

NOTE: Accuracy is essential when entering data into this form. The program checks Form I-3 against the treatment combinations in Form I-2, and a warning message will be displayed if any discrepancies are found.

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```
FORM J: Experiment Planting                                          ADD

                                                                  ID: TK-01
  Planting Date (mm/dd/yy): 10/15/87

  Control of Competing Vegetation at Planting
     (description and estimation of % control):
       Manual work for weed control, 100%
       (The planting date was delayed due to long summer months)

  Preplant Amendments (fertilizer, herbicide or others):
       Add compost and NPK fertilizer

  Soil Moisture (1=dry, 2=damp, 3=moist, 4=wet, 5=very wet)
       Condition At Planting...: 3
       Condition After Planting: 3

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM J: EXPERIMENT PLANTING

Planting Date

Enter the month, day, and year of planting. Use the mm/dd/yy format. If more than one day was required for planting, enter the date when planting was completed.

Control of Competing Vegetation

Describe methods of vegetation control used at the time of planting and their effectiveness.

Preplant Amendments

Describe, as precisely as possible, the types and the amounts of amendments used at the time of planting.

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Soil Moisture

Evaluate the soil moisture at the time of planting and the general condition over the three months following planting and select the option that best describes the soil condition.

Option		Description
1	-	Dry. Soil frequently without available water in the rooting zone, causing some vegetation to stay wilted overnight. Continuous dry periods sometimes exceeding one week.
2	-	Damp. Water present in the rooting zone most of the time; wilting overnight rare; continuous dry periods probably less than one week.
3	-	Moist. Water in the rooting zone; no wilting overnight; no local spots of water logging.
4	-	Wet. Soil near field capacity most of the time; local spots flooded or saturated; runoff with each rain.
5	-	Very Wet. Soil saturated or nearly so most of the time; waterlogged soil common; runoff or flooding with every rain; observable plant stress from oxygen or other deficiency related to excess water.

```
FORM K: Tree Species                                                    ADD

                                                                    ID: TK-01
  Species ID: 1

  Tree Species;     Genus: Acacia
                  Species: auriculiformis
              Sub-species:

  Seed Origin;
                  Country: Australia
        State/Territory: Queensland
                 Locality: Moorehead River
           Elevation (m):  70
        Latitude  (deg):  15 (min): 02   Direction (N,S): S
        Longitude (deg): 143 (min): 40   Direction (W,E): E

  Seed Supplier: CSIRO
     Lot Number: 15477

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM K: TREE SPECIES

Species ID

A window will be displayed on screen. From this display, select the number for the species you want. From your selection, both "Genus" and "Species" will be entered by the program. For a species not listed in the window, enter "27" (Other) and type in the genus and species names. The term Sub-species in this screen is synonymous with variety.

Seed Origin

Enter country information for the origin of the variety.

Seed Supplier

Enter the name of the institution or organization that supplied the seeds used in the experiment.

Lot Number

Enter the code(s) used by the seed supplier to identify the seeds used.

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Chapter 3
MEASUREMENTS FORMS L - Q

INTRODUCTION

This chapter describes and explains the screens presented for Forms L-Q, when "Measurements" is selected from the Experiment Database Main menu.

Weather Measurement Forms L-1 and L-2

Form L-1 contains weather station information. Form L-2 contains daily weather measurements and monthly weather values.

Soil Measurement Forms M-1 and M-2

Form M-1 contains preplant soil measurements. Form M-2 contains all subsequent soil measurements.

Nondestructive Tree Measurement Forms N-1 and N-2

Form N-1 contains tree survival, height, and diameter measurements. Form N-2 contains tree form (shape) information.

Biomass Measurement Forms O and P

Form O contains tree foliage biomass measurements. Form P contains wood biomass measurements.

Tree Litter Measurement Form Q

This form contains tree litter measurements.

Highlighted areas on the screen for Form L-Q indicate where data may be entered. Press the [Enter] key after each entry. Press <Ctrl-W> to save entered data. If you need assistance while in a form, press the Help key, [F1], and messages giving additional information will be presented.

NOTE: If you use the [Esc] key in a data form after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

SUBMENU FOR FORMS L-Q

After selecting the "Measurements" module option from the Experiment Database Main menu and entering, if necessary, an Experiment ID, the following submenu will appear. Move the highlight bar until the form you want is highlighted and then press the [Enter] key.

```
EXPERIMENT DATABASE MEASUREMENT                                ID: TK-01

                          << S U B M E N U >>

                    FORM
                     L-> Weather Data
                     M-> Soil Measurements
                     N-> Tree Measurements
                     O-> Foliage Biomass Measurements
                     P-> Wood Biomass Measurements
                     Q-> Tree Litter Measurements

Use [↑] and [↓] to highlight desired item. Press [Enter] to begin program
execution. (Press [Esc] to exit to select other data forms.)

[Esc]=Exit, [F3]=Change Experiment
```


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Submenus for Forms L, M, and N

When Forms L, M, and N, are selected, the respective submenus (shown below) will appear. In each menu, select one of the options presented.

Form L Sub-menu

```
SUBMENU
  1-> Weather Station Information
  2-> Weather Data Measurements
[Esc]=Exit,[↑],[↓]=Move,[Enter]=Select
```

Form M Sub-menu

```
SUBMENU
  1-> Preplant Soil Measurements
  2-> Soil Measurements
[Esc]=Exit,[↑],[↓]=Move,[Enter]=Select
```

Form N Sub-menu

```
SUBMENU
  1-> Tree h/d Measurements
  2-> Tree form
[Esc]=Exit,[↑],[↓]=Move,[Enter]=Select
```


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```
FORM L-1: Weather Station Information                                  ADD

                                                                  ID: TK-01
  Weather Station ID   : LAD11
  Weather Station Name: Lad Kratin Plantation
  Responsible Institution:
                 Name: LAD KRATIBS PLANTATION

              Address: THAI PLYWOOD Co. BANGKOK, BANGKOK



  Observation Time (hour 1-24):  9

  Start Date of Collecting Data (mm/dd/yy): 12/01/67

  Elevation (m):  150
  Latitude  (deg):  13 (min): 30   Direction (N,S): N
  Longitude (deg): 101 (min): 32   Direction (W,E): E

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM L-1: WEATHER STATION INFORMATION

Form L has two input screen: Form L-1 and Form L-2. When you select Option 1 from the Form L submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N") this screen will appear.

Weather Station ID

Enter a unique, five-character code, consisting of three letters and two digits. It is suggested you use the first three letters of the weather station name, then two digits.

NOTE: If you have already entered a Weather Station ID for this station, use that ID. The rest of the form will be completed by the program using the information already entered into the Experiment database for this station.

Weather Station Name

Enter the commonly used name of the weather station, in full. A weather station name may be used by any number of experiments.

a1

Responsible Institution

Enter the complete name and address of the institution operating the weather station.

Observation Time

Using the 24-hour system, enter the hour of the day when observations are made.

Start Date of Collecting Data

Using the mm/dd/yy format, enter the date when observations began at this station. This date should not be later than the date of planting.

G2

FORM L-2: Daily Weather Measurements

ADD

Year: 88 Month: 10 ID: TK-01

Day	MaxT (C)	MinT (C)	Precip (mm)	Humidity (%)	Day	MaxT (C)	MinT (C)	Precip (mm)	Humidity (%)
1	34.0	24.0	0	79.0	11	29.0	24.0	0	92.0
2	33.0	24.0	0	85.0	12	30.0	24.0	0	92.0
3	34.0	24.0	8	78.0	13	33.0	25.0	0	85.0
4	34.0	24.0	11	95.0	14	33.0	23.0	0	78.0
5	29.0	24.0	0	79.0	15	36.0	24.0	0	89.0
6	37.0	24.0	0	85.0	16	34.0	24.0	143	92.0
7	36.0	25.0	0	85.0	17	34.0	23.0	14	96.0
8	35.0	26.0	0	92.0	18	37.0	23.0	31	98.0
9	33.0	25.0	16	92.0	19	35.0	25.0	5	98.0
10	28.0	23.0	0	95.0	20	32.0	23.0	0	92.0

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

Page: 1/2

FORM L-2: DAILY WEATHER MEASUREMENTS

When you select Option 2 from the Form L submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N), you will be given the option of entering data by daily weather data or by monthly weather data. The screen above will appear if you select Daily Weather Data.

Year

Enter the year when measurements were taken (i.e., '88' for 1988).

Month

Enter the numeric designation of the month, so that January is '01', February is '02', etc.

When you press the [Enter] key after entering the month, the measurement input fields will be highlighted and contain default values of '-99' for temperatures and '-9' for the others.

MaxT, MinT, Precip, and Humidity

Enter maximum and minimum temperature, precipitation, and humidity for each day of each month, beginning at the time of planting. Use degrees Celsius, millimeters, and percentage, respectively.

IADSS will calculate total precipitation and temperature means when all the data for the month have been entered and <Ctrl-W> has been pressed.

FORM L-2: Monthly Weather Measurements

ADD

ID: TK-01

Year	Month	MaxT (C)	MinT (C)	Precip (mm)	Humidity (%)
88	01	34.6	18.4	0	-9.0
88	02	35.3	22.2	28	-9.0
88	03	36.9	24.3	26	-9.0
88	04	36.4	25.1	77	87.3
88	05	33.9	25.3	153	84.4
88	06	34.2	24.9	220	83.5
88	07	33.2	24.3	229	88.3
88	08	32.9	24.3	262	88.4
88	09	33.9	24.3	189	88.1
88	10	33.0	23.7	247	87.1
88	11	31.4	21.0	0	74.8
88	12	32.4	17.0	0	78.5

Enter information in form above. <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM L-2: MONTHLY WEATHER MEASUREMENTS

When you select the option of entering Monthly Weather Data, the screen above will appear. Enter the mean monthly weather data in the highlighted fields. The highlighted measurement input fields will contain default values of '-99' for temperatures and '-9' for the others.

Year

Enter the last two digits of the year measurements were taken (i.e., '89' for 1989).

Month

Enter the numeric designation of the month. January is '01', February is '02', etc.

MaxT

Enter the mean maximum temperature for the month, in degrees Celsius.

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MinT
Enter the mean minimum temperature for the month, in degrees Celsius.

Precip
Enter the total amount of precipitation for the month, in millimeters.

Humidity
Enter the mean percent humidity for the month, as a percentage.

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FORM M-1: Preplant Soil Measurements ADD

Date (mm/dd/yy): 05/08/87 ID: TK-01

Layer (cm) Upper	Lower	pH (H2O)	pH (KCl)	N (%)	P (ppm)	extr meth	K (ppm)	extr meth	OM (%)
0	10	4.9	4.5	0.12	4.38		-9.00		2.56
10	20	4.7	4.1	0.07	1.44		64.00		1.34
20	43	4.7	4.0	0.06	1.31		61.00		1.19
43	76	4.6	3.9	0.06	1.25		58.00		0.91
76	98	4.7	4.0	0.05	1.00		45.00		0.64
98	130	4.8	4.0	0.04	1.06		36.00		0.46

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM M-1: PREPLANT SOIL MEASUREMENTS

Form M has two input screens: Form M-1 and Form M-2. When you select Option 1 from the Form M submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N"), this screen will appear.

Date

Enter the date that the measurements were taken. When you press the [Enter] key after entering the date, the measurement input fields will be highlighted and contain default values of '-9'.

Layer

Depth from soil surface to upper and lower boundaries (in centimeters). The top layer begins at the point where there is only soil, no litter. The upper depth of the top layer is zero. Sample for each layer as a composite for all replications. Seven is the maximum number of layers that may be entered.

Chemical and Organic Components

The chemical and organic components must be obtained from a soil analysis laboratory.

pH. pH (H_2O-based and KCl-based).

N. Nitrogen content, as a percent (%).

P. Phosphorus content, in parts per million (ppm).

Extraction Method. Enter the extraction method. For example, BK1=Bray and Kurtz 1 phosphorus extraction; SBS=Sodium bicarbonate (Olson) P extraction, used to determine parts per million of extractable phosphorus and potassium.

K. Potassium content in parts per million (ppm).

OM. Organic matter, as a percent (%), for each layer.

NOTE: Deleting a record in Form M-1 is somewhat different than in other forms. Select [M]odify, then enter 0 (zero) in every lower and upper layer fields containing entered data. Press <Ctrl-W> and the record will be deleted.

FORM M-2: Soil Measurements ADD

ID: XX-99

Age (months): 12
Plot(s) : 1 5 16

Plot	Age (mo)	Layer(cm) Upper	Layer(cm) Lower	pH (H2O)	pH (KCl)	N (%)	P (ppm)	extr meth	K (ppm)	extr meth	OM (%)
		0	15	4.3	3.7	0.02	9.16		8.59		3.56
		15	30	4.8	3.9	0.10	4.52		7.40		2.15
		-9	-9	-9.0	-9.0	-9.00	-9.00		-9.00		-9.00
		-9	-9	-9.0	-9.0	-9.00	-9.00		-9.00		-9.00
		-9	-9	-9.0	-9.0	-9.00	-9.00		-9.00		-9.00
		-9	-9	-9.0	-9.0	-9.00	-9.00		-9.00		-9.00

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM M-2: SOIL MEASUREMENTS

When you select Option 2 from the Form M submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N"), the screen above will appear. The highlighted measurement input fields will contain default values of '-9'.

Age

Enter the age (in months) of the tree when the soil samples were taken.

Plots

Enter the plot numbers (see Form I-3 in Chapter 2) to which the measurements being entered apply.

Layer

Enter a layer's upper and lower boundaries in centimeters (see Form M-1 for a description of layer).

Chemical and Organic Components

The chemical and organic components must be obtained from a soil analysis laboratory.

pH. pH (H_2O-based and KCl-based).

N. Nitrogen content, as a percent (%).

P. Phosphorus content, in parts per million (ppm).

Extraction Method. Enter the extraction method. For example, BK1=Bray and Kurtz 1 phosphorus extraction; SBS=Sodium bicarbonate (Olson) P extraction, used to determine parts per million of extractable phosphorus and potassium.

K. Potassium content in parts per million (ppm).

OM. Organic matter, as a percent (%), for each layer.

NOTE: The data entered for the layers will be applied to each of the plot numbers you enter. In the example, for instance, Plots 1, 5, 16 will contain the same data (see screen on previous page).

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FORM N-1: Tree h/d Measurements ADD

Age (months): 12 ID: TK-01

Plot	Age (mo)	Survival live/total	(%)	Trees measured	Height (m)	Basal diameter	DBH (cm)	# of stems/tree
1	12	45/49	(91%)	9	4.6	5.4	4.0	-9.0
2	12	49/49	(100%)	9	4.6	5.0	3.4	-9.0
3	12	49/49	(100%)	9	4.5	4.3	3.3	-9.0
4	12	49/49	(100%)	9	5.6	3.8	3.5	-9.0
5	12	48/49	(97%)	9	4.5	4.7	3.6	-9.0
6	12	49/49	(100%)	9	3.8	3.6	2.8	-9.0
7	12	48/49	(97%)	9	4.4	5.2	3.7	-9.0
8	12	49/49	(100%)	9	4.1	4.7	3.6	-9.0
9	12	49/49	(100%)	9	5.2	3.7	2.9	-9.0
10	12	49/49	(100%)	9	4.8	5.0	3.5	-9.0
11	12	49/49	(100%)	9	5.7	3.7	3.0	-9.0

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help, <Ctrl-Home>=Data Entry Option

FORM N-1: TREE h/d MEASUREMENTS

Form N has two input screens: Form N-1 and From N-2. When you select Option 1 from the Form N submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N"), this screen will appear.

Form N-1, Tree h/d (height/diameter) Measurements, allows you to enter Stem, Tree, and Plot level data. The default data entry level is at the Stem level. To change the data entry level to Tree or Plot, use <Ctrl-Home>. You may enter data at one level and then change to another level.

The measurements, "Height," Basal-diameter," "DBH," and "# of stems/trees," in Form N-1, are all mean values for a plot and are entered either by the user (at Plot level) or calculated by the program (at the Tree and Stem level).

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When entering data at the Plot level, these mean values must first be calculated by the user and then entered into Form N-1.

When entering data at the Stem level, the program will calculate mean tree values from the stem measurements, and the mean plot values from the tree values.

When entering data at the Tree level, the program will calculate the mean plot values from the tree measurements. All entered values (stem, tree, plot) will be saved in the Experiment Database.

ALL DATA ENTRY LEVELS

Enter the following data for data entry at Stem, Tree, or Plot level.

Age

Enter the age of the trees (to the nearest month) when measurements are taken.

Plot

Enter the plot number(s) for which you will be entering h/d measurement data for the entered age.

Survival

Enter the total number of live trees over the number of trees planted. Replants for initial mortality should not be included. The system calculates the survival percentage at the time of measurement.

Trees Measured

Enter the number of trees measured at this date and used to calculate mean values. Measuring at least eight trees per plot until the end of your experiment is desirable. The program will accept values from 1 to 99.

NOTE: When entering data at the Tree or Stem level, the number of trees entered in "Trees measured" is used to generate the number of data entry lines presented when the tree window is displayed. The maximum number of trees (entry spaces) that can be displayed at one time in a window is 9 and is called a page. A page counter is used to display the current page in relation to the total number of pages. For example, if the entered number of trees measured was 16, then the number of pages would be 2.

PLOT LEVEL

At the Plot data entry level, the user must calculate the following values.

Height

Enter the mean total tree height, in meters. This height is the vertical distance from the ground line to the apical bud of the main stem; do not consider leaves and lateral branches. On appreciable slopes, measure from the ground line on the uphill side of the tree.

Basal (Diameter at the Base)

Basal diameter is usually measured at nominal stump height. Thus, enter the mean db measurement (in cm) taken at 30 cm above ground line.

DBH (Diameter at Breast Height)

Enter this mean diameter (in cm) of the trees taken at 1.3 m above ground line. If there is a knot or other abnormality at that height, measure at a nearby point that most closely approximates what the correct measurement would have been (this is usually above 1.3m).

of Stems/Tree

Enter the mean number of stems per individual trees in a plot. The system will accept values from 1 to 99.

```
FORM N-1:  Tree h/d Measurements                                   ADD

                                                                  ID: TK-01
                                                 P L O T:   1          page: 1/1
      Age    - Survival -     Trees                Plot # of     Ht   Basal  DBH
Plot (mo)  live/total (%) measure              Tree Ave. Stems   (m)  (cm)   (cm)
-------------------------------------------    ----------------------------------
  1   12     45/49  ( 91%)    9                  17   Y          4.8   5.4    4.2
      12      /     (   %)                       18   Y          3.8   4.0    2.8
      12      /     (   %)                       19   Y          4.7   6.7    4.7
      12      /     (   %)                       24   Y          4.7   5.5    4.0
      12      /     (   %)                       25   Y          4.7   4.6    3.5
      12      /     (   %)                       26   Y          4.9   5.6    4.5
      12      /     (   %)                       31   Y          4.5   5.6    4.3
      12      /     (   %)                       32   Y          4.1   5.5    3.8
      12      /     (   %)                            Y         -9.0  -9.0   -9.0
      12      /     (   %)                  <Ctrl-W>=Plot Mean, [Esc]=Exit
      12      /     (   %)                  [PgUp]/[PgDn]=Prev./Next Page

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help, <Ctrl-Home>=Data Entry Option
```

TREE AND STEM LEVEL

When you select data entry at Tree or Stem level, the data entry window shown above will appear after you enter the number of trees in "Trees measured."

Enter the measurement data for the individual trees. The program calculates the mean plot values from this data when you press <Ctrl-W>. The mean values for the plot are then entered into Form N-1.

NOTE: If you are entering data at the Plot level and want to change to data entry at the Tree or Stem level, you must do so before entering a number in "Trees measured."

Tree

Enter the number of the tree for which measurements will be entered.

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NOTE: The Tree ID number must remain constant throughout the life of the plot; if a tree dies, retire the number and never apply it to another tree on that plot. The numbering system should be the same for all experiments with the same experiment design.

Plot Ave.
Enter 'Y' if you want the program to include the measurement in the plot mean. Enter a 'N' if you do not want it included.

NOTE: You may want to enter the data for a tree in order to have it in the database, but may not, for any number of reasons, want this data included in the mean plot values' calculations.

# of Stems/tree
Enter the number of stems measured per tree, from 1 to 9.

NOTE: When entering data at the Stem level, the # of stems/tree value is used to generate the number of data entry lines, presented when the stem window is displayed.

Ht (Height)
Enter the total tree height in meters. This height is the vertical distance from the ground line to the apical bud of the main stem; do not consider leaves and lateral branches. On applicable slopes, measure from the ground line on the uphill side of the tree.

Basal (Diameter at the Base)
Basal diameter is usually measured at nominal stump height. Thus, enter the basal diameter of the tree (in cm) taken at 30 cm above ground line.

DBH (Diameter at Breast Height)
Enter the diameter of the tree (in cm) taken at 1.3 m above ground line. If there is a knob or other abnormality at that height, measure at a nearby point that most closely approximates what the correct measurement would have been (usually above 1.3 m).

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```
FORM N-1: Tree h/d Measurements                                   ADD

                                                                  ID: TK-01
                                  PLOT: 1          page: 1/1
  TREE: 33                            Plot # of     Ht   Basal  DBH
P       Tree  Ht   Basal  DBH       Tree Ave. Stems  (m)  (cm)   (cm)
-  Stem Ave   (m)  (cm)  (cm)       ---------------------------------
  ---------------------------         17   Y         4.8   5.4    4.2
       Y   -9.0  -9.0  -9.0           18   Y         3.8   4.0    2.8
       Y   -9.0  -9.0  -9.0           19   Y         4.7   6.7    4.7
[Esc]=Exit, <Ctrl-W>=Tree Mean        24   Y         4.7   5.5    4.0
                                      25   Y         4.7   4.6    3.5
   12      /    (   %)                26   Y         4.9   5.6    4.5
   12      /    (   %)                31   Y         4.5   5.6    4.3
   12      /    (   %)                32   Y         4.1   5.5    3.8
   12      /    (   %)                33   Y    2   -9.0  -9.0   -9.0
   12      /    (   %)              <Ctrl-W>=Plot Mean, [Esc]=Exit
   12      /    (   %)              [PgUp]/[PgDn]=Prev./Next Page

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help, <Ctrl-Home>=Data Entry Option
```

STEM LEVEL

When you select data entry at the Stem level, the data entry window shown above (on the left) will appear after you enter a number in "# of Stems."

Enter the measurement data for individual stems. The program calculates the mean tree values from the stem data when you press <Ctrl-W>.

NOTE: If you are entering data at the Tree level and want to change to the Stem level, you must do so before entering a number in "# of Stems."

Stem

Enter the number of the stem from which measurements will be entered.

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NOTE: This stem number must remain constant for this particular tree throughout the life of the tree. If the stem dies, do not use this stem number for another stem on the same tree. Of course, one tree may have the same stem number as another tree.

Tree Ave
Enter 'Y' if you want to include the measurement in the individual tree mean. Enter a 'N' if you do not want the program to include the measurement in the individual tree mean.

Ht (Height)
Enter the total stem height, from the ground line to the top of the measured stem.

Basal (Diameter at the Base)
Measure the same as traditional measurements.

DBH (Diameter at Breast Height)
Measure the same as traditional measurements.

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```
FORM N-2: Tree Form                                                    ADD

                                                                  ID: TK-01
  Age (months): 12
  ____________________________________________________________________
        Age    Trees          Stem form (%)          Description
  Plot  (mo)   measured    (S=single stem, M=multi stem, F=forked)
  --------------------------------------------------------------------

 Enter information in  form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help, <Ctrl-Home>=Data Entry Option
```

FORM N-2: TREE FORM

When you select Option 2 from the Form N submenu (see the section in this chapter entitled "Submenus for Forms L, M, and N"), the screen above will appear.

Use Form N-2 when you want to enter data on the growth pattern of trees in the experiment. You may enter this data at the Plot or Tree level. Use <Ctrl-Home> to select the data entry level.

The measurements in "Stem form (%)" in Form N-2 are percentage values derived from the ratio of trees in a plot having (S)ingle stems, (M)ultiple stems, and (F)orked stems (respectively) to the total number of trees measured. This percentage can be entered by the user (at Plot level) or calculated by the program (at Tree level).

The measurements for "Description" in Form N-2 are dependent on whether the tree is single-stemmed or multi-stemmed. For the trees in a plot that are single-stemmed, the "Description" is a nominal value describing the average tree stem. For the trees in a plot that are multi-stemmed the "Description" is a numerical value - the mean number of stems per tree.

NOTE: Even though the number of [F] forked-stem trees per plot may be entered, the program will not calculate their mean descriptive value nor may you enter this value.

Use the Plot level if you want to calculate and enter the percentage and mean values. When you select the Tree data entry level, a window will be displayed when the number of "Trees Measured" is entered in the form. From the data entered in this window. The percentage and mean values will be calculated by the program and displayed in Form N-2.

PLOT AND TREE LEVEL

Enter the following data for data entry at Plot and Tree level.

Age

Enter the age of the trees (to the nearest month) when measurements are taken.

Plot

Enter the number assigned to the plot being sampled.

Trees Measured

Enter the number of trees measured in the plot. Enter a value from 1 to 99.

PLOT LEVEL

Stem Form (%)

Enter the percentage of trees in the plot that are S=single stem, M=multi-stem (below 50 cm), and F=forked (above 50 cm) in the respective data entry fields.

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Description

For all single-stem trees in the plot, determine the mean shape which best describes the trees using the following descriptor codes:

```
(1) Very Straight, (2) Straight, (3) Fair, (4) Crooked.
```

For all multi-stem trees in the plot, enter the mean number of stems per tree.

The program does not allow you to enter a value for forked-stem trees.

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```
FORM N-2: Tree Form                                                    ADD

                                                                       ID: TK-01
                                  P L O T :  1        page:  1/1
                                       Stem form  Description
      Age   Trees                 Tree (S/M/F)    type/# of stem        !!
Plot  (mo)  measured                                                    rked)
-----------------------------     ---------------------------          ------
  1   12      3                     17    S            1               .0
      12     -9                                       -9               .0
      12     -9                                       -9               .0
      12     -9                 <Ctrl-W>=Plot Mean, [Esc]=Exit         .0
      12     -9                 [PgUp]/[PgDn]=Prev./Next Page          .0
      12     -9                                                        .0
      12     -9                 S -9  M -9  F -9        S-9.0  M-9.0
      12     -9                 S -9  M -9  F -9        S-9.0  M-9.0
      12     -9                 S -9  M -9  F -9        S-9.0  M-9.0
      12     -9                 S -9  M -9  F -9        S-9.0  M-9.0
      12     -9                 S -9  M -9  F -9        S-9.0  M-9.0

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

TREE LEVEL

When you select data entry at the Tree level, the data entry window shown above will be displayed after you enter a number in "Trees measured." When you complete data entry in this window and press <Ctrl-W>, the program will calculate the values from the entered data and display them in Form N-2.

NOTE: If you are entering data at Plot level and want to change to Tree level, you must do so before entering a number in "Trees measured."

Tree

Enter the number of the tree for which measurements will be entered.

NOTE: This Tree ID number must remain consistent throughout the life of the plot. See the NOTE in this chapter under "Tree Number" in "Form N-1."

Stem Form

Enter the letter option, S=Single Stem, M=Multi-Stem, or F=Forked, that best describes the structure of this individual tree.

Description

For all single-stem trees, determine the shape which describes the tree, using the following descriptor codes:

```
(1) Very Straight, (2) Straight, (3) Fair, (4) Crooked.
```

For trees which are multi-stem or forked, enter the number of stems per tree. Valid entries are from 1 to 99.

FORM O: Foliage Biomass Measurements ADD

ID: TK-01

Plot	Age (mo)	Trees measured	Wet Wt (---kg/tree---)	Dry Wt (---kg/tree---)	N (----% of Dry Wt----)	P (----% of Dry Wt----)	K (----% of Dry Wt----)
1	12	2	4.39	0.70	-9.0	-9.0	-9.0
2	12	2	2.55	0.60	-9.0	-9.0	-9.0
3	12	2	1.20	0.30	-9.0	-9.0	-9.0
4	12	2	2.55	0.80	-9.0	-9.0	-9.0
5	12	2	1.60	0.40	-9.0	-9.0	-9.0
6	12	2	2.20	0.50	-9.0	-9.0	-9.0
7	12	2	6.15	1.60	-9.0	-9.0	-9.0
8	12	2	5.30	1.60	-9.0	-9.0	-9.0
9	12	2	1.95	0.60	-9.0	-9.0	-9.0
10	12	2	1.50	0.40	-9.0	-9.0	-9.0
11	12	2	0.43	0.30	-9.0	-9.0	-9.0

Enter information in the form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM O: FOLIAGE BIOMASS MEASUREMENTS

You may enter foliage biomass measurements into Form O at either the Plot or Tree level. Select the data entry level by pressing <Ctrl-Home>.

At the Tree level, a data entry window will be presented for "Wet Wt" and "Dry Wt" after a number has been entered into "Trees measured."

The measurements, "Wet Wt" and "Dry Wt," in Form O are mean values for a plot and are entered either by the user (at Plot level) or calculated by the program (at the Tree level).

When entering data at the Plot level, these mean plot values must first be calculated by the user and then entered into Form O.

When entering data at the Tree level, the program will calculate mean plot value from the individual tree values and display them in Form O.

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PLOT AND TREE LEVEL

Enter the following for both Plot and Tree level data entry.

Age

Enter the age (to the nearest month) of the trees when measurements are taken.

Plot

Enter the number of the plot being sampled.

Trees Measured

Enter the number of trees measured in the plot at this date (from 1 to 99).

PLOT LEVEL

At the Plot level, you must calculate the mean "Wet Wt" and "Dry Wt" values.

Dry Wt

Enter the mean foliage dry weight, in kilograms/tree, for each plot.

Wet Wt

Enter the mean foliage wet (fresh) weight, in kilograms/tree, for each plot.

Foliage Nutrient Analysis

Enter the mean amounts of nitrogen (N), phosphorous (P), and potassium (K), as determined in a laboratory from the bulked dry material.

```
FORM O: Foliage Biomass Measurements                                   ADD

                                                                       D: TK-01
                          P L O T :   1          page:  1/1
                          -------------- Foliage Weight ---------
                                 Plot    TWW   SWW   SDW    TDW
      Age   Trees          Tree  ave.   (kg)  (g)   (g)    (kg)
Plot  (mo)  measured
                                 Y     3.79  110   21     0.73
      12    2                2     Y     4.97  70    10     0.71
      12    -9               28
      12    -9               <Ctrl-W>=Plot Mean, [Esc]=Exit
      12    -9               [PgUp]/[PgDn]=Prev./Next Page
      12    -9
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0
      12    -9          -9.00   -9.00   -9.0    -9.0    -9.0

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

TREE LEVEL

When you select data entry at the Tree level, the data entry window shown above will be displayed after you enter a number in "Trees measured."

When you complete data entry in the window and press <Ctrl-W>, the program will calculate mean "Wet Wt" and "Dry Wt" from the entered data and display them in Form O.

NOTE: If you are entering data at Plot level and want to change to Tree level, you must do so before entering a number in "Trees measured."

Tree

Enter the number of the tree for which measurements will be entered.

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NOTE: This Tree ID number must remain constant throughout the life of the plot. See the NOTE in this chapter under "Tree" in "Form N-1".

Plot Ave.

Enter 'Y' if you want the program to include the measurement in the plot mean. Enter 'N' if you do not want it included.

TWW

Enter the total wet weight. TWW is the tree's total foliage fresh weight, measured in kilograms.

SWW

Enter the sample wet weight. SWW is determined by taking a representative sample (if necessary) of the TWW (usually less then 1.0 kg, depending on total and individual leaf weight). This amount (weight) of foliage will be used to obtain the sample dry weight (SDW). Enter weight in grams.

SDW

Enter the sample dry weight. SDW is obtained by drying the SWW at 60-80 degrees C until the weight is constant, and then re-weighing it. Enter weight in grams.

TDW

The total dry weight is calculated and entered by the program from the data entered in the window.
TDW = TWW x (SDW/SWW).

Foliage Nutrient Analysis

Enter the mean amount of nitrogen (N), phosphorous (P), and potassium (K), as determined in a laboratory from the bulked dry material.

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FORM P: Wood Biomass Measurements

ADD

ID: TK-01

Plot	Age (mo)	Trees measured	Stems Wet Wt (--kg/tree--)	Stems Dry Wt (--kg/tree--)	Branches/Twigs Wet Wt (--kg/tree--)	Branches/Twigs Dry Wt (--kg/tree--)	Specific Gravity
1	12	2	26.50	5.60	2.17	0.65	0.23
2	12	2	4.20	1.50	1.67	0.62	0.68
3	12	2	4.80	2.00	0.82	0.27	0.52
4	12	2	3.65	1.20	1.57	0.70	0.51
5	12	2	4.05	1.80	1.67	0.69	0.50
6	12	2	5.05	1.90	1.22	0.46	0.54
7	12	2	32.50	12.40	2.67	0.91	0.37
8	12	2	4.05	1.20	2.67	1.01	0.38
9	12	2	4.65	2.20	1.62	0.71	0.48
10	12	2	4.55	2.00	1.32	0.49	0.48
11	12	2	1.00	0.50	0.25	0.17	0.49

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM P: WOOD BIOMASS MEASUREMENTS

You may enter wood biomass measurements into Form P at either the Plot or Tree level. Select the data entry level by pressing <Ctrl-Home>.

At the Tree level, a data entry window will be presented for "Wet Wt" and "Dry Wt" for both Stems and Branches/Twigs after a number has been entered into "Trees measured."

Both sets of measurements for "Wet Wt" and "Dry Wt" in Form P are mean values for a plot and are entered either by the user (at Plot level) or calculated by the program (at Tree level).

When entering data at the Plot level, these mean plot values must first be calculated by the user and then entered into Form P.

When entering data at the Tree level, the program will calculate mean plot values from the individual tree values and display them in Form P.

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PLOT AND TREE LEVEL

Enter the following for both Plot and Tree level data entry.

Age

Enter the age (to the nearest month) of the trees when measurements are taken.

Plot

Enter the number assigned to the plot being sampled.

Trees Measured

Enter the number of trees measured in the plot at this date.

PLOT LEVEL

At the Plot level, the user must calculate the mean "Wet Wt" and "Dry Wt" values.

Stems

Enter the dry weight for all stems, in kilograms/tree.

Wet Wt. Enter the mean stem wet (fresh) weight, in kilograms/tree, for each plot.

Dry Wt. Enter the mean stem dry weight, in kilograms/tree, for each plot.

Branches/Twigs

Enter the dry weight for all branches and twigs, in kilograms/tree.

Wet Wt. Enter the mean branches/twigs wet (fresh) weight, in kilograms/tree, for each plot.

Dry Wt. Enter the mean branches/twigs dry weight, in kilograms/tree, for each plot.

Specific Gravity

Enter specific gravity of wood (stems and branches/twigs) for each plot. The specific gravity may be calculated by dividing sample dry weight of wood by wet sample volume.

Form P: Wood Biomass Measurements ADD

PLOT: 11 page: 1/1

Plot	Ag (mo	Tree	Plot ave.	Stems Wt TWW (kg)	SWW (-- g --)	SDW (-- g --)	TDW (kg)	Branches/Twigs Wt TWW (kg)	SWW (-- g --)	SDW (-- g --)	TDW (kg)
1	12	2	Y	0.40	20	9	0.18	0.07	65	56	0.06
2	12	28	Y	1.60	50	24	0.80	0.42	170	70	0.17
3	12										
4	12										
5	12										
6	12	2		5.05	1.90	1.22	0.46	0.54			
7	12	2		32.50	12.40	2.67	0.91	0.37			
8	12	2		4.05	1.20	2.67	1.01	0.38			
9	12	2		4.65	2.20	1.62	0.71	0.48			
10	12	2		4.55	2.00	1.32	0.49	0.48			
11	12	2		1.00	0.50	0.25	0.17	0.49			

<Ctrl-W>=Plot Mean, [Esc]=Exit
[PgUp]/[PgDn]=Prev./Next Page

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

TREE LEVEL

When you select data entry at the Tree level, the data entry window shown above will be displayed after you enter a number in "Trees measured."

When you complete data entry in the window and press <Ctrl-W>, the program will calculate the mean "Wet Wt" and "Dry Wt" values for both stem and Branches/Twigs from the entered data and displays them in Form P.

NOTE: If you are entering data at Plot level and want to change to Tree level, you must do so before entering a number in "Trees measured."

Trees

Enter the number of the tree for which measurements will be entered.

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NOTE: The Tree ID number must remain constant throughout the life of the plot. See the NOTE in this chapter under "Tree" in "Form N-1."

Plot Ave.
Enter a 'Y' if you want the program to include the measurement in the plot mean. Enter a 'N' if you do not want it included.

Stems Weight

TWW. Enter the total wet (fresh) weight of stems. TWW is total stem fresh weight of the tree measured in grams.

SWW. Enter the sample wet weight. SWW is determined by taking a representative sample of the stem TWW. Enter weight in grams.

SDW. Enter the sample dry weight. SDW is obtained by drying the SWW sample at 60-80 degrees C until weight is constant, and then re-weighing. Enter weight, in grams.

TDW. The total dry weight is calculated and entered by the program from the data entered in the window.
TDW = TWW x (SDW/SWW).

Branches/Twigs Weight

TWW, SWW, SDW. Determine the values for Branches/Twigs for each tree in the same way described for "Stem Wt" measurements.

TDW. The program calculates and enters the value.

Specific Gravity
Enter specific gravity of wood (stems and branches/twigs) for each plot. The specific gravity may be calculated by dividing sample dry weight of wood by wet sample volume.

FORM Q: Tree Litter Measurements ADD

ID: TK-01

Age (months): 12
Plot(s) : 1 2 3 4 5

Plot	Age (mo)	Layer (mm) Upper	Layer (mm) Lower	Dry Wt (kg/tree)	OM (%)	- Nutrients (%) - N	P	K
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00
		-9	-9	-9.00	-9.0	-9.00	-9.00	-9.00

Enter information in form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM Q: TREE LITTER MEASUREMENTS

Form Q enables you to enter data for the organic material lying on top of the mineral soil. This data must be calculated as mean values for all the plots designated in "Plot(s)."

Age

Enter the age (to the nearest month) of the trees when measurements were taken.

Plots

Enter the plot numbers (maximum = 5) to which the tree litter measurements apply.

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Layer

The user must determine the litter layers, by composition and placement (within the total litter accumulation). Usually, however, litter deposits exhibit all or some of the following layers.

1. One layer (at least part of the year) in which the original material is practically unmodified and is recognizable as to origin.

2. A second layer (sometimes called fermented) is made up of partially modified materials, such as leaves, twigs, woody and animal matter, and is recognizable only as to general origin.

3. A third, almost universal layer (at least part of the year) which is amorphous and broken down to such an extent that the original form cannot be distinguished.

Dry Wt

Enter the mean dry weight of the litter deposit, per layer, in kilograms.

OM

Enter the mean percentage of organic matter, per layer, determined in a laboratory.

N, P, and K

Enter the mean percentage of the nutrient contents of the tree litter, per layer as determined in a laboratory.

NOTE: The entered data will be copied to each of the plots specified. In the example above, Plots 1 through 5 will contain the same data.

Chapter 4
OBSERVATIONS FORMS R - U

INTRODUCTION

This chapter describes and explains the screens presented for Forms R-U, when "Observations" is selected from the Experiment Database Main menu.

Information entered into Forms R-U cannot be analyzed by the Data Analysis program.

Tree Observation Forms R and S

Form R contains tree phenology observations entered at the species or genotype level. Form S contains tree damage observations entered at the treatment, plot, or tree level.

Experiment Operations Forms T and U

Form T contains irrigation data entered at the experiment, treatment, or plot level. Use Form U to record a log of operations performed during the experiment.

Highlighted areas on the screens for Forms R-U indicate where data may be entered. Press the [Enter] key after each entry. Press <Ctrl-W> to save all entered data. If you need assistance while in a form, press the Help Key, [F1], and messages giving additional information will be presented.

NOTE: If you use the [Esc] key in a data set form after ending data but before pressing <Ctrl-W>, your entered data will not be saved.

SUBMENU FOR FORMS R-U

After selecting the Observation module option from the Experiment Database Main menu and entering, if necessary, an Experiment ID, the following submenu will be presented. Move the highlight bar until the form you want is highlighted and then press [Enter] key.

```
EXPERIMENT DATABASE MEASUREMENT
                                                    ID: TK-01
                    << S U B M E N U >>

                FORM
                  R-> Tree Phenology Observation
                  S-> Tree Damage Observation
                  T-> Irrigation
                  U-> Log of Experiment Operations

Use [↑] and [↓] to highlight desired item. Press [Enter] to begin program
execution. (Press [Esc] to exit to select other data forms.)
[Esc]=Exit, [F3]=Change Experiment
```

DATES AND COMMENTS

The Observation forms require dates and comments. Use the date that an observation or operation was performed. The comments should be detailed and specific. You may enter observation data into Forms R-U as often as needed for each experiment. Each dated observation will be stored as a record, by form and experiment, in the database. When you have entered data into a form and press <Ctrl-W> the data will be saved and a blank record presented. Press the [A]dd key to add another record or the [Esc] key to return to the submenu for Forms R-U.

```
                                                                    ADD
FORM R:  Tree Phenology Observation

                                                          ID: TK-01

   Genotype:

   Flowering
     Date (mm/dd/yy) of flower bud appearance  (50% of trees):  /  /
         Flower bud  abundance (L=light, M=medium, H=heavy):

     Date (mm/dd/yy) of open flower appearance (50% of trees):  /  /
         Open flower abundance (L-light, M=medium, H=heavy):


   Fruiting
     Date (mm/dd/yy) of fruit appearance
                        (50% of trees > 1 cm length of fruit):  /  /
     Date (mm/dd/yy) of mature fruit appearance(50% of trees):  /  /

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM R: TREE PHENOLOGY OBSERVATION

Form R enables you to record by date of occurrence, an annual summary of genotype phenology for the experiment as a whole, without considering treatment effects.

Genotype

Enter the tree species, variety, and/or provenance.

Flowering

Using data from control plots only, enter the date when 50% of the trees of the particular species at the particular site have flower buds and open flowers. Enter flower bud and open flower abundance using the following descriptor codes:

- L - light (few locations do have flower buds, but many more could)
- M - medium (many locations do have buds, but many more could)
- H - heavy (buds are present at most of the locations that could have them).

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Fruiting

Using data from control plots only, enter the date when 50% of the trees have fruit > 1 cm long. You may **NOT** enter a value < 1 cm long.

Enter the date when 50% of the trees have mature fruit.

```
ADD
FORM S: Tree Damage Observation

                                                          ID: TK-01

   Date   Health(1-4) Damage
(mm/dd/yy) (1=Good)   (%)    Comments (Include Plot No, Cause,..)
-------------------------------------------------------------------
  / /

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM S: TREE DAMAGE OBSERVATION

Use Form S as a log for dated summary evaluations with brief comments.

Date

Enter the date of observation.

Health

Code general health as follows:

```
1  -  Trees growing well with no evidence of
      environmental limitations.
2  -  Leaves discolored or shoot growth limited, but
      overall health is good (describe the problem
      briefly).
3  -  Growth limited, but some healthy leaves exist.
4  -  No growth or no healthy leaves.
```

Damage

Enter the percentage of damage, if any.

```
FORM T: Irrigation                                                    ADD

                                                                ID: TK-01
-----------------------------------------------------------------------
   Date          Amount
(mm/dd/yy)       (mm)                Method
-----------------------------------------------------------------------
   / /
   / /
   / /
   / /
   / /
   / /
   / /
   / /
   / /
   / /
   / /

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM T: IRRIGATION

Use Form T as a log of irrigation operations, with date of application, amount, and method. Uniform application is assumed.

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```
FORM U: Log of Experiment Operations                                   ADC

                                                                  ID: TK-01

   Date        Management
 (mm/dd/yy)    Operation                      Remark
 ------------------------------------------------------------------------
   / /

Enter information in form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM U: LOG OF EXPERIMENT OPERATIONS

Use Form U as a summary log of the experiment operations. Enter date, management operation, and remarks.

The program can search for specific dates or a range of dates, but does not search for a management operation or remark. You can do this only by scrolling through the records. Complete Form U after every site visit and after every silvicultural operation.

Chapter 5
GENERAL MEASUREMENTS FORMS X AND Y

INTRODUCTION

This chapter describes and explains the screens presented for Forms X and Y when "General Measurements" is selected from the Experiment Database Main menu.

Forms X and Y are for entering user defined measurement variables and data which have not been defined in any of the other Experiment Database forms.

General Measurement Forms X-1 and X-2

In Form X-1, maximum of 12 measurement variables may be defined. In Form X-2, the data for the defined variables may be entered.

General Biomass Measurement Forms Y-1 and Y-2

In Form Y-1, up to six pairs of wet- and dry-weight variables may be defined. In Form Y-2, the data for the defined variables may be entered.

Highlighted areas on the screens for Forms R-U indicate where data may be entered. Press the [Enter] key after each entry. Press <Ctrl-W> to save all entered data. If you need assistance while in a form, press the Help Key, [F1], and messages giving additional information will be presented.

NOTE: If you use the [Esc] key in a data set form after ending data but before pressing <Ctrl-W>, your entered data will not be saved.

SUBMENU FOR FORMS X AND Y

After selecting the module option from the Experiment Database Main menu and entering, if necessary, an Experiment ID, the following sub-menu will be presented. Move the highlight bar until the form you want is highlighted and then press the [Enter] key.

```
EXPERIMENT DATABASE GENERAL MEASUREMENT
                                                    ID: TK-01
                    << S U B M E N U >>

                FORM
                 X-1-> General Measurement Definition
                 X-2-> General Measurements

                 Y-1-> General Biomass Measurement Definition
                 Y-2-> General Biomass Measurements

Use [↑] and [↓] to highlight desired item. Press [Enter] to begin program
execution. (Press [Esc] to exit to select other data forms.)
[Esc]=Exit, [F3]=Change Experiment
```

TO USE FORM X AND Y

Use Forms X and Y to describe, measure, and analyze variables not provided by other measurement forms. Form X can handle up to 12 additional variables of either numeric or nominal data. Form Y can handle up to 6 pairs of wet- and dry-weight data.

You must define the variables you will use before you select Form X-2 or Y-2 to enter data. To do this, first select Form X-1 if you are going to enter data into X-2, General Measurements; or select Form Y-1 if you are going to enter data into Y-2, General Biomass Measurements.

```
FORM X-1: General Measurements Definition                                  ADD

                                                                        ID: TK-01

 -- V a r i a b l e s ---     Input Plot
  Name     Type Dec  Unit     Level Value  Description
 ------------------------------------------------------------------------------
 DK         N    2   meter    TREE  AREA   crown diameter
 GENHLTH    C        A - F    PLOT  AREA   general health; A = excellent
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA
                              PLOT  AREA

 Enter information in the form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM X-1: GENERAL MEASUREMENTS DEFINITION

In From X-1, define the variables you will use to describe, measure, and analyze measurements not provided for in the Forms A-U. You may enter up to 12 different variables. Enter the variable by name, type, decimal places, unit, input level, and plot value. These are described below.

Name

New variable names must not be the same as those used in Forms A-U. You may not use the names:

PSURVIV, HT, BASAL, DBH, WWT, WT, N, P, K, WSTEM, STEM, WBRANCH, BRANCH, GRAVITY, ELEV, LAT_DEG, SITESLOPE, GENESLOPE, LAND_OWN, LAND_USE, NEAR_ROAD, TMAX, TMIN, PPN, ORDER, MOISTURE, SOILTEMP, IMPLAYER, SUB_PH, SUB_TXTURE, AFMOIST.

A name may have eight characters, and if you wish, you may slightly modify the names listed on the previous page. For example, you could designate DBH as DBH1. The name must start with a letter and cannot contain a space. For example, in the screen above, two variables have been entered: 'DK' and 'GENHLTH'.

Type

Enter either a 'C' for nominal (qualitative, categorical, alphanumeric) data or a 'N' for numeric (quantitative) data.

Decimal

For numeric fields, enter the number of decimal places to be assigned. Valid entries are the digits 0 to 4.

Unit

Enter the unit of measurement to be used for a particular variable, up to a maximum of eight characters.

Input Level

Enter 'PLOT' for plots with one measurement or calculated value. Enter 'TREE' for multiple subplot (sample) measurements or for calculated values per plot, such as one measurement per tree within a plot or the average stem measurements for each tree.

NOTE: Nominal variables have to be entered at the Plot input level.

Plot Value

Enter the computational method you want the program to use to summarize subplot measurements within a plot for each Plot value. Enter the following for each Plot value.

```
"AMEA " - Arithmetic Mean        "MIN  " - Minimum
"GMEA " - Geometric Mean         "SUM  " - Summation
"MAX  " - Maximum
```


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```
ADD
FORM X-2: General Measurements
                                                                ID: TK-01

 ---------------------------------------------------------------------
                      DK      GENHLTH
 Plot Age Trees  meter      A - F
 ---------------------------------------------------------------------
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00
      12   -9    -9.00

 Enter information in the form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM X-2: GENERAL MEASUREMENTS

The variables you entered in Form X-1 will appear on Form X-2.

Enter the plot number, age, and the number of trees measured.

Enter measurements for the appropriate variables. Default values for numeric measurements, '-9', will appear in the highlighted areas as shown in the above screen.

Variables with the input level set to "Tree" will accept individual tree measurements in separate tree windows. Mean plot values, however, can also be entered directly, by using <Ctrl-Home> to change the data entry to the "Plot" level.

The program provides plot summaries based on the entered measurements, as defined in Form X-1 and recorded in Form X-2 (by tree). The program calculates the plot value according to the method specified in "Plot Value" in Form X-1.

```
FORM Y-1: General Biomass Measurements Definition                    ADD

                                                                  ID: TK-01
----- V a r i a b l e s -----------------------------------------------------
 ----- Name -----                                  Input
 Wet Wt     Dry Wt     Dec   Unit        Level    Description
-------------------------------------------------------------------------------
WFOLPRUN   DFOLPRUN   2     kg/tree     TREE     foliage biomass from PRUNING
WWOODPRUN  DWOODPRUN  2     kg/tree     TREE     wood biomass from PRUNING
W          D          0     kg/tree     PLOT
W          D          0     kg/tree     PLOT
W          D          0     kg/tree     PLOT
W          D          0     kg/tree     PLOT

Enter information in the form above.  Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help
```

FORM Y-1: GENERAL BIOMASS MEASUREMENTS DEFINITION

In Form Y-1, define the variables you will use to describe, measure, and analyze biomass-type measurements. You may enter up to 6 pairs of wet- and dry-weight data. Enter the variable name, decimal places, unit of measurement, input level, and plot value.

Name

In the highlighted areas under "Wet Wt" and "Dry Wt," are the letters 'W' and 'D', respectively. These letters cannot be changed and will be the first letter of any variable names you enter. Each variable name may have a maximum of eight characters in length, including the fixed letter, W or D. The name may include letters, numbers and the '_' underline character.

Decimal

Enter the number of decimal places to be assigned for the variable. Valid entries are the digits 0-4.

Unit

Enter the unit of measurement to be used for the variable, up to a maximum of eight characters.

Input Level

Enter 'PLOT' if you want to enter measurements as mean plot values. Enter 'TREE' if you want to enter measurements at the individual tree level within a plot and want the program to calculate the mean plot value.

FORM Y-2: General Biomass Measurements

ADD

ID: TK-01

Plot	Age	Trees	WFOLPRUN -- kg/tree --	DFOLPRUN	WWODPRUN -- kg/tree --	DWODPRUN
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00
	18	-9	-9.00	-9.00	-9.00	-9.00

Enter information in the form above. Press <Ctrl-W> to save.

[Esc]=Exit, [F1]=Help

FORM Y-2: GENERAL BIOMASS MEASUREMENTS

The variables you entered in Form Y-1 will appear on screen in Form Y-2. Enter the plot number, age, and the number of trees measured.

Enter measurements for the appropriate variables. Default values for numeric values will appear in the highlighted areas.

Variables with the input level set to "Tree" will accept individual tree measurements in separate tree windows. Mean plot values, however, can also be entered directly, by using <Ctrl-Home> to change the data entry to the "Plot" level.

The program provides plot summaries based on the entered measurements, as defined in Form Y-1 and recorded in Form Y-2 (by tree).

The program calculates the plot value according to the method specified in "Plot Value" in Form Y-1.

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Chapter 6
DATA ANALYSIS

INTRODUCTION

This chapter describes and explains the screens presented when "Data Analysis" is selected from the Experiment Database Main menu.

NOTE: The Data Analysis program creates data sets for running the FMOD data analysis and graphics package. The program can also create an ASCII (text) file from the data set created that can be edited for use with other data analysis programs. FMOD can be used independent of the Experiment Database by selecting Option 1 in the IADSS Master menu. For details on using FMOD, refer to the FMOD User's Manual.

DATA ANALYSIS WINDOW

When you select "Data Analysis" from the Experiment Database main menu, the following screen is presented. The window in the center of this sample screen is displayed whenever a data set file exists for the experiment listed at the top right corner of the screen. The window lists the data set variables contained in the data set file and the status line across the bottom of the screen lists the data set file name, the number of records in the file, the length of each record, and the file creation date.

```
F/FRED DATA ANALYSIS

Age (Month):    -                                                    ID: TK-01
                          ┌─ DATA SET VARIABLES ─┐
TREE MEASUREMENTS  FOLIA  │      I_ID            │   OD BIOMASS MEASUREMENTS
PSURVIV (%).....   WWT (  │      EXPT_ID         │   TEM (wet weight).......
HT (height).....   WT (d  │      AGE             │   EM (dry weight)........
BASAL (dia.)....   N (%   │      PLOT            │   RANCH (wet weight).....
DBH (dia.)......   P (%   │      TRT             │   ANCH (dry weight)......
                   K (%   │      REP             │   AVITY (s.g.)...........
                          │      SOILTEMP        │
                          │      PSURVIV         │
                   GE     └──────────────────────┘

DSN: TK01.DBF      72 record(s),     31 bytes/record.      Updated 10/20/89

[C]reate new dataset, [A]SCII File (.txt), [K]MD file (.kmd)
[R]un FMOD data analysis program, [B]rowse

[Esc]=Exit, [F1]=Help, [F2]=Print, [F3]=Change Experiment
```

The file name listed on the status line always has a .DBF extension, indicating that it is a dBASE-compatible file. The file name is that of the experiment ID (in the sample screen, it is 'TK-01'). Whenever a data set is created for an experiment, whether or not an ASCII and/or FMOD file has also been created, only the .DBF file will be listed on this line. From this file, the program creates the ASCII and/or FMOD files.

The options highlighted on the bottom of this screen allow selection of the data analysis options. All these options are highlighted except when a data set file does not exist for the experiment displayed in the right top of the screen ('TK-02' in the sample screen). When that is the case, no window will appear in the screen and only the [C]reate and [R]un data options and the [F3] key will be highlighted.

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CREATE NEW DATASET

Press the [C]reate key to create a data set for the experiment displayed in the screen. The Measurement Variables screen will be presented (see below). This is the first of two variable selection screens. In the first screen, Measurement variables are selected; in the second screen, Explanatory variables are selected.

```
F/FRED DATA ANALYSIS

                                                                ID: TK-01
 Age (Month):    -

 TREE MEASUREMENTS  FOLIAGE BIOMASS MEASUREMENTS   WOOD BIOMASS MEASUREMENTS
 PSURVIV (%).....N  WWT (wet weight)............N  WSTEM (wet weight)......N
 HT (height).....N  WT (dry weight).............N  STEM (dry weight)......N
 BASAL (dia.)....N  N (% of dry weight)........N  WBRANCH (wet weight)....N
 DBH (dia.)......N  P (% of dry weight)........N  BRANCH (dry weight).....N
                    K (% of dry weight)........N  GRAVITY (s.g.)..........N

                          GENERAL MEASUREMENTS


                       GENERAL BIOMASS MEASUREMENTS


 [C]reate new dataset, [A]SCII File (.txt), [K]MD file (.kmd)
 [R]un FMOD data analysis program, [B]rowse

[Esc]=Exit, [F1]=Help, [F2]=Print, [F3]=Change Experiment
```

Select Measurement Variables

Enter the age range for the data you want analyzed. The variable fields will be highlighted and contain the default value, 'N'. Enter a 'Y' in the field to select that measurement variable for analysis. You may select as many variables in the screen as you want, but you must choose at least one.

NOTE: Treatment information from Form I is always included in the data set and therefore is not listed as a variable selection choice.

General measurements and general biomass measurements have been defined in Forms X and Y. These variables will be listed in this screen under these headings and may also be selected.

NOTE: If you do not want to include Explanatory variables in the data set, press <Ctrl-W> to begin data set creation after selecting Measurement variables.

Select Explanatory Variables

Use the [PgDn] key to move to the Explanatory variables screen (see below). Press the [PgUp] key to move back to the Measurement variables screen.

```
F/FRED DATA ANALYSIS

OTHER EXPLANATORY VARIABLES                                   ID: TK-01

        SITE DESCRIPTORS                      CLIMATE DESCRIPTORS
 ELEV (elevation)...........N          TMAX (maximum temperature)..........N
 LAT_DEG (latitude).........N          TMIN (minimum temperature)..........N
 SITESLOPE (site slope).....N          PPN (total precipitation)...........N
 GENESLOPE (general slope)..N

                                              SOIL DESCRIPTORS
  SOCIO-ECONOMIC DESCRIPTORS          ORDER (soil order)..................N
 LAND_OWN (land ownership)..N         MOISTURE (moisture regime)..........N
 LAND_USE (land use)........N         SOILTEMP (temperature regime).......N
 NEAR_ROAD (nearest road)...N         IMPLAYER (impermeable layer)........N
                                      SUB_PH (subsoil pH).................N
                                      SUB_TXTURE (subsoil texture)........N
                                      AF_MOIST (moisture after planting)..N

Enter [Y] for the variables to be analyzed.  Press <Ctrl-W> to begin.
[PgDn]=Page Down, [PgUp]=Page Up

[Esc]=Exit, [F1]=Help                                          Page: 2/2
```

Select these variables only if you want to perform an intersite analysis (combining several experiments in one analysis) on the data set. The value of each selected explanatory variable is repeated for each observation (plot) in the data set.

In the highlighted variable fields, the default values are '-9'. Enter a 'Y' in the field to select that variable for analysis.

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Data Set Creation

After selecting all variables to be included in the data set, press <Ctrl-W> to begin data set creation. When creating the data set, the program will include all variables selected but any that contain 'missing' values in the database will be assigned a '.' (dot) in the final data set.

Problems

If a data set is not created (the message "No data records found" will be displayed), check the following conditions.

Make certain that data exists for the age range you specified.

Make certain that the plot numbers entered in the measurement forms *exactly* match the plot numbers designated in Form I-3.

CREATE FMOD FILE

From Newly-Created Data Set

When a data set is created, you will be given the option of creating an FMOD file to be used for data analysis. At the bottom of the data set variable screen, the Experiment ID and a highlighted data entry field containing four default zeros will be presented (see screen below).

```
Enter data file number to be used:  TK010000
Enter a four digit number >= 0.  Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help                                    Page: 2/2
```

Enter a number and press <Ctrl-W> or leave the default zeroes and press <Ctrl-W>. The program will create the FMOD file and write it directly to the FMOD subdirectory 'C\IADSS\FMOD' if you have installed IADSS using either the Install program or the DOS commands described in the "Installation" chapter of this *User's Manual.*

The file can be identified in the subdirectory by its .KMD extension. For example, TK011234.KMD. After creating the FMOD file, the program will display on screen the file name and its subdirectory location. Make a note of the name; it will not be listed in the FMOD program.

From Existing Data Set

If you have already created a data set for an experiment and want to create an FMOD file, enter the Experiment ID, press the [K]MOD key and follow the instructions in "From Newly-Created Data Set" above.

NOTE: If you press the [Esc] key before pressing <Ctrl-W>, the FMOD file will not be created.

NOTE: If you use the same file name for an FMOD file which is already in the subdirectory, you will be asked whether you want to overwrite the old file or rename the new file.

RUN FMOD

When the FMOD file is created, the prompt at the bottom of the screen will display the following message.

```
Run FMOD data analysis program now? (Y/N)? N

[Esc]=Exit, [F1]=Help                                  Page: 2/2
```

Press the [Y] key to run FMOD or any other key to return to the main menu.

FMOD Execution

To run an FMOD analysis, from the Experiment Database means a transfer to the FMOD package. This is done by IADSS and the following two screens will be presented which explain the FMOD options. See the *FMOD User's Manual* for detailed instructions.

```
A   Select the SET option if the FMOD menu colors are difficult to see.
    See the SET Command Options and Appendix A in the FMOD User's Manual.
T
P   Select the RECORD option if you want to save your selections and
H   inputs to a disk file during the analysis session.
B   CAUTION:  A .KMD file with the same file name will be overwritten.
D

    Select the READ option to enter a data set (a file with a .KMD
    extension) into FMOD for analysis.

    Select DESCRIBE then SUMMARY to quickly check your data after using
    the READ option.

    Screen outputs will be in a disk file with a .OUT extension.  The
    file name will be the same as the data set name.

    See the FMOD User's Manual for information on other options.
[C        [PgUp]=Page Up, [PgDn]=Page Down, [Enter]=Continue
[R
```

[Esc]=Exit

F/FRED DATA ANALYSIS

```
A   Select the GLM command to estimate analysis-of-variance and
    regression models.
T
P   Select the MODEL command to specify the variables in the model.
H   The model terms are selected from the variables list on the right.
B   Select the explanatory terms first.  Separate the terms with the
D   blank delimiter.  Use the '*' for interaction terms and the '/' for
    nested terms.  Enter only one response variable after entering the
    explanatory variables.
    NOTE: The model needs to be specified before any of the options
          listed below MODEL can be utilized.
    NOTE: The first term in the model has to be CONSTANT for the first
          sum of squares line in the ANOV table to be corrected for the
          overall mean of the data, to calculate a coefficient of
          determination (R square value), to calculate a coefficient of
          variation (CV value), or to include an intercept in a
          regression model.
[C          [PgUp]=Page Up, [PgDn]=Page Down, [Enter]=Continue
[R
```

[Esc]=Exit

CREATE ASCII FILE

To create an ASCII (or text) file from a data set, enter the Experiment ID and then press the [A] ASCII/text file key. Like the FMOD file, you will be asked to enter a number to replace the four default zeroes in the file name (see screen below).

```
Enter data file number to be used:  TK010000
Enter a four digit number >= 0.  Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help                                    Page: 2/2
```

Enter a number and press <Ctrl-W>. The file name and its subdirectory location will be displayed. An ASCII file can be identified in the subdirectory by its .TXT extension. For example, TK011234.TXT. Make a note of the file name.

NOTE: If you use the same file name for an ASCII file which is already in the subdirectory, you will be asked whether you want to overwrite the old file or rename the new file.

NOTE: The first line of an ASCII (text) created file will contain the variable names. These will be listed in the same order as the columns of data in the data set but may not line up with their corresponding columns because of variable widths of names and data.

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Chapter 7
UTILITIES

INTRODUCTION

The Utilities program is designed for system maintenance and data exchange among user. Users may backup, restore, reindex, delete and group experiments.

This chapter describes and explains the screens presented when "Utilities" is selected from the Experiment Database Main menu.

Highlighted areas on the screen for the Utility program indicate where data may be entered. Press the [Enter] key after each entry. If you need assistance while in a screen, press the Help Key, [F1], and messages giving additional information will be presented.

NOTE: If you use the [Esc] key in a Utilities input screen after entering information or data but before pressing <Ctrl-W>, your entered data will not be saved.

SUBMENU FOR UTILITIES

After selecting "Utilities" from the Experiment Database Main menu, the following submenu will appear.

```
                    EXPERIMENT DATABASE UTILITIES
                                                              ID: TK-01
                         << S U B M E N U >>

                      1-> BACKUP Experiment data
                      2-> RESTORE Backed up data
                      3-> REINDEX Experiment database
                      4-> DELETE Experiment data
                      5-> GROUP Experiments

 Use [↑] and [↓] to highlight desired item.  Press [Enter] to begin program
 execution.  (Press [Esc] to exit to select other data forms.)
[Esc]=Exit, [F3]=Change Experiment
```

From the menu, you may:

```
1 - BACKUP data in the experiment database.
2 - RESTORE data that was previously backed up.
3 - REINDEX the experiment files.
4 - DELETE selected groups of data.
5 - GROUP experiments      - by creating experiment groups
                           - by modifying experiment groups
                           - by deleting experiment groups
```

```
EXPERIMENT DATABASE BACKUP UTILITY

                    BACKUP CRITERIA SELECTION

  1-> SELECT AN EXPERIMENT GROUP TO BACKUP
  2-> SELECT EXPERIMENTS WITHIN THE EXPERIMENT GROUP TO BACKUP
  3-> SELECT FORMS TO BACKUP
  4-> SELECT AGE RANGE OF DATA TO BACKUP

  [Esc]=Exit, <Ctrl-W>=start BACKUP, [↑] [↓]=Move,[Enter]=Select

EXPERIMENT GROUP:
EXPERIMENTS (First 10 selected listed):

FORMS:

AGE:

Specify the set of data backup.
All criteria selections must be specified.

[Esc]=Exit, [F1]=Help
```

OPTION 1: BACKUP EXPERIMENT DATA

When Option 1 of the Utilities submenu is selected, the above menu will be presented.

Backing up data stored in the hard disk to floppy disks enables you to transfer data from one computer to another, restore data that is accidentally erased or destroyed, and archive data that is no longer used (freeing disk storage space). Because this utility allows you to specify data in the Experiment Database for back up to one or more floppy disks, you must select each of the four options presented in the screen to set the data criteria parameters.

SELECT BACKUP CRITERIA

Experiment Group Selection

When Option 1 of the Backup Criteria Select menu is selected, the following submenu is displayed.

```
submenu
1-> Backup All Experiment Groups and All Experiments
2-> Select an Experiment Group to Backup
```

1 - Choose this option to backup all experiment groups and all experiments. (See the section entitled "Option 5 - Group Experiments" in this chapter for a description of Experiment Groups.)

By choosing this option, you do not need to select from the second criteria option, "Select Experiments within the Experiment Group." Go to the section in this chapter entitled "Form Selection."

2 - Choose this option to select a specific experiment group for backup. Every experiment group in the database will be listed in a similar window to the one shown below.

```
EXPERIMENT GROUPS
ID          GROUP NAME
        INDIVIDUAL EXPERIMENTS

[Esc]=Exit, [↑],[↓] [PgUp],[PgDn], [Enter]=Select
```

Select the Experiment Group you wish to backup, by using the cursor keys and the [PgUp] and [PgDn] keys to highlight the group of your choice. Press the [Enter] key.

Experiment Selection

When Option 2 of the Backup Criteria Selection menu is selected, the following submenu is presented.

```
submenu
1-> Backup ALL Experiment in the Experiment Group
2-> Select Experiments to Backup
```

1 - Choose this option to select all the experiments in the group to be backed up.

2 - Choose this option to select specific experiments for backup. The following window will be displayed listing the experiments in the selected group.

```
EXPERIMENT SELECTIONS

►TK-01

[↑],[↓],[→],[←] [PgUp] [PgDn],
[Enter]=Select,<Ctrl-W>=Finished
```

Use the cursor keys and the [PgUp] and [PgDn] keys to highlight the experiment(s). The [Enter] key acts as a toggle to select or unselect the experiment being highlighted. Selected experiments are marked by a small triangle, '►', to the left of the Experiment ID. Press <Ctrl-W> when you have finished your selections.

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Form Selection

When Option 3 of the Backup Criteria Selection menu is selected, the following submenu is presented. For the experiment(s) you have already selected, choose specific Experiment Data Forms A-U to be backed up.

```
submenu
1-> Backup All Forms
2-> Select Forms to Backup
```

1 - Choose this option to select all the forms for back up.

2 - Choose this option to select specific forms for back up. The following screen will be displayed, listing all the forms in the Experiment Database from which you can select specific forms to be backed up. Highlight the forms you want by using the cursor keys and the [PgUp] and [PgDn] keys. The [Enter] key acts as a toggle to select or unselect the form being highlighted. Selected forms are marked by a small triangle, '▸', to the left of the form. Press <Ctrl-W> when you have completed your selection.

```
EXPERIMENT DATABASE BACKUP UTILITY

                    FORM SELECTIONS
FORM                                FORM
 A-> Institution Information         M-> Soil Measurements
 B-> Cooperator Information          N-> Tree Measurements
 C-> Trial Site Information          O-> Foliage Biomass Measurements
 D-> Site Descriptor - Socioeconomic P-> Wood Biomass Measurements
 E-> Site Descriptor - Climate       Q-> Tree Litter Measurements
 F-> Site Descriptor - Soil          R-> Tree Phenology Observation
 G-> Experiment Site Preparation     S-> Tree Damage Observation
 H-> Experiment Description          T-> Irrigation
 I-> Experiment Factors/Treatments   U-> Log of Experiment Operations
 J-> Experiment Planting             X-> General Measurements
 K-> Tree Species                    Y-> General Biomass Measurements
 L-> Weather Data

 [↑] [↓] [→] [←]=Move Selection, [Enter]=Select, <Ctrl-W>=Finished

Use the Cursor keys to highlight a FORM, then press [Enter] to
select the FORM. Press <Ctrl-W> when finished selecting.

[Esc]=Exit, [F1]=Help
```

Age Range Selection

When Option 4 of the Backup Criteria Selection menu is selected, the following window is presented. Enter the age range (in months) of the data you want backed up. For example, entering "3-12" would mean you want all data in the age range 3 months through 12 months to be backed up. Entering the range "0-99" will select all ages.

```
AGE SELECTION

    ▒ - ▒

[Esc]=Exit
```

NOTE: If you selected only Information forms (Forms A-K) in the Form Selection option, the age selection will not be used by the program when backing up data because age is not a dynamic criterion for these forms. You must still, however, enter an age range.

STARTING THE BACKUP

When you finish specifying the backup criteria, press <Ctrl-W>. The program will calculate the approximate number of blank diskettes (double sided 5-1/4") that will be needed for backup. Enter the letter of the disk drive to which you are backing up the data. If the set of data cannot fit on one disk, the program will prompt you for more disks until all of the selected data is backed up.

NOTE: The Backup utility will not erase a diskette. If IADSS data are found on the diskette, the utility will overwrite them. If non-IADSS data are found, however, the utility will not overwrite them. Therefore, it is suggested that you erase all files on diskettes you are using as backup diskettes.

When backup is completed, a @BACKUP.TXT file will be found in the disk directory with a summary of the backed-up files, in ACSII format.

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It is suggested you label your diskettes and list the data they contain. For example:

```
IADSS Backup 1 of 2
TK01 6 month data
```

OPTION 2: RESTORE BACKED UP DATA

When Option 2 of the Utilities submenu is selected, the following screens will be presented. Use this utility to restore backed up data from a floppy disk (using the Backup utility) to the database on a hard disk.

Restoration is done on a record by record basis. Each data record on the backup disk is checked against data records in the database. If the record exists in the database, it is replaced; if the record does not exist, the program will add the record to the database. The program first checks to see that the disk containing the backed-up data is an IADSS Experiment Database Version 2.0 backup disk.

Follow the screen messages to restore data to the hard disk.

```
EXPERIMENT DATABASE RESTORE UTILITY

Place back up disk in disk drive.
Press any key to continue...

[Esc]=Exit, [F1]=Help
```

```
EXPERIMENT DATABASE RESTORE UTILITY

Enter the disk drive letter

[Esc]=Exit, [F1]=Help
```

Backup Report

After inserting the backup disk into the disk drive, enter the disk drive letter (see screen on previous page). The Restore utility checks to see if the inserted disk is a IADSS version 2.0 backup disk and that all files listed in the disk's @BACKUP.TXT file are on the disk. The program then displays a Backup report listing the data contained on the disk. (See sample Backup report in following screen.)

```
EXPERIMENT DATABASE RESTORE UTILITY

    ===== IADSS BACKUP REPORT =====
    DATE: 02/08/90     TIME:  15:27:52

    EXPERIMENT GROUP: A.AURI
    EXPERIMENTS:

    CF-10  FF-10  MP-10  TK-10  TS-10

    AGE CONDITION:  All Ages

    BACKUP FORMS ON THIS DISK:
    --------------------------
     NETWORK FORMA FORMG FORMH FORMI FORMJ FORMK

    DISK  #:  1 (LAST)

  End of Backup Report file
  Press any key to continue...

[Esc]=Exit, [F1]=Help
```

Read this report to make sure you have inserted the correct diskettes. Use the [F2] key to print the report. Notice the last line of the report where the number of the disk is given. In this sample report, the Disk is #1 (LAST). This means that one disk holds all the data that was requested for backup. If, however, two or more disks were needed to hold all the backed up data, each of those diskettes will list the data contained on its disk and the number of the disk, and the label "LAST" will be listed only for the last disk in that series.

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Before restoration begins, you have the option of changing the disk.

When restoration is completed, you may restore another disk or exit the utility.

OPTION 3: REINDEX EXPERIMENT DATABASE

When Option 3 of the Utilities submenu is selected, the following submenu will be presented. Use the Reindex utility to rebuild the index file(s) of an Experiment Database file which has been corrupted or damaged in some way.

```
submenu
 1-> Reindex all forms
 2-> Select forms to Reindex
```

Index files contain information on the sorted order of the data in the database. When these files are corrupted by power problems, manipulated incorrectly or accidentally erased, the program may not be able to find certain data. The Reindex utility will rebuild the damaged or missing index files, correcting the problem.

Because the reindex process can be time consuming if the database contains a large amount of data, two options are available at the submenu level when for reindexing.

1 - Choose this option to reindex all forms in the experiment database.

2 - Choose this option to view a form selection screen.

Highlight as many forms as you want by using the cursor keys and the [PgUp] and [PgDn] keys. The [Enter] key acts as a toggle to select or unselect the form being highlighted. Press <Ctrl-W> when you have completed your selection.

```
EXPERIMENT DATABASE REINDEX UTILITY

                    REINDEX BY FORM
FORM                                FORM
 A-> Institution Information         P-> Wood Biomass Measurements
 B-> Cooperator Information          Q-> Tree Litter Measurements
 I-> Experiment Factors/Treatments   R-> Tree Phenology Observation
 K-> Tree Species                    S-> Tree Damage Observation
 L-> Weather Data                    T-> Irrigation
 M-> Soil Measurements               U-> Log of Experiment Operations
 N-> Tree Measurements               X-> General Measurements
 O-> Foliage Biomass Measurements    Y-> General Biomass Measurements

[↑][↓][→][←]=Move Selection, [Enter]=Select, <Ctrl-W>=Finished

Select a form to Reindex

[Esc]=Exit, [F1]=Help
```

OPTION 4: DELETE EXPERIMENT DATA

When Option 4 of the Utilities submenu is selected, the first screen presented contains a warning message (see below). Use the Delete utility to remove large blocks of data from the Experiment database files, but be aware that the deletion is permanent.

```
!!! WARNING !!!

The DELETE Utility will permanently delete data from
the Experiment Database. Make sure you are deleting
only the data you want deleted. If you have previously
made a BACKUP of the deleted data you can use the RESTORE
Utility to restore the data.

Press any key to continue...
```


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The delete utility allows you to 1) delete a set of data from more than one data form at a time; 2) use data form and age range criteria to delete selected data forms; and 3) delete Experiment IDs and remove an experiment group from the database.

Select Delete Criteria

The following screen will be presented, asking you to choose the criteria for deletion. This criteria selection process is the same as the one used for the Backup utility, except for Form selection. Review the section entitled "Select Backup Criteria" in this chapter under "Experiment Group Selection" and make your selections from Options 1, 2, and 4 of the Delete Criteria Selection menu.

```
EXPERIMENT DATABASE DELETE UTILITY

                    DELETE CRITERIA SELECTION

 1-> SELECT AN EXPERIMENT GROUP TO BE DELETED
 2-> SELECT EXPERIMENTS WITHIN THE EXPERIMENT GROUP TO BE DELETED
 3-> SELECT FORMS TO BE DELETED
 4-> SELECT AGE RANGE OF DATA TO BE DELETED

 [Esc]=Exit, <Ctrl-W>=start DELETE, [↑] [↓]=Move,[Enter]=Select

EXPERIMENT GROUP:
EXPERIMENTS (First 10 selected listed):

FORMS:

AGE:

Specify the set of data to be deleted.
All criteria selections must be specified.

[Esc]=Exit, [F1]=Help
```

For Form Selection, you may select an entire form to delete or you may choose to select just the subforms of a form to delete. For example, you may choose to delete from Form N, only subforms, either Form N-1 or Form N-2.

For forms which are further subdivided at the data level (e.g., forms N, O, P, X, and Y), you may choose to delete the plot, tree, or stem data level.

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For Form L, you may choose to delete at both the monthly and daily data level or at the daily level only.

Delete Experiment ID

If you choose to delete an experiment, you will delete all its experiment forms (including subforms and plot, monthly, and daily data) in the age range 0- 99.

Delete Experiment Group

If you choose to delete an Experiment Group, you will delete all the groups of its experiments and all the associated experiment forms (including subforms and plot, monthly, and daily data) in the age range 0 - 99.

OPTION 5: GROUP EXPERIMENTS

When Option 5 of the Utilities submenu is selected, the following screen will be presented.

When an experiment data set is entered into IADSS, it is assigned to the experiment group named "Individual Experiments." Using the Group Experiments utility, you can create an experiment group that combines several Individual Experiments within it. You can also modify (change) the name and/or ID of an experiment group, and delete an experiment group.

```
EXPERIMENT GROUPS UTILITY

                    EXPERIMENT GROUPS
      ID                          Group Name
                INDIVIDUAL EXPERIMENTS
   HUMID87   Humid 1987 Network Trials

     Use [Up Arrow] or [Down Arrow] to choose a group.

                <<EXPERIMENTS FOR HUMID 87>>
 ID     Date    Max.T  Min.T  Rain  Soil Order    Country
TH-01 10/01/87 -9.0   -9.0   1211  Ultisol       Thailand
TK-01 10/01/87 33.5   21.4   1529  Entisol       Thailand

      Use [PgUp] or [PgDn] to see Experiments.

[A]dd a Group, [M]odify selected Group ID and Name,
[D]elete selected Group, [R]eassign an Experiment

[Esc]=Exit, [F1]=Help
```

The screen displays the current group IDs and names and lists the experiments contained within each group when it is highlighted.

For example, in the top portion of this screen under "Experiment Groups," the group "HUMID87 HUMID 1987 Network Trials" is highlighted. In the bottom portion of the screen, under "Experiments for HUMID87" all the experiments grouped under this group name are listed.

Add Group

To add an Experiment group, press the [A]dd key. Prompts and highlighted data entry fields will be presented in the bottom portion of the screen (see below). Enter a Group ID and Group Name and press <Ctrl-W> to save.

```
Group ID:          Group Name:
Enter the Group ID and Group Name.  Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help
```


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The entered ID and name will be displayed in the top portion of the screen. Press the [R]eassign key to assign experiments to this group (see following section, "Reassign Experiments," for instructions).

Modify a Group ID and Name

To change a group name and/or ID, highlight the ID and name you want to change. Press the [M]odify key. The group ID and name will be presented in the bottom portion of the screen. Make any modifications to the group ID and/or name and then press <Ctrl-W> to save the changes.

Reassign Experiments

To reassign or assign an experiment to a group, highlight the group ID and name to which you want the experiment reassigned. Press the [R]eassign key. The bottom portion of the screen will display a prompt and a data entry field (see below). Enter the ID of the experiment you wish to reassign and press <Ctrl-W>. The experiment will be listed under the selected group name.

```
Reassign Experiment: ____ to Group: TEST.
Enter the Experiment ID.  Press <Ctrl-W> to save.
```

```
[Esc]=Exit, [F1]=Help
```


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Delete a Group Name

To delete a grouping of experiments under a group name, highlight the group ID and name you want deleted. Press the [D]elete key. A message with the group ID will appear in the bottom portion of the screen (see below). Select 'Y' to delete the group or 'N' if you do not want to delete.

```
Delete Group: TEST     (Y/N)? N
```

[Esc]=Exit, [F1]=Help

NOTE: When an Experiment group is deleted, any experiment assigned to that group will be reassigned to the 'Individual Experiments' group.

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MPTS SPECIALIST DATABASE

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Chapter 1
INTRODUCTION

PROGRAM DESCRIPTION

The MultiPurpose Tree Species (MPTS) Specialist Database enables quick access to the names, addresses, and areas of expertise of researchers active in MPTS research worldwide. The information contained in the database records include a specialist's experience with species, subject fields, environmental zones, and geographic regions. The database is designed to serve not only as a directory of MPTS specialists for F/FRED cooperators but also as an efficient means of information exchange among a wide range of individuals in the MPTS and farm forestry research community.

Each record in the database is comprised of two pages. The first page contains information about each individual's specialty. The second page contains general personal data.

DATA ENTRY SCREENS

The Specialist Database has two data entry screens corresponding to the two pages that comprise each database record. Entering data into both screens completes the record for a specialist.

DATA SELECTION WINDOWS

In the first data entry screen (page) of a specialist record, Data Selection Windows are available to facilitate data entry, as shown in the above screen. In the [A]dd mode, these windows contain a list of data entry options for the following data entry fields.

- MPT Professional Responsibility
- MPT Subject Field
- MPT Species
- MPT Environmental Zone
- MPTS Geographic Regions

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```
MPTS SPECIALIST DATABASE                                                    ADD

 Name.......                                                   MI
            Family Name                First Name

 Job Title..
 Institution
                    << EXPERIENCE >>
 MPT Pro  1) Project Management/Implementation
   1.     2) Research
   2.     3) Extension/Training
 MPT Sub     Select 1                                  cies:
   1.        0 = None
   2.
   3.                                                  3.
 MPT Environmental Zone:                          MPTS Geographic Regions:
                                                     1.
                                                     2.
 Percentage of time working with the above species:    %

 Enter information in above form.  Press <Ctrl-W> to save.
 [PgUp]=Page up, [PgDn]=Page down

[Esc]=Exit                                                          Page: 1/2
```

To view the Data Selection windows for one of these fields, place the cursor in the field and then press the [Enter] key. The window will list, by number, the options available. Enter the number which corresponds to the selection you want. The selected item will be entered and displayed in the data field.

FUNCTION KEYS

The function keys available in the Specialist Database are as follows.

[A]dd	-	Enter specialist information.
[S]earch	-	Specify criteria to locate records.
[M]odify	-	Update and change information in a record which resides in the database.
[D]elete	-	Remove records from the database.

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ACCESS DATABASE

To access the MPTS Specialist Database, select "D - MPTS Specialist Database" from the F/FRED Master menu.

NOTE: If you are using the MPTS Specialist Database separate from IADSS, access the program by typing 'SPECMAIN [ENTER]' at the DOS prompt.

Chapter 2
MPTS SPECIALIST DATABASE PROGRAM

This chapter describes and explains the two screens presented for the MPTS Specialist Database program.

Highlighted areas on the screens indicate where data may be entered. Press <Ctrl-W> to save all entered data.

NOTE: If you use the [Esc] key in a page after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

```
                                                                    ADD
MPTS SPECIALIST DATABASE

 Name....... Doe                    John                    A.
             Family Name            First Name              MI

 Job Title.. Associate Professor
 Institution The Research Center

 MPT Professional Experience:
   1.Research
   2.Extension/Training
 MPT Subject Field:                    MPT Species:
   1.Genetics/Breeding                   1.Acacia auriculiformis
   2.Nurseries/Seed Orchards             2.Acacia mangium
   3.Sp./Provenance Trials               3.Azadirachta indica
 MPT Environmental Zone:               MPTS Geographic Regions:
     Humid/Semi-humid Tropics             1.S. Asia
                                          2.S.E. Asia
 Percentage of time working with the above species: 95 %

Enter information in above form.  Press <Ctrl-W> to save.
[PgUp]=Page up, [PgDn]=Page down

[Esc]=Exit                                                  Page: 1/2
```

PAGE ONE

The above sample screen is the first page of the MPTS Specialist Database.

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Name, Job Title, and Institution

Enter the appropriate information. Use complete, unabbreviated names in these three data fields.

MPT Professional Experience, MPT Subject Field, MPT Species, MPT Environmental Zone, and MPTS Geographic Regions

Data Selection windows are available for these data entry fields. Enter these data by selecting an option from the window.

Percentage

Enter the percentage of time devoted to MPTS-related work (forest/biological and socioeconomic research and programs).

```
MPTS SPECIALIST DATABASE                                                    ADD

Name... Dr.   Doe                          John                    Q.
        Prefix Family Name                 First Name              MI

Job Title..... Associate Professor
Institution... The Research Center

Address ...... P.O. Box 123
               100 Main Street
City.......... Pala
State/Province Hawaii                 Postal Code..... 96779
Country....... United States

Phone......... (555) 123-4567         Telex.. 5500001234 DBS UI
                                      Fax.... (555) 123-5555
Note..........

Update........ 11/01/89               Directory Code..  99

Enter information in above form.  Press <Ctrl-W> to save.
[PgUp]=Page up, [PgDn]=Page down

[Esc]=Exit                                                          Page: 2/2
```

PAGE TWO

The above sample screen is the second page of the MPTS Specialist Database.

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Name, Job Title, and Institution

These fields will be displayed with the information entered into Page One of the MPTS Specialist Database.

Address

Enter a street address as well as a post office box or other information needed to deliver regular mail. The address should be adequate to deliver packages and messages.

City, State/Province, and Country

Enter complete, unabbreviated names.

Postal Code

Enter the postal code as well as inter-city zip and other codes.

Telex

Enter the telex code, including the country code number.

Update

The program will display the date which information was entered into this form.

Directory Code

There are five Directory Codes available. The last code's default value is '99'. This is the code to designate a MPTS Specialist record. You may use the other Directory Codes to indicate other groups of people within the database. Add any digit or combination of digits in the other blank data fields to use that numeric combination for a particular group.

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ABSTRACT DATABASE

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Chapter 1
INTRODUCTION

PROGRAM DESCRIPTION

The Abstract Database is a reference database containing literature citations and abstracts that are relevant to MPTS.

The database stores the citation and abstract data as separate files which enables more efficient search procedures. The citation record includes title, author, source, and other standard citation information, and space is also provided for entering geographic region and species information. Subject headings and subheadings, based on *CAB Forestry Abstracts*, can be assigned to this record. The abstract record can contain up to six pages of copy.

DATA ENTRY SCREENS

The Abstract Database has seven data entry screens. The first screen allows entry of data for the citation record. The other six screens allow entry of abstract copy and comprise the abstract record.

DATA SELECTION WINDOWS

In the data entry screen for the citation record, which is the first screen to appear in the Abstract Database, Data Selection Windows are available to facilitate data entry. In the [A]dd mode, these windows contain a list of data entry options for the following data entry fields.

- Geographic Region
- Species
- Main Headings
- Subheadings

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```
F/FRED Abstract Database                                                    ADD

Title:                                                   REF ID: XX12345678
                          << REGIONS >>
                          1) Africa
Author(s):                2) Australia/New Zealand
                          3) Europe
Source:                   4) Latin America
                          5) North America
                          6) Pacific Islands
                          7) S. Asia
Volume:                   8) S.E. Asia                   Region:
Issue.:                    Enter region number:          ies...:
Page..:                    0 = none of the above         ract..: Y
Main Heading

Enter information in above form.  Press <Ctrl-W> to save.
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                          Page: 1/7
```

To view the Data Selection windows for one of these fields, place the cursor in the field. The window will list, by number, the options available. Enter the number which corresponds to the selection you want. The selected item will be entered and displayed in the data field.

"Geographic Region" and "Species" data may also be entered with the keyboard. Entering a blank or zero in these windows moves the cursor to the data entry field. You may then enter a more specific geographic region or a species not listed in the Data Selection Window.

"Main Heading.Subheading" data must be entered using the Data Selection windows.

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FUNCTION KEYS

The function keys available in the Abstract Database are as follows.

[A]dd	-	Enter citation and abstract information.
[S]earch	-	Specify criteria to locate citation records. Not available for the abstract records.
[M]odify	-	Update and change information in a record which resides in the database.
[D]elete	-	Remove records from the database.

ACCESS DATABASE

To access the Abstract Database, select "E - Abstract Database" from the F/FRED Master menu.

*NOTE: If you are using the Abstract Database separate from IADSS, access the program by typing **'BIBMAIN [Enter]'** at the DOS prompt.*

Chapter 2
ABSTRACT DATABASE PROGRAM

This chapter describes and explains the screens presented for the Abstract Database program.

Highlighted areas on the screens indicate where data may be entered. Press <Ctrl-W> to save all entered data.

NOTE: If you use the [Esc] key in a page after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

```
                                                                    ADD
F/FRED Abstract Database

Title:                                                   REF ID: CB0444587
Growth and fuelwood yield of Petford provenance of Eucalyptus
camaldulensis Dehn. grown in rural marginal land.

Author(s):
Kamaluddin, M.
Bhuiyan, M. K.
Source:
Pakistan Journal of Forestry

Volume: 35      Year........: 1985       Geo.Region:
Issue.: 1       Doc.Type...:             Species....: Eucalyptus camaldulensis
Page..: 15-19   Language...: English     Abstract..: Y
Main Heading . Sub Heading:
   Forest mensuration and management
   Business economics of forestry

Enter information in above form.  Press <Ctrl-W> to save.
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                      Page: 1/7
```

CITATION FORM

The first screen presented in the Abstract Database is shown above and enables you to enter citation information about an abstract in the Abstract Database.

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Ref ID

Enter a reference ID. This is required in the Abstract Database and can be any combination of letters and digits that do not exceed ten characters in length.

It is suggested that you use a two-letter code (to indicate country or institution) followed by eight digits. The program will check the entered ID for duplication before highlighting the rest of the input fields for data entry. If the ID entered is a duplicate, the message "ID exists" will flash several times and then the reference ID field will be cleared. You may reenter another reference ID.

All *CAB Abstracts* citations (the initial information obtained from a commercial database) in the database have a two-letter code of 'CB' to make retrieval by reference ID easier.

Title

Enter the title of the publication.

Author(s)

Enter the author(s) of the publication.

Source

Enter the source of the publication. This depends on the citation and this field may contain journal names, publishers, institutions, and so on.

Volume, Issue, Page

You need only enter this data for articles.

Year

Enter the year of publication.

Doc. Type

The document type used by *CAB Abstracts* are NP (numbered part), UP (unnumbered part), NW (numbered whole), and UW (unnumbered whole). Respective examples are chapters in a book, a section of speech, a book, and a thesis. It may be more useful, for personal use, to use the actual document type, i.e., 'article', for a journal article.

Language
Enter the language the abstract or the article was written in.

Geo.Region
This is the geographic region covered by the citation. The Data Selection window for this data entry field lists geographical regions. Select one of these regions by entering the number corresponding to the one you wish to select. If your region is not listed in this window, enter the region with the keyboard.

Species
Enter the principal species covered by the citation. The Data Selection window for this data entry field lists species, by number. Enter the number corresponding to the species you wish to select. If the species is not listed in this window, enter the name with the keyboard.

Main Heading.Sub Heading
The main heading and subheading fields are used to categorize the citation under a specific subject.

Select one of the sixteen main headings which appear in the Data Selection window for these fields to indicate the *general* subject of the citation. If the window list does not contain an appropriate heading, leave this field blank and use the [up arrow] to leave the window.

A list of subheadings will appear in a Data Selection window after you have selected a main heading. Select a subheading that indicates a *specific* subject covered by the citation. Some of the subheadings have a second level of subheadings and these will appear in windows on the screen. Choose a second level of subheading if you need to indicate a more specific subject.

Abstract
An abstract text can only be entered if you enter 'Y' in the Abstract field.

NOTE: Press [PgDn] to go to the abstract screens to enter the text of the abstract.

```
F/FRED Abstract Database                                                    ADD

                                                                REF ID: CB0444587
Title:
Growth and fuelwood yield of Petford provenance of Eucalyptus
camldulensis Dehn. grown in rural marginal land.

-<< ABSTRACT >>-----------------------------------------------------------------
    A 0.018-ha plantation (spacing 1.6X1.6 m) was grown on the banks of
rural ponds in Chittagong, Bangladesh. After 5 yr, sample trees were
felled and measured. Survival was 96% and trees had reached a ht. of
11.5 m and a d.b.h. of 11.6 cm. Yield of fuelwood including bark and
branches was 139.1 t/ha with 12% m.c.

Enter information in above form.  Press <Ctrl-W> to save.
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                          Page: 2/7
```

ABSTRACT FORM

Six screens are available for abstract text. The above screen is a sample abstract text entry screen.

The title of the Abstract and its Reference ID will be entered by the program from the information entered in the citation screen.

Abstract

A maximum of 61 lines (6 pages of abstract) can be included with a citation. Eleven lines per screen may be entered. **Text must be entered without blank lines because the program reads a blank line as the end of text entry.** After you have filled a screen, press the [PgDn] key to display the next abstract data entry screen. After the first text entry screen, each subsequent screen will display the last line of the previous screen as the first line. Pressing the [PgUp] key allows you to go back to previous screens.

When you have completed entering the text for the abstract, press <Ctrl-W> to save the abstract you have entered.

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SOIL DATABASE

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Chapter 1
INTRODUCTION

PROGRAM DESCRIPTION

The Soil Database contains soil information data and is designed not only to manage this massive bank of soil data but also to manipulate these data for various end uses. It can be used to retrieve general information, create output files for F/FRED's Multipurpose Tree Growth (MPTGro) Simulation Model and general text files for various application programs, and produce customized output.

Two major data files comprise the database. One contains information associated with a single soil profile and does not vary according to soil layer. It distinguishes between pedons by the use of pedon numbers.

The second file contains information associated with a single layer of a soil profile. It distinguishes between layers by the depth of each layer from the surface and the total depth of the layer.

DATA ENTRY SCREENS

The Soil Database has two data entry screens corresponding to the two pages that comprise each database record. The first screen (or page) contains soil classification information. The second screen (or page) contains chemical and physical analysis data by layer.

DATA SELECTION WINDOWS

In the first data entry screen (page) of a soil record, Data Selection windows are available to facilitate data entry. These windows contain a list of data entry options for Soil Taxonomy variables, the moisture regime, estimated permeability, and drainage, in both [A]dd and [S]earch modes.

To view the Data Selection window for one of these data entry fields, place the cursor in the field and press the [F1] key. The window will list the options in alphabetical order. Move the highlight bar to the desired entry (or use the [PgDn] and [PgUp] keys if available) and press the [Enter] key. The selected data item will be placed in the data entry field.

```
SOIL DATABASE                                                          SEARCH

                                                   SOIL PEDON ID:
  Site ID:                    Country:
     Range of Latitude (deg:min):        - GREAT GROUP -
     Range of Longitude(deg:min):        Albaqualf
     Range of Elevation  (meter):        Duraqualf
  SOIL..... Order,Suborder:              Fagiaqualf
  TAXONOMY; Great Group   :              Glossaqualf
            Sub-Group Mod.:              Natraqualf
            Texture       :              Ochraqualf
            Mineralogy    :              Paleaqualf
            Reaction      :              Plinthaqualf
            Temperature   :              Tropaqualf
  Moisture Regime       :                Umbraqualf
  Estimated Permeability:                Cryoboralf
  Soil Drainage         :                Eutroboralf
  Erosion Information   :                Fragiboralf
  Annual Air Temperature:     C          Natriboralf
                                         Paleboralf
Enter search criteria in the field       [Esc]=Exit, [Enter]=Select
begin search.  (Blank=All records        [↓] [↑] [PgUp] [PgDn]=Move

                                                cm
                                          ion:        mm
                                          Ctrl-W> to

[Esc]=Exit, [F1]=Help
```

As an example, the screen above displays a sample Data Selection window in [S]earch mode for the first data entry screen (page) of a soil record and lists data entry options for the data entry field, "Great Group."

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```
SOIL DATABASE                                                          ADD

                                                   SOIL PEDON ID: 87P0485
                   Layer (cm)
Master Horizon     Upper-Lower  CLAY                Mg Content Sat. Extr.
Kjeldahl N         -----------  -----               Elec. Conduct. Ba-Cl
Extr P                   0 -  10  57.9              Total Potassium
Extr P method           10 -  21  59.9              Total Coarse Fragments
Total Clay              21 -  51  72.3              1/10 Water Clods
Total Silt              51 -  81  75.4              1/3 Water Clods
Walkly-Black O C        81 - 109  75.9              15 Bar Air Dry Soil
KCL Extr Al            109 - 144  74.5              Soil Structure
NH4OAC Base Sat        144 - 175  68.2              Soil Consistence Dry
pH, 1:1 Soil-KCL       175 - 200  03.0              Soil Consistence Moist
pH, 1:1 Soil-H2O                                    Soil Consistence Other
pH, 1:50 Soil-NAFL                                  Root Information
Bulk Density, O D      Carbonate < 2mm
Bulk Density, 1/3 B    Carbonate > 2mm

Use [↑] and [↓] to highlight desired item.  Press [Enter] to enter data.
Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help                                              Page: 2/2
```

DATA ENTRY WINDOWS

In the second data entry screen (page) of a soil record, data entry for each field must be done in Data Entry windows. When the cursor is placed in a field and the [Enter] key is pressed, a Data Entry window will be displayed. For example, in the screen above, the Data Entry window is displayed for the "Total Clay" data entry field, and the percentage of total clay of each layer must be entered in this window.

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FUNCTION KEYS

The function keys available in the Soil Database are as follows.

[A]dd	-	Enter soil information.
[S]earch	-	Specify criteria to locate record.
[M]odify	-	Update and change information in a record which resides in the database.
[D]elete	-	Remove record from the database.
[B]rowse	-	Display record in the database files.
[F10]	-	Reindex files.

ACCESS DATABASE

To access the Soil Database, select "G - Soil Database" from the F/FRED Master menu.

NOTE: If you are using the Soil Database separate from IADSS, access the program by typing 'SOILMAIN [Enter]' at the DOS prompt.

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Chapter 2
SOIL DATABASE PROGRAM

This chapter discusses and explains the screens presented for the Soil Database program.

Highlighted areas on the screens indicate where data may be entered. Press <Ctrl-W> to save all entered data.

NOTE: If you use the [Esc] key on the page after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

NOTE: To enter certain data into the first page (screen) of the Soil Database, you must use specified names and codes. These are listed in the Data Selection windows for this page. You may also print out a copy of these specific items (see Appendix A in this section).

```
                                                                    ADD
SOIL DATABASE

                                                SOIL PEDON ID: B7P0485
   Site ID: FM458001        Country:
      Latitude  (deg): 06   (min): 33   Direction (N/S): S
      Longitude (deg): 16   (min): 43   Direction (E/W): E
      Elevation   (m): 0                Slope: 1 %
   SOIL..... Order,Suborder: ALFISOLS    ,UDALFS
   TAXONOMY; Great Group   : Paleudalf
             Sub-Group Mod.: Typic
             Texture       : very fine
             Mineralogy    : kaolinitic
             Reaction      :
             Temperature   : isohyperthermic
   Moisture Regime       :
   Estimated Permeability: moderately rapid
   Soil Drainage         : well drained
   Erosion Information   : slight      Water Table Depth:      cm
   Annual Air Temperature:    C        Annual Total Precipitation: 2000 mm

 Enter information in form above.  Press <Ctrl-W>to save.

[Esc]=Exit, [F1]=Help                                          Page: 1/2
```

PAGE ONE

In the first page of the Soil Database input form, all data entered with the keyboard are checked for errors. If you do not select data

items from the Data Select window, you must be sure you enter specified names and codes. Do not save the data entered into this page until you have also completed data entry in Page Two (see the next section, "Page Two," for instructions).

Soil Pedon ID

Enter the soil Pedon ID number that has been assigned by the U.S. National Soils Survey Laboratory. If it is not available, enter a unique soil identifier of up to 7 characters.

Site ID

Enter the site ID number assigned by the U.S. National Soils Survey Laboratory. If this is not available, enter the country code where the site is located by doing the following.

1. See Appendix A for instructions on obtaining a list of the country codes. Each code has three digits.

2. Use the spacebar or the right arrow key to move the cursor to the third character position in the soil ID data entry field.

3. Enter the three-digit Country ID code and press the [Enter] key.

Country

Enter the country name where the site is located.

NOTE: When using the [A]dd function, you cannot enter a country name.

Latitude, Longitude, Direction, Elevation, and Slope

Enter the geographic position of the site. Enter the elevation of the site, in meters, and the slope, in percent.

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Soil Taxonomy, Order, Suborder, Great Group

Data Selection windows are available for these data entries. Enter these data entries with the keyboard or by pressing the [F1] key and selecting an option from the window.

NOTE: If an entry is made in the "Great Group" data entry field, the program will enter the Order and Suborder of that group. If no entry is made into the "Order" and "Suborder" data entry fields, you will not be able to enter a data item into the "Sub-group Mod." data entry field.

Moisture Regime, Estimated Permeability, Soil Drainage, Erosion Information

Data Selection windows are available for these data entry fields. Enter the data either with the keyboard or by pressing the [F1] key and selecting an option from the window.

Water Table Depth

Enter the depth of the water table, in centimeters.

Annual Air Temperature

Enter the average yearly air temperature, in Celsius.

Annual Total Precipitation

Enter the average yearly total amount of rainfall per year.

```
SOIL DATABASE                                                          ADD

                                                   SOIL PEDON ID: 87P0485

Master Horizon          P Absorption                Mg Content Sat. Extr.
Kjeldahl N              P Absorption Method         Elec. Conduct. Ba-Cl
Extr P                                              Total Potassium
Extr P method                 DEPTH                 Total Coarse Fragments
Total Clay              LAYER (cm)                  1/10 Water Clods
Total Silt              ----- -------               1/3 Water Clods
Walkly-Black O C         1st    0                   15 Bar Air Dry Soil
KCL Extr Al              2nd    0                   Soil Structure
NH4OAC Base Sat          3rd    0                   Soil Consistence Dry
pH, 1:1 Soil-KCL         4th    0                   Soil Consistence Moist
pH, 1:1 Soil-H2O         5th    0                   Soil Consistence Other
pH, 1:50 Soil-NAFL       6th    0                   Root Information
Bulk Density, O D        7th    0
Bulk Density, 1/3 B      8th    0
                         9th    0

Enter depth of soil layers.  Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help                                          Page: 2/2
```

PAGE TWO

The second page of the Soil Database (displayed here as it appears in the [A]dd mode) is shown above. To move from Page One to this page of the soil entry forms, press either <Ctrl-W> or the [PgDn] key while in Page One. The second page consists of a list of soil characteristics. When adding data in this page, you must first enter the "Master Horizon" information; other data cannot be entered until this is completed. In the screen above, the data entry window for this information is displayed. Once the "Master Horizon" information is entered and saved by pressing <Ctrl-W>, you will not be able to change this information.

Use the highlight bar to move to a variable on this page and then press the [Enter] key to open the Data Entry window for that variable. You must enter data for a variable in these windows. Press the [F1] key while in a window to get help information about that variable.

After you have entered all data and all Data Entry windows are closed, press <Ctrl-W> to save the inputted information, including that of Page One.

NOTE: To save this page to the Soil Database, you must enter not only the "Master Horizon" information, but also data into at least one of the other variables listed in this page.

Depth

Enter the depth of each layer, from the surface, in centimeters.

```
                                                                    ADD
SOIL DATABASE

                                                  SOIL PEDON ID: 87P0485
                          Layer (cm)
  Master Horizon          Upper-Lower   CLAY        Mg Content Sat. Extr.
  Kjeldahl N              ------------  ------      Elec. Conduct. Ba-Cl
  Extr P                    0 -  15                 Total Potassium
  Extr P method            15 -  30                 Total Coarse Fragments
  Total Clay               30 -  45                 1/10 Water Clods
  Total Silt               45 -  60                 1/3 Water Clods
  Walkly-Black O C         60 -  90                 15 Bar Air Dry Soil
  KCL Extr Al              90 - 105                 Soil Structure
  NH4OAC Base Sat                                   Soil Consistence Dry
  pH, 1:1 Soil-KCL                                  Soil Consistence Moist
  pH, 1:1 Soil-H2O                                  Soil Consistence Other
  pH, 1:50 Soil-NAFL                                Root Information
  Bulk Density, O D        Carbonate < 2mm
  Bulk Density, 1/3 B      Carbonate > 2mm

Use cursor keys to highlight desired item.  Press [Enter] to enter data.
Press <Ctrl-W> when done.

[Esc]=Exit, [F1]=Help                                          Page: 2/2
```

Other Variables

Enter into the Data Entry windows, the data for any or all of the variables listed on this page. Please note (see window in above screen) that all data entries for these variables are by the layers designated in "Master Horizon."

```
SOIL DATABASE                                                          SEARCH

                                                   SOIL PEDON ID:
  Site ID:                 Country:
     Range of Latitude (deg:min):  [  :  ] to [  :  ] (N/S):
     Range of Longitude(deg:min): [  :  ] to [  :  ] (E/W):
     Range of Elevation  (meter): [    ] to [    ]
  SOIL..... Order,Suborder:
  TAXONOMY; Great Group   :
            Sub-Group Mod.:
            Texture       :
            Mineralogy    :
            Reaction      :
            Temperature   :
  Moisture Regime       :
  Estimated Permeability:
  Soil Drainage         :
  Erosion Information   :              Water Table Depth:        cm
  Annual Air Temperature:     C        Annual Total Precipitation:      mm

Enter search criteria in the field displayed above.  Press <Ctrl-W> to
save.  (Blank=All records will be selected)

[Esc]=Exit, [F1]=Help
```

SEARCH

You may search for records in the Soil Database by selecting your own search criteria from the variables listed in Page One of the soil entry forms. Press the [S]earch key and the above screen will be displayed. You may choose to enter search criteria from any of the highlighted data fields. Look-up tables for Soil Taxonomy, Moisture Regime, Permeablilty, and Drainage variables are available by pressing the [F1] key while in these fields.

NOTE: To use a "Range of Longitude" and "Range of Elevation" as search criteria, you must also enter a "Range of Latitude."

NOTE: If the "Soil Pedon ID" is entered as the search criteria, any other entered search field criteria will not be used in the search.

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```
SOIL DATABASE                                                          SEARCH

                                                   SOIL PEDON ID: 87P0482
 SURFACE LAYER DATA
  Master Horizon: AP        P Absorption:            Mg Content Sat Extr:
  Kjeldahl N: 0.070         P Absorption Method:     Elec Conduct Ba-Cl:
  Extr P :                  Dith Cit Extr Fe: 0.3    Total Potassium:
  Extr P Method:            Dith Cit Extr Al: 0.1    Total Coarse Fragments:
  Total Clay:  7.4          Dith Cit Extr Mn: 0.1    1/10 Water Clods:
  Total Silt: 17.5          NH4OAC Extr K : 0.4      1/3 Water Clods: 14.5
  Walkly-Black O C: 0.82    NH4OAC Extr Ca: 5.4      15 Bar Air Dry Soil: 11.4
  KCL Extr Al:              NH4OAC Extr MG: 0.9      Soil Structure: 1M SBK
  NH4OAC Base Sat: 100      NH4OAC Extr Na:          Soil Consistence Dry  :
  pH, 1:1 Soil-KCL:         Sum of Cats CEC: 9.0     Soil Consistence Moist:FR
  pH, 1:1 Soil-H2O: 6.4     NH4OAC CEC: 5.4          Soil Consistence Other:D
  pH, 1:50 Soil-NAFL:       Al Saturation:           Root Information: M 3 T
  Bulk Density, O D : 1.56  Carbonate < 2mm:
  Bulk Density, 1/3B: 1.53  Carbonate > 2mm:

 [M]odify, [D]elete, [P]rev. record, [N]ext record
 [PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit, [F1]=Help, [F2]=Output                    Record: 1/1  Page: 2/3
```

Data Display

When records are found after a search, the soil data for each Soil Pedon ID will be displayed in three pages. Use the [PgUp] and [PgDn] keys to move from one page to another.

First Page

The first page of the record will display soil classification information and is similar to Page One of the soil data entry forms displayed when adding information.

Second Page

The second page of the record will display the soil surface layer data, as shown in the above sample screen.

Third Page

The third page of the record will display soil characteristics in data windows, by soil layer, as shown in the sample screen which follows.

```
SOIL DATABASE                                                          SEARCH

                                                   SOIL PEDON ID: 87P0482

  Master Horizon          P Absorption              Mg Content Sat Extr
  Kjeldahl N              P Absorption Method
  Extr P                  Dith Cit Extr Fe          Layer (cm)
  Extr P Method           Dith Cit Extr Al        Upper-Lower    CEC7
  Total Clay              Dith Cit Extr Mn        -----------   --------
  Total Silt              NH4OAC Extr K             0 -  20      5.4
  Walkly-Black O C        NH4OAC Extr Ca           20 -  38      3.9
  KCL Extr Al             NH4OAC Extr MG           38 -  56      4.8
  NH4OAC Base Sat         NH4OAC Extr Na           56 -  76      4.8
  pH, 1:1 Soil-KCL        Sum of Cats CEC          76 - 101      5.7
  pH, 1:1 Soil-H2O        NH4OAC CEC              101 - 123      3.6
  pH, 1:50 Soil-NAFL      Al Saturation           123 - 160      2.1
  Bulk Density, O D       Carbonate < 2mm         160 - 180      0.9
  Bulk Density, 1/3B      Carbonate > 2mm

[M]odify, [D]elete, [P]rev. record, [N]ext record
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                 Record: 1/1  Page: 3/3
```

MODIFY

Once a record or records has been found after a search, you may modify or change data BUT only in the first and third pages of the record(s). The above screen displays the third page of a record; note that both the [D]elete and [M]odify keys can be used in this screen. Use the [N] and [P] keys to move from one record to another. To modify data in a record, do the following.

1. Highlight the variable (in the third page) for which you want to make changes and press the [Enter] key. The variable's Data Entry window will be displayed.

2. Press the [M]odify key.

3. Make any changes in the window, and then press <Ctrl-W> while STILL in the window to save your changes. If you press the [Esc] key without first pressing <Ctrl-W> your modifications will not be saved.

DELETE

Once a record or records has been found after a search, you may delete the record(s) by using the [D]elete function in any of the three pages. Please be aware that you can not delete part of a record; the entire record will be deleted. Use the [N] and [P] keys to move form one record to another. To delete a record, do the following.

1. Press the [D]elete key.

2. A prompt will be displayed asking you to confirm your decision to delete.

3. If you do not want to delete, simply press the [Enter] key. The default response is 'N'.

4. If you do want to delete, enter a 'Y' at the prompt and press the [Enter] key. The entire record will be deleted.

```
SOIL DATABASE                                                          SEARCH

                                                        SOIL PEDON ID: 87P0482
  Site ID: FN87          OPTION                        CURRENT OPTION
     Latitude
     Longitude
     Elevation        Starting Record [ 1]          Record Selection
  SOIL..... Orde      Ending Record   [ 3]            1  to  1
  TAXONOMY; Grea
            Sub-      [1] Full Report               Format is:
            Text      [2] Select Fields              FULL Report
            Mine      [3] MPTGRO format
            Reac      [4] ENVGRO format
            Temp
  Moisture Regim      [5] Printer                   Output to :
  Estimated Perm      [6] File                       File (ASCII)
  Soil Drainage       [7] Printer and File             S87P0482.RPT
  Erosion Inform
  Annual Air Tem

Use [↓] and [↑] to move to the desired option  and press [Enter] to select.
Press <Ctrl-W> when ready to process the output.

[Esc]=Exit                                                  Record: 1/3   Page: 1/3
```

OUTPUT

Once a record or records have been found after a search, you may output the record(s) by using the [F2] key. A double-sided window, the sides named respectively, "Option" and "Current Selection," will be displayed with the default values, as shown in the above sample screen. Do the following.

"Option" Window Selection

Format Selection.

1. If more than one record has been found after a search, you may output multiple records by specifying the Starting and Ending Record numbers in the "Option" portion of the window. Use the [↑] and [↓] keys to move to these two fields.

2. Use the highlight bar and press the [Enter] key to select one of the following format selection options for output.

[1]	Select all fields in all records.
[2]	Choose selected fields (see the following subsection entitled "Specify Fields").
[3]	Create an input file for the MultiPurpose Tree Species Growth Model (MPTGro). The fields for this output are preselected and you may not change them.
[4]	Create an input file for the Environmental Model. The fields for this output are preselected and you may not change them.

Output Selection.

3. Use the highlight bar and press the [Enter] key to select one of the following output options.

[5]	Send output to the printer.
[6]	Send output as an ASCII file.
[7]	Send output to printer and as an ASCII file.

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```
FIELD SELECTION
§ Site ID                    Master Horizon              ►NH4OAC Extr Ca
  ►Latitude                  Kjeldahl N                  ►NH4OAC Extr Mg
  ►Longitude                 Extr P                       NH4OAC Extr Na
  ►Site Elevation            Extr P Method                Sum of Cats CEC
   Site Slope                Total Clay                   NH4OAC CEC
  ►Soil Order                Total Silt                  ►Al Saturation
  ►Soil Sub-Order            Walky-Black O C              Carbonate < 2mm
  ►Soil Great Group          KCl Extr Al                  Carbonate > 2mm
   Soil Sub-Group modifier   NH4OAC Base Sat              Mg Content Sat Extr
  ►Soil Texture              pH, 1:1 Soilk-KCL            Elec Conduct Ba-Cl
  ►Soil Mineralogy           pH, 1:1 Soil-Water           Total Potassium
   Soil Reaction             pH, 1:50 Soil-NAFL           T Coarse Fragments
   Soil Temperature         ►Bulk Density, O D            1/10 Water Clods
  ►Moisture Regime          ►Bulk Density, 1/3 B          1/3 Water Clods
   Estimated Permeability   P Absorption                  15 Bar Air Dry Soil
   Soil Drainage            P Absorption Method           Soil Structure
   Erosion Information      Dith Cit Extr Fe              Soil Consistence
   Water Table              Dith Cit Extr Al              Soil Consistence Moist
  ►Annual Air Temperature   Dith Cit Extr Mn              Soil Consistence Other
  ►Annual Precipitation     NH4OAC Extr K                ►Root Information

Press [Enter] to mark or un-mark the field.   Press <Ctrl-W> when done.

[Esc]=Exit                                   Record: 1/1   Page: 1/3
```

Specify Fields. When you select [2] as an option in "Format Selection" (see previous section), the above window will be displayed with the default fields selected, as shown above. A small triangular marker, '►', is displayed to the left of each selected field. To unselect a default field, use the cursor keys to highlight the field and press the [Enter] key. To select any field, use the [↑] and [↓] keys to highlight the field(s) you want and press the [Enter] key for each one. When you have finished, press <Ctrl-W> to save your selections.

```
SOIL DATABASE                                                          SEARCH

                                                   SOIL PEDON ID: 87P0482
   Site ID: FN87 ──────── OPTION ──────── CURRENT OPTION ──────
      Latitude
      Longitude
      Elevation     Starting Record [ 1]     Record Selection
   SOIL..... Orde   Ending Record   [ 3]       1  to  1
   TAXONOMY; Grea
             Sub-   [1] Full Report          Format is:
             Text   [2] Select Filed          FULL Report
             Mine   [3] MPTGRO format
             Reac   [4] ENVG─ FILE NAME ──────────────────────────
             Temp              Output file names are reserved for their
   Moisture Regim   [5] Prin  unique Soil Pedon number with 'S' prefix.
   Estimated Perm   [6] File
   Soil Drainage    [7] Prin  Enter file name extension:
   Erosion Inform                          S87P0482.RPT
   Annual Air Tem

Use [↓] and [↑] to move to the desired option  and press [Enter] to select.
Press <Ctrl-W> when ready to process the output.

[Esc]=Exit                                          Record: 1/3   Page: 1/3
```

"Current Option" Window Selection

In this side of the output window, the first two fields contain the information you selected in the "Option" window. The "Record Selection" field will change as the records are outputted.

File Name. The file name listed in this window is that of the Soil Pedon ID. You must complete the file name by entering an extension. In the example in the above screen, the extension "RPT" has been entered. Since you may want to output the same records and field selections in various formats, it is recommended that you use extensions which reflect these differing formats. Press <Ctrl-W> when you have entered this information. Output files are stored in the Soil Database directory. This location will be displayed on screen.

SOIL PEDON ID:

SOURCE	IDPED	IDSIT	LATSTR	LONGSTR	TXORD	TASORD	TXGG	TXSGM	TXTEX
	87P0477	FN875001	1334 N	09942 E	A	US	HA	UL	096
	87P0478	FN875002	1058 N	09922 E	E	PS	QU	US04	
	87P0479	FN875003	1645 N	10159 E	A	US	PA		126
	87P0480	FN875004	1856 N	09902 E	A	US	HA		056
	87P0481	FN875005	1330 N	10132 E	M	US	PA	OX	056
	87P0482	FN875006	1525 N	09940 E	E	FL	US	AA	080
	87P0483	FN580001	0640 N	10025 E	U	HU	HA	AA	056
	87P0484	FN580002	0302 N	10142 E	E	AQ	FL	TR04	080
	87P0485	FN458001	0633 S	16 43 E	A	UD	PA	AA	134
	87P0486	FN458002	0626 S	10724 E	A	UD	PA	AA	134
	87P0487	FN725001	1557 N	12108 E	A	US	PA	AA	126
	87P0488	FN725002	1041 N	12448 E	A	UD	HA	MO	134
	88P0220	FN862002	2454 N	12134 E	I	OC	DY	AA	096

[↓]/[↑]=Up/Down 1 Line, [←]/[→]=Left/Right 1 Screen
[PgUp]/[PgDn]=Up/Down 1 Screen, <Ctrl-PgUp>=Top, <Ctrl-PgDn>=Bottom

[Esc]=Exit

BROWSE

The soil data in the Soil Database can be viewed in their actual storage format by using the [B]rowse function. Do the following.

1. Press the [B]rowse key to see the Browse Menu (shown below).

```
BROWSE MENU
Soil Description
Soil Chemical Analysis
[Esc]=Exit, [↑],[↓]=Move, [Enter]=Select
```


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2. Select, with the highlight bar, one of the two ways of viewing the data.

a. If you select "Soil Description," all records in the soil descriptive file will be displayed by Pedon ID in the format shown in the sample screen on the previous page.

b. If you select "Soil Chemical Analysis," the soil characteristics of every record, by layer and by depth, will be displayed.

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Appendix A
SOIL DATABASE CODES

PRINTING THE SOIL DATABASE CODES

The codes for page one of the soil data entry forms can be printed out in hard copy format if you have DBXL, dBASE III Plus, or dBASE IV in your computer. If not, write to F/FRED Project Global Research Unit, Winrock International, 1611 N. Kent St., Suite 600, Arlington, VA 22209, USA, for a hard copy.

In the following list of instructions, if you have DBXL, then substitute "DBXL" for the term "DBASE" when you find it in these instructions. Press the [Enter] key after each line. For these instructions, it is assumed that the Soil Database is installed in the hard disk directory, C:\IADSS\SOIL.

1. Type **C:**
2. Type **CD\IADSS\SOIL**
3. Type **PATH=C:\DBASE**
4. Type **DBASE**
5. Press the [Esc] key a few times until you see the (dot) prompt. (Skip this procedure for DBXL)
6. Type **SET PRINTER ON**
7. Type **USE COUNTRY**
8. Type **LIST**

The country code will be printed. To print the following codes replace "COUNTRY" in step 7 of the instructions with:

SORDER	(for Soil Order codes)
SUBORDER	(for Soil Suborder codes)
SCSCODES	(for all other codes)
SOILVAR	(for field name abbreviations).

When you have finished printing the codes you want,

9. Type **SET PRINT OFF**
10. Type **QUIT**

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Information and Decision Support System Version 2.0

CLIMATE DATABASE

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CLIMATE DATABASE

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Chapter 1
INTRODUCTION

PROGRAM DESCRIPTION

The Climate Database contains climate station information and long-term climate data and provides a readily available source of worldwide climatic data. Data output can be sent to a printer, saved on a disk as a text file or in the form of a parameter file, which can then be input to a weather data generator. The generated weather data can then be used as input to the F/FRED MPTGro Simulation Model or other simulation models.

Each record in the database contains a station code, a climate variable code, and 12 climate data values (one for each month). Records can be retrieved based on climate station characteristics and/or values of selected climate variables.

Currently, the database is distributed with 11 climate variables (see the section in this chapter entitled, "Climate Variables File") - more may be added as required by the user - and 466 climate stations in South East Asia. Over 3000 climate stations worldwide are available from the F/FRED Project. The database consists of a station file for all climate station information; auxiliary files for country and climate variable codes; and data files for the 12 climate data values.

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CLIMATE VARIABLES FILE

The climate variables are stored in a separate auxiliary file. Listed below are the eleven climate variables. Each variable has a two digit code, a variable name, and unit of measure.

Code	Name	Unit
01	RAIN	MM
02	MEAN TEMPERATURE	DEGREES C
03	MAXIMUM TEMPERATURE	DEGREES C
04	MINIMUM TEMPERATURE	DEGREES C
05	VAPOUR PRESSURE	MB
07	WINDSPEED	M/S
08	SUNSHINE	FRACTION
09	GLOBAL RADIATION	CALORIES/SQ CM/DAY
10	PENMAN'S PET	MM
11	DAYTIME TEMPERATURE	DEGREES C
12	NIGHTTIME TEMPERATURE	DEGREES C

DATA FILES

Each of the twelve monthly values (January to December) for each climate station is stored in a separate data file. That is, each file contains one climate variable. The data files are listed below.

File name	Type of data
CLDATA01.DBF	RAIN
CLDATA02.DBF	MEAN TEMPERATURE
CLDATA03.DBF	MAXIMUM TEMPERATURE
CLDATA04.DBF	MINIMUM TEMPERATURE
CLDATA05.DBF	VAPOUR PRESSURE
CLDATA07.DBF	WINDSPEED
CLDATA08.DBF	SUNSHINE
CLDATA09.DBF	GLOBAL RADIATION
CLDATA10.DBF	PENMAN'S PET
CLDATA11.DBF	DAYTIME TEMPERATURE
CLDATA12.DBF	NIGHTTIME TEMPERATURE

A new data file is created for every climate variable added to the system with the [F]ile function.

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FUNCTION KEYS

The function keys available in the Climate Database are as follows.

[A]dd	-	Enter climate station information.
[S]earch	-	Specify search criteria using either climate station information and climate variables to locate records.
[M]odify	-	Update and change climate station information.
[D]elete	-	Remove climate station records and its data from the database.
[B]rowse	-	View the contents of database files (station and data) in table form.
[F]ile	-	Maintain the country and the climate variables files. Used in conjunction with other function keys to add, modify, or delete countries and climate variables, and reindex the files.
[R]eindex	-	Reindex the data files.
[F2]	-	Used after the [S]earch function to print or output to a file, the climate station information and its data.
[1]	-	Enter climate data.
[2]	-	Modify climate data.
[3]	-	Delete climate data.

ACCESS DATABASE

To access the Climate Database, select "H - Climate Database" from the F/FRED Master menu.

*NOTE: If you are using the Climate Database separate from IADSS, access the program by typing **'CLIMMAIN [Enter]'** at the DOS prompt.*

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Chapter 2
CLIMATE DATABASE PROGRAM

This chapter describes and explains the screens presented for the Climate Database program.

Highlighted areas on the screens indicate where data may be entered. Press <Ctrl-W> to save all entered data.

NOTE: If you use the [Esc] key in a page after entering data but before pressing <Ctrl-W>, your entered data will not be saved.

```
                                                                    ADD
CLIMATE DATABASE

 Climate Station Information;

 Country Code...........:
 Country Name...........:

 Climate Station Number.:  0
 Climate Station Name...:

 WMO Number.............: 00.000

 Latitude  (deg):  -9 (min): -9  Direction (N,S):

 Longitude (deg):  -9 (min): -9  Direction (W,E):

 Elevation (m):  0

 Enter information in above form.  Press <Ctrl-W> to save.

[Esc]=Exit
```

CLIMATE FORMS

Climate data can be entered in the Climate Database only for stations which are already in the database. In the add option screen shown above, you may enter climate station information.

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Country Code
Enter a two-letter code. Specific codes for various countries must be used. Use the [B]rowse function for a listing of these codes.

Country Name
Enter the country where the station is located.

Climate Station Number
Enter a unique station number (maximum 4 digits).

Climate Station Name
Enter the name of the station as it is commonly known.

WMO Number
Enter the World Meteorological Organization assigned identification number for this station. Leave blank if unknown.

Latitude, Longitude and Direction
Enter the geographical position of the station.

Elevation
Enter the elevation of the station above sea level, in meters.

```
CLIMATE DATABASE                                                    SEARCH

Climate Station Information;

Country Code...........:
Country Name...........:

Climate Station Number.:  0
Climate Station Name...:

WMO Number.............:

Latitude  (deg):  -9 (min): -9  Direction (N,S):    Range: ± 90

Longitude (deg):  -9 (min): -9  Direction (W,E):    Range: ± 180

Elevation (m):  0                                   Range: ± 9999

Enter search criteria in form above.  Press <Ctrl-W> to begin search.
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                    Page: 1/2
```

SEARCH FUNCTION

Two screens for entering search criteria are presented when the [S]earch key is pressed. The above screen is the first one. Press <Ctrl-W> when you have completed your entries in both screens.

By Station Criteria

You may search for climate station records in the Climate Database either by selecting climate station criteria or climatic variable criteria. When, however, you enter a climate station number, only that station record will be selected, regardless of any other search criteria you may enter. Entering the country code as a search criterion will select ALL the climate stations in the country.

Country Code

Enter a country code. All stations in that country will be selected.

Station Number

Enter the number of a station to search for just one station.

Range

Enter latitude, longitude, and elevation as well as plus/minus range values to search for all stations within those limits. The default range values displayed in this screen are set at the maximums to select all stations.

NOTE: By entering latitude, longitude, and elevation along with appropriate ranges for each, the search can be made as wide or as narrow as you desire.

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```
CLIMATE DATABASE                                                    SEARCH

Climate Variables;
                                  Unit          Annual Value      Range
  RAIN                            MM                2000    ±      500
  MEAN TEMPERATURE                DEGREES C               ±
  MAXIMUM TEMPERATURE             DEGREES C               ±
  MINIMUM TEMPERATURE             DEGREES C               ±
  VAPOUR PRESSURE                 MB                      ±
  WINDSPEED                       M/S                     ±
  SUNSHINE                        FRACTION                ±
  GLOBAL RADIATION                CALORIES/SQ CM/DAY      ±
  PENMAN'S PET                    MM                      ±
  DAYTIME TEMPERATURE             DEGREES C               ±
  NIGHTTIME TEMPERATURE           DEGREES C               ±

Enter search criteria in form above.  Press <Ctrl-W> to begin search.
[PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit                                                      Page: 2/2
```

By Variable Data Criteria

Search for stations with certain climatic characteristics by using the second page of the search option, as shown in the above screen. The screen lists the variables in the database and their units of measurement, and for each, search criteria can be entered by annual value and range. The screen above shows a search for weather stations with annual rainfall between 1500 and 2500 mm.

Annual Value

Enter the annual value for each variable. This value is an average of the twelve monthly values, except for RAIN, which is calculated as the total of the twelve monthly values.

Range

Enter a plus/minus range value for each variable. The range determines the upper and lower limits of acceptable data values. If the annual value is entered and the range is left blank, only those records with data values that exactly match the annual value will be retrieved.

NOTE: If you do not wish to have the program search by variable data, leave these data entry fields blank.

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```
CLIMATE DATABASE                                                    SEARCH

Climate Station Information;                          CLIMATE DATA
                                                          RAIN
Country Code...........: NP                               MM
Country Name...........: NEPAL                      JAN    48 *
                                                    FEB    39 *
Climate Station Number.:  144                       MAR    53 *
Climate Station Name...: DADELDHURA                 APR    40 *
                                                    MAY    57 *
WMO Number.............: 44.404                    JUN   206 *******
                                                    JUL   351 ************
Latitude  (deg):  29 (min): 18  Direction (N,S): N  AUG   305 **********
                                                    SEP   179 ******
Longitude (deg):  80 (min): 35  Direction (W,E): E  OCT    60 **
                                                    NOV    17
Elevation (m): 1865                                 DEC    24
                                                    *=29        Page:  1/11

Station: [M]odify, [D]elete, [N]ext record, [P]revious record
Data: [1]=Add, [2]=Modify, [3]=Delete, [PgUp]=Page Up, [PgDn]=Page Down

[Esc]=Exit, [F2]=Output                                        Record:  1/466
```

RECORD DISPLAY

A successful search displays the retrieved records one at a time, showing climate station information and its data. The data are displayed in a window, as shown in the above screen, in both numeric and graphic form. The approximate value of each '*' is shown in the lower left corner of the data window. The value of the '*' is optimized to use the full range of the display so its value will change from variable to variable as well as from station to station. The primary use of the graphic display is for visual comparison of climate patterns. Use the numeric display to compare the magnitude of the values.

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FUNCTION KEYS

Function key options for records are displayed at the lower part of the screen and are divided into station options and data options.

Station Options

The station options are [M]odify, [D]elete, [N]ext record, and [P]revious record. The record (station) counter is in the lower right corner of the screen. Pressing [N] and [P] will display the stations but will leave the variable being displayed unchanged. This allows comparison of a variable, e.g., RAIN, between stations.

Data Options

The data options are [1]=Add (if the data window displays no data) or [2]=Modify and [3]=Delete (if the data window displays data as shown above). The [PgUp] and [PgDn] keys are used to display the data for different variables in the data window for the current climate station. This allows you to scan all the data for a particular station. The page (variable) counter is in the lower right corner of the data window.

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```
CLIMATE DATABASE                                                    SEARCH

Climate Station Information;

 Output Options                12                      CLIMATE DATA
                               INDIA (PART 2)          MINIMUM TEMPERATURE
   ASCII File                                                DEGREES C
 SIMMETEO Input File            221                    JAN  20.3 *********
                               MADRAS (MINAMBAK)       FEB  21.1 *********
 Print Current Record                                  MAR  23.1 *********
 Specify Record Range           Current Settings       APR    26 ***********
                                                       MAY  27.8 ************
      Printer                     ASCII File           JUN  27.6 ************
      File                      RECORDS:  3 TO 3       JUL  26.3 ************
   Printer & File                  File                AUG  25.8 ************
                              FILENAME: CLIMFILE.DAT   SEP  25.4 ***********
 [↑],[↓] [Enter]=Select                                OCT  24.4 ***********
                                                       NOV  22.5 *********
                                                       DEC    21 *********
                                                       *=2.3        Page:  4/11

Select output options above.  Press <Ctrl-W> to start.

[Esc]=Exit                                                    Record:  3/466
```

OUTPUT

After a successful search, you may output records either to a printer or a file. When the [F2] key is pressed, the above screen will be displayed. The default output sends the current record information to the printer. Press <Ctrl-W> if this is what you want or use the output options to create customized outputs.

Output Options

These options control the type of disk file to be created, the record(s) included in the output, and the destination(s) of the output. Select the "Output Options" you want by using the highlight bar and pressing the [Enter] key. For example, you may choose to output the climate station record data to an "ASCII File" or as a "SIMMETEO Input File." Choose "Specify Record Range" to enter the starting and ending record numbers. Choose "File" or "Printer & File" to enter the output filename. The default output filename is CLIMFILE.DAT.

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NOTE: The SIMMETEO Input File is designed for use with SIMMETEO (SIMulation of METEOrological variables), a weather model that produces daily values based on an input of monthly averages. The model is being developed in conjunction with Shu Geng, Department of Agronomy and Range Science, University of California, Davis, CA 95616.

Current Settings

In this window, enter the starting and ending record number(s) you want to output. In the sample screen, only one record, #3, has been selected for output (see previou page).

Enter a name for the file, up to a maximum of 8 characters for the filename and 3 characters for the extension. You may use the default filename, CLIMFILE.DAT.

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The Forestry/Fuelwood Research and Development Project (F/FRED) is designed to help scientists address the needs of small-scale farmers in the developing world for fuelwood and other tree products. It provides a network through which scientists exchange research plans, methods, and results on the production and use of trees that meet the household needs of small farmers. These trees, in project terms, are multipurpose tree species (MPTS).

F/FRED is being carried out by the Winrock International Institute for Agricultural Development. Winrock was established in 1985 through the merging of the Agricultural Development Council (A/D/C), the International Agricultural Development Service (IADS), and the Winrock International Livestock Research and Training Center. Winrock's mission is to improve agriculture for the benefit of people--to help increase the productivity, improve the nutrition, and advance the well-being of people throughout the world. Winrock's main areas of emphasis are human resources, renewable resources, food policy, animal agriculture and farming systems, and agricultural research and extension.

Global Research Unit
and
F/FRED Management Office
Winrock International
1611 N. Kent St., Suite 600
Arlington, VA 22209
USA

tel :703/525-9430

tx :248589 WIDC
fax :703/525-1744

F/FRED Coordinating Unit
c/o Faculty of Forestry
Kasetsart University
P.O. Box 1038
Kasetsart Post Office
Bangkok 10903, Thailand

tel :66-2/570-1977
66-2/561-1041
tx :788/2134 WINROCK TH
fax :66-2/561-1041

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