# Forest Genetic Resources Information Database (FGRID) system manual

*T.C. Nieman*

Natural Resources Canada
Canadian Forest Service

Ressources naturelles Canada
Service canadien des forêts

Canada

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# FOREST GENETIC RESOURCES INFORMATION DATABASE (FGRID) SYSTEM MANUAL

*T.C. Nieman*

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## ABSTRACT

The Forest Genetic Resources Information Database (FGRID) system was developed to provide reliable and up-to-date information on the status of forest genetic resources to forest planners, managers, and policy makers. This information is a valuable aid in planning and developing large-scale forestation and conservation strategies and programs. The FGRID system contains information on the location and distribution of forest resources as well as details on identification, collection, processing, storage, testing, and production and distribution of forest tree seedlings. It also stores information on the origin, production, and distribution of planting material originating from clones and wildings. FGRID is a single- or multi-user menu driven relational database system. A number of retrieval options enable users to access stored data for the preparation of annual and long-term forest management programs. The FGRID system manual is accompanied by a set of diskettes comprising installation diskettes for loading the program and demonstration diskettes for evaluation purposes.

## RÉSUMÉ

Le système de la Base de Données des Ressources Génétiques Forestières (BDRGF) fût développé pour donner aux gestionnaires et planificateurs forestiers des informations courantes relatives aux ressources forestières génétiques. Ces informations sont utiles dans la planification d'opérations d'afforestation et de conservation forestière à grande échelle. Le système BDRGF contient des informations relatives à la localisation et distribution des ressources forestières ainsi que des détails au sujet de l'identifiction, la collecte, le traitement, l'épreuve, la production et la distribution des semis d'arbres forestiers. Il maintient également des informations relatives à l'origine, la production et la distribution des matériaux de plantation provenant de clones et de sauvageons. La BDRGF est une base de données relationnelle munie de menus pour un ou plusieurs usagers. Plusieurs options permettent aux usagers d'accéder aux données afin de préparer des programmes de gestion forestière annuels ou à long terme. Ce manuel parr la BDRGF est accompagné de disquettes d'installation du système et de disquettes de démonstration afin de permettre l'évaluation du système.

# PREFACE

The Forest Genetic Resources Information Database (FGRID) system is a development of the Association of Southeast Asian Nations (ASEAN) Forest Tree Seed Centre (AFTSC) Project, a joint undertaking of ASEAN and the government of Canada. The AFTSC Project was implemented by the Royal Forest Department of Thailand in cooperation with the Canadian Forest Service through the ASEAN Forest Tree Seed Centre in Muak Lek, Saraburi, Thailand.

In the ASEAN region, there is increasing demand for forest tree seed and planting material for regular enrichment planting in poorly regenerated logged-over forest, and for afforestation and reforestation programs on newly acquired forest land. Lack of access to sufficient tree seed of high quality has been an impediment to forest management agencies in meeting their planting stock requirements.

FGRID was developed as a management tool to provide information on the location, extent, and diversity of forest genetic resources. This computerized database system is based on the storage and retrieval of a broad range of information relevant to the management of ASEAN forest genetic resources. It includes detailed information on the identification, collection, processing, storage, testing, and distribution of tree seed, and the production and distribution of planting material including seedlings, wildings, and clones.

FGRID was developed between 1994 and 1996. System design was based on input from forest departments in Indonesia, Malaysia, Thailand, and The Philippines. To accommodate the variable data management requirements of each of these countries, FGRID allows users the flexibility of establishing their own coding system for many of the data entry fields.

Although FGRID was developed for use in ASEAN, the software is adaptable for worldwide use and distribution. For information on obtaining the program, or to provide constructive criticism of the software or documentation, please contact:

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The development of the FGRID system was completed in close collaboration with the ASEAN Forest Tree Seed Centre, Muak Lek, Thailand. The Director of the Centre, Mr. Somyos Kijkar, and Canadian Project Managers, Mr. Jim Coles and Dr. Christopher W. (Kit) Yeatman, provided continuing support for the project and organized several FGRID workshops and training sessions throughout the ASEAN region. In Canada, thanks are due to CIDA and the Canadian Project Supervisor, Mr. Boyd Case of the Canadian Forest Service, for providing support and funding to complete the FGRID system, including the publishing of this manual.

The system design was based on valuable input from forest managers and technical staff of the Royal Forest Department, Thailand, the Forest Department of Peninsular Malaysia, the Forest Research Institute of Malaysia (FRIM), and the Forest Management Bureau in The Philippines.

A special thanks to Mr. Chong Phang Fee of the Forest Research Institute of Malaysia who was directly involved in the development of FGRID and, whose expertise in dBase programming, made possible the writing of programs for the system.

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**NOTE**

*The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by Natural Resources Canada.*

# 1 INTRODUCTION TO FGRID

FGRID (Forest Genetic Resources Information Database) is a computerized database system developed for the storage and retrieval of a broad range of information related to the management of forest genetic resources. As a relational database system, it is designed to store information based on:

- the location, extent, and diversity of forest resources
- the identification, collection, processing, storage, testing, and distribution of tree seed
- the production and distribution of planting material including seedlings, wildings, and clones
- the monitoring of selected trees for seed crop forecasting and wilding (natural regeneration) production

If you are a forest manager responsible for planning and implementing large-scale reforestation programs and for developing strategies for the protection and conservation of forest genetic diversity, this information is vital to the success of your program. FGRID provides this information in the form of an efficient, easy-to-use management tool.

The system is comprised of two main modules: the FGRID Coordinator Module and the FGRID User Module. FGRID was originally designed to function in a networking environment such as a national system within a country. In this case, several users or agencies each contribute their data to a combined national data set under the management of one agency that has been identified as the coordinator.

This coordinator is responsible for setting up the FGRID coding system to ensure standardization; for preparing and distributing FGRID user diskettes to each of the identified agencies for installation; and for managing the system with regard to data transfer between the agencies and coordinator for information updating and merging.

In this network scenario, the coordinator installs both modules; each of the counterpart agencies installs only the FGRID User Module.

When FGRID is used as a single-user system, one forestry agency acts as both the coordinator and user. Therefore, that one agency installs both modules.

The FGRID User Module contains four main registers for data entry and retrieval:

1. Resource Register—detailed information on resource type, origin, location, extent, and species composition
2. Seed Register—detailed information on seed collection, processing, storage, testing, and distribution
3. Nursery Register—detailed information on stock production from seed, wildings, and clones, and distribution
4. Phenology Register—detailed information on selected trees for seed crop forecasting and wilding regeneration

FGRID is fully menu driven. Registers, or databases, are selected from the FGRID main menu. Pop-up screens display options for adding records, editing records, and retrieving information. Depending on the selection, the program generates the appropriate form on the screen.

Data retrieval and data output is flexible. An agency can design its own query form to retrieve information from each register. Summary information may also be obtained from pre-designed output forms. Any output can be viewed on the screen or directed to a printer. The system also provides for database backup and data transfer procedures.

FGRID was also designed to provide flexibility for agencies to configure the system to accommodate their specific requirements. Except for a species database, the coordinator must define and build all data codes used in the registers. This must be completed in the Coordinator Module before FGRID can be used for data entry. Once the codes are established, they are automatically built into an on-line Help function that can be accessed at any time during the operation of the program.

The species list contains 5500 tropical forest species. Species can be added or edited. If FGRID is used in a non-tropical country, the species list can be replaced, but it must be coded in the same format as the species list that is included with this package. The structure of the species coding system is explained in Section 15.4.

Before installing and using FGRID, it is important to completely understand the capabilities and the operation of the system. This involves entering test data and testing all components of the system. Before you install the FGRID system on your computer, install and run the demonstration diskettes included in this package, to ensure that FGRID meets your management needs.

In this manual, examples for data entry, editing, and reporting are used from the FGRID demonstration program.

## 1.1 Helpful Hints

1. Excluding the first two sections and the last section, this manual comprises two main parts. Sections 3 to 14 are related to the FGRID User Module and sections 15 to 21 are related to the FGRID Coordinator Module. Read Section 1 (Introduction to FGRID) for an explanation of the two modules.

2. Ensure that CAPS LOCK is on before starting FGRID. FGRID only recognizes upper case letters.

3. Menu options or data fields may be selected by using the arrow keys, or by clicking the mouse on the selected menu option or data field.

4. Press the F1 key at any time during the operation of the FGRID User Module for an explanation of codes used in the system.

5. The record codes begin with a capital letter, usually denoting country (none of the record numbers in any of the registers contain the capital letter O). The rest of the code consists of numeric values, except for the / delimiter to identify year.

   Example: M0100001/96 M, zero, one, zero, zero, zero, zero, one, /96

6. When you are entering data, the cursor will automatically move to the next field if all the allocated spaces are used. If all spaces are not used, press Enter to move to the next field.

7. During the operation of the FGRID User Module or the FGRID Coordinator Module, if the program faults, a cancel/ignore message will be displayed in the center of the screen. If the ignore option is selected, the program will try to continue, usually without success. Instead, choose the cancel option and start the program again.

8. The FGRID User and Coordinator Modules may be set up to work in a Windows environment. This is done by identifying the program group and program item properties in the Program Manager.

9. Install the FGRID demonstration diskettes and refer to the manual to practice using the system.

# 2 COMPUTER SYSTEM REQUIREMENTS

FGRID was developed using dBase V version 2.0. The two main programs, one for the FGRID User Module and the other for the FGRID Coordinator Module, run as compiled .EXE files. Each of the modules, including the .EXE files and database files, will require at least five megabytes (MB) of free hard disk space for full program installation.

- The FGRID system requires the following:
- PC 386/486 or later model
- DOS 3.0 or later version
- 8 MB RAM
- Hard disk drive with a minimum of 5 MB of free space for FGRID User Module installation
- Hard disk drive with a minimum of 10 MB of free space to install FGRID User and Coordinator Modules

A second hard disk is recommended to accommodate the program's backup system and re-installation procedures.

# 3 FGRID USER MODULE INSTALLATION

## 3.1 Introduction

FGRID may be installed as a single-user or multi-user system. As a single-user, or stand-alone system, FGRID is used by one organization, or agency, as it is referred to throughout this manual. The agency acts as both the coordinator and the user. Before FGRID can be installed, the procedures for preparing diskettes for FGRID installation in the Coordinator Module (Section 16) must be completed.

When FGRID is used as a multi-user system (a national database including several agencies from government, universities, and the private sector, for example) one agency is designated as the coordinator responsible for managing the system. This coordinator, in addition to performing the tasks identified in the Coordinator Module, prepares and provides FGRID installation diskettes for each agency within the network.

Whether the intended use for FGRID is as a single- or multi-user system, each agent must begin by installing FGRID from the diskettes prepared in the Coordinator Module.

## 3.2 Installation

Ensure that the write-protect switch on each diskette is in the locked position.

To install FGRID, return your computer's hard disk drive to the C:\> prompt.

Insert the diskette labeled FGRID INSTALLATION DISKETTE #1 into drive A and type:

A:FINSTALL and press Enter

The screen displays:

> FGRID installation will be installed on hard disk C
> During installation, a subdirectory FGRID will be created
> A backup subdirectory FGBACK will be created on hard disk D
>
> Press Ctrl C to exit or any other key to continue

The installation program will create a directory named FGRID on hard disk C. A directory named FGBACK, to serve as a backup for FGRID, will be created on the computer's D drive.

If either of these directories already exist on your computer, it is suggested that you exit the installation and rename or delete them. Exit by holding down the Ctrl key and pressing C. If your computer does not have a second hard disk D, installation can continue but no backup for the system will be created.

To continue with the installation press any key. The screen displays:

1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied

Insert FGRID INSTALLATION DISKETTE 2 in drive A
Press any key to continue...

If your computer does not have a D drive, two lines will be displayed at the top of the previous screen. They are:

Invalid drive specification
Invalid directory

Continue with the installation and insert the FGRID INSTALLATION DISKETTE #2 into drive A and press any key. One more file is copied to the FGRID directory. The copied files include the FGRID system in a compressed or zipped format.

The screen then displays a list of FGRID programs, database, and list files (Fig. 3.2a) that are being unzipped from compressed format to the FGRID directory.

Midway during the display of file names, scrolling stops at:

PKUNZIP: Warning! file: PKUNZIP.EXE already exists. Overwrite? (Y/N)

PKUNZIP is the program used to restore the FGRID files to their full size. The file is insignificant to the operation of the FGRID system.

```
PKUNZIP (R)    FAST!    Extract Utility    Version 1.1    03-15-90
Copr. 1989-1990 PKWARE Inc. All Rights Reserved. PKUNZIP/h for help
PKUNZIP Reg. U.S. Pat. and Tm. Off.

Searching ZIP: FGRIDA.ZIP
  Exploding: FDISP.EXE
  Exploding: FGRID.EXE
  Exploding: PKZIP.EXE
  Exploding: FGRIDB.PCX
  Exploding: NURBANK.DBF
  Exploding: NURBANK.MDX
UnShrinking: NURDIST.DBF
  Exploding: NURDIST.MDX
  Exploding: NURSERY.DBF
  Exploding: NURSERY.MDX
  Exploding: RESOURCE.DBF
  Exploding: RESOURCE.DBT
  Exploding: RESOURCE.MDX
  Exploding: SEED.DBF
  Exploding: SEED.MDX
  Exploding: SEEDBANK.DBF
  Exploding: SEEDBANK.MDX
UnShrinking: SEEDIST.DBF
  Exploding: SEEDIST.MDX
PKUNZIP: Warning! file: PKUNZIP.EXE already exists.  Overwrite (y/n)?
```

**Figure 3.2a FGRID file listing during installation.**

Type N and the installation is completed.

The DOS prompt is displayed: C:\FGRID>.

After the C:\FGRID> prompt type:

FGRID and press Enter

The FGRID main menu (Fig. 3.2b) is displayed and the program is ready for use.

To access the FGRID User Module at any time, return your computer to the root directory C:\>. Change the directory to FGRID by typing:

CD\FGRID and press Enter

At the C:\FGRID> prompt, type:

FGRID and press Enter

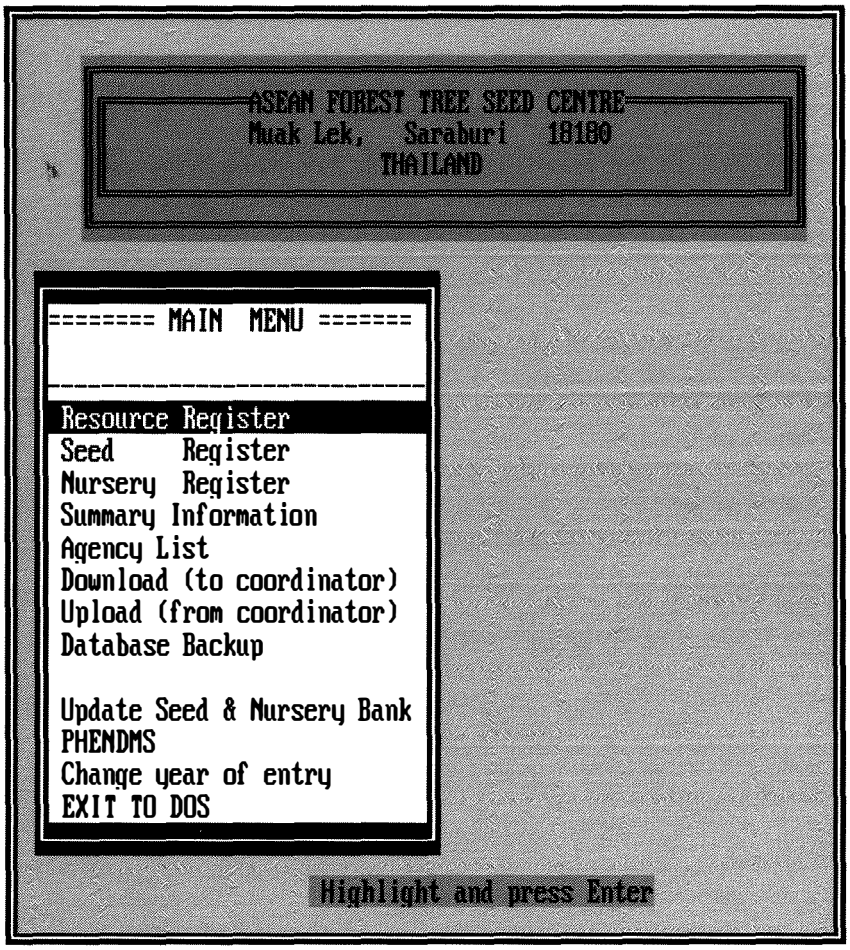



**Figure 3.2b FGRID main menu.**

The FGRID main menu (Fig. 3.2b) is displayed. (Throughout remainder of this manual, the main menu screen illustration will include only the menu options. The header information at the top of the screen and the **Highlight and press Enter** message at the bottom of the screen will be omitted.)

To exit the FGRID program from the main menu, highlight **EXIT TO DOS** and press Enter. The DOS prompt is displayed.

# 4 UNDERSTANDING THE FGRID RECORD NUMBERING SYSTEM

## 4.1 Introduction

FGRID contains four main databases that are used to enter and store data—the Resource Register, Seed Register, Nursery Register, and a Phenology Register.

Within each register, a numbering system is established to maintain the identity of each record stored in the system. The program generates these numbers. Before using FGRID, you need to understand how the record numbering system is constructed.

## 4.2 Resource Register

Each record entered is assigned a number code in a field named SOURCE ID. Its field width is 10 spaces. It is based on an agent code in the first three spaces, followed by a number from 1 to 9,999,999. For every record entered into the Resource Register by an agent, the agent code remains the same and the numbers increase by one.

An example of a SOURCE ID is M010000015.

| | |
|---|---|
| M | refers to country Malaysia |
| 01 | agent #1 - Forest Department Peninsular Malaysia |
| 0000015 | record number 15 in the database |

If FGRID is used as a multi-user system it is limited to 99 codes for agents, each of which can enter 9,999,999 records.

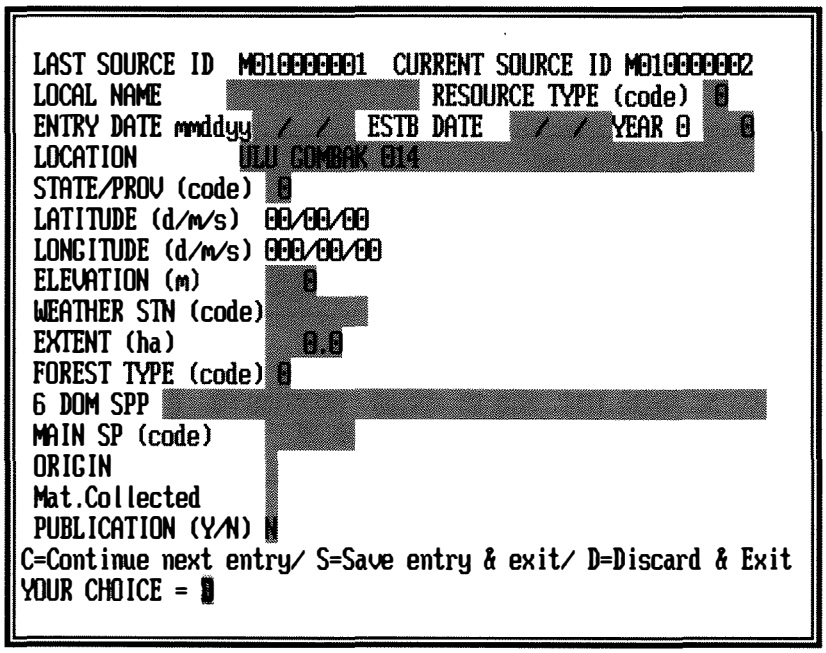



**Figure 4.2a Resource Register data entry screen.**

Before any records can be entered in the seed, nursery, or phenology databases, a record must be entered in the RESOURCE database (Fig. 4.2a). This is essential, as the SOURCE ID in the resource database is linked to the record identification numbers in the other databases.

## 4.3 Seed Register

For every seedlot collected and entered in the seed database, a number code is assigned to a field named SEEDLOT. Its field width is 11 spaces. It is based on a combination of an agent code and a number from 1 to 99,999, followed by a / delimiter and the year of collection. For every record entered into the Seedlot Register by an agent, the agent code remains the same and the numbers increase by one. The year of collection is established in the **Change year of entry** option in the FGRID main menu.

An example of a SEEDLOT number is M0100010/96.

| | |
|---|---|
| M | refers to country Malaysia |
| 01 | agent #1 - Forest Department Peninsular Malaysia |
| 00010 | record number 10 in the database |
| /96 | year of collection* |

If FGRID is used as a multi-user system, it is limited to 99 codes for agents, each of which can enter 99,999 records each year.

Every seedlot entry must be linked to a SOURCE ID in the Resource Register. The SOURCE ID must be entered when adding records for seed collection (Fig. 4.3a) The seedlot numbers are automatically linked to the seed testing and seed distribution databases.

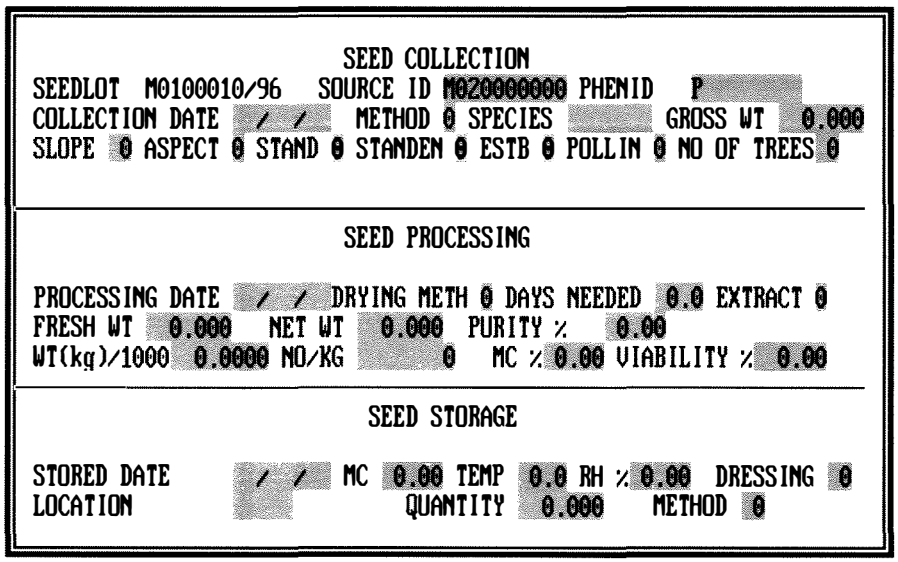



**Figure 4.3a Seed collection data entry screen.**

* Read **Change year of entry** before entering data (Section 4.6).

## 4.4 Nursery Register

When a seedlot is used for seedling production in a nursery, a nursery lot number is assigned to the seedlings originating from that seedlot. The field name is NURLOT (Fig. 4.4a) and the field width is 12 spaces. Similar to the SEEDLOT number, it is based on the agent code, followed by a / delimiter, the year of sowing or planting in the nursery, a / delimiter and a number from 1 to 99,999.

An example of a nursery lot number is M01/95/00001.

| | |
|---|---|
| M | refers to country Malaysia |
| 01 | agent #1 - Forest Department Peninsular Malaysia |
| /95 | year seed is propagated in nursery* |
| 00001 | record number 1 in the database |

If FGRID is used as a multi-user system it is limited to 99 codes for agents, each of which can enter 99,999 records each year.

Each nursery entry is linked to the seed database, which in turn is linked to the resource database.

Although the Nursery Register is predominantly used to store information related to the production of planting stock originating from seed, it is also used to store information for planting stock originating from wildings or clones. In the case of stock from wildings or clones, a special code (X0000000/00) is always entered when making a nursery entry record. A nursery lot (NURLOT) number is automatically assigned for the entry.

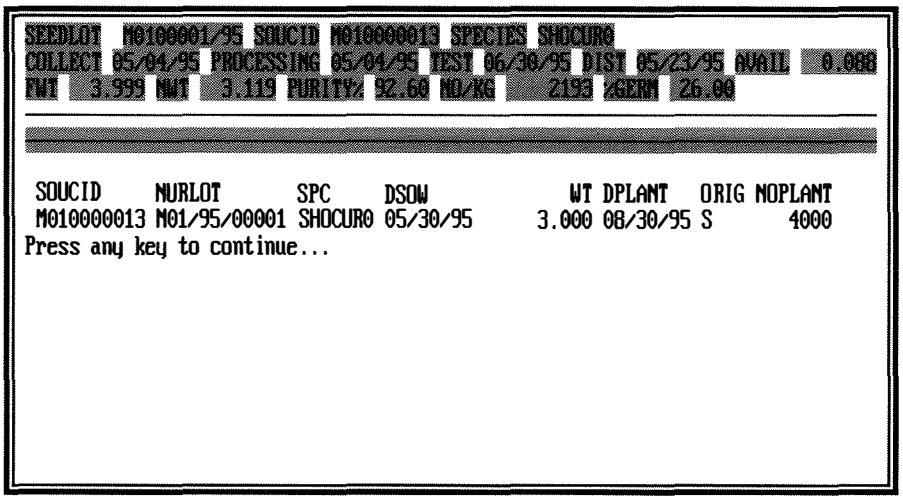



**Figure 4.4a Nursery production screen showing generated nursery lot number.**

* Read **Change year of entry** before entering data (Section 4.6).

## 4.5 Phenology Register

The phenology database stores information for individual trees (Fig. 4.5a) selected for the monitoring of seed development and wilding regeneration. Each tree selected is linked to a resource record (SOURCE ID) entered in the resource database.

An identification number is assigned to every tree selected and entered in the phenology database. The field name is PHENID and the field width is nine spaces.

An example of a phenology tree number is PM0100001.

| | |
|---|---|
| P | identifies a phenology tree |
| M | refers to country Malaysia |
| 01 | agent #1 - Forest Department Peninsular Malaysia |
| 00001 | record number 1 in the database |

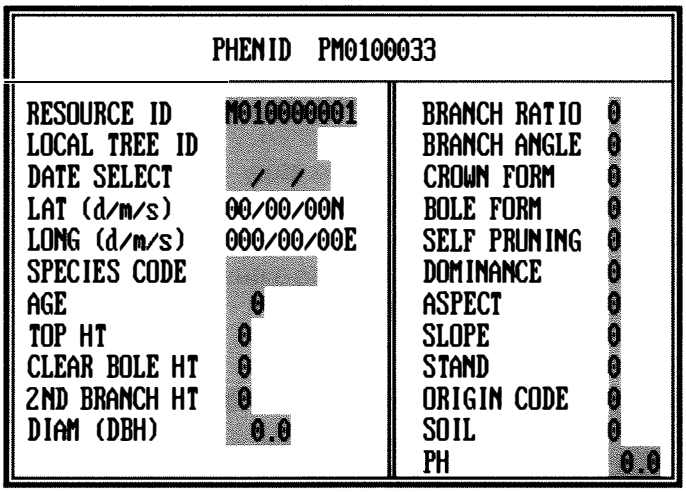



**Figure 4.5a Phenology tree data entry screen.**

## 4.6 Change Year of Entry

Before using FGRID to enter data, it is important to recognize the function of the **Change year of entry** option in the FGRID main menu. As described in sections 4.2 and 4.3, the SEEDLOT and NURLOT (nursery) numbers include the year to identify the year of seed collection or nursery production. Because the program automatically generates the record numbers, this option must be executed before data entry in the seed and nursery databases begins for each new year.

To change the year of entry, highlight the option in the main FGRID menu and press Enter. The following message is displayed.

> Record numbers in the Seed and Nursery registers are numbered sequentially by year (e.g., M0100123/94, M01/94/00123).
>
> Changing the year of entry will reset the respective serial numbers to 1 (e.g., M0100001/95, M01/95/00001).
>
> This procedure will allow the entry of 99,999 Seed and Nursery records per year.
>
> The year change must be carried out prior to the entering of the first Seed and/or Nursery record for the current year.
>
> Do you want to change the year of entry? (Y/N) __

To exit this procedure and return to the FGRID main menu, type N and press Enter.

Change the new year for data entry by typing Y and type in the year in response to the message:

Enter new year of entry (e.g., 1998) __

The program requests confirmation of the year:

Please confirm year of entry is correct (Y/N) __

Type Y if the year just entered is correct or N to exit and return to the main menu.

# 5 THE RESOURCE REGISTER

## 5.1 Introduction

Forest land area in any country in the world is categorized by forest regions and forest types. Within these categories, specific forest areas may be identified by their designated land use, which can include

- national parks,
- state/provincial parks,
- ecological reserves,
- conservation areas,
- virgin jungle reserves, or
- model forests.

On a smaller scale, examples may include

- seed collection areas,
- seed production areas,
- seedling or clonal seed orchards,
- native or exotic plantations, or
- provenance/progeny tests.

The FGRID program identifies such forest land use designations as RESOURCES. It is from these resources that seed, wildings, or clones are selected and collected and used to provide planting stock for reforestation programs.

The Resource Register in FGRID is used to identify and provide a description for each resource entered into the system. Many of the data fields are coded to minimize field length and data entry, reduce the chance of error, and to facilitate the search function when retrieving information.

Procedures for adding and editing records, conducting information searches, and producing output reports are explained in this section.

## 5.2 Accessing the Resource Register

Highlight **Resource Register** on the FGRID main menu screen (Fig. 5.2a) and press Enter. Options for this register are shown in Figure 5.2b.

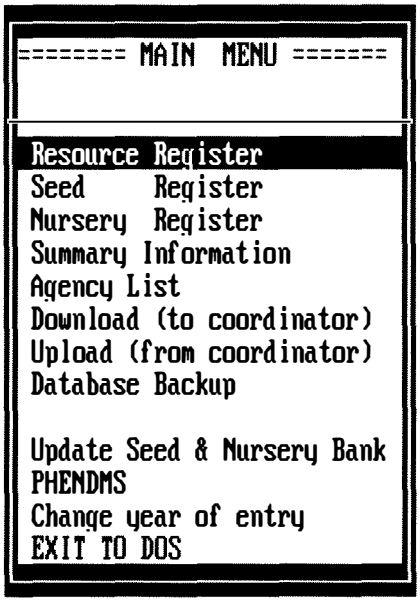



**Figure 5.2a FGRID main menu.**

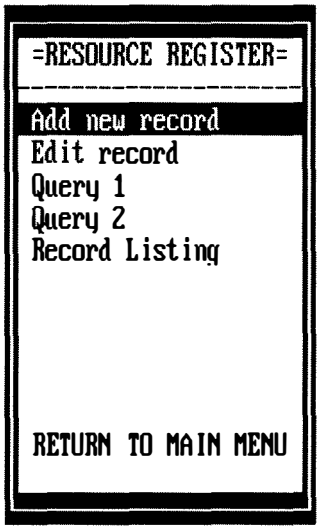



**Figure 5.2b Resource Register options.**

## 5.3 Add New Record

Highlight **Add new record** and press Enter. The screen displays:

To quit and return to previous screen type EXIT
To continue,
(Enter Location) LOCATION: __

If you decide not to enter information, type EXIT or simply press Enter to return to the previous menu. If a record is to be added, a location must be entered.

Remember to enter data using only CAPITAL LETTERS.

The purpose of location is to identify, in the smallest unit of land area, the geographical location of the resource type. Location should be coded using a maximum of 40 characters. The coding system must be standardized by the coordinator when FGRID is used as a multi-user system.

After a location is entered, the system will check for duplication of locations within the existing Resource Register. If a location already exists, a list of SOURCE IDs and locations will be displayed. If the record is still to be entered, press C to continue or N to discard the entry.

Once in the **Add new record** screen (Fig. 5.3a), the first line on the screen automatically displays the last SOURCE ID entered and the new record number for which information will be entered. Information is entered by moving through the screen using the Tab or Enter keys, or by using the mouse.

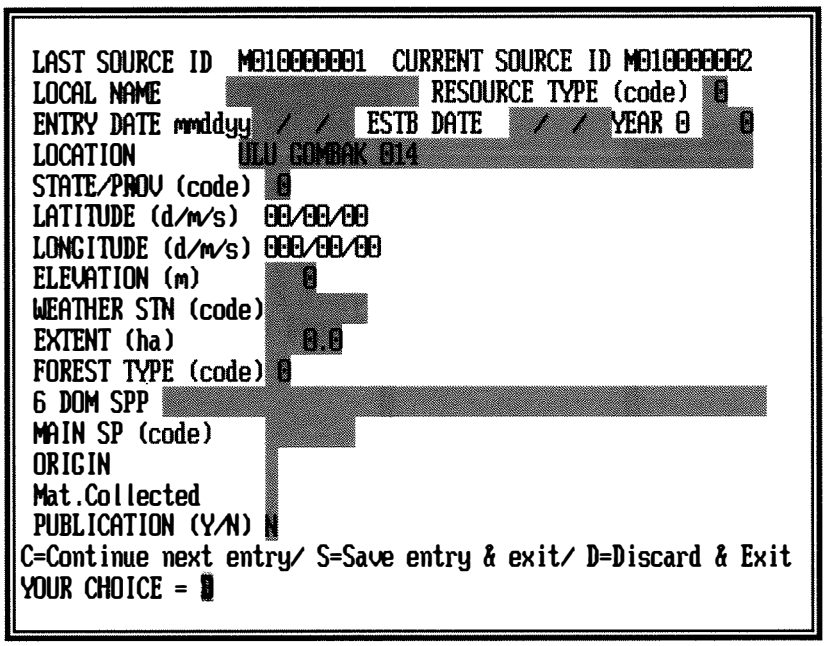



**Figure 5.3a Resource Register. Add new record.**

A Help function for codes used in FGRID may be accessed by pressing the F1 key. Refer to the FGRID demonstration program for code examples. For an explanation of data fields, see Appendix 1.

After data for the last field (PUBLICATION) is entered, the cursor moves directly to options to save or discard the information that was entered on the screen. The last two lines are:

C=Continue next entry/ S=Save entry & exit/ D=Discard & exit
YOUR CHOICE=D

The default is always D (discard and exit). If you press Enter now, the information entered on the screen will not be saved in the database. Review the options very carefully. If C or S is entered in the YOUR CHOICE option, the program displays this line at the bottom of the screen:

NOTE MEMO (Ctrl Home to access memo field or Enter to continue)

Often it is necessary to include additional information about the resource that is not defined in the resource database data entry screen. Access a note field by pressing Ctrl Home. Type in your information. When finished, exit the note field by pressing Ctrl End and then Enter. If the memo field is not needed, just press Enter. The data entry screen will be displayed again, so you have a chance to review the data and make changes if necessary. When you are sure the information is complete and correct, press Ctrl End and the record will be saved.

The difference between using C or S is that C will save the record and continue with the next resource entry, while S will save the record and return you to the Resource Register menu.

## 5.4 Edit a Record

To make changes to a resource entry that has already been saved in the Resource Register, highlight **Edit record** in the Resource Register menu (Fig. 5.2b) and press Enter. The screen displays:

ENTER SOURCE ID M000000000

Type the SOURCE ID code for the resource record that requires editing. A screen displays the current resource data (Fig. 5.4a). By using the Tab or Enter keys or mouse, move to the field(s) that require changing and type over existing data.

After changes are made, return to the Resource Register menu by pressing Ctrl End.

```
                    SOURCE ID  M010000001
LOCAL NAME FOREST RES 22    RESOURCE TYPE (code)    1
ENTRY DATE mmddyy11/16/95 ESTB DATE  01/01/00YEAR 0 1900
LOCATION        ULU GOMBAK 022
STATE/PROV (code)  5
LATITUDE (d/m/s)  03/20/17N
LONGITUDE (d/m/s) 101/42/12E
ELEVATION (m)      200
WEATHER STATION    SL002
EXTENT (ha)        500.0
FOREST TYPE (code) 5
6 DOM SPP SHOLEP1 SHOACU0 SHOCUR0 SHOPLA1 DIPGRA1 DIAPLA0
MAIN SP (code)     SHOLEP1
ORIGIN             1
Mat.Collected      5
PUBLICATION (Y/N) N
NOTE MEMO (Ctrl Home to access memo field)
```

**Figure 5.4a Resource Register. Edit record.**

## 5.5 Query 1

This query option is used to search for information stored in the resource database. To select Query 1, highlight it in the Resource Register menu (Fig. 5.2b) and press Enter. The query is a two-step procedure. First, the user must decide which fields are to be displayed as output (Fig. 5.5a). This is accomplished by moving the cursor in the vertical bar beside the field names and typing a Y next to the field names for which information is required.

It is advisable to select only necessary fields. If too many fields are selected, the output on the screen is difficult to read. After the fields are selected, press Ctrl End to move to the bottom of the screen and a second Ctrl End to move to the next screen.

By using the mouse or arrow keys select the field(s) to set the conditions for the query (Fig. 5.5b). Type in the conditions and press Ctrl End to execute the procedure.

The number of records meeting the query conditions is displayed.

Select output options. Press Enter when CHOICE=Q if you do not want to view or print the query output.

Display summary=1 /Print summary=2 /Full report=3 CHOICE=Q

After an option (1, 2, or 3) is selected, the information will be directed to the screen or to a printer. Press any key to continue and respond to the following option:

CONTINUE THE QUERY? (Y/N) _

N will return you to the Resource Register menu (Fig. 5.2b).

If you wish to continue the query by changing the conditions, select Y and the Conditions screen will be displayed for the query. Enter the new conditions and press Ctrl End to execute the search.

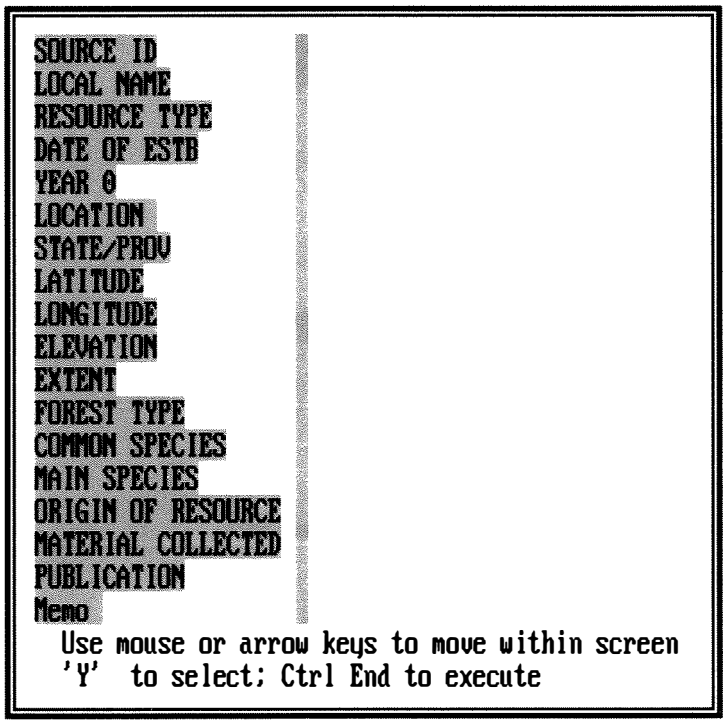



**Figure 5.5a Query 1. Define fields for display screen.**

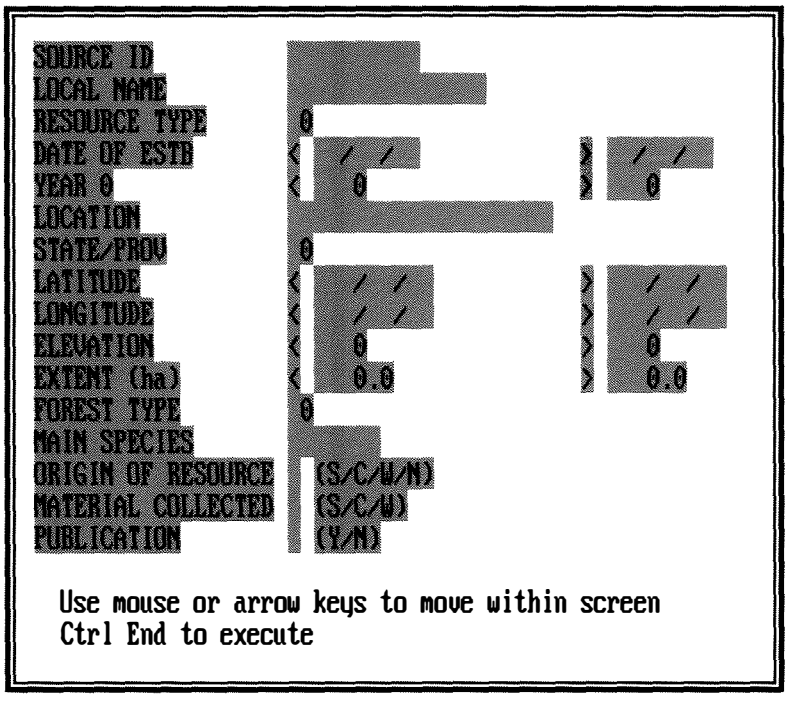



**Figure 5.5b Query 1. Query conditions screen.**

## 5.6 Query 1 Example

As a forest manager, responsible for setting seed collection targets, you would like to know the answers to these questions:

How many seed production areas are there for all species?
When were they established?
Which agency is responsible for them?
Where are they located?
What is their area in hectares?
Have any seed, clones, or wildings been collected from them?

In the FGRIDEMO program, select **Query 1** from the Resource Register menu.

On the screen, select the following fields and type a capital Y in the vertical bar beside each field.

SOURCE ID
DATE OF ESTB
STATE/PROV
EXTENT
SPECIES
MATERIAL COLLECTED

Figure 5.6a shows the completed query screen identifying the fields for information that will be displayed.

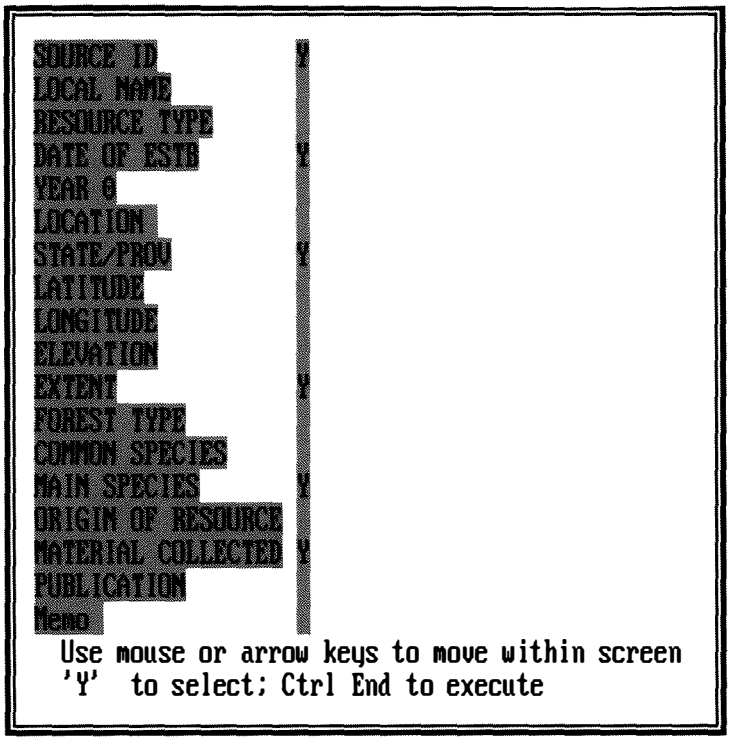



**Figure 5.6a** **Query 1 example. Defining fields for display.**

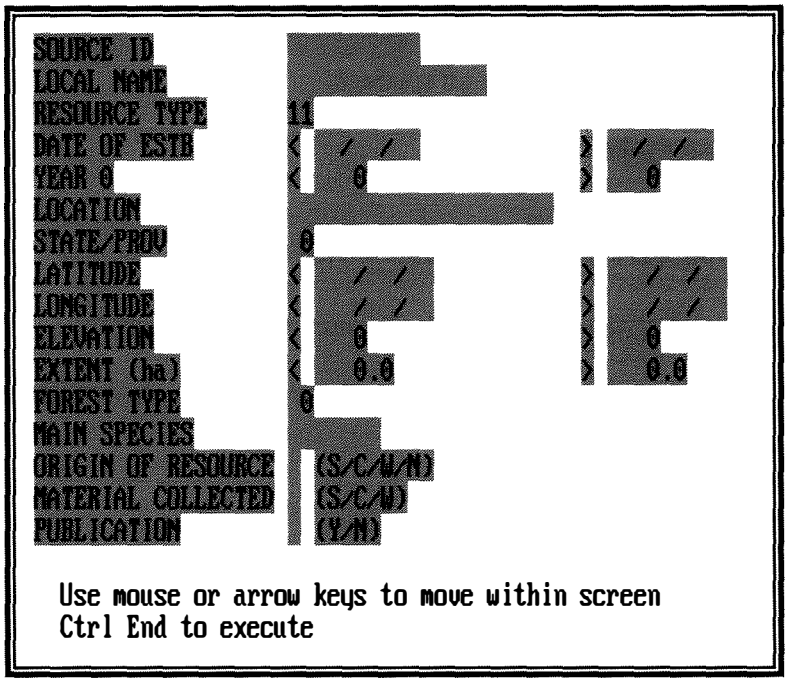



**Figure 5.6b** **Query 1 example. Setting conditions for the search.**

Press Ctrl End. The cursor moves to the bottom left side of the screen. Press Ctrl End again and the Define query conditions screen (Fig. 5.6b) is displayed. Since you only want the information identified on the previous screen for seed production areas, type the code for seed production areas in the resource type. If you do not remember the code, press the F1 key, which displays the codes used in FGRID. Select 2 for resource type. The code for seed production areas is 11. Press any key to exit the Help function and enter the code 11 for the resource type.

Press Ctrl End. The screen displays:

```
Total number of entries counted=7
Display summary=1  /Print summary=2  /Full report=3  CHOICE=Q
```

To exit the query procedure, press Enter.

In this example, select 1 to display the results of the query on the screen.

```
Record#  SOUCID      ESTB     STATE   EXTD SPC     MCOL
     11  M010000011 01/01/90     5  200.0 SHOCUR0 1
     12  M010000012 01/01/90     5  300.0 SHOCUR1 1
     13  M010000013 01/01/90     5  600.0 SHOCUR0 1
     17  M020000003 01/01/68     6  230.0 SHOLEP1 5
     19  M020000005 01/01/65     6  300.0 SHOLEP1 5
     25  M020000011 01/01/90     6  200.0 SHOCUR0 1
     26  M020000012 01/01/90     6    0.0 SHOCUR1 1
Press any key to continue...
```

The outut provides the informaton requested in the query. There are seven seed production areas. Three were established by agent M01 and four by agent M02. The resource number identification; date of establishment, location (state); extent or size (hectares); and the species and type of material collected are listed for each. The output includes only coded data. Refer to a hardcopy listing of codes for interpretation.

Press any key to continue and respond to the following option:

```
CONTINUE THE QUERY? (Y/N) _
```

N will return you to the Resource Register menu.

If you wish to continue the query for the same fields as those identified above (Fig. 5.6a), select Y and the conditions screen will be displayed for the query. Enter the new conditions and press Ctrl End to execute the search.

After an outout option is selected, type Y to continue the query or N to exit and return to the Resource Register menu (Fig. 5.2b).

## 5.7 Query 2

This query is designed to identify the main species associated with a selected species entered in the **6 DOM SPP** field of the resource database.

Highlight **Query 2** and press Enter. The screen displays:

Enter species code of COMMON SPECIES __

Type in a species code. A listing is produced identifying the main species code, forest type, resource type, location, and SOURCE ID for the selected species.

As an example, using the FGRIDEMO program, select Query 2 from the Resource Register menu. Type the species code KOOMAL0 (*Koompassia malaccensis*). The output from the search is displayed (Fig. 5.7a).

Return to the Resource Register menu by pressing any key.

```
SOUCID     LOCATION                          RESTY FORTY SPC
M010000002 ULU GOMBAK 014                        1     4 SHOCUR0
M010000004 SEMANGKOK 030                        14     3 SHOCUR0
M010000006 SEMANGKOK 038                         1     3 SHOCUR0
M010000011 SEMANGKOK 113                        11     4 SHOCUR0
M010000013 SEMANGKOK 058                        11     4 SHOCUR0
M020000002 TERIANG 018                          15     4 SHOCUR0
M020000004 PASOH 011                            14     3 SHOPLA1
M020000006 SETUI 115                            15     3 SHOCUR0
M020000007 PASOH 001                            16     5 SHOLEP1
M020000009 SG LALANG 004                         8     5 KOOMAL0
M020000011 SG LALANG 135                        11     4 SHOCUR0
Press any key to continue...
```

**Figure 5.7a Query 2. Resource Register output for *Koompassia malaccensis*.**

## 5.8 Record Listing

This option allows the user to view or print records stored in the Resource Register. Output includes all information entered for the records and is presented in a form format. Use this option to maintain an updated hard copy of the Resource Register for reference purposes.

Select **Record listing** from the Resource Register menu (Fig. 5.2b) and press Enter. The screen displays:

SOURCE ID=M000000000 to M000000000

Enter a range of SOURCE ID codes. For example, in the FGRIDEMO program, type M010000001 and M010000010 to obtain a record listing for the first 10 resource records entered by agent M01. After the search is completed the screen displays:

Total records present=10
Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

To display output on the screen, press 1. The first record is displayed (Fig. 5.8a). View each of the records by pressing C. To exit press E. The screen prompts for a new range of records. Press Enter twice and select 4 to exit and return to the Resource Register menu screen.

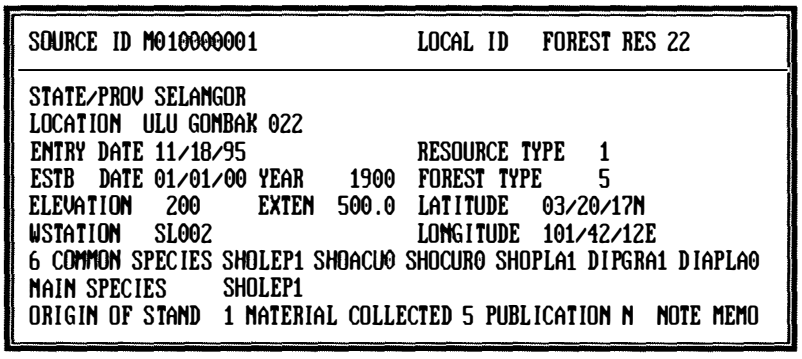



**Figure 5.8a Record listing from the Resource Register.**

## 5.9 Quitting the Resource Register

Highlight the **RETURN TO MAIN MENU** option and press Enter. The program returns you to the FGRID main menu.

# 6 THE SEED REGISTER

## 6.1 Introduction

This register is comprised of three databases containing information related to collection, processing, storage, testing, and distribution for every seedlot collected by an agent. Procedures for adding and editing records, designing query forms for information retrieval, and producing reports and listing outputs are explained in this section.

## 6.2 Accessing the Seed Register

From the FGRID main menu (Fig. 6.2a), highlight **Seed Register** and press Enter. Figure 6.2b displays the options available for seed collection, seed testing, and seed distribution.

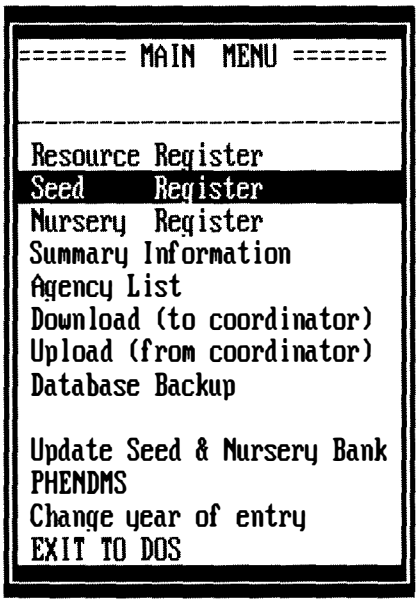



**Figure 6.2a FGRID main menu.**

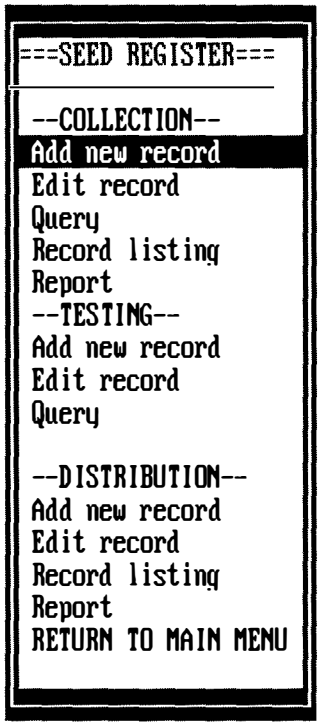



**Figure 6.2b Seed Register options.**

## 6.3 Seed Collection

This component of the Seed Register maintains information on the collection, processing and storage for each seedlot.

### 6.3.1 Add new record

From the Seed Register menu, highlight **Add new record** under COLLECTION and press Enter. The screen displays the last seedlot record entered and asks if a new record is to be added.

LAST SEEDLOT NO=M010009/96  New entry? (Y/N) N

The default is set to N. If you do not wish to enter a seed collection record, press Enter and the system returns you to the Seed Register menu. If Y is entered, complete data entry for seed collection, processing, and storage (Fig. 6.3.1a).

To access Help for coded fields, press the F1 key. In the FGRIDEMO program, select 6 for Help on seed collection.

To exit the screen for the current record move to the last field (METHOD) in seed storage, enter the code or press Enter if there is no code. To exit the screen at any field, press Ctrl End. In either case the exit options are displayed.

C=Continue next entry/ S=Save entry & exit/ D=Discard & exit
CHOICE=D

The default is always D (discard & exit). If you press Enter now, the information entered on the screen will not be saved in the database.

The only difference between using C or S is that C will save the current record and continue with the next seed collection entry, while S will save the record and return you to the Seed Register menu.

```
                        SEED COLLECTION
SEEDLOT  M0100010/96   SOURCE ID M020000000 PHENID   P
COLLECTION DATE   /  /    METHOD 0 SPECIES        GROSS WT   0.000
SLOPE  0 ASPECT 0 STAND 0 STANDEN 0 ESTB 0 POLLIN 0 NO OF TREES 0

                        SEED PROCESSING

PROCESSING DATE   /  / DRYING METH 0 DAYS NEEDED  0.0 EXTRACT 0
FRESH WT   0.000   NET WT   0.000  PURITY %    0.00
WT(kg)/1000  0.0000 NO/KG        0   MC % 0.00 VIABILITY %  0.00

                        SEED STORAGE

STORED DATE       /  /   MC  0.00 TEMP  0.0 RH % 0.00  DRESSING  0
LOCATION                    QUANTITY   0.000    METHOD  0
```

**Figure 6.3.1a Seed collection. Add new record.**

### 6.3.2 Edit record

To edit an existing seedlot record, select **Edit record** under COLLECTION in the Seed Register menu. The seedlot number is entered and the seed register data edit screen (Fig. 6.3.2a) is displayed. Information may be changed by moving to the different fields by using the Tab or Enter keys or the mouse.

After all changes are made, press Ctrl End twice to return to the Seed Register menu.

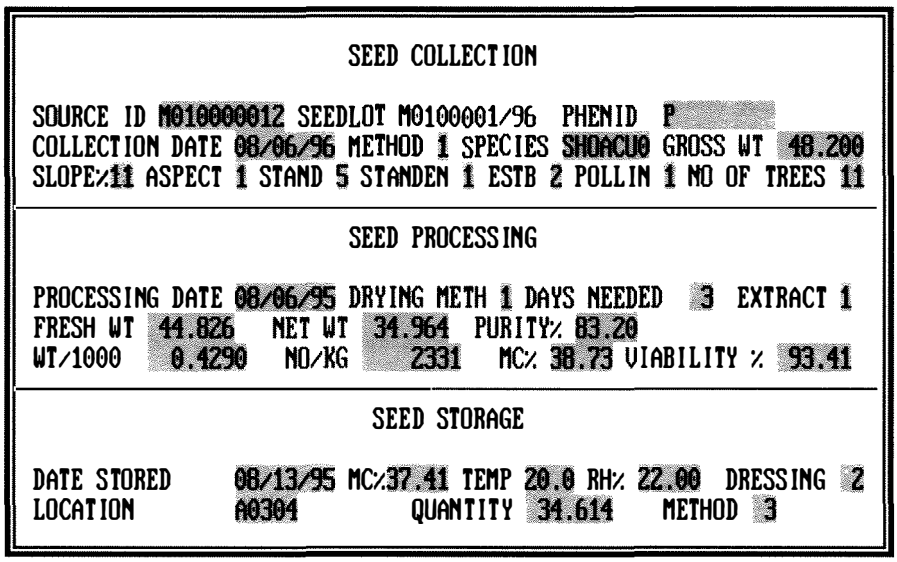



**Figure 6.3.2a Seed collection. Edit record.**

### 6.3.3 Query

The query option is used to search for information related to seed collection, processing, storage, or a combination of the three. Highlight **Query** under COLLECTION and press Enter. The query is a two-step procedure. First, the user must decide which fields are to be displayed as output (Fig. 6.3.3a). This is accomplished by moving the cursor in the vertical bar beside the field names and typing Y next to the field names for which information is required.

Select only necessary fields, otherwise the output display will be difficult to view. After the fields are selected, press Ctrl End.

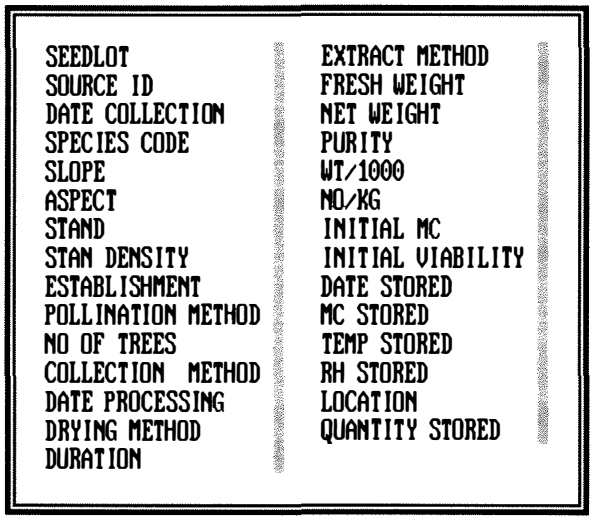



**Figure 6.3.3a Seed collection query. Define fields for display screen.**

By using the mouse or arrow keys, select the fields (Fig. 6.3.3b) to set the conditions for the query. Type in the conditions and press Ctrl End to execute the procedure.

The number of records meeting the query conditions is displayed.

Select output options.

Display summary=1 /Print summary=2 /Full report=3 CHOICE=0

Press Enter to exit the query procedure. Otherwise select an option and the information will be directed to the screen or to a printer. Press any key to continue and respond to the following option:

CONTINUE THE QUERY? (Y/N) __

N will return you to the Seed Register menu.

If you wish to continue the query for the same fields as identified in (Fig. 6.3.3a), select Y and the conditions screen will be re-displayed for the query. Enter the new conditions and press Ctrl End to execute the search.

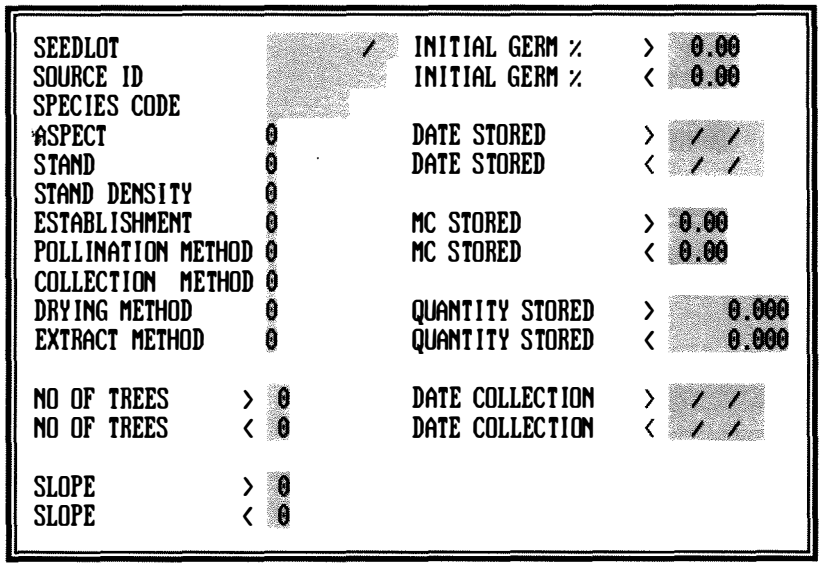



**Figure 6.3.3b Seed collection query. Conditions screen.**

### 6.3.4 Query example

Using the FGRIDEMO program, search for SHOCUR0 (*Shorea curtisii*): the number of seedlots collected; the date of collection; the seedlot identification numbers; the origin (in Resource Register); the quantity of seed collected; and the initial viability of each seedlot.

From the Seed Register under COLLECTION, highlight **Query** and press Enter. On the screen, select the following fields and type a capital Y in the vertical bar beside each field.

SEEDLOT
SOURCE ID
DATE COLLECTION
FRESH WEIGHT
NET WEIGHT
INITIAL VIABILITY

The completed seed database query screen to define fields for display is represented in Figure 6.3.4a.

Press Ctrl End to move to the query conditions screen (Fig. 6.3.4b) Type SHOCUR0 in the species field and press Ctrl End to execute the query search.

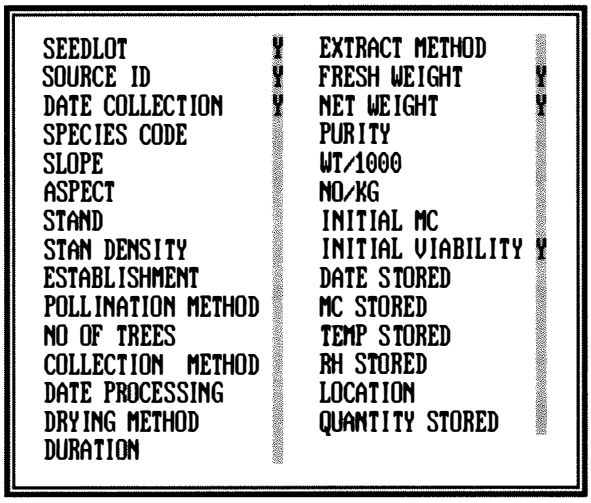



**Figure 6.3.4a** **Seed collection query example. Defining fields for output.**

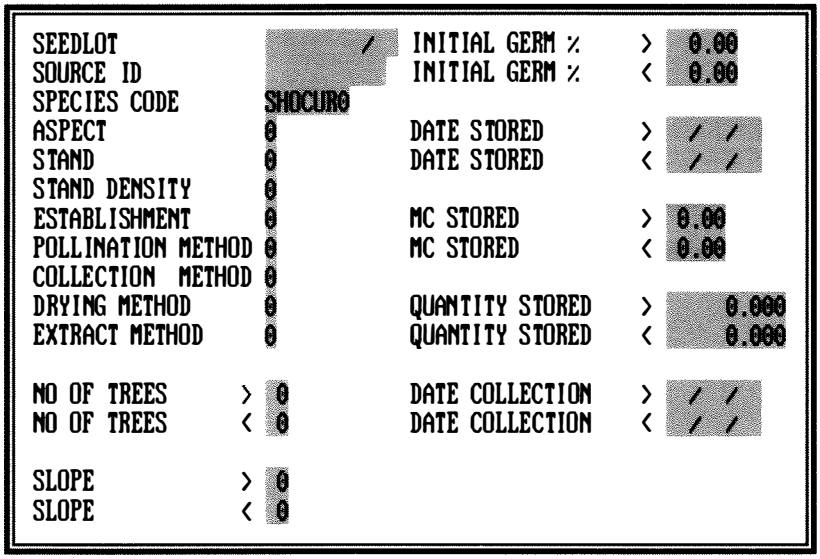



**Figure 6.3.4b** **Seed collection query example. Using species as condition for search.**

The screen displays:

Total number of entries found=9
Display summary=1 /Print summary=2 /Full report=3 CHOICE=0

Pressing Enter will exit the query procedure. In this example, select 1 to display the query results on the screen.

| Record# | SEEDLOT | SOUCID | FRESHWT | DCOLL | NETWT | IVIAB |
|---|---|---|---|---|---|---|
| 1 | M0100001/95 | M010000013 | 3.999 | 05/04/95 | 3.119 | 92.30 |
| 2 | M0100002/95 | M010000013 | 5.394 | 05/07/95 | 4.207 | 94.70 |
| 5 | M0100005/95 | M010000011 | 20.367 | 05/11/95 | 15.886 | 94.20 |
| 8 | M0100008/95 | M010000011 | 43.152 | 05/17/95 | 33.659 | 93.13 |
| 9 | M0100009/95 | M010000012 | 48.918 | 05/17/95 | 38.156 | 87.90 |
| 23 | M0200003/95 | M020000005 | 28.551 | 01/07/95 | 22.270 | 98.00 |
| 25 | M0200005/95 | M020000011 | 20.367 | 01/13/95 | 15.886 | 94.20 |
| 28 | M0200008/95 | M020000011 | 43.152 | 01/17/95 | 33.659 | 93.13 |
| 29 | M0200009/95 | M020000012 | 48.918 | 01/17/95 | 38.156 | 87.90 |

Press any key to continue...

Press any key to continue and respond to the following option:

CONTINUE THE QUERY? (Y/N) __

N will return you to the Seed Register menu.

If you wish to continue the query for the same fields as identified in Figure 6.3.4a, select Y and the conditions screen will be displayed. Enter the new conditions and press Ctrl End to execute the search.

### 6.3.5 Record listing

This option allows the user to view or print seed collection records stored in the Seed Register. Output includes all information entered for the records and is presented in a form format. Use this option to maintain an updated hard copy for reference purposes.

Select **Record listing** under COLLECTION in the Seed Register (Fig. 6.2b) and press Enter. The screen displays:

SEEDLOT=M0200000/00 to M0200000/00

Enter a range of seedlot numbers. For example, in the FGRIDEMO program, type M0100001/95 and M0100010/95 to get a record listing for the first 10 seed collection records entered by agent M01. After the search is completed the screen displays:

Total records present=10
Display= 1; Print=2; Next listing=3; Exit=4; CHOICE= __

To display output on the screen, press 1. The first record is displayed (Fig. 6.3.5a). View each of the records by pressing C. To exit press E. The screen prompts for a new range of records. Press Enter twice and select 4 to exit and return to the Seed Register menu screen.

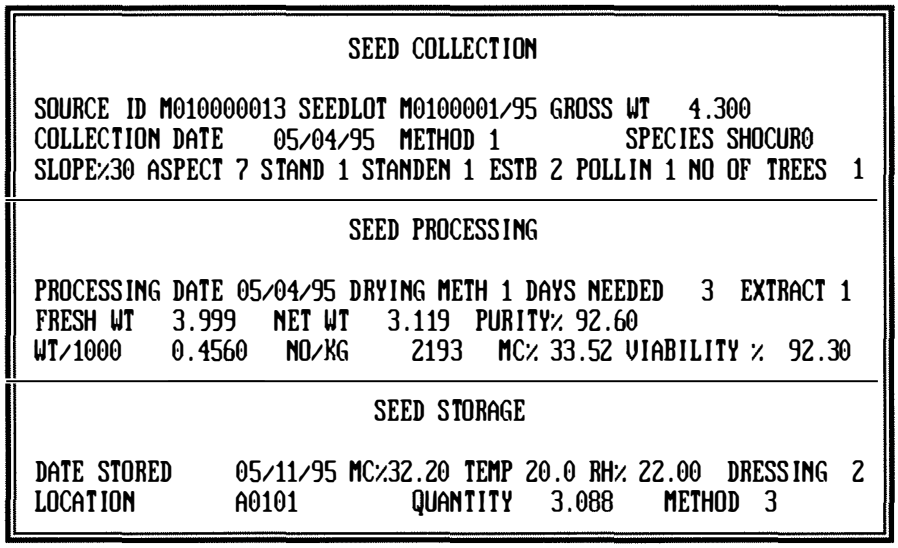



**Figure 6.3.5a Seedlot collection information using the Record listing option.**

### 6.3.6 Report

This option provides information for seedlots in storage. Highlight **Report** and press Enter. The screen displays:

AGENT CODE=M00
SEED BANK REPORT FOR DATE FROM
__/__/__ to __/__/__

Type the agent code and the dates for which the report is needed. Entry format for date is month/day/year. The output displays by species, all seedlot numbers, resource type, location, the quantity of seed originally stored, and quantity available. Output may be directed to either the screen or a printer. If the exit option is selected, the program returns to the Seed Register menu.

As an example, using the FGRIDEMO program, highlight **Report** under COLLECTION in the Seed Register. Type in the agent code and the dates for which the report is required. In this example, the first date would be January 1, 1995, and the second date would be December 31, 1995.

AGENT CODE=M01
SEED BANK REPORT FOR DATE FROM
01/01/95 TO 12/31/95

1=Display 2=Print 3=Exit Choice= __

Type 1 to display the output on the screen. The report identifies all seedlots collected in 1995, the resource from which they were collected, the species, the quantity stored after collection, and the quantity that is currently in storage.

```
                              SEED STORAGE REPORT
                              01/01/95 TO 12/31/95

SEEDLOT     SOUCID                  LOCATION                  STORAGE  AVAILABLE
=============================================================================
SPECIES   ENDOSPERMUM MALACCENSE
M0100004/96 M0100000014 AYER HITAM 024                         54.435    54.435
M0100005/96 M0100000014 AYER HITAM 024                         45.028    45.028
M0100006/96 M0100000014 AYER HITAM 024                         57.308    57.308
SPECIES   KOOMPASSIA MALACCENSIS
M0100004/95 M0100000011 SEMANGKOK 113                          16.159    11.159
SPECIES   SHOREA ACUMINATA
M0100006/95 M0100000011 SEMANGKOK 113                          25.135    24.135
M0100008/96 M0100000005 SEMANGKOK 002                          12.568     0.000
SPECIES   SHOREA CURTISII
M0100001/95 M0100000013 SEMANGKOK 058                           3.008     0.008
M0100002/95 M0100000013 SEMANGKOK 058                           4.165     4.165
M0100005/95 M0100000011 SEMANGKOK 113                          15.727    15.727
M0100008/95 M0100000011 SEMANGKOK 113                          33.322    33.322
M0100009/95 M0100000012 SEMANGKOK 002                          37.774    37.774
SPECIES   SHOREA LEPROSULA
M0100007/95 M0100000011 SEMANGKOK 113                          34.614    34.614
-- More --
```

After the report is viewed or printed, press any key to continue. The screen displays:

C=Continue  E=Exit  CHOICE= __

If C is entered, the conditions for a new report can be entered (e.g., a different agent code or different time period). To exit the report option, type E and the Seed Register menu is displayed.

## 6.4 Seed Testing

This component is used by agencies or organizations that conduct seed testing normally associated with a seed bank. Information is not sent to the coordinator for updating and can only be accessed by the agent entering the data.

### 6.4.1 Add new record

Under TESTING, highlight **Add new record** and press Enter. The screen displays:

Do you want to add a seed testing record? (Exit=A0000000/00)
SEEDLOT M0000000/00

To enter a record, type in the SEEDLOT number (e.g., M0100001/95).

To exit and return to the Seed Register menu, type A0000000/00.

If a seedlot number is entered, and if it exists in the database, a screen (Fig. 6.4.1a) displays background information related to the seedlot and a listing of previous testing results. For a seedlot that has never been tested, only the background information is displayed in the top portion of the screen.

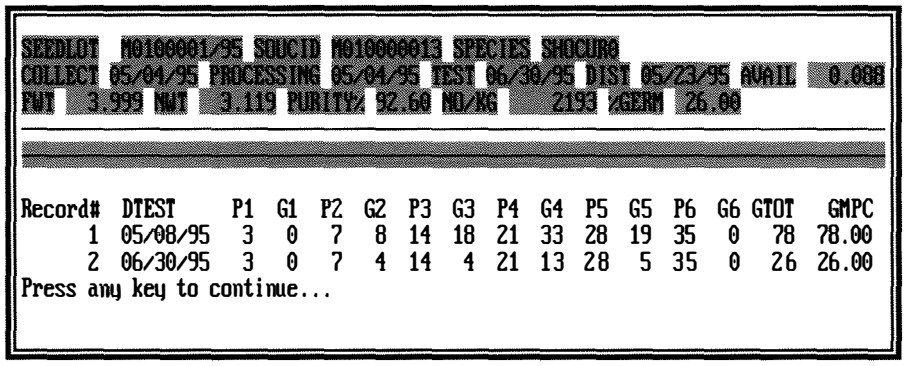



**Figure 6.4.1a Collection and previous testing information for a selected seedlot.**

The background information includes:

| | |
|---|---|
| SEEDLOT | seedlot number |
| SOUCID | resource from which seed was collected |
| SPECIES | species code for which seed is collected |
| COLLECT | date of seed collection |
| PROCESSING | first day of seed processing\extraction |
| TEST | date of most recent seed testing |
| DIST | date of most recent seed distribution |
| AVAIL | quantity (kilograms) of seed available |
| FWT | fresh weight (kilograms) at time of collection |
| NWT | net weight (kilograms) after processing |
| PURITY% | purity of seedlot after processing |
| NO/KG | number of seed per kilogram |
| %GERM | germination percentage of most recent testing |

Press any key to continue. The screen (Fig. 6.4.1b) prompts you to enter a seed testing record for the seedlot, or to exit the procedure.

Type N if you do not want to make an entry. Type A0000000/00 in the seedlot field, which returns the screen to the Seed Register menu.

To enter a new record, type Y. Enter the testing data (Fig. 6.4.1c).

| | |
|---|---|
| Treatment | seed treatment prior to germination testing (press F1 key for Help) |
| Days | periods when germination counts are made; different periods can be entered |
| DATE | date test was initiated |
| MC% | moisture content (percent) of seed tested |
| TEMP | temperature degrees centigrade in germination environment |
| GERM | number of germinants after period of time (days) |
| SAMPLE SIZE | number of seed tested, maximum 999 |

When the last field is completed, the data entry screen is replaced by:

C=Continue next entry/ S=Save entry & exit/ D=Discard & exit
CHOICE=D

The default is always D. If Enter is pressed, the information for the seed testing will not be saved. Look at the options very carefully. The only difference between typing C or S is that C will save the current record and continue with the next seed testing entry while S will save the record and return to the Seed Register menu screen.

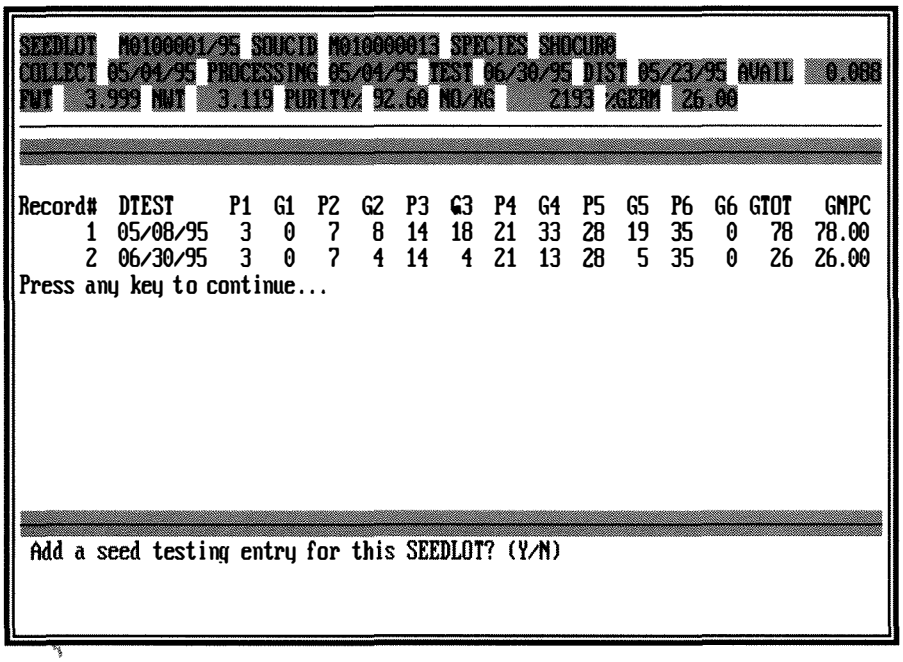



**Figure 6.4.1b Option to add a seed testing record.**

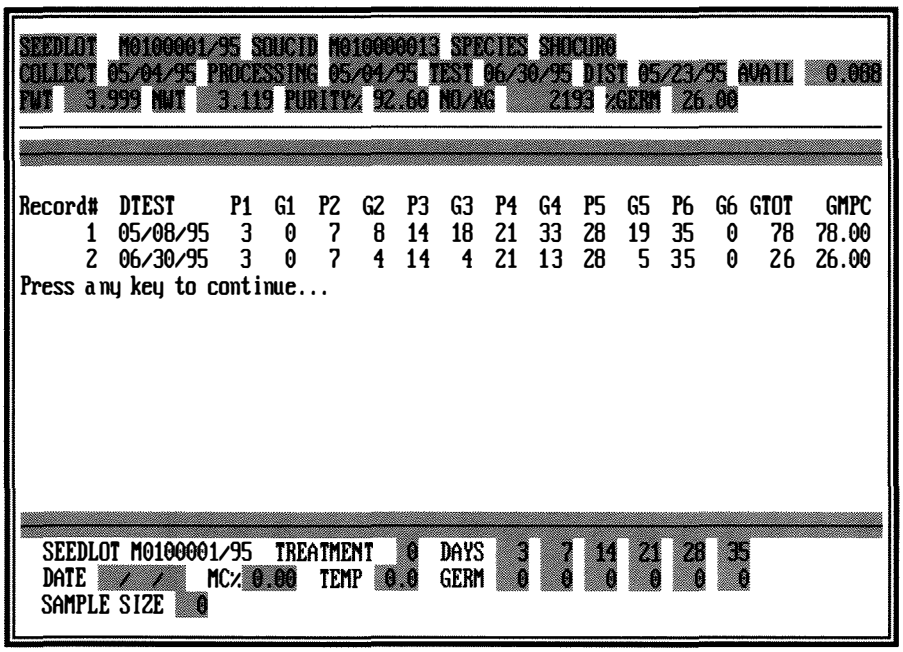



**Figure 6.4.1c Seed testing data entry screen.**

### 6.4.2 Edit record

To edit an existing seed testing record, highlight **Edit record** and press Enter. The screen displays:

> Do you want to edit a seed testing record? (Exit=A0000000/00)
> SEEDLOT M0000000/00

To exit the edit procedure and return to the Seed Register menu, type A0000000/00.

To edit a seed testing record, enter a SEEDLOT number (e.g., M0100001/95). A current listing of testing results for the seedlot (Fig. 6.4.2a) is displayed. Press any key to continue. Type Y or N to the line displayed:

> Do you wish to edit a seed testing record? (Y/N)

To exit without editing a record, type N. If a record requires editing, type Y and the following statement is displayed:

> Enter record number you wish to edit __

In the center portion of the screen, all testing records are displayed. Each one is assigned a unique record number. Type in the record number for the entry to be edited and the screen displays:

> Is this the most current record? (If yes, the seedbank will be updated) Y/N __

Type Y if the record is the most current (the highest record number). Any changes affecting the germination percentage or date of testing will automatically be updated in the seed bank database. Otherwise, type N. In both cases, data for the record selected is displayed. Use the Tab or Enter keys or the mouse to move to the fields and make necessary changes by typing over existing data (Fig. 6.4.2b).

Press Ctrl End to exit. You may have to press Ctrl End a second time if you are not at the last field (SAMPLE SIZE). If data for germination counts are changed, the new total germination count and percentage germination are generated.

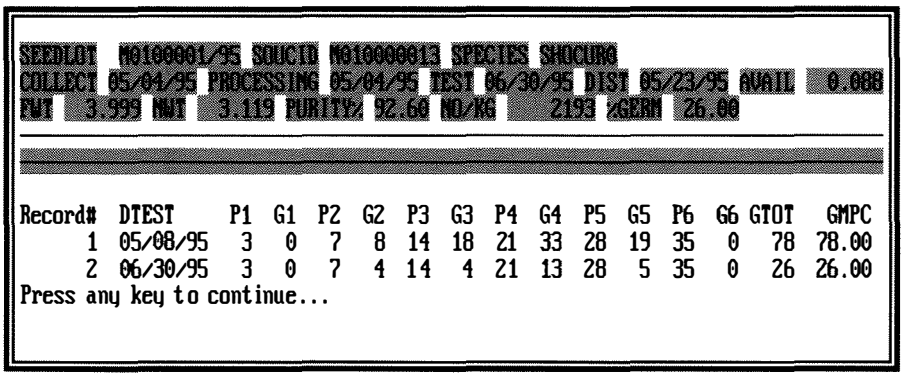



**Figure 6.4.2a Collection and previous testing information for a seedlot identified for editing.**

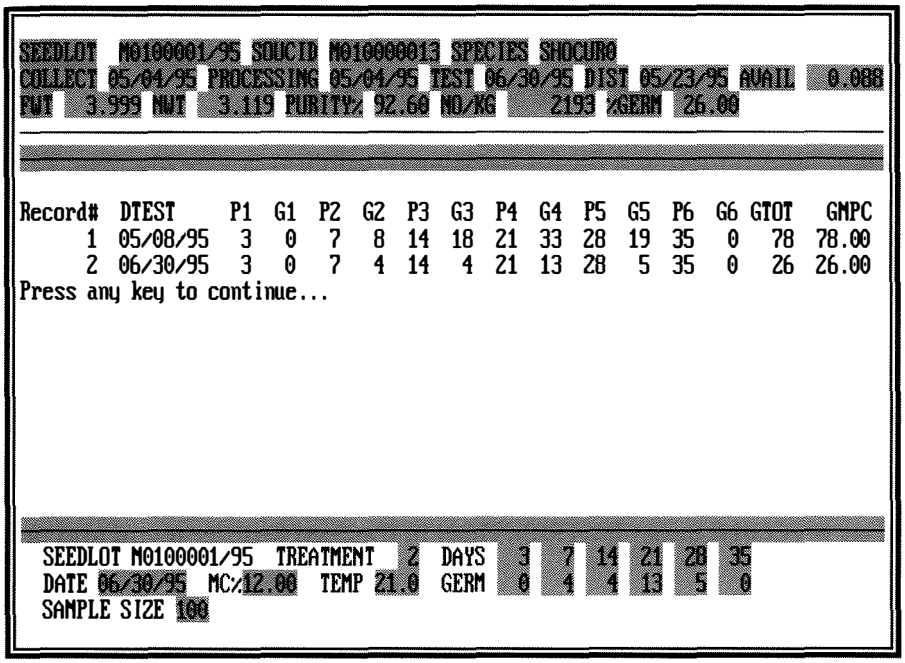



**Figure 6.4.2b Seed testing. Data fields displayed for editing.**

### 6.4.3 Query

Select **Query** and enter the seedlot number (M0100001/95). If seed testing record(s) were entered for the seedlot, the screen will display:

```
Record#  SEEDLOT     DTEST      GMC GTREAT GTEMP SAMPSZ  P1  G1  P2  G2  P3  G3
 P4  G4  P5  G5  P6  G6 GTOT   GMPC
     1  M0100001/95 05/08/95 15.00      2  21.0    100   3   0   7   8  14  18
 21  33  28  19  35   0   78  78.00
     2  M0100001/95 06/30/95 12.00      2  21.0    100   3   0   7   4  14   4
 21  13  28   5  35   0   26  26.00

Press any key to continue...
```

| | |
|---|---|
| Record # | number assigned for each seedlot test |
| SEEDLOT | seedlot tested |
| DTEST | date of testing |
| GMC | seed moisture content when tested |
| GTREAT | seed treatment prior to germination testing |
| GTEMP | temperature in germination environment |
| SAMPSZ | sample size of seed being tested |
| P1...P6 | period interval (days) when germination counts are made |
| G1..G6 | number of seed germinants at time intervals |
| GTOT | total number of germinants |
| GMPC | percentage germination of sample size |

After viewing the screen, press any key and the screen displays:

Do you want to copy to a file? (Y/N)

If not, type N and the screen returns to the Seed Register menu.

To copy the testing information to a file for subsequent printing or viewing, type Y.

Insert a formatted diskette into drive A. Type a file name to identify the file and press Enter. After the file is copied the screen returns to the Seed Register menu.

## 6.5 Seed Distribution

This component of the Seed Register menu maintains information on the distribution of seedlots.

### 6.5.1 Add new record

Highlight **Add new record** under DISTRIBUTION in the Seed Register menu and press Enter. The screen displays:

Do you want to enter a seed distribution record? (Exit=A000000/00)
SEEDLOT M0000000/00

To enter a record, type in the SEEDLOT number (e.g., M0100001/95).

To exit and return to the Seed Register menu, type A0000000/00.

If a seedlot number is entered, and if it exists in the database, a screen (Fig. 6.5.1a) displays background information related to the seedlot and a listing of distribution records. For a seedlot that has no distribution history, only the background information is displayed at the top of the screen.

The background information includes:

| | |
|---|---|
| SEEDLOT | seedlot number |
| SOUCID | resource from which seed was collected |
| SPECIES | species for which seed is collected |
| COLLECT | date of seed collection |
| PROCESSING | first day of seed processing\extraction |
| TEST | date of most recent seed testing |
| DIST | date of most recent seed distribution |
| AVAIL | quantity (kilograms) of seed available |
| FWT | fresh weight (kilograms) at time of collection |
| NWT | net weight (kilograms) after processing |
| PURITY% | purity of seedlot after processing |
| NO/KG | number of seed per kilogram |
| %GERM | germination percentage of most recent testing |

Press any key to continue. The screen (Fig. 6.5.1b) prompts for a response to enter a seed distribution record for the seedlot or to exit the procedure.

Type N if you do not want to make an entry. Type A0000000/00 in the seedlot field to return to the Seed Register menu.

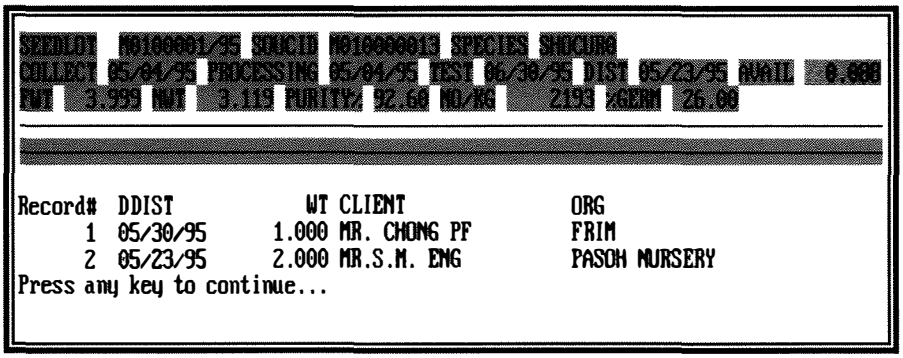



**Figure 6.5.1a Seed collection and previous distribution information for a selected seedlot.**

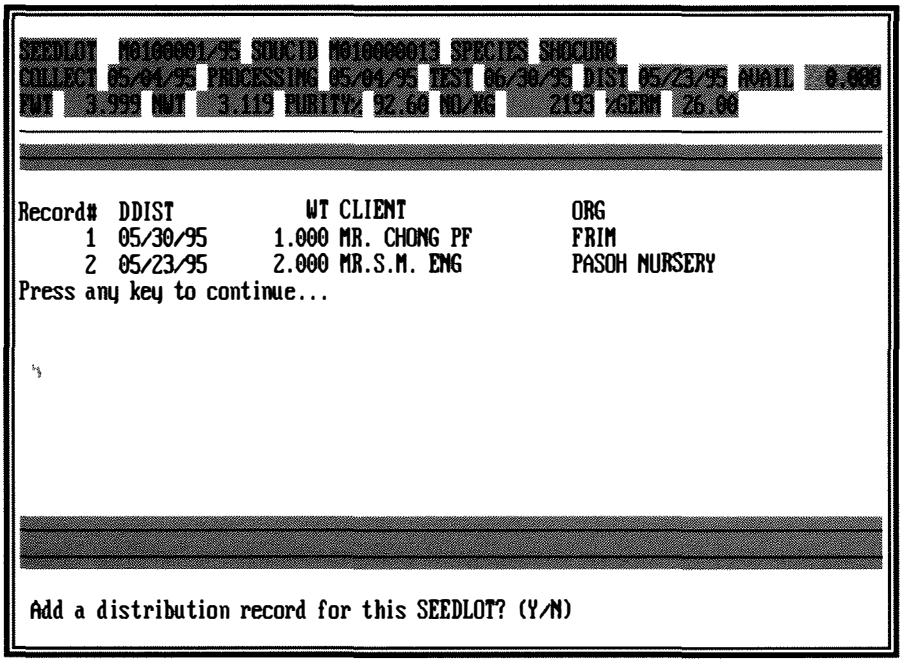



**Figure 6.5.1b Option to add a seed distribution record.**

To enter a new record, type Y. Enter the testing data for the fields displayed at the bottom of the screen (Fig. 6.5.1c).

| | |
|---|---|
| DATE DIST | date of seed distribution |
| CLIENT | client's name |
| ORGANIZATION | client's organization or agency |
| PURPOSE | intended use of seed |
| WT | quantity of seed sent (kilograms) |

When the last field is completed, the data entry screen is replaced by:

C= Continue next entry/ S=Save entry & exit/ D=Discard & exit
CHOICE=D

The default is always D. If Enter is pressed, the seed distribution data will not be saved. Look at the options very carefully. The only difference between typing C or S is that C will save the current record and continue with the next seed distribution entry, while S will save the record and return to the Seed Register menu.

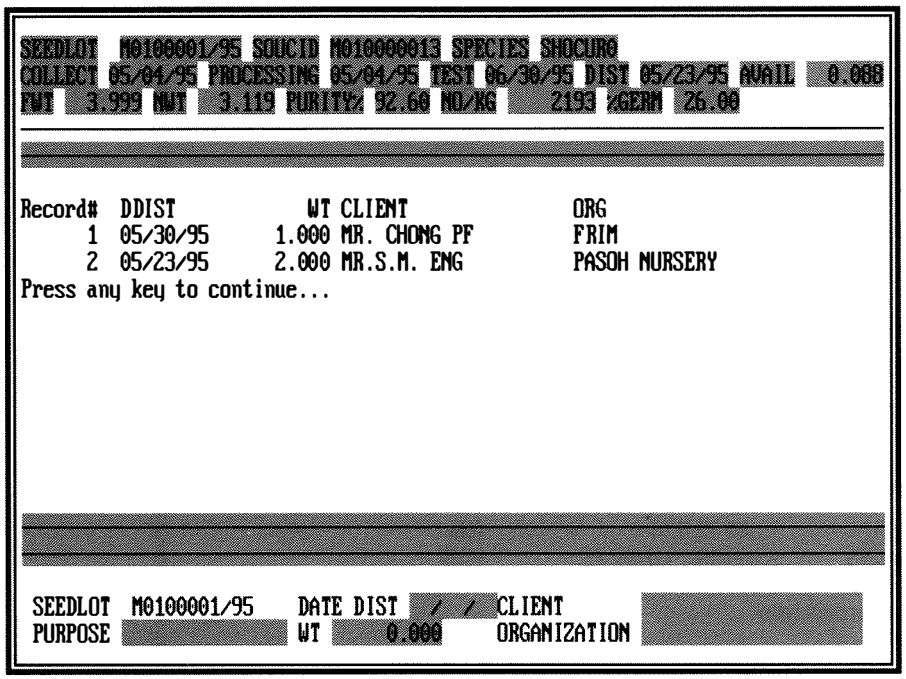



**Figure 6.5.1c Seed distribution data entry screen.**

### 6.5.2 Edit record

This option allows the user to change distribution information for a seedlot. Highlight **Edit record** and press Enter. The screen displays:

> Do you want to edit a seed distribution record? (Exit=A0000000/00)
> CHOICE M0000000/00

To exit the edit procedure and return to the Seed Register menu, type A0000000/00.

To edit a seed distribution, enter a SEEDLOT number (e.g., M0100001/95) to display a current distribution listing for the seedlot (Fig. 6.5.2a).

Press any key to continue. Type Y or N to the line displayed at the bottom of the screen (Fig. 6.5.2b).

To exit without editing a record, type N. If a record requires editing, type Y and the following statement is displayed:

> Enter record number to edit __

All distribution records are displayed in the center portion of the screen. Each one is assigned a unique record number. Type in the record number for the entry to be edited. The data

associated with that record is displayed. Move to the fields that require changing. After all changes have been made, press Ctrl End to exit. You may have to press Ctrl End a second time if you are not at the last field (WT).

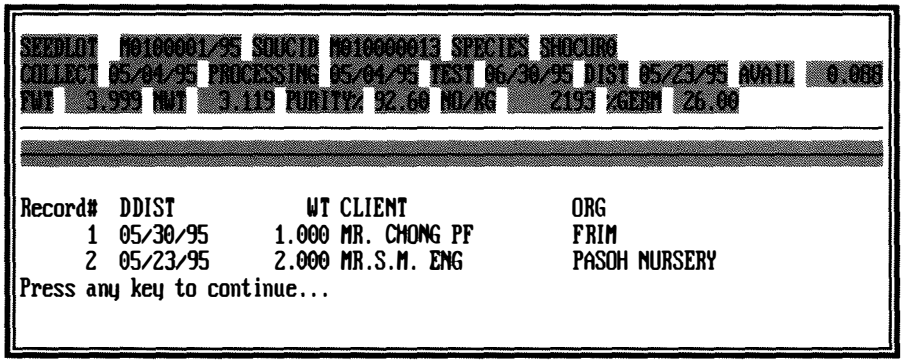



**Figure 6.5.2a Collection and previous distribution information for a seedlot identified for editing.**

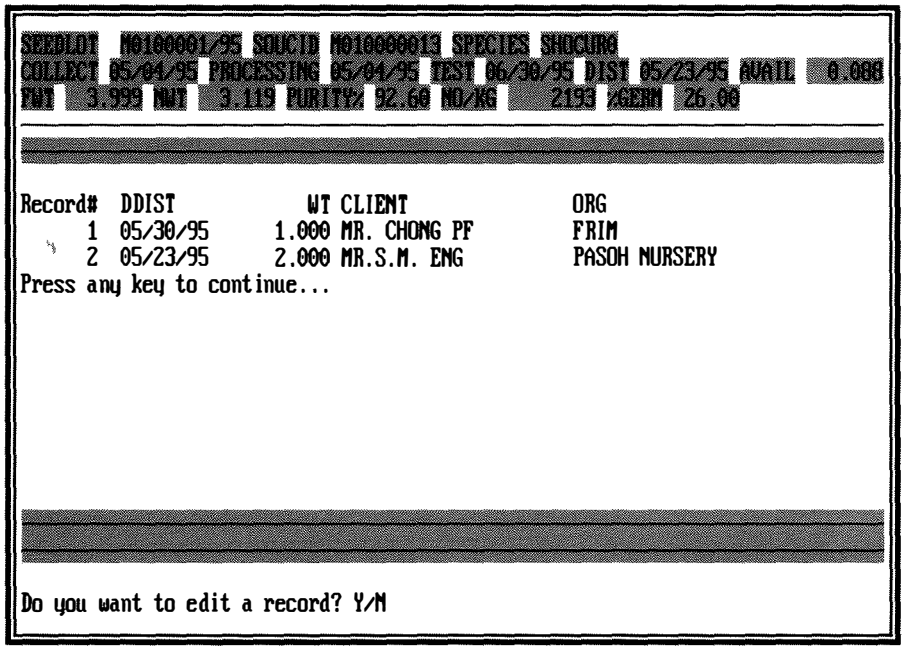



**Figure 6.5.2b Option to edit a seed distribution record.**

### 6.5.3 Record listing

This option provides the opportunity to view or print a hard copy of distribution information for a seedlot or a range of seedlots. Highlight **Record listing** and press Enter. The screen displays:

SEEDLOT=M0200000/00 to M0200000/00

Enter a SEEDLOT number or a range of SEEDLOT numbers and press Enter. At the bottom of the screen the number of records found is displayed along with the options:

Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

As an example, using the FGRIDEMO program, display on the screen the seedlot distribution records by agent M01 for the year 1995.

Select **Record listing** in the DISTRIBUTION option of the Seed Register menu. The screen displays:

SEEDLOT=M0200000/00 to M0200000/00

Type M0100001/95 and M0100010/95 in the respective fields to obtain a record listing of the first 10 seedlot records that were sent out by agent M01 in 1995.

The screen displays:

Total records present=4
Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

The output indicates that only four seedlot numbers have distribution records associated with them. Select 1 to display the output on the screen. The first distribution is displayed.

```
SEEDLOT M0100001/95      DATE DIST 05/30/95 CLIENT       MR. CHONG PF
PURPOSE TESTING          WEIGHT      1.000  ORGANIZATION FRIM
```

Press C to continue viewing the distribution records. Press E to exit. The screen prompts for a new range of seedlot numbers. Press Enter twice and select 4 to return to the Seed Register menu.

### 6.5.4 Report

This option provides a listing of seedlot distribution records for a single agent. It differs from the record listing as it is based on distribution over a period of time rather than for a range of seedlots. Highlight **Report** and press Enter. The screen displays:

AGENT CODE=M00
DISTRIBUTION DATE FROM
__/__/__ to __/__/__

Type in the agent code (e.g., M01) and the dates (month/day/year).

After the search is completed, the screen displays:

Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

Follow the same procedure as described in the Report listing (Section 6.5.3).

## 6.6 Quitting the Seed Register

Highlight the **RETURN TO MAIN MENU** option and press Enter. The program returns to the FGRID main menu.

# 7 THE NURSERY REGISTER

## 7.1 Introduction

This register is comprised of two databases. They contain information related to the production of seedlings, wildings, and clones and the distribution of planting stock.

## 7.2 Accessing the Nursery Register

From the FGRID main menu (Fig. 7.2a), highlight **Nursery Register** and press Enter. Figure 7.2b displays the options available for the production and distribution of planting stock.

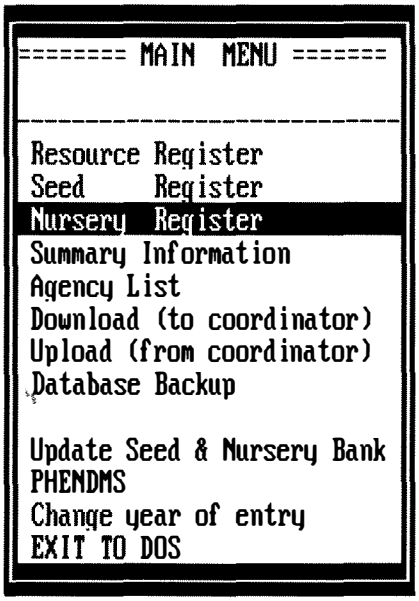



**Figure 7.2a FGRID main menu.**


**Figure 7.2b Nursery Register options.**

## 7.3 Production

The production of nursery stock originates from seed, clones, or wildings. The procedure for adding and editing nursery records originating from seed will be presented first, followed by the procedure for clones and wildings.

### 7.3.1 Add new record (for a seedlot)

Highlight **Add new record** and press Enter. The screen displays:

> Do you want to make a nursery entry? (exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT M0000000/00

To exit and return to the Nursery Register menu, type A0000000/00.

To enter a record for a seedlot (e.g., M0100001/95) that is to be propagated in the nursery, type in the seedlot number. If the seedlot exists in the database, a screen (Fig. 7.3.1a) displays background information related to the seedlot and a listing of previous propagation records. For a seedlot that has never been propagated, only the background information at the top of the screen is displayed.

The background information includes:

| | |
|---|---|
| SEEDLOT | seedlot number |
| SOUCID | resource from which seed was collected |
| SPECIES | species for which seed is collected |
| COLLECT | date of seed collection |
| PROCESSING | first day of seed processing\extraction |
| TEST | date of most recent seed testing |
| DIST | date of most recent seed distribution |
| AVAIL | quantity (kilograms) of seed available |
| FWT | fresh weight (kilograms) at time of collection |
| NWT | net weight (kilograms) after processing |
| PURITY% | purity of seedlot after processing |
| NO/KG | number of seed per kilogram |
| %GERM | germination percentage of most recent testing |

Press any key to continue. The screen (Fig. 7.3.1b) prompts you to add a nursery record for the seedlot, or to exit the procedure.

Type N If you do not want to make an entry. The screen then asks if you want to make another nursery entry. Type A0000000/00 in the seedlot field to return to the Nursery Register menu.

To enter a new record, type Y. The line at the bottom of the screen displays the last nursery lot entered in the database.

Type Y if this is correct and enter the new record information (Fig. 7.3.1c).

At the bottom of the screen, the program generates data for the fields SOUCID, SEEDLOT, NURLOT, SPECIES, and ORIGIN.

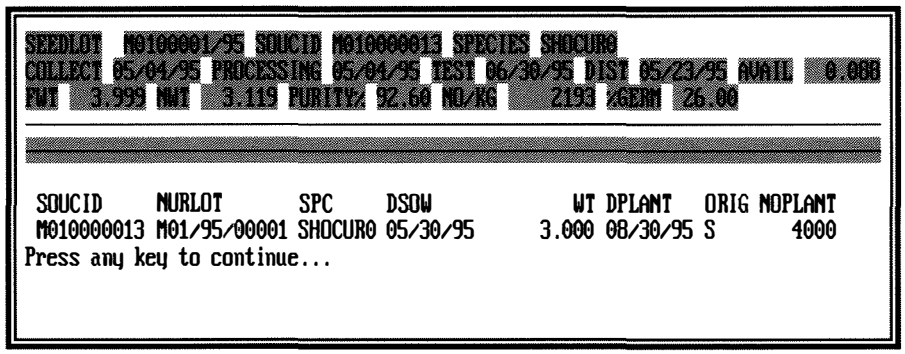



**Figure 7.3.1a Nursery production. Seedlot information and associated nursery lots displayed.**

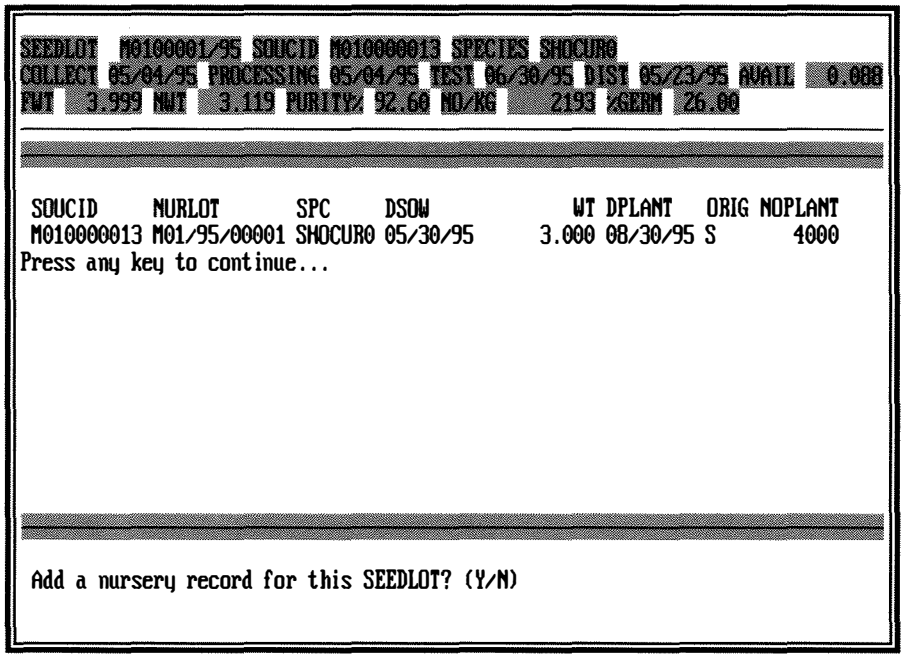



**Figure 7.3.1b Option to add a nursery production record for a seedlot.**

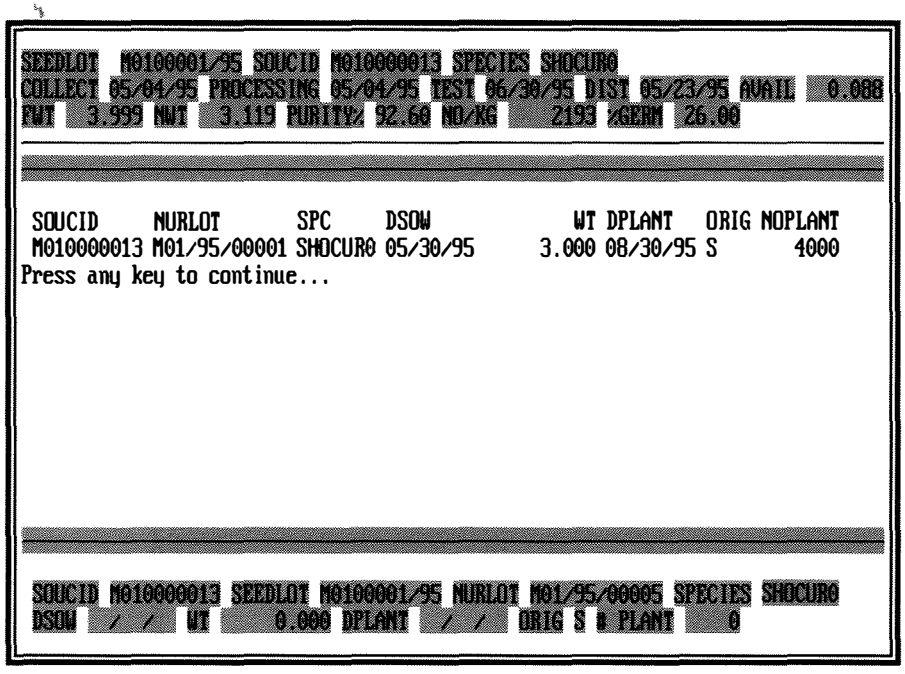



**Figure 7.3.1c Nursery production data entry screen.**

Enter data for the following fields.

| | |
|---|---|
| DSOW | date when seed is sown in nursery or greenhouse (month/day/year) |
| WT | weight of seed sown in kilograms |
| DPLANT | date of transplanting in nursery (month/day/year) |
| # PLANT | number of plants in the nursery lot |

When the last field is completed, the data entry screen is replaced by:

C=Continue next entry/ S=Save entry & exit/ D=Discard & exit
CHOICE=D

The default is always D. If Enter is pressed, the information will not be saved. Look at the options very carefully. The only difference between typing C or S is that C will save the current record and continue with the next nursery entry, while S will save the record and return to the Nursery Register menu.

### 7.3.2 Edit record (for a seedlot)

To edit an existing nursery entry for a seedlot record, highlight **Edit record** and press Enter. The screen displays:

Do you want to edit a nursery entry? (Exit=A0000000/00)
(X0000000/00) for Clones/Wildings
SEEDLOT _____/__

To exit the edit procedure and return to the Nursery Register menu, type A0000000/00.

To edit a nursery entry for a seedlot record, enter a SEEDLOT number (e.g., M0100001/95). A current listing of nursery lots (Fig. 7.3.2a) is displayed.

Press any key to continue. The screen displays the option to edit a record (Fig. 7.3.2b).

The last line on the screen asks for the record number to edit.

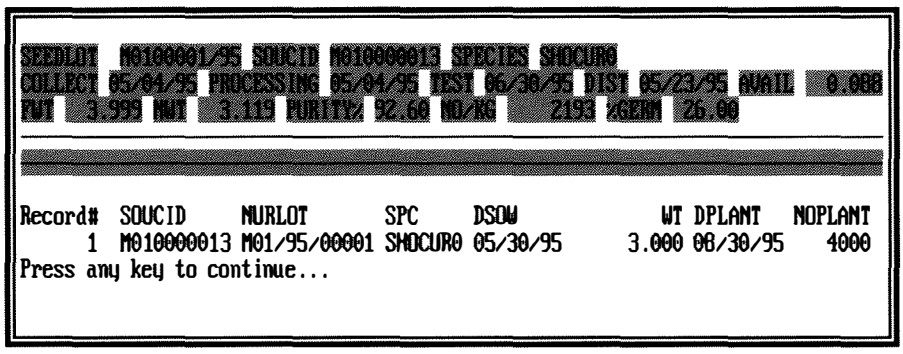



**Figure 7.3.2a Edit a nursery record for a seedlot. Seedlot and associated nursery lot information displayed.**

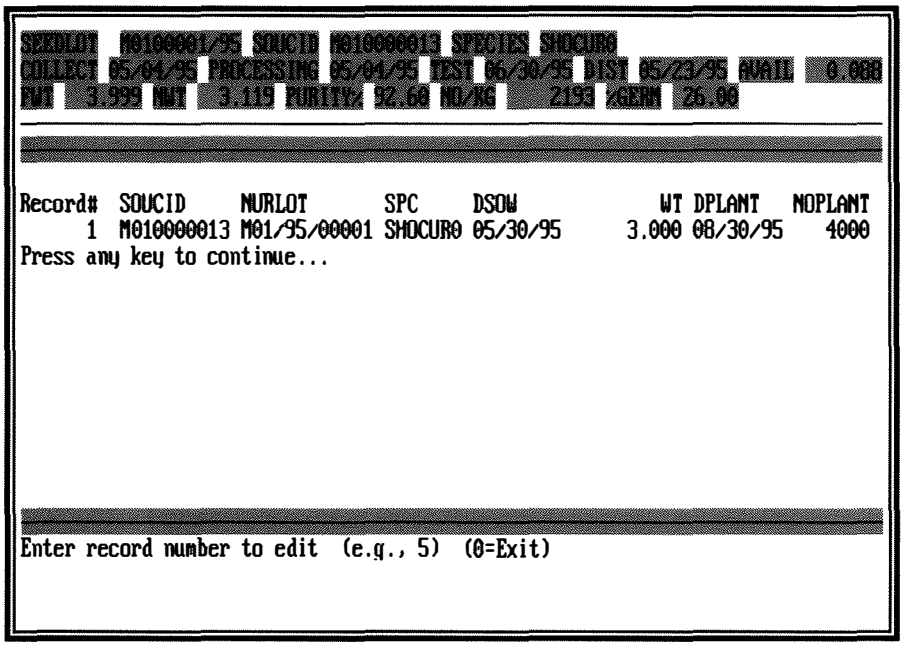



**Figure 7.3.2b Identifying nursery record number for editing.**

To exit without editing a record, type 0. A message displays that no records were found. Press any key to continue. The screen displays:

> Do you want to edit a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT _____/__

To exit the edit procedure and return to the Nursery Register menu, type A0000000/00.

All nursery lots established from a seedlot are displayed in the center portion of the screen. Each one is assigned a unique record number. Type in the record number for the entry to be edited. The record is displayed at the bottom of the screen (Fig. 7.3.2c). Use the Tab or Enter keys or the mouse to move through the fields and make necessary changes by typing over existing data.

After all changes are made, move to the last field (# PLANT) and press Enter. The screen returns to:

> Do you want to edit a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT M0000000/00

Enter a new seedlot for editing or exit the edit procedure and return to the Nursery Register menu by typing A0000000/00.

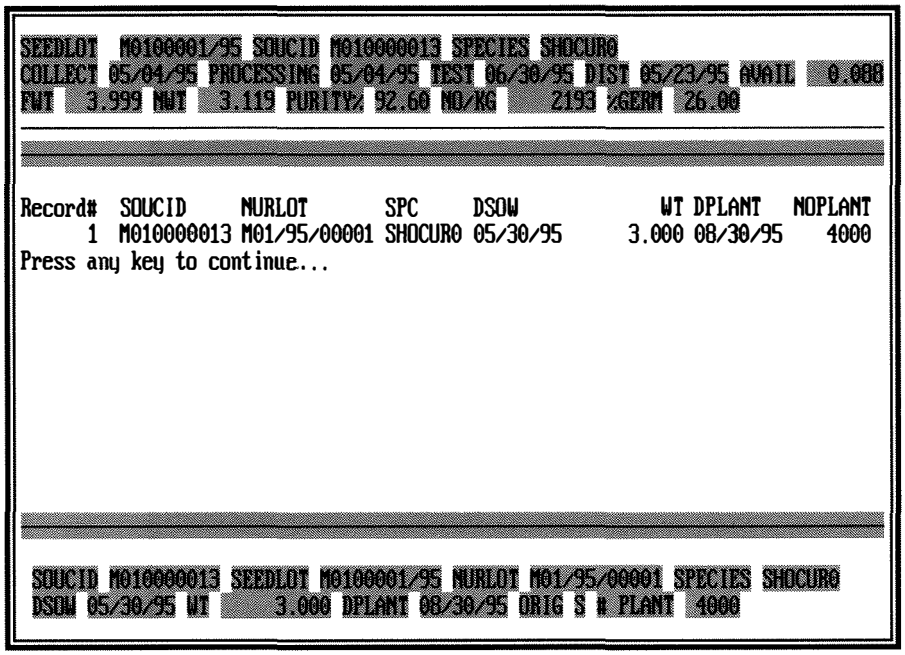



**Figure 7.3.2c Nursery production data fields displayed for editing.**

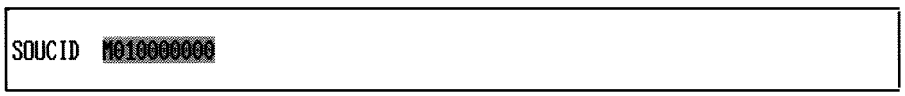
### 7.3.3 Add new record (for clones/wildings)

Highlight **Add new record** and press Enter. The screen displays:

> Do you want to make a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT M0000000/00

To exit and return to the Nursery Register menu, type A0000000/00.

Since clones and wildings do not originate from a seedlot, a unique code must be used to indicate that a nursery record is to be entered for them. For each entry originating from clones and wildings, always type X0000000/00. The screen prompts you for a SOURCE ID (SOUCID) number from the Resource Register. The SOURCE ID is required to identify the location of origin of the clones or wildings.




Type a SOURCE ID number, (e.g., M010000001) and press Enter.

The screen (Fig. 7.3.3a) displays a listing of previous propagation records. Unlike the entry for a seedlot (Fig. 7.3.1a), there is no background information at the top of the screen. If the clone or wilding lots were never propagated, the screen is blank.

Press any key to continue. The screen (Fig. 7.3.3b) prompts for a response to enter a nursery record.

```
Record#  SOUCID      NURLOT        SPC      DSOW      DPLANT   NOPLANT
     4   M010000001  M01/95/00004  SHOLEP1    / /     07/07/95    1500
Press any key to continue...
```

**Figure 7.3.3a Nursery production. Previous nursery lots originating from clones or wildings displayed.**

```
 SOUCID      NURLOT        SPC      DSOW      DPLANT   ORIG NOPLANT
 M010000001  M01/95/00004  SHOLEP1    / /     07/07/95 W       1500
Press any key to continue...

 Add a nursery record? (Y/N)
```

**Figure 7.3.3b Option to add a nursery production record.**

Type N if you do not want to make an entry. The screen asks if you want to make another nursery entry. Type A0000000/00 in the seedlot field to return to the Nursery Register menu.

To enter a new record, type Y. The line at the bottom of the screen displays the last nursery lot entered in the database.

Type Y if this is correct and enter the new record information (Fig. 7.3.3c).

The program generates data for SOUCID, SEEDLOT, and NURLOT (nursery lot) fields. Enter the data for the following fields.

| | |
|---|---|
| SPECIES | species code |
| DSOW | field is automatically skipped because it is not a seedlot |
| WT | field is automatically skipped because it is not a seedlot |
| DPLANT | date of transplanting in nursery (month/day/year) |
| ORIG | enter C for clone or W for wilding |
| # PLANT | number of plants in the nursery lot |

When the last field is completed, the data entry screen is replaced by:

```
C=Continue next entry/  S=Save entry & exit/  D=Discard & exit
CHOICE=D
```

The default is always D. If Enter is pressed, the information will not be saved. Look at the options very carefully. The only difference between typing C or S is that C will save the current record and continue with the next nursery entry, while S will save the record and return to the Nursery Register menu.

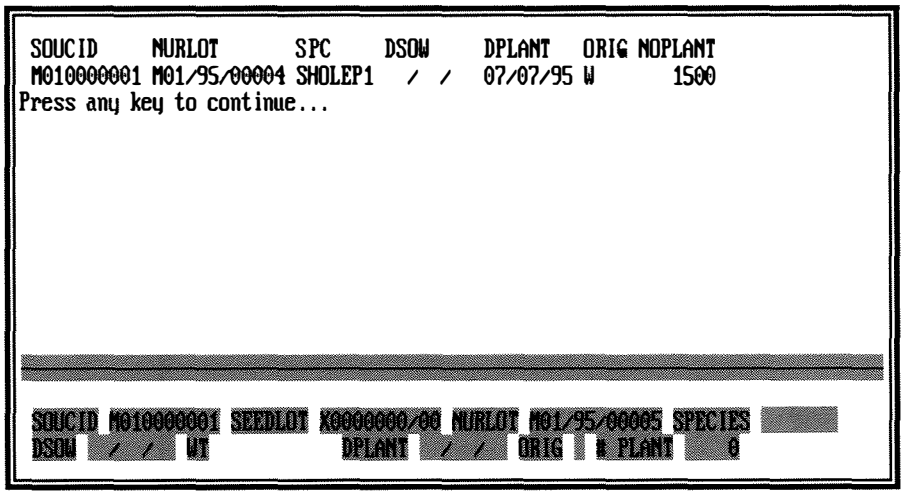



**Figure 7.3.3c Nursery production data entry screen.**

### 7.3.4 Edit record (for clones/wildings)

To edit an existing nursery entry originating from clones or wildings, highlight **Edit record** and press Enter. The screen displays:

> Do you want to edit a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT _____/__

To exit the edit procedure and return to the Nursery Register menu, type A0000000/00.

To edit a nursery record, type X0000000/00. The screen prompts you to enter a SOURCE ID number, in the Resource Register, from which the clones or wildings were collected.

Type a SOURCE ID number (e.g., M010000001). A listing of nursery lots associated with the resource record is displayed (Fig. 7.3.4a).

Press any key to continue. The screen displays the option to edit a record (Fig. 7.3.4b).

The last line on the screen asks for the record number to edit.

To exit without editing a record, type 0 (zero). A message displays that no records were found. Press any key to continue. The screen displays:

> Do you want to edit a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT _____/__

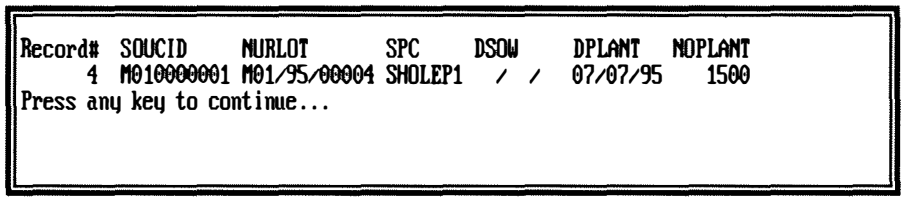



**Figure 7.3.4a Edit a nursery record for clones/wildings. Previous nursery lots displayed.**

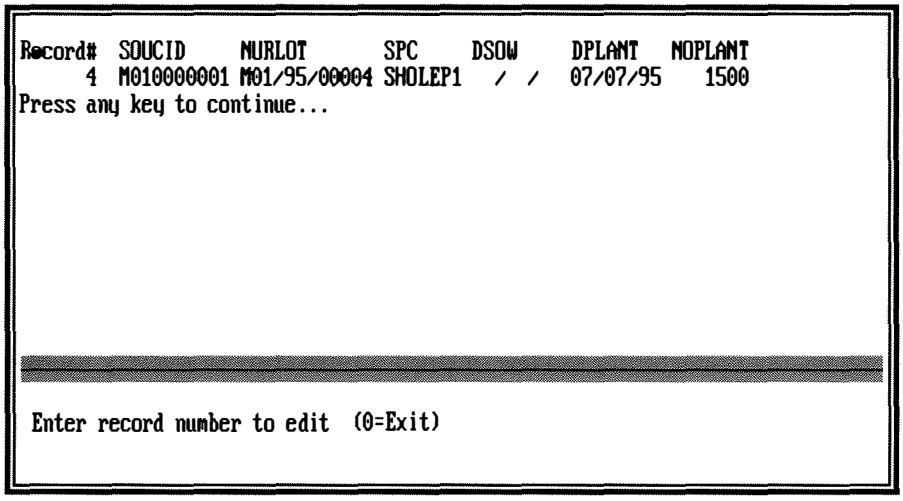



**Figure 7.3.4b Identifying nursery record for editing.**

To exit the edit procedure and return to the Nursery Register menu, type A0000000/00.

To edit a nursery record, select the record # that requires editing. Each nursery record is assigned a unique number. The record is displayed at the bottom of the screen (Fig. 7.3.4c). Use the Tab or Enter keys or the mouse to move through the fields and make necessary changes by typing over existing data.

After all changes are made, move to the last field (# PLANT) and press Enter. The screen returns to:

> Do you want to edit a nursery entry? (Exit=A0000000/00)
> (X0000000/00) for Clones/Wildings
> SEEDLOT _____/__

Type X0000000/00 to edit a nursery record or A0000000/00 to exit the procedure and return to the Nursery Register menu.

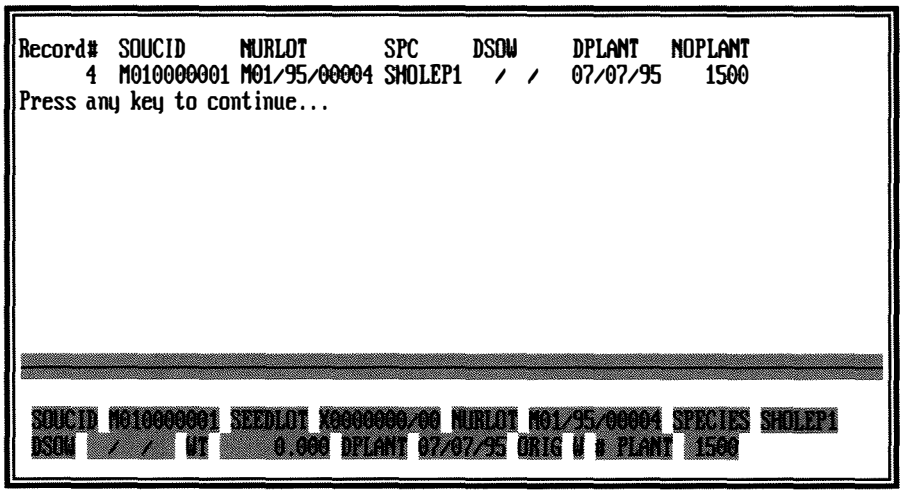



**Figure 7.3.4c Nursery production data fields displayed for editing.**

### 7.3.5 Record listing

This option provides the opportunity to view or print a hard copy of nursery lot information for a single nursery lot or a range of nursery lots. Highlight **Record listing** and the screen displays:

NURLOT=M00/00/00000 to M00/00/00000

Enter a nursery lot or a range of nursery lots and press Enter. At the bottom of the screen the number of records found is displayed along with the options:

Display=1;/ Print=2; Next listing=3; Exit=4; CHOICE= __

As an example, using the FGRIDEMO package, display on the screen the first ten nursery lot records propagated by agent M01 in 1995.

Select **Record listing** in the Nursery Register menu. The screen displays:

NURLOT=M00/00/00000 to M00/00/00000

Type M01/95/00001 and M01/95/00010 in the respective fields to get a record listing of the first 10 nursery lots propagated by agent M01 in 1995.

The screen displays:

Total records present=4
Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

The output indicates that only four nursery lots were raised in a nursery. Select 1 to display the output on the screen. The first distribution record is displayed.


Press C to continue viewing the distribution records. Press E to exit. The screen prompts you to enter a new range of nursery lot numbers. Press Enter twice and select 4 to return to the Nursery Register menu.

## 7.4 Nursery Distribution

### 7.4.1 Add new record

Highlight **Add new record** under DISTRIBUTION. The screen displays:

> Do you want to make a nursery distribution entry? (Exit=A00/00/00000)
> NURLOT M00/00/00000

To exit without entering a record, type A00/00/00000 in the NURLOT field, press Enter; the screen returns to the Nursery Register menu screen.

To enter a record, type in the NURLOT number (e.g., M01/95/00001).

If planting stock for the nursery lot was never distributed, a screen displays background information related to the nursery lot and the rest of the screen is blank. However, if planting stock was distributed elsewhere, the screen displays the background information and all the distribution records (Fig. 7.4.1a).

Press any key to continue. The option to add a new distribution for the nursery lot or to exit to the Nursery Register menu is displayed (Fig. 7.4.1b).

If N is typed, the screen prompts you to make another nursery distribution entry. Type A00/00/00000 in the NURLOT field to return the program to the Nursery Register menu.

To enter a distribution record, type Y and complete the data entry at the bottom of the screen (Fig. 7.4.1c).

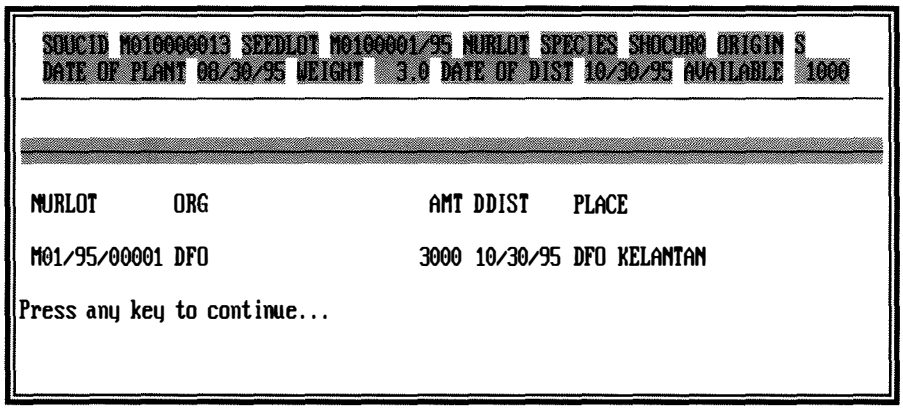



**Figure 7.4.1a Nursery distribution. Nursery lot and distribution information displayed.**

After information for the last field is entered, the following options are displayed:

C=Continue next entry/ S=Save entry & exit/ D=Discard & exit
CHOICE=D

The default is always D. If Enter is pressed, the information just entered on the screen will not be saved. To save the entry and continue with a new distribution record, type C. To save the record and exit to the Nursery Register menu, type S.

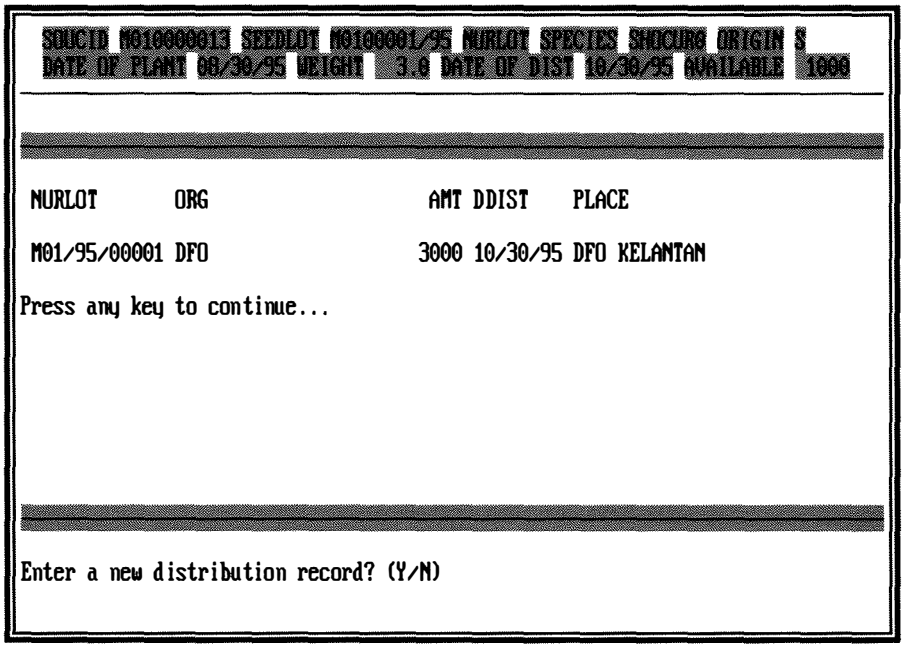



**Figure 7.4.1b Option to add a nursery distribution record.**

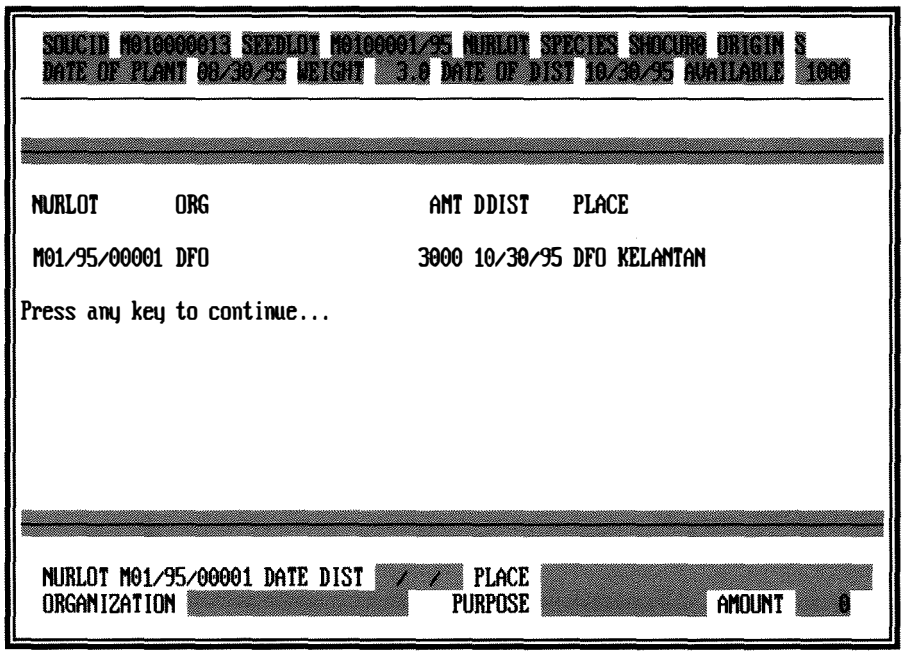



**Figure 7.4.1c Nursery distribution data entry screen.**

### 7.4.2 Edit record

This option allows the user to change distribution information for a nursery lot record. Highlight **Edit record** under DISTRIBUTION. The screen displays:

> Do you want to edit a nursery distribution entry? (Exit=A00/00/00000)
> NURLOT M00/00/00000

To exit without entering a record, replace the NURLOT number with A00/00/00000. Change the M to an A, press Enter, and the Nursery Register menu is displayed.

To edit a record, type in the NURLOT number (e.g., M01/95/00001).

If this nursery lot exists in the database, a screen (refer to Fig. 7.4.1a) displays background information related to the nursery lot and a current listing of planting stock distribution.

Press any key to continue and select the distribution record that requires editing. Make the necessary changes (Fig. 7.4.2a) and press Ctrl End when finished, or continue to press Enter through all the fields.

The screen prompts you to edit another nursery distribution record. Type a new NURLOT number to continue, or replace the NURLOT number with A00/00/00000 to return to the Nursery Register menu.

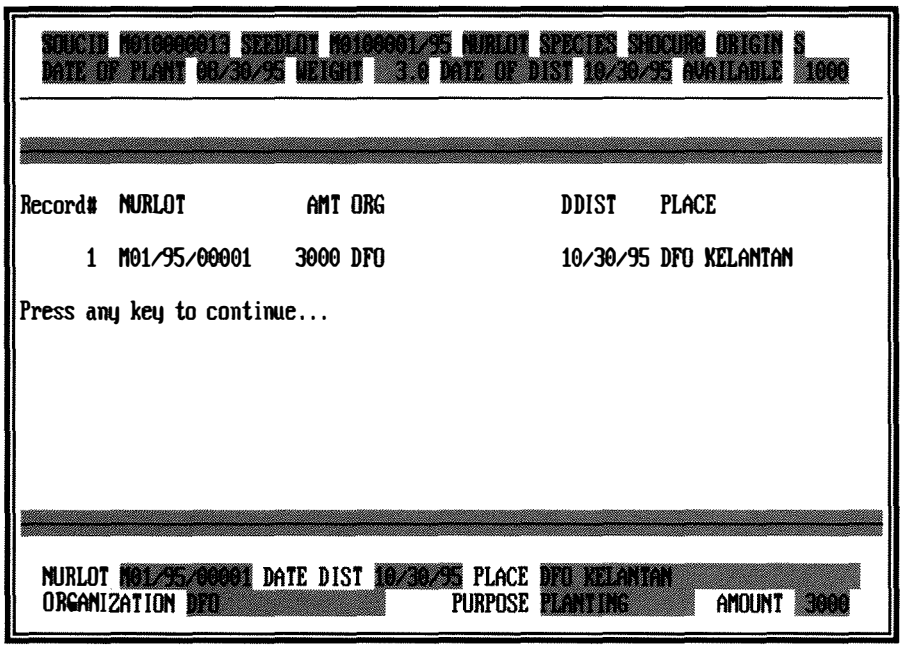



**Figure 7.4.2a Nursery distribution fields displayed for editing.**

### 7.4.3 Record listing

This option provides the opportunity to view, or to print a hard copy of, distribution information for a nursery lot or a range of nursery lots. Highlight **Record listing** under DISTRIBUTION in the Nursery Register menu. The screen displays:

NURLOT = M02/00/00000 to M02/00/00000

Enter a NURLOT number or a range of NURLOT numbers and press Enter. At the bottom of the screen the number of records found is displayed along with the options:

Display=1; Print=2; Next listing;=3; Exit=4; CHOICE= __

As an example, using the FGRIDEMO package, display on the screen the nursery lot records distributed by agent M01 in 1995.

Select **Record listing** under DISTRIBUTION in the Nursery Register menu. The screen displays:

NURLOT = M02/00/00000 to M02/00/00000

Type M01/95/00001 and M01/95/00010 in the respective fields to get a record listing of the first 10 nursery lots distributed by agent M01 in 1995.

The screen displays:

Total records present=3
Display=1; Print=2; Next listing=3; Exit=4; CHOICE= __

The output indicates that only three nursery lots were sent out for planting. Select 1 to display the output on the screen. The first distribution record is displayed.

```
NURLOT M01/95/00001 DATE DIST 10/30/95 PLACE DFO KELANTAN
ORGANIZATION DFO          PURPOSE PLANTING    AMOUNT 3000
```

Press C to continue viewing the distribution records. To exit, press E and the screen prompts for a new range of NURLOT numbers. Press Enter twice and select 4 to exit.

## 7.5 Quitting the Nursery Register

Highlight **RETURN TO MAIN MENU** and press Enter. The program returns to the FGRID main menu.

# 8 USING THE SUMMARY INFORMATION OPTION

## 8.1 Introduction

The Summary Information option is used to conduct searches on data stored in the resource, seed, and nursery databases. Output is directed to pre-designed forms for easy viewing on the screen or producing hard copy reports.

## 8.2 Accessing Summary Information

Highlight **Summary Information** in the FGRID main menu (Fig. 8.2a). Figure 8.2b displays the 15 options available.

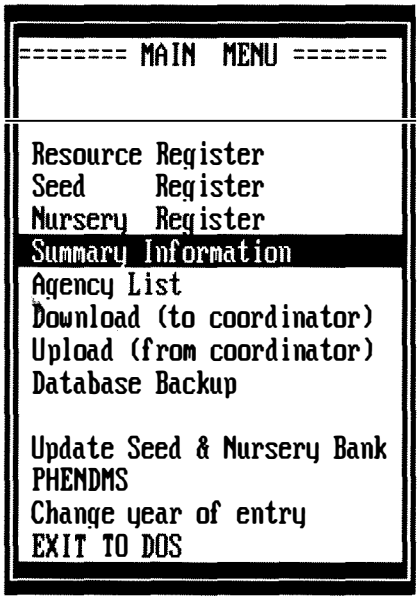



**Figure 8.2a FGRID main menu.**

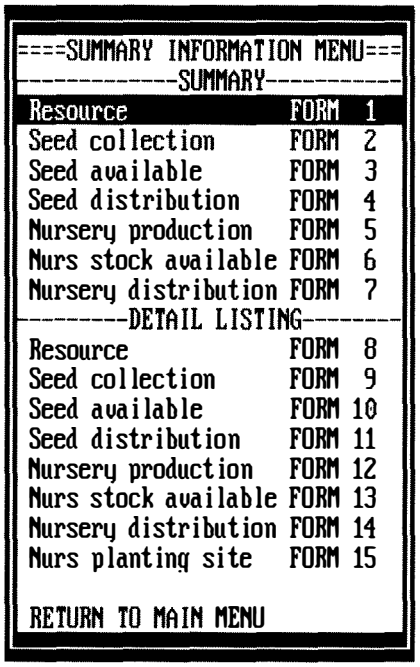



**Figure 8.2b Summary Information menu options.**

## 8.3 Using the Summary Information Option

Although forms 1–7 (under SUMMARY) and 8–14 (under DETAIL LISTING) have identical names, they serve different purposes. Forms 1 to 7 provide a general summary for each of the categories.

For example, if **Resource (FORM 1)** is selected, the output will identify all resource types by state/province, the total number of each resource type, and the total land area occupied by the resource type. It will then summarize the total area of all resource types within each state/province and list a total for all state/provinces.

If **Resource (FORM 8)** is selected, the output identifies specific information for each resource type, including the SOURCE ID #, species, location, area, forest type, and confirmation if seed, wildings, or clones were collected. Whenever any of the summary menu items are selected, the user has the opportunity to enter conditions for the search. The following screen is always displayed.

```
Setting conditions for summary
Agent code (e.g., M01) Enter if none
```

If FGRID is used as a single-user system, there is only one agent code. Press Enter. However, if FGRID is being used as a multi-user system, there should be several agent codes (refer to Agency List in main menu). In this case, if Enter is pressed, the summary report will include data for all the agents and the report could be very large. If you want information from only one agent, enter the agent code (e.g., M01) and press Enter.

The next line displayed is:

```
Resource type code (e.g., 12) or 0 (zero) if none
```

There should be several resource types that were coded in the Coordinator Module. To include all the resource types, type 0 (zero) and press Enter. If you want information for a specific resource type (seed production areas for example), type in the code number (use the F1 Help key for codes) and press Enter.

The next line is displayed:

```
Species code Enter if none
```

If the report is to include all species in the database, press Enter. To limit the search to a single species, type the species code and press Enter.

The next lines displayed are:

```
Starting date (e.g., 01/01/90) or Enter if none     00/00/00
Ending date (e.g., 12/31/90) or Enter if none       00/00/00
```

Pressing Enter for these fields will include all the resource types in the database. By entering a starting date and an ending date, the search will select the resource types that were established for the identified period.

Depending on the size of the database and the search conditions, it could take a few minutes to complete the procedure. The screen displays:

```
This will take a while, please wait
Total number of records=
Please set printer to condensed mode
Display=1; Printer=2; Change summary conditions=3; Exit=4
CHOICE (1,2,3,4) __
```

You now have the options of viewing the report on the screen (1), directing the report to a printer (2), changing the summary conditions (3) or exiting from the procedure (4). Type the number option after CHOICE and press Enter. If the number of records found is very large, you may want to view the output on the screen first before sending it to a printer.

## 8.4 Examples Using Summary Information

Examples used in this section are based on sample data in the FGRID demonstration program. FGRIDEMO contains data for two agents, coded as M01 and M02.

### 8.4.1 Example 1 - Resource FORM 1

This option provides a report summarizing by state/province, all resource types, the total number of entries for each resource type, total area of each resource type, and the total area for all states/provinces including data from both agents.

From the FGRID main menu, highlight **Summary Information** and press Enter. Highlight **Resource (FORM 1)** and press Enter.

Type in the conditions for the summary:

Agent code (e.g., M01) return if none

Press Enter.

Resource type code (e.g., 12) 0 (zero) if none

Type 0.

Species code return if none

Press Enter.

Starting date (e.g., 01/01/90) or Enter if none 00/00/00
Ending date (e.g., 12/31/90) or Enter if none 00/00/00

Press Enter twice.

The screen displays:

This will take a while, please wait
Please set printer to condensed print
Total number of records=28
Please set printer to condensed print
Display=1; Printer=2; Change summary condition=3; Exit=4

Type 1 and press Enter to view the report (Fig. 8.4.1a).

Press any key to continue viewing the second page of the report (Fig. 8.4.1b).

```
♀        RESOURCES SUMMARY BY STATE/PROVINCE (FORM  1)

Page no.   1
12/03/97
                              RESOURCE                    NO OF      AREA
STATE/PROVINCE                TYPE                        RESOURCE   (HA)
=============================================================================
SELANGOR                      NATURAL FOREST                     5   2067.00
SELANGOR                      LOCAL PLANTATION                   1    720.00
SELANGOR                      EXOTIC PLANTATION                  1    100.00
SELANGOR                      SPECIES TRIAL PLOTS                1      5.00
SELANGOR                      GROWTH AND YIELD PLOT              1      4.00
SELANGOR                      SEED PRODUCTION AREA               3   1100.00
SELANGOR                      SEED ORCHARD                       1     20.00
SELANGOR                      VIRGIN JUNGLE                      1    345.00
-----------------------------------------------------------------------------
TOTAL FOR STATE/PROV SELANGOR                                          4361.00
=============================================================================
NEGERI SEMBILAN               NATURAL FOREST                     1    489.00
NEGERI SEMBILAN               EXOTIC PLANTATION                  1    600.00
NEGERI SEMBILAN               GROWTH AND YIELD PLOT              2      8.00
NEGERI SEMBILAN               SEED PRODUCTION AREA               4    730.00
NEGERI SEMBILAN               SEED ORCHARD                       1     25.00
-- More --
```

**Figure 8.4.1a Resource report (FORM 1). No conditions identified.**

```
TOTAL FOR STATE/PROV SELANGOR                                          4361.00
=============================================================================
NEGERI SEMBILAN               NATURAL FOREST                     1    489.00
NEGERI SEMBILAN               EXOTIC PLANTATION                  1    600.00
NEGERI SEMBILAN               GROWTH AND YIELD PLOT              2      8.00
NEGERI SEMBILAN               SEED PRODUCTION AREA               4    730.00
NEGERI SEMBILAN               SEED ORCHARD                       1     25.00
-- More --

NEGERI SEMBILAN               CLONAL ORCHARD                     1    250.00
NEGERI SEMBILAN               VIRGIN JUNGLE                      1    345.00
NEGERI SEMBILAN               WATER CATCHMENT                    2   1604.00
NEGERI SEMBILAN               FOREST PARK                        1    250.00
-----------------------------------------------------------------------------
TOTAL FOR STATE/PROV NEGERI SEMBILAN                                   4301.00
=============================================================================
TOTAL FOR ALL STATE/PROVINCE                                           8662.00
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

Please set printer to condense print

Display=1, Printer=2, Change summary condition=3,Exit=4

CHOICE (1,2,3,4)
```

**Figure 8.4.1b Second page of Resource report (FORM 1).**

At the bottom of the last page of the report options are displayed for viewing, printing, changing summary conditions or quitting the procedure.

Type 4 to exit and press Enter to return to the Summary Information menu.

### 8.4.2 Example 2 - Resource FORM 1

The same option, **Resource (FORM 1)** is selected. This time, restrict the search to include resource information for one agent (code M01) and one resource type, seed production areas (code 11).

Set the conditions for the summary report.

Agent code (e.g., M01) Enter if none

Type M01 and press Enter.

Resource type code (e.g., 12) 0 if none

Type 11 and press Enter.

Press Enter through the remainder of the conditions.

The total number of records found is 3.

To view the summary output (Fig. 8.4.2a) type 1 and press Enter.

This report indicates that agent M01 has established three seed production areas in the state of Selangor, totaling 1100 hectares.

```
♀        RESOURCES SUMMARY BY STATE/PROVINCE (FORM  1)

Page no.   1
12/03/97
                          RESOURCE                NO OF      AREA
STATE/PROVINCE              TYPE                  RESOURCE   (HA)
================================================================
SELANGOR               SEED PRODUCTION AREA          3     1100.00
----------------------------------------------------------------
TOTAL FOR STATE/PROV SELANGOR                                1100.00
================================================================
TOTAL FOR ALL STATE/PROVINCE                                 1100.00
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

Please set printer to condense print

Display=1, Printer=2, Change summary condition=3,Exit=4

CHOICE (1,2,3,4)
```

**Figure 8.4.2a Resource report (FORM 1) with set conditions.**

### 8.4.3 Example 3 - Resource FORM 8

To obtain more information on the three seed production areas in Example 2, highlight **Resource (FORM 8)** in the DETAIL LISTING of the Summary Information menu.

Type in the same conditions as Example 2.

Agent code=M01
Resource type=11

Press Enter for all other conditions.

The total number of records found is still 3. However, the output (Fig. 8.4.3a) provides detailed information about each of the three seed production areas, including the resource identification number (SOUCID), species code, location, area, forest type, and type of material collected. For coded data, species, forest type, and material collected, refer to a hard copy of the codes or use the F1 Help key.

```
?       LISTING OF RESOURCES BY STATE/PROVINCE (FORM 8)
Page No.    1
12/03/97
 SOUCID    SP        LOCATION            AREA                 FOREST    MAT.
           CODE                          HA                   TYPE      COLL
=============================================================================
STATE/PROVINCE: SELANGOR
RESOURCE TYPE:  SEED PRODUCTION AREA

MB1000000013 SHOCUR0 SEMANGKOK 658          600.0 SEED PRODUCTION AREA      1


MB1000000011 SHOCUR0 SEMANGKOK 113          200.0 SEED PRODUCTION AREA      1


MB1000000012 SHOCUR1 SEMANGKOK 002          300.0 SEED PRODUCTION AREA      1


SUB TOTAL FOR RESOURCE: SEED PRODUCTION AREA      1100.00(HA)
-----------------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
TOTAL AREA ALL STATE/PROVINCE                        1100.00 (HA)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
-- More --
```

**Figure 8.4.3a Resource report (FORM 8) with set conditions.**

### 8.4.4 Example 4 - Seed collection FORM 2

This form provides a report summarizing by state/province, a combined total of seed collected and quantity (kilograms) stored for each species for each resource type. It includes information from both agents (M01 and M02).

Highlight **Seed collection (FORM 2)** and press Enter.

No conditions will be entered for the summary.

| | |
|---|---|
| Agent code | press Enter |
| Resource code | type 0 (zero) |
| Species code | press Enter |
| Starting date | press Enter |
| Ending date | press Enter |

View the output (Fig. 8.4.4a) on the screen by typing 1 in the CHOICE option. Only the first page of the report is presented in this example. The output includes, for each species, by state/province and resource type, the total number of seedlots collected, the total fresh weight, and the quantity stored.

Continue to scroll through the display. Type 4 to return to the Summary Information menu.

```
?Page No.  1        SUMMARY OF SEED COLLECTIONS                (FORM 2

NO OF                SPECIES                          FRESH     QUANTITY
SEEDLOTS                                              WEIGHT    STORED
=============================================================================
STATE/PROVINCE:  SELANGOR
RESOURCE TYPE:   NATURAL FOREST
-----------------------------------------------------------------------------
     1      SHOREA ACUMINATA                           16.275    12.568
     2      SHOREA LEPROSULA                           24.459    18.887
TOTAL COLLECTED FROM NATURAL FOREST                  62.910
-----------------------------------------------------------------------------
RESOURCE TYPE:   SEED PRODUCTION AREA
-----------------------------------------------------------------------------
     1      KOOMPASSIA MALACCENSIS                     20.925    16.159
     2      SHOREA ACUMINATA                           44.826    34.614
     5      SHOREA CURTISII                             3.999     3.088
     5      SHOREA LEPROSULA                           24.459    18.887
     1      SHOREA PARVIFOLIA                          28.551    22.047
TOTAL COLLECTED FROM SEED PRODUCTION AREA            339.896
-----------------------------------------------------------------------------
RESOURCE TYPE:   SEED ORCHARD
```

**Figure 8.4.4a Seed collection report (FORM 2). No conditions identified.**

### 8.4.5 Example 5 - Seed collection FORM 2

Highlight **Seed collection (FORM 2)**. Restrict the search to include 1995 seed collection information by one agent (code M01) for one resource type (seed production areas, code 11).

Set the conditions for the summary report.

Agent code (e.g., M01) Enter if none

Type M01 and press Enter.

Resource type code (e.g., 12) or 0 if none

Type 11 and press Enter.

Species code

Press Enter

Starting date (e.g., 01/01/90) or Enter if none 00/00/00

Type 01/01/95. The cursor moves to the next entry.

Ending date (e.g., 12/31/90) or Enter if none 00/00/00

Type 12/31/95.

To view the summary output (Fig. 8.4.5a), type 1 and press Enter.

The report indicates that agent M01 collected 11 seedlots from seed production areas, including five species. The fresh weight and quantity stored represents a total for all seedlots collected for each species.

```
?Page No.  1        SUMMARY OF SEED COLLECTIONS                (FORM 2)

NO OF                SPECIES                          FRESH     QUANTITY
SEEDLOTS                                              WEIGHT    STORED
=============================================================================
STATE/PROVINCE:  SELANGOR
RESOURCE TYPE:   SEED PRODUCTION AREA
-----------------------------------------------------------------------------
     1       KOOMPASSIA MALACCENSIS                    20.925    16.159
     1       SHOREA ACUMINATA                          32.550    25.135
     5       SHOREA CURTISII                            3.999     3.088
     3       SHOREA LEPROSULA                          24.459    18.887
     1       SHOREA PARVIFOLIA                         28.551    22.047
TOTAL COLLECTED FROM SEED PRODUCTION AREA             239.213
-----------------------------------------------------------------------------
TOTAL COLLECTED FROM SELANGOR                         239.213
=============================================================
TOTAL COLLECTION FROM ALL STATE/PROVINCE              239.213
```

**Figure 8.4.5a Seed collection report (FORM 2) with set conditions.**

### 8.4.6 Example 6 - Seed collection FORM 9

To obtain specific information for each seedlot collected from the seed production areas in Example 5, highlight **Seed collection (FORM 9)** in the DETAIL LISTING of the Summary Information menu.

Type in the same conditions as Example 5.

Agent code=M01
Resource type=11
Starting date=01/01/95
Ending date=12/31/95

Press Enter for all other conditions.

```
9                    LISTING OF SEED COLLECTIONS (FORM 9)
Page No.  1
12/03/97

LOCATION              SEEDLOT     SPECIES  DATE        QUANTITY   FRESH
                                  CODE     COLLECTION  STORED     WEIGHT
================================================================================
================================================================================
STATE/PROVINCE:  SELANGOR
================================================================================
--------------------------------------------------------------------------------
  RESOURCE TYPE:   SEED PRODUCTION AREA
--------------------------------------------------------------------------------
SEMANGKOK 113         M0100004/95 MOOMPASSIA              05/11/95  16.159  20.925
                                  MALACCENSIS
SEMANGKOK 113         M0100006/95 SHOREA ACUMINATA        05/13/95  25.135  32.558
SEMANGKOK 113         M0100005/95 SHOREA CURTISII         05/11/95  15.727  20.367
SEMANGKOK 113         M0100008/95 SHOREA CURTISII         05/17/95  33.322  43.152
SEMANGKOK 002         M0100009/95 SHOREA CURTISII         05/17/95  37.774  48.918
SEMANGKOK 058         M0100002/95 SHOREA CURTISII         05/07/95   4.165   5.394
SEMANGKOK 058         M0100001/95 SHOREA CURTISII         05/04/95   3.088   3.999
SEMANGKOK 002         M0100010/95 SHOREA LEPROSULA        05/19/95  28.295  36.642
SEMANGKOK 113         M0100007/95 SHOREA LEPROSULA        05/17/95  34.614  44.826
-- More --
```

**Figure 8.4.6a Seed collection report (FORM 9) with set conditions.**

```
SEMANGKOK 113         M0100005/95 SHOREA CURTISII         05/11/95  15.727  20.367
SEMANGKOK 113         M0100008/95 SHOREA CURTISII         05/17/95  33.322  43.152
SEMANGKOK 002         M0100009/95 SHOREA CURTISII         05/17/95  37.774  48.918
SEMANGKOK 058         M0100002/95 SHOREA CURTISII         05/07/95   4.165   5.394
SEMANGKOK 058         M0100001/95 SHOREA CURTISII         05/04/95   3.088   3.999
SEMANGKOK 002         M0100010/95 SHOREA LEPROSULA        05/19/95  28.295  36.642
SEMANGKOK 113         M0100007/95 SHOREA LEPROSULA        05/17/95  34.614  44.826
-- More --

SEMANGKOK 002         M0100011/95 SHOREA LEPROSULA        05/19/95  18.887  24.459
SEMANGKOK 058         M0100003/95 SHOREA PARVIFOLIA       05/11/95  22.047  28.551
TOTAL COLLECTION FROM SEED PRODUCTION AREA                 239.21          389.78
TOTAL FOR STATE/PROV. SELANGOR              239.21                        389.78


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
TOTAL FOR ALL STATE/PROVINCE                               239.21          389.78
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

Please set printer to condense print

Display=1, Printer=2, Change summary condition=3,Exit=4

CHOICE (1,2,3,4)
```

**Figure 8.4.6b Second page of seed collection report (FORM 9).**

To view the first page of the summary output (Fig. 8.4.6a), select 1 and press Enter.

Press any key to display the second page of output (Fig. 8.4.6b).

The report includes a listing of all seedlots collected by agent M01 from seed production areas. The list includes, by state/province, the location, seedlot number, species, date of collection, seed weight,and quantity stored. A total weight for quantity collected and quantity stored for all states/provinces by agent M01 is displayed at the end of the last record.

Use the FGRIDEMO program to prepare reports using the forms in the Summary Information menu. Practice using different conditions for output.

## 8.5 Quitting the Summary Information Menu

Highlight **RETURN TO MAIN MENU** at the bottom of the Summary Information menu and press Enter. The FGRID main menu is displayed.

# 9 USING PHENDMS—PHENOLOGY DATABASE MANAGEMENT SYSTEM

## 9.1 Introduction

The PHENDMS was developed independently by the Forest Research Institute Malaysia (FRIM). It is used to identify single trees for the purpose of assessing potential seed crops and monitoring natural regeneration of wildings. The PHENDMS is linked to the FGRID system. Each phenology tree identified is linked to a record in the FGRID Resource Register.

The database is designed to store detailed mensurational and descriptive data for individual trees. The flowering data is analyzed in a program in the Coordinator Module. The output is used to determine the location and species for potential seed crops, the density of the crop, and timing for collection.

## 9.2 Accessing PHENDMS

Highlight **PHENDMS** in the FGRID main menu (Fig. 9.2a) and press Enter. The PHENDMS menu (Fig. 9.2b) is displayed.

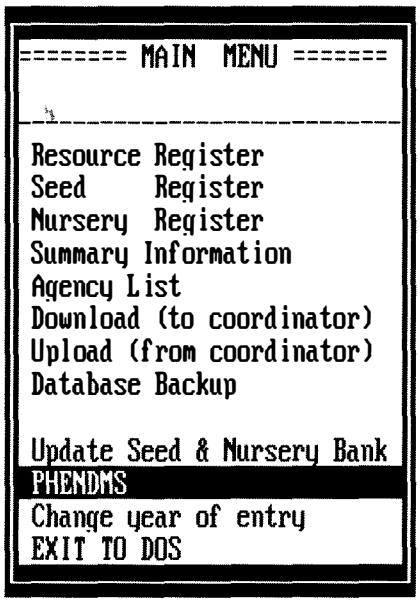



**Figure 9.2a FGRID main menu.**

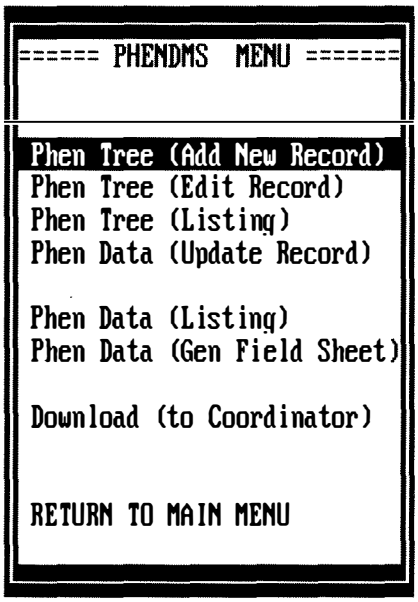



**Figure 9.2b Phenology (PHENDMS) menu options.**

## 9.3 Add New Record

Highlight **Phen Tree (Add New Record)** in the PHENDMS menu and press Enter. The screen displays:

PHENOLOGY TREE ENTRY FORM
PHENID PM0100033
RESOURCE ID _____

PHENID is the code used to identify and number each phenology tree entered in the database. The code PM0100033 means:

P=identified as phenology (selected) tree
M01=agent code
00033=32 tree records have already been entered, record to be added will be number 33

The RESOURCE ID is the SOURCE ID code used in the FGRID Resource Register. This provides a link between the phenology tree and the resource from which it is selected. Since these trees are used to estimate the potential for seed crops, there are usually several phenology trees associated with a resource.

After a RESOURCE ID is entered (e.g., M010000001), a form (Fig. 9.3a) is displayed and data is entered for the new tree record. Several data fields are coded (e.g., BRANCH ANGLE, CROWN FORM, BOLE FORM) that are designated by the coordinator.

After data is entered for the last field (PH), the cursor moves directly to the options at the bottom of Figure 9.3a to save or discard the record. The default is always D. If you press Enter now, the information entered will not be saved in the database. The only difference between using C or S is that C will save the current record and continue with the next phenology tree entry, while S will save the record and return to the PHENDMS menu.

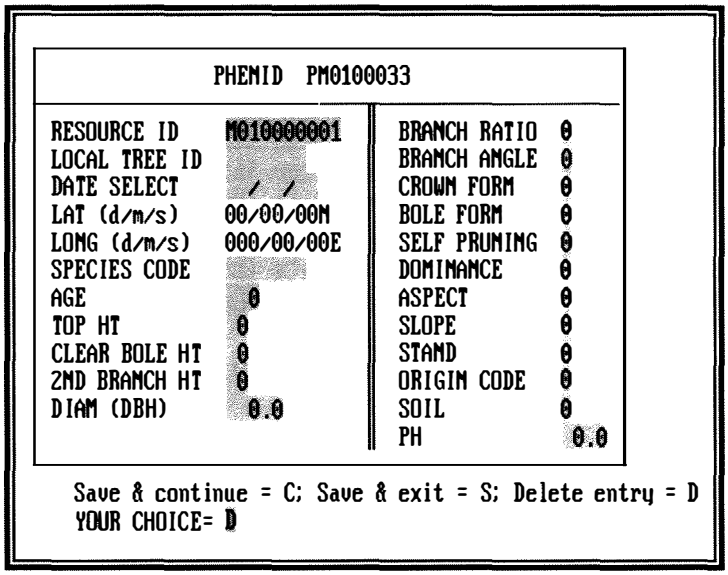



**Figure 9.3a Phenology tree. Add new record screen.**

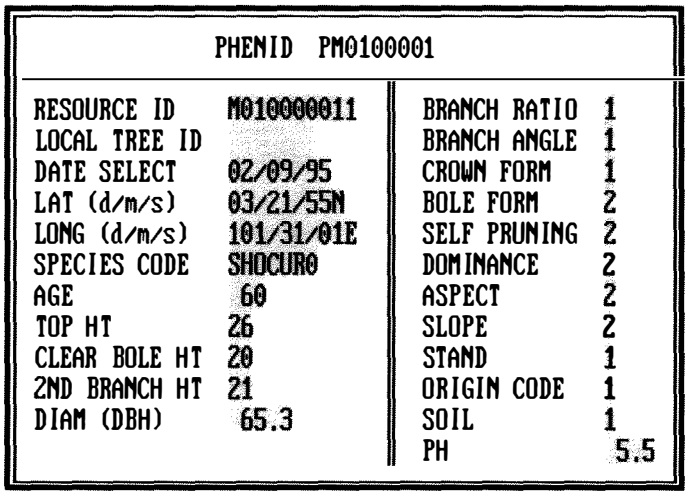
## 9.4 Phen Tree (Edit Record)

To make changes to a phenology tree record that has been saved in the PHENDMS register, highlight **Phen Tree (Edit Record)** in the PHENDMS menu. The screen displays:

ENTER PHENID PM0000000

Type in the PHENID number (e.g., PM0100001). A screen displays the data for that record (Fig. 9.4a). Using the Tab or Enter keys or mouse, move to the fields that require changing and type over existing data.

After all changes are made, and if you are not at the last field (PH), return to the PHENDMS menu by pressing Ctrl End. The screen will automatically return to the PHENDMS menu if the last field (PH) is changed.



PHENID PM0100001

| | | | |
|---|---|---|---|
| RESOURCE ID | M010000011 | BRANCH RATIO | 1 |
| LOCAL TREE ID | | BRANCH ANGLE | 1 |
| DATE SELECT | 02/09/95 | CROWN FORM | 1 |
| LAT (d/m/s) | 03/21/55N | BOLE FORM | 2 |
| LONG (d/m/s) | 101/31/01E | SELF PRUNING | 2 |
| SPECIES CODE | SHOCURO | DOMINANCE | 2 |
| AGE | 60 | ASPECT | 2 |
| TOP HT | 26 | SLOPE | 2 |
| CLEAR BOLE HT | 20 | STAND | 1 |
| 2ND BRANCH HT | 21 | ORIGIN CODE | 1 |
| DIAM (DBH) | 65.3 | SOIL | 1 |
| | | PH | 5.5 |

**Figure 9.4a Phenology tree. Edit a record screen.**

## 9.5 Phen Tree (Listing)

This option allows the user to view or print records saved in the Phenology Register. Output includes all information entered for each record and is presented in a form format. Use this option to maintain an updated hard copy of the Phenology Register for reference purposes.

Highlight **Phen Tree (Listing)** from the PHENDMS menu. The screen displays:

RESOURCE ID=M000000000

Type the SOURCE ID located in the Resource Register (e.g., M010000011).

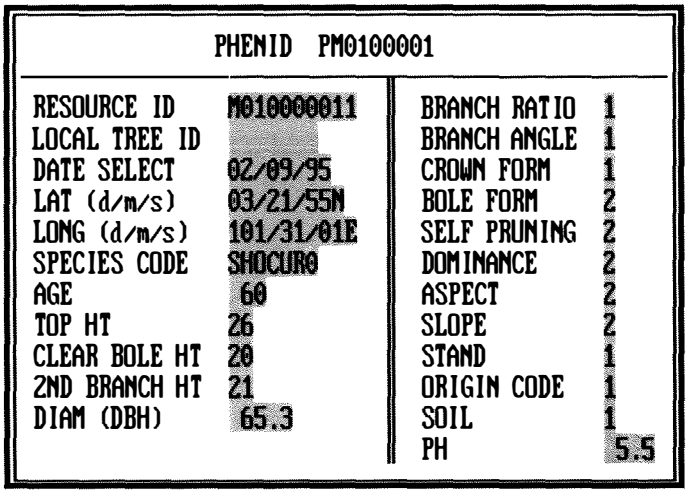
The listing displays the number of records (phenology trees) found for the specified resource number and options for output.

Total number of records=
Display=1; Print=2; Next listing=3; Exit= 4; CHOICE= __

To display output on the screen, type 1 and press Enter. The first record is displayed (Fig. 9.5a). Type C to continue viewing the record listing. Type E to quit. The screen prompts you for a new SOURCE ID. Press Enter, and select 4 to exit and return to the PHENDMS menu.

Output can be directed to a printer by selecting 2 in the output options.

Select 3, **Next listing**, to identify phenology trees located for a different resource record.



PHENID PM0100001

| | | | |
|---|---|---|---|
| RESOURCE ID | M010000011 | BRANCH RATIO | 1 |
| LOCAL TREE ID | | BRANCH ANGLE | 1 |
| DATE SELECT | 02/09/95 | CROWN FORM | 1 |
| LAT (d/m/s) | 03/21/55N | BOLE FORM | 2 |
| LONG (d/m/s) | 101/31/01E | SELF PRUNING | 2 |
| SPECIES CODE | SHOCURO | DOMINANCE | 2 |
| AGE | 60 | ASPECT | 2 |
| TOP HT | 26 | SLOPE | 2 |
| CLEAR BOLE HT | 20 | STAND | 1 |
| 2ND BRANCH HT | 21 | ORIGIN CODE | 1 |
| DIAM (DBH) | 65.3 | SOIL | 1 |
| | | PH | 5.5 |

**Figure 9.5a Output from Phen Tree Listing.**

## 9.6 Generate Field Sheets

This option generates field sheets used for the assessment of flowering and regeneration of wildings for the phenology trees. Field assessments are conducted at frequent time intervals, particularly after initial flowering is identified.

Highlight **Phen data (Gen Field Sheet)** and press Enter. The screen displays:

> Date of next phenological observation (mm/dd/yy) 12/31/94

Type in the date when you want to do your assessment. Example: 12/31/97.

At the bottom of the screen is displayed:

> Data file M011297 will be copied to update diskette
> Insert data diskette in drive A (for old data transfer) and press Enter

A file named M011297 is created on the diskette that was inserted into drive A. The filename represents:

| | |
|---|---|
| M01 | agent collecting phenology data |
| 12 | month of assessment |
| 97 | year of assessment |

Label the diskette and keep it for future observation assessments and for transfer of data to the Coordinator Module, where data analysis is completed.

If this is the first assessment, only the date for assessment and the tree identification are filled in. The fields PHCODH and PHDENH contain previous (history) flowering and density of flowering codes that will contain the most recent codes in subsequent assessments. The forms can be printed and used to write data during the field assessment.

| Record# | PHDATE | PHENID | PHCODH | PHDENH | PHCOD | PHDEN | REGCOD | REGDEN |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/31/97 | PM0100001 | 0 | 0 | | | | |
| 2 | 12/31/97 | PM0100002 | 0 | 0 | | | | |
| 3 | 12/31/97 | PM0100003 | 0 | 0 | | | | |
| 4 | 12/31/97 | PM0100004 | 0 | 0 | | | | |
| 5 | 12/31/97 | PM0100005 | 0 | 0 | | | | |
| 6 | 12/31/97 | PM0100006 | 0 | 0 | | | | |
| 7 | 12/31/97 | PM0100007 | 0 | 0 | | | | |

### 9.6.1 The phenology coding system

Four coded fields are used for the flower and wilding assessment. They include:

| | |
|---|---|
| PHCOD | stage of flower development for the phenology tree (codes: 1 to 9) |
| PHDEN | density of flowering (codes: 1 to 5) |
| REGCOD | occurrence of wildings for phenology (codes: 1 or 2) |
| REGDEN | density of wildings (codes: 1 to 5) |

The coordinator must establish the coding system to meet their own requirements. In a multi-user system, the coding must be standardized for all agents.

For the stage of flower development (PHCOD), a 1 (one) code may indicate that flowers are not identifiable. Codes 7 and 8 would indicate that the seed has almost reached maturity and should be collected. Codes 2 to 6 would be based on progressing stages of development. Code 9 would indicate that seed has matured and is too late for collection. For density (PHDEN), code 1 may indicate none, or a negligible number of flowers, while code 5 could indicate a very heavy crop.

Codes for REGCOD can only be 1 or 2: 1 indicating no wildings for the phenology tree, or 2 indicating wildings are growing in the vicinity of the tree. Density of wildings (REGDEN) could be categorized from light to heavy or it could be based on the number of wildings per unit area.

## 9.7 Update Record

After the field assessment is completed, the data must be entered from the written forms to a computer file.

Highlight **Phen Data (Update Record)** and the screen displays:

PHEN DATA FILE (A:M000000=Exit) A:M010000

To exit the procedure and return to the PHENDMS main menu type:

A:M000000

To enter the assessment data, insert the diskette labeled M011297 (generated in Section 9.6) in drive A and type:

A:M011297

The screen displays the form (Fig. 9.7a).

| PHENID | PHDATE | PHCOD | PHDEN | REGCOD | REGDEN |
|---|---|---|---|---|---|
| PM0100001 | 12/31/97 | | | | |
| PM0100002 | 12/31/97 | | | | |
| PM0100003 | 12/31/97 | | | | |
| PM0100004 | 12/31/97 | | | | |
| PM0100005 | 12/31/97 | | | | |
| PM0100006 | 12/31/97 | | | | |
| PM0100007 | 12/31/97 | | | | |
| PM0100008 | 12/31/97 | | | | |
| PM0100009 | 12/31/97 | | | | |
| PM0100010 | 12/31/97 | | | | |
| PM0100011 | 12/31/97 | | | | |
| PM0100012 | 12/31/97 | | | | |
| PM0100013 | 12/31/97 | | | | |
| PM0100014 | 12/31/97 | | | | |
| PM0100015 | 12/31/97 | | | | |
| PM0100016 | 12/31/97 | | | | |
| PM0100017 | 12/31/97 | | | | |
| PM0100018 | 12/31/97 | | | | |

**Figure 9.7a Data form for adding phenology codes.**

Type in the codes for each of the phenology trees (Fig. 9.7b).

| PHENID | PHDATE | PHCOD | PHDEN | REGCOD | REGDEN |
|---|---|---|---|---|---|
| PM0100001 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100002 | 12/31/97 | 1 | 2 | 1 | 3 |
| PM0100003 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100004 | 12/31/97 | 2 | 3 | 1 | 2 |
| PM0100005 | 12/31/97 | 1 | 2 | 2 | 2 |
| PM0100006 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100007 | 12/31/97 | 2 | 2 | 2 | 2 |
| PM0100008 | 12/31/97 | 1 | 2 | 1 | 2 |
| PM0100009 | 12/31/97 | 2 | 1 | 2 | 1 |
| PM0100010 | 12/31/97 | 3 | 3 | 1 | 2 |
| PM0100011 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100012 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100013 | 12/31/97 | 1 | 1 | 1 | 1 |
| PM0100014 | 12/31/97 | 1 | 2 | 1 | 2 |
| PM0100015 | 12/31/97 | 2 | 2 | 2 | 1 |
| PM0100016 | 12/31/97 | 2 | 1 | 2 | 1 |
| PM0100017 | 12/31/97 | 2 | 1 | 2 | 1 |
| PM0100018 | 12/31/97 | 1 | 1 | 1 | 1 |

**Figure 9.7b Completed data form after assessment.**

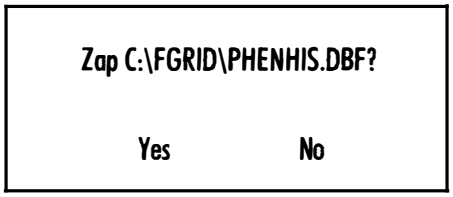
Press Ctrl End when finished.

The screen displays:

Do you wish to copy current phenology data to phenology history file?
CHOICE (Y/N) __

Choose Y to copy the data to a history file. For a new assessment, the codes for flowering status (PHCODH) and density (PHDENH), from the previous assessment, will be included for reference purposes when new field sheets are generated.

The screen displays:




If the data are to be copied to a history file, select Yes.

When preparing field sheets (Phen Data-Gen Field Sheet) for the next observation, the PHCOD and PHDEN codes will be recovered from the history file. The codes will appear under the PHCODH and PHDENH fields. They are used as a reference when conducting the current assessment.

| Record# | PHDATE | PHENID | PHCODH | PHDENH | PHCOD | PHDEN | REGCOD | REGDEN |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/31/97 | PM0100001 | 0 | 0 | 1 | 1 | 1 | 1 |
| 2 | 12/31/97 | PM0100002 | 0 | 0 | 1 | 2 | 1 | 3 |
| 3 | 12/31/97 | PM0100003 | 0 | 0 | | | | |
| 4 | 12/31/97 | PM0100004 | 0 | 0 | | | | |
| 5 | 12/31/97 | PM0100005 | 0 | 0 | 1 | 1 | 1 | 2 |
| 6 | 12/31/97 | PM0100006 | 0 | 0 | 1 | 2 | 1 | 2 |
| 7 | 12/31/97 | PM0100007 | 0 | 0 | 1 | 2 | 1 | 2 |
| 8 | 12/31/97 | PM0100008 | 0 | 0 | | | | |
| 9 | 12/31/97 | PM0100009 | 0 | 0 | | | | |

## 9.8 Download (to Coordinator)

After a field assessment, the data sets are sent to the coordinator for data analysis.

Highlight **Download (to coordinator)** and press Enter. The screen displays:

Preparing phenology data diskette for the coordinator?
CHOICE (Y/N)

Type N to exit the procedure.

Type Y to continue.

Current data of phenological observation (mm/dd/yy) 12/31/94

Type in the observation date (e.g., 12/31/97. The screen displays:

Two sets of the data will be copied
Set 1 is for safekeeping
Set 2 is for dispatch to coordinator
Make sure that the file names are marked on the diskettes
The output file names are: CM011297; TM011297; RM011297
Insert diskette 1 in drive A and press Enter

At this point, insert the diskette containing the assessment data (M011297) and type Y. The three files: CM011297, TM011297, and RM011297, are copied to the diskette and contain data required for data analysis in the Coordinator Module.

| | |
|---|---|
| CM011297 | assessment codes for flowering and regen |
| RM011297 | data for the resource (in Resource Register) from which phenology trees are selected |
| TM011297 | data for each phenology tree extracted from the PHENDMS register |

After the set of files is copied, the screen displays:

Insert diskette 2 in drive A and press Enter.

The same set of files is copied to the diskette. You keep one diskette, and send the other to the coordinator for data analysis.

## 9.9 Data Analysis

A series of analyses are performed on the data set sent to the coordinator. Refer to the phenology option (Section 21) in the FGRID Coordinator Module.

## 9.10 Quitting the PHENDMS Menu

Highlight **RETURN TO MAIN MENU** and press Enter. The program returns to the FGRID main menu.

# 10 AGENCY LIST

## 10.1 Introduction

The Agency List is established in the Coordinator Module. When FGRID is used as a multi-user system (a national/country database, for example), there could be as many as 99 agents in the Agency List. One agent is identified as the coordinator/manager who is responsible for maintaining the system. When FGRID is used as a single-user system, there is only one agent who acts as both coordinator and the agent. Therefore, there would be only one record in the Agency List.

Only the coordinator can add or change the records in the Agency List. As an FGRID user, you are able to access the list to view the information. The list provides the code identification for each agent, the name of the organization, its address and telephone and fax numbers. It is a useful reference for conducting searches on information entered into the FGRID system by other agents in the network. It is used as a reference for the exchange of information among agents, or to make inquiries regarding the exchange or purchase of seed or nursery stock.

## 10.2 Accessing and Displaying the Agency List

Highlight **Agency List** in the FGRID main menu. The screen displays the first record in the list.

IDENTIFICATION CODE
ORGANIZATION
ADDRESS
ADDRESS
ADDRESS
CITY
ZIP CODE
STATE
COUNTRY
TELEPHONE
FAX

To continue viewing the list, press Enter. After the last agent is displayed, the program returns to the FGRID main menu. Pressing Ctrl End at any time will also return the program to the main menu.

# 11 INFORMATION TRANSFER FOR UPDATING AND MERGING—DOWNLOAD AND UPLOAD PROCEDURES

## 11.1 Introduction

Periodically, information entered in the FGRID User Module must be sent to the coordinator for updating and for merging agent data sets to create a master FGRID database. The first time FGRID is used, all the data entered is sent to the coordinator for updating. For subsequent updates, only new records entered or edited since the most recent update will be copied to the coordinator. Each agent identified in a multi-user system must follow the same procedure.

## 11.2 Download (to Coordinator)

Highlight **Download (to coordinator)** on the FGRID main menu screen and press Enter. The screen displays:

```
*** DOWNLOADING TO COORDINATOR***
LABEL AGENT CODE AND DATE ON BLANK FORMATTED DISKETTE
INSERT DISKETTE IN DRIVE A

Press any key to continue...
```

Before pressing a key, ensure that a blank, formatted 1.44-MB diskette is labeled with your agent code and dated. Insert the diskette in drive A. The procedure is executed by pressing any key. The screen displays a list of files containing the agent data. Not all data is written to the diskette. Only new records added, or records that have been changed through the edit options since the last update will be written on the diskette. Therefore, one diskette should be sufficient. When the procedure is completed the screen automatically returns to the main menu.

Send the diskette(s) to the coordinator.

## 11.3 Upload (from Coordinator)

After the coordinator has finished updating FGRID with diskettes sent by all agents in the system, it is his/her responsibility to return the updated FGRID version to each of the agents in the network.

To update your FGRID system, highlight **Upload (from coordinator)** on the FGRID main menu screen and press Enter. Follow instructions on the screen.

```
***UPLOADING FROM COORDINATOR***
INSERT COORDINATOR DISKETTE IN DRIVE A
Press any key to continue...
```

Insert the diskette received from the coordinator, labeled with your agent code and date, into drive A. A listing of file names will be displayed on the screen and the merged FGRID database is updated in your FGRID program.

Note: FGRID can be used to enter data while the coordinator is updating the system. FGRID has an internal updating procedure that marks all new records added, or edited with an update code. Refer to Section 17.1 for an explanation of the update code.

# 12 DATABASE BACKUP

## 12.1 Introduction

FGRID is installed on your computer's hard disk C. During installation, a directory named FGBACK was created on the hard disk D. This directory is used to backup your FGRID system in the event of hardware failure in the C drive. The backup procedure is simple, fast, and is transparent to the user. If data are entered on a daily basis, run the backup routine daily. Obviously, if you lose your hard drive C, the data in the FGBACK directory will only include information entered before the last backup.

## 12.2 Backup Procedure

Highlight **Database Backup** on the main FGRID menu and press Enter. The screen displays:

Exit=0 (zero)  Backup=1  Retrieve=2

Type 0 (zero) to exit the procedure.

To backup the FGRID system in the FGBACK directory on the D drive, type 1. The backup is done automatically.

If your hard disk C fails, first repair the problem. Then type 2 to copy the FGRID system from FGBACK in the D drive to the FGRID directory in the C drive. Again, the procedure is transparent to the user.

For users who do not have a D drive, the coordinator can provide a new set of FGRID diskettes prepared in the Coordinator Module, in case of disk failure.

# 13 USING THE UPDATE SEED AND NURSERY BANK OPTION

## 13.1 Introduction

As seed stored in a seed bank or planting stock grown in a nursery is used, the quantity or amount remaining will eventually reach zero. The information entered for these seedlots or nursery lots remain in the FGRID database. However, when searches are conducted on the quantity of material available, only those records that do have stock in inventory should be identified in the output. This procedure eliminates those seedlots and nursery lots in their respective database banks that have zero material available and prevents the output from including meaningless data.

Periodically, perhaps once a year, the Update Seed and Nursery Bank option should be executed.

## 13.2 Accessing and Using the Update Seed and Nursery Bank Option

Highlight **Update Seed and Nursery Bank** option in the FGRID main menu and press Enter. The operation is transparent to the user and the main menu screen remains displayed.

# 14 CHANGE YEAR OF ENTRY

This procedure must be executed before data are entered for a new year. The year is needed by the program to generate record numbers in the seed and nursery databases. Because the year of entry option is directly related to the FGRID record numbering system, it is explained more thoroughly in Section 4—Understanding the FGRID record numbering system. Before using this option, refer to Section 4.6 for a complete explanation of its function.

# 15 FGRID COORDINATOR MODULE INSTALLATION

## 15.1 Introduction

The FGRID (Forest Genetic Resources Information Database) system is comprised of two main components: the FGRID Coordinator Module and the FGRID User Module. Before FGRID can be used to enter data, the Coordinator Module must be installed and the coding used for data entry and Help menus must be established. In a multi-user system, a coordinator must identify the agents or users who will be using FGRID. The coordinator should seek input from potential users when developing the coding system as discussed later in this section.

The coordinator is responsible for managing the system. The coordinator is the only person who can make changes for the data codes and Help menus. If a FGRID agent needs to add codes to meet their data entry needs, the new codes must be added in the Coordinator Module. FGRID was designed this way so that all agents would use the same coding system, which is essential when combining agent data sets.

In addition to configuring the initial setup for FGRID, the coordinator is responsible for updating the system by combining data sets from the identified agents and returning the updated version to each agent. Each agent sends their data to the coordinator, who merges the individual data sets.

When the updated FGRID diskettes are returned to them, each agent will have access, not only to their information, but also to information entered by all the other agents. There are some restrictions to public access for certain data, such as seed testing results and nursery production figures. These restrictions will be addressed later in this section.

## 15.2 Installation

FGRID is designed to run as a multi-user or single-user system. In either case, the same installation procedure must be used. Three diskettes are included in the installation program. Each is labeled with FGRID Coordinator Installation and diskette numbers 1 to 3.

Return your computer to the DOS C:\> prompt:

Insert diskette 1 into the A drive, and then type:

A:FCOINST and press Enter

The screen displays:

COOD will be installed on hard disk C.
During installation, a subdirectory COOD and a subdirectory within COOD named COODFGR will be created.
A backup subdirectory CFGBACK will be created on hard disk D.
If any of these sub directories already exist, press Ctrl C to exit.
To continue press any key

The installation program will create a directory named COOD on hard disk C. A subdirectory in COOD will also be created named COODFGR. A directory named CFGBACK will be created on hard disk D to serve as a backup for the Coordinator Module.

If any of these directories already exist on your computer, it is suggested that you exit the installation and rename or delete them. Exit by holding down the Ctrl key and pressing C. If your computer does not have a second hard disk D, installation can continue but no backup for the system will be created.

To continue with the installation, press any key. The screen displays:

```
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied

Insert COOD INSTALLATION DISKETTE 2 in drive A
Press any key to continue...
```

Continue the installation by inserting the COOD INSTALLATION DISKETTE #2 into drive A and press any key. The screen displays:

```
1 file(s) copied
Insert COOD INSTALLATION DISKETTE 3 in drive A
Press any key to continue...
```

Complete the installation by inserting the COOD INSTALLATION DISKETTE #3 into drive A and press any key. A list of file names will be displayed on the screen. These files are being restored from zipped file format and include the compiled dBase programs and database files necessary to run the Coordinator Module. Type Y or N if a "warning" message is displayed to overwrite any file name.

After installation, the computer returns to the C:\COOD> prompt.

Type COOD and press Enter. The Coordinator Module is executed and the main menu appears on the screen (Fig. 15.2a).

To access the FGRID Coordinator Module at any time, return your computer to the root directory C:\>. Change the directory to COOD by typing

```
CD\COOD
```

At the C:\COOD> prompt, type COOD and press Enter

The main menu is displayed. Throughout this manual, the main menu screen will only include the main menu components portion. The header information at the top of the screen and the **Highlight and press Enter** message at the bottom of the screen will be omitted.

To exit the FGRID Coordinator program from the main menu, highlight **QUIT TO DOS** and press Enter. The DOS prompt is displayed.

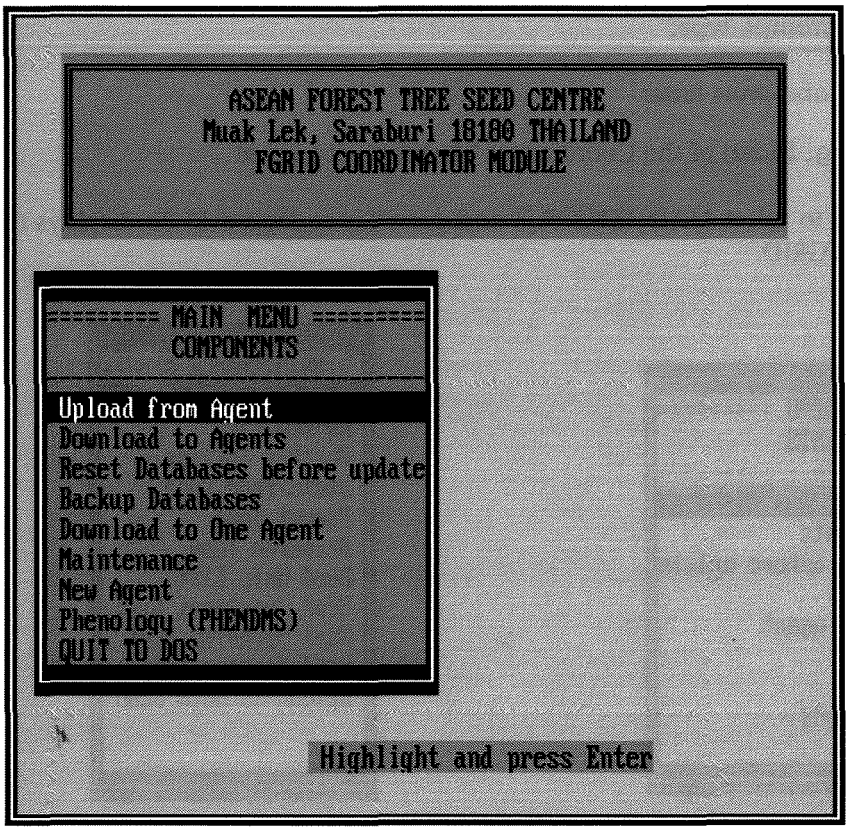



**Figure 15.2a FGRID Coordinator Module main menu.**

## 15.3 FGRID Setup

As the coordinator or manager of FGRID, you need to run the module that was just installed and establish the coding system for the following FGRID components.

- species list
- agency list
- state/province
- forest type
- resource type
- weather station
- seed collection help
- seed treatment help
- seed dressing help
- seed storage help

To do this, return your computer to the DOS C:\> prompt.

Change the directory to COOD by typing:

CD\COOD and press Enter

At the C:\COOD> prompt, type:

COOD and press Enter

The main menu (Fig. 15.3a) of the Coordinator Module is displayed.

Use the arrow keys to select MAINTENANCE and press Enter. Figure 15.3b displays the code categories used in FGRID.

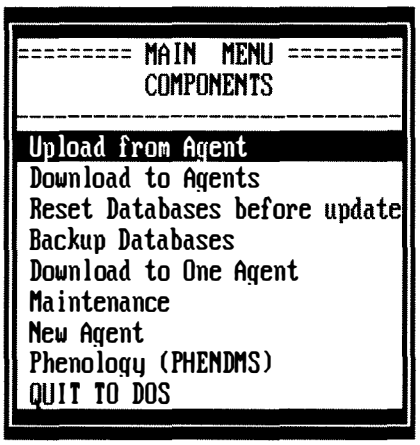



**Figure 15.3a Coordinator main menu.**

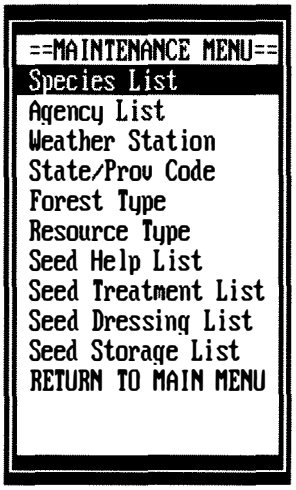



**Figure 15.3b FGRID Maintenance menu.**

To access menu items, use the arrow keys or mouse and set up the coding for each of the 10 categories. As an example, select Resource Type. The screen (Fig. 15.3c) displayed is blank, except for two field names (RESTY and RESNAME).

RESTY field is a number code from 1 to 99. Each number is a code to identify a different resource type represented by the RESNAME field. The numeric code will be used to enter a resource type when using the FGRID module. Figure 15.3d is a sample of a constructed coding system for resource type. When constructing the list type in the first number (1), press Enter to move to the definition field. Continue until the list is completed. Save the file by pressing Ctrl End and return to the Maintenance menu.

Note: For examples of codes, refer to the FGRIDEMO program. From the main menu, press the F1 Help key to view the codes used.

At any time, additional codes may be added to any of the code lists. Select the appropriate list from the Maintenance menu and use the arrow key to move to the last record. Figure 15.3e is displayed.

Use the arrow key to highlight Yes, press Enter and continue adding new codes and definitions to the list.

All the Maintenance menu items are blank, except for the species list. The species coding system and the procedures for adding or editing species in the Maintenance menu are addressed in Section 15.4.

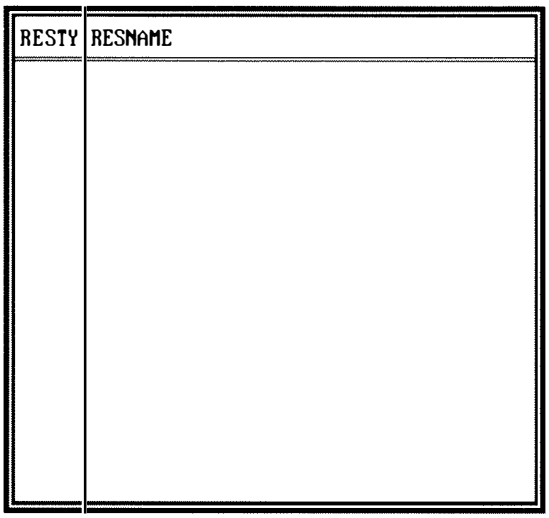



**Figure 15.3c Blank resource type screen.**

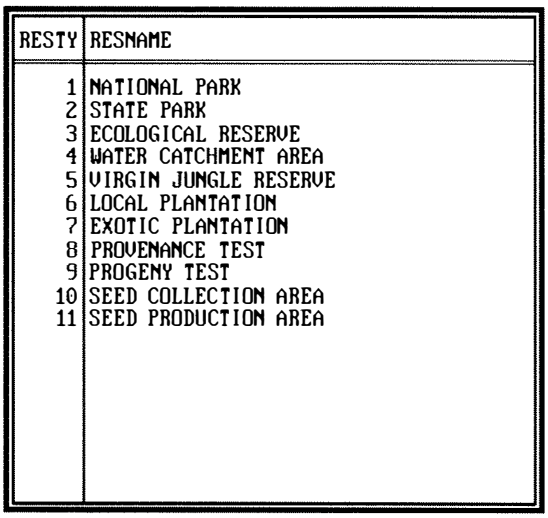



**Figure 15.3d Coded resource type screen.**

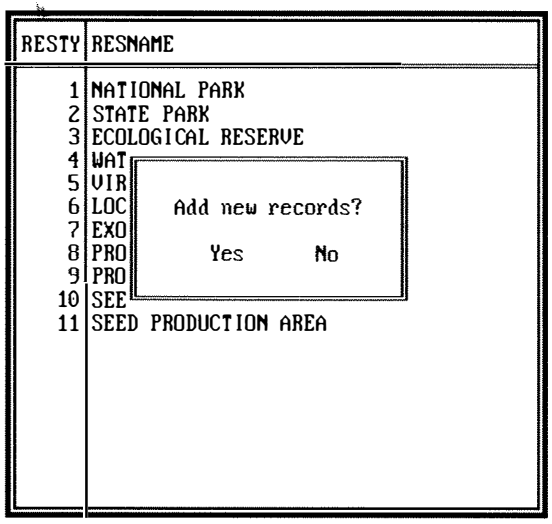



**Figure 15.3e Option to add new codes for resource type.**

## 15.4 Species List

The species database included with the FGRID software contains 5500 species. Most are tropical species found in ASEAN, for which the FGRID system was originally developed.

The species are coded using a seven-character code as represented in Figure 15.4a.

The code is constructed based on the species' scientific name. The first three letters of the code represent the first three letters of the general name of the species. The next three letters are the first three letters of the specific name of the species. The seventh character of the code is a number ranging from zero to nine. This number is used to differentiate among species that have identical letters in the first three spaces of the general and specific names. As an example, refer to Figure 15.4a. The species SHOREA POLITA and SHOREA POLYSPERMA have the same first three letters in both names. Since the species list is arranged in alphabetical order, the species SHOREA POLITA is assigned the code SHOPOL0 (the last character is a zero, not the letter O) and SHOREA POLYSPERMA is coded as SHOPOL1.

This coding system allows for differentiation among 10 species that have the same first three letters in both the general and specific names.

If a different species list is required (e.g., for a non-tropical country), the species list must be coded according to the format as described above.

| SPC | SPP | FAM |
|---|---|---|
| SHOOVA1 | SHOREA OVATA | Dipterocarpaceae |
| SHOPAL0 | SHOREA PALEMBANICA | Dipterocarpaceae |
| SHOPAL1 | SHOREA PALOSAPIS | Dipterocarpaceae |
| SHOPAR0 | SHOREA PARVIFOLIA | Dipterocarpaceae |
| SHOPAU0 | SHOREA PAUCIFLORA | Dipterocarpaceae |
| SHOPEL0 | SHOREA PELTATA | Dipterocarpaceae |
| SHOPLA0 | SHOREA PLATYCARPA | Dipterocarpaceae |
| SHOPLA1 | SHOREA PLATYCLADOS | Dipterocarpaceae |
| SHOPOL0 | SHOREA POLITA | Dipterocarpaceae |
| SHOPOL1 | SHOREA POLYSPERMA | Dipterocarpaceae |
| SHORES0 | SHOREA RESINA-NIGRA | Dipterocarpaceae |
| SHORES1 | SHOREA RESINOSA | Dipterocarpaceae |
| SHOROB0 | SHOREA ROBUSTA | Dipterocarpaceae |
| SHOROX0 | SHOREA ROXBURGHII | Dipterocarpaceae |
| SHOSCR0 | SHOREA SCROBICULATA | Dipterocarpaceae |
| SHOSEL0 | SHOREA SELANICA | Dipterocarpaceae |
| SHOSEM0 | SHOREA SEMINIS | Dipterocarpaceae |

**Figure 15.4a Species list screen demonstrating coding system.**

### 15.4.1 Adding and editing species

Any changes to the species list must be made in the FGRID Coordinator Module. From the coordinator main menu (Fig. 15.3a), highlight the **Maintenance** option and press Enter. Highlight **Species List** in the Maintenance menu (Fig. 15.3b) and press Enter. The screen (Fig. 15.4.1a) is displayed.

The default is set to Q (quit). To exit and return to the Maintenance menu, press Enter. To add a new species to the list, type A. The cursor moves to the species code (SP CODE) field. Type in the seven-character code and complete the entry for the remaining fields. It is not essential that the local name be entered. The update field is bypassed and is automatically assigned a code 0 (zero). Refer to Section 17.1 for an explanation of the update field.

After the new species has been entered (Fig. 15.4.1b), the option of saving the entry is displayed. The default is set to D. Press Enter to discard the entry, return to the previous screen, and choose an option. To save the new entry, type S. The program returns to the previous screen (Fig. 15.4.1a).

To edit an existing species in the database, type E in the choice option in Figure 15.4.1a. The program prompts for the species code for editing. Type the seven-character code. Make the necessary changes. The update field should always be 1. See Section 17.1 for an explanation of the update field. After the changes are completed, continue to press Enter for all remaining fields, including the update field.

The option of saving the edited record is displayed. The default is set to D. Press Enter to discard the entry and return to the previous screen (Fig. 15.4.1a) and choose an option. To save the new entry, type S. The program returns to Figure 15.4.1b.

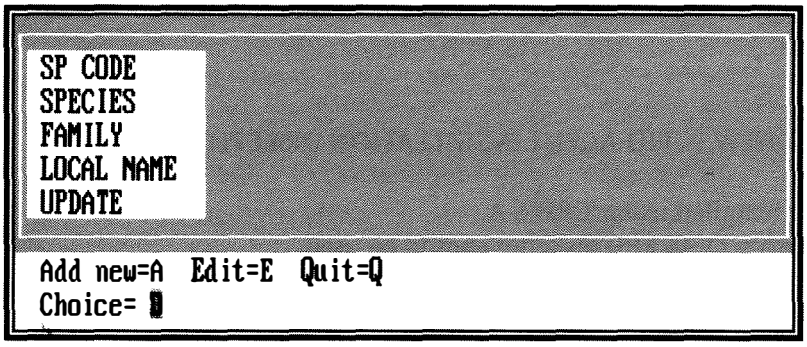



**Figure 15.4.1a Options to add or edit a species record.**

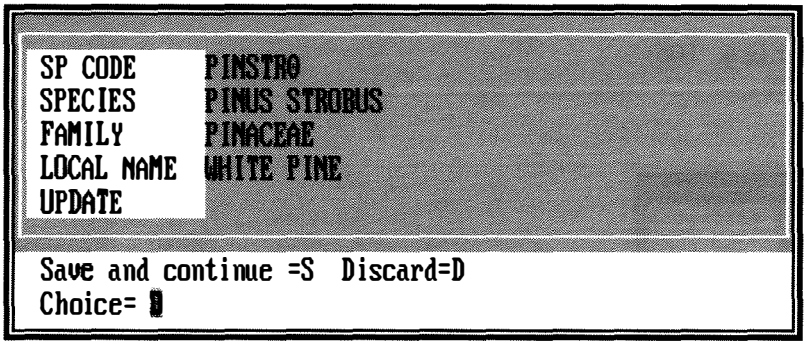



**Figure 15.4.1b Saving a new species entry.**

# 16 PREPARING FGRID USER INSTALLATION DISKETTES FOR A NEW AGENT

After the FGRID setup is completed, the coordinator can make diskettes for distribution to FGRID users. Depending on the intended function of the program the number of sets of diskettes may vary. For example, if a single user will use FGRID, only one set of diskettes would be required. However, if it will be used as a multi-user system, the number of sets of diskettes needed depends on the number of users identified in the network.

To make FGRID INSTALLATION diskettes, access the Coordinator Module by typing:

COOD at the DOS C:\COOD> prompt

From the menu, select the NEW AGENT option (Fig. 16.1a) and follow the screen instructions.

The screen displays:

*** GENERATE NEW FGRID AGENT INSTALLATION DISKETTES ***

FGRID will be installed using DRIVE A.
Only high-density (1.44 MB) diskettes should be used.
The program will prompt for diskettes depending on the size of the DATABASES in FGRID.
Ensure there are enough formatted diskettes.
Press any key to continue...

The program asks for the new agent identification number.

Agent number (e.g., T06)

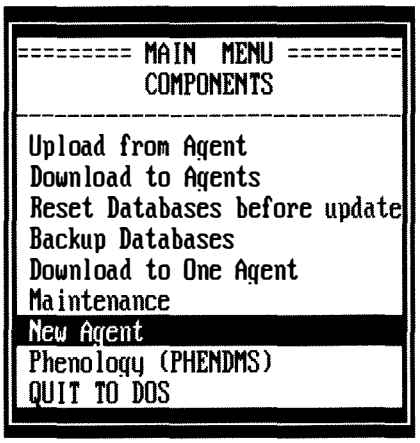



**Figure 16.1a** **Coordinator Module main menu.**

Type the three-digit code for the new agent. This code must correspond to one of the agent codes that should have been entered in the Agency List from the Maintenance menu.

The next line displayed is:

Agent category (e.g., A or B or C)

Type in agent category code A or B or C. This code identifies different options for access to information stored in FGRID for the users in the system.

A=access to network users' information including nursery production figures
B=access to network users' information but only their own nursery production figures
C=access to network users' information but no nursery production figures

If an agent code is entered that was not coded in the Agency List, the screen displays:

AGENT CODE NOT FOUND IN AGENCY FILE
UPDATE AGENCY FILE
Press any key to continue...

In this case, pressing any key will return you to the main menu. Make sure the new agent's identification code is entered in the Agency List in the Maintenance menu.

If the agent code matches one found in the Agency List, a list of file names will be displayed. The files are compressed and split into sizes that will fit on 1.44-MB diskettes.

When this process is finished, the screen displays:

Agent identification=T06
Label and insert blank FGRID INSTALLATION DISKETTE 1
Press any key to continue...

Insert the first diskette into drive A and press any key. The FGRID files will then be copied to the diskette. This will take a few moments. Do not touch the keyboard until the following message appears.

Label and insert blank FGRID INSTALLATION DISKETTE 2
Press any key to continue...

Continue with the procedure until all the installation diskettes are prepared and the screen displays:

FGRID ready for new agent installation
Please ensure all diskettes are labeled with
Agent code (e.g., M01) and diskette number
Press any key to continue...

Pressing any key will return you to the main menu screen.

After the last diskette is finished, the screen will remain blank for a few moments. During this time, all files created for the procedure are being deleted from the hard drive.

When FGRID is set up for the first time, and no data has been entered into the system by any agents, two or three diskettes will be required. However, if a new agent is identified after other agents have used the system, the number of diskettes needed will increase, depending on the size of the data sets in FGRID.

In the event that a diskette has bad sectors or insufficient space, the entire procedure must be repeated.

Only the agent who enters the data can access seed testing information. The coordinator does not have access to it, as it is never downloaded to the coordinator for the updating process.

The computer screen will now display a list of files that are being compressed and split into file sizes that will fit on 1.44-MB diskettes. Follow instructions on the screen and insert formatted 1.44-MB diskettes into drive A when requested to do so.

Label each diskette with:

Agent code (e.g., M01)
Agent name (e.g., Forest Department Peninsular Malaysia)
Diskette name: (e.g., FGRID Installation Diskette #1)

MAKE SURE THAT THE WRITE PROTECT TAB IS IN THE LOCKED POSITION ON EACH OF THE DISKETTES.

The same procedures must be repeated for each of the new agents identified in the Agency List of the MAINTENANCE menu.

FGRID Installation diskettes are now ready for distribution to identified agents.

In a multi-user environment, it may be necessary to add a new agent after the FGRID system has been set up and in use by other agents. In this case, the new agent will receive diskettes containing the combined data sets for all agents.

# 17 UPLOAD FROM AGENT

Periodically, data entered by each agent must be sent to the coordinator to merge the FGRID data into a combined or merged FGRID set. The coordinator establishes the time frame to do this, which may be every three or six months.

After copying their respective FGRID data to diskette, using the download to coordinator option in the FGRID main menu, each agent sends the diskettes(s) to the coordinator for updating. The coordinator then runs the upload from agent routine.

Select **Upload from Agent** in the main menu. The screen displays:

```
*** UPLOADING FROM AGENT ***
INSERT AGENT DISKETTE IN DRIVE A
```

The first agent's diskette is inserted into drive A. Press any key and the data is transferred to the coordinator's FGRID system. Continue to insert diskettes for the other agents when requested to do so. After the last agent's diskette is uploaded, the program returns you to the main menu.

## 17.1 Understanding the Data Transfer between Agent and Coordinator, and the Reset Database Before Update Option

When FGRID diskettes are installed for the first time, all the databases are blank.

As data are entered in the different registers (Resource, Seed, and Nursery), each record is assigned an update code. A new record is coded as 0 and a record that has been modified in the edit procedures is coded as 1. During the download to coordinator routine in the FGRID main menu, all data with codes 0 and 1 are copied to diskette and sent to the coordinator. The coordinator, in the Upload from Agent in the Coordinator Module copies the data sets from each agent into a master FGRID database. All data with update codes of 0 and 1 are transferred to this master database.

The coordinator then runs the **Download to Agents** routine. On the diskette(s) sent to each agent, each of the record update codes is changed to a 2. However, in the coordinator's FGRID master database, the record codes remain as either a 0 or 1. Each time the coordinator runs the Upload from Agent routine (after the first time), he/she must run the **Reset Databases before update** routine. This procedure changes all of the record update codes (0 or 1), in the master database, to 2. This routine was designed to prevent the duplication of records in the FGRID system.

When this option is selected, the screen will go blank for a few moments after which the main menu will be displayed. Do not press any keys while the screen is blank.

# 18 DOWNLOAD TO AGENTS

After the coordinator runs the Upload from Agent option, diskettes containing the updated and merged FGRID system must be prepared for each agent in the Agency List.

Highlight **Download to Agents** in the main menu and press Enter. The screen displays:

```
*** DOWN LOADING TO AGENT ***
AGENT IDENTIFICATION CODE=M01
LABEL AGENT CODE AND DATE ON BLANK DISKETTE
INSERT DISKETTE IN DRIVE A
Press any key to continue...
```

The agent identification code is retrieved from the Agency List and the first agent code is identified and displayed. Make sure to label a blank diskette with the agent code and date. Insert the diskette in drive A and press any key to continue the procedure.

A list of file names is displayed on the screen. These files contain the updated FGRID version. They are compressed and copied as a single PKZIP file.

When the file transfer is completed, the screen will display:

```
*** DOWNLOADING TO AGENT ***
AGENT IDENTIFICATION CODE=M02
LABEL AGENT CODE AND DATE ON BLANK DISKETTE
INSERT DISKETTE IN DRIVE A
Press any key to continue...
```

The same procedure is followed to prepare the update diskettes for the second agent. This process will continue until diskettes are prepared for each of the agents in the Agency List.

# 19 DOWNLOAD TO ONE AGENT

If an agent identified in the Coordinator Module loses their FGRID system because of a computer system failure, and they do not have a second hard disk D to retrieve the program, the coordinator can use this option to copy the FGRID master program and send it to the agent. It differs from the new agent option as it is not necessary to code the agent in the Maintenance menu and allocate an agent category (ABC).

Select **Download to One Agent**. The screen displays:

Agent Identification=M01
LABEL AGENT CODE AND DATE ON BLANK DISKETTE
INSERT DISKETTE IN DRIVE A
Press any key to continue...

Type in the agent code and ensure you have sufficient blank formatted diskettes for the procedure. A list of file names is displayed that are compressed into a zip file. The diskettes are then sent to the agent for re-installation.

# 20 BACKUP DATABASES

## 20.1 Introduction

The FGRID Coordinator Module is installed on your computer's hard disk C in a directory named COOD. During installation a subdirectory named COODFGR was created in hard disk D. A subdirectory was created in COODFGR named CFGBACK. It is in this directory that the backup procedure for the coordinator is maintained. The backup procedure is simple and fast and is transparent to the user. The Database Backup option should be executed after the coordinator runs the Upload from Agent option.

## 20.2 Backup Procedure

Highlight **Backup Databases** in the main menu and press Enter. The screen displays:

```
Backup=1      Retrieve=2      Exit=3
YOUR CHOICE 1–3 __
```

Type 3 to exit the procedure and return to the main menu.

To backup the FGRID system in the CFGBACK directory on the D drive, type 1. The backup is performed automatically.

Type 2 to copy the FGRID system from the D drive back to the C drive. The retrieval option is included in case the hard drive C crashes.

# 21 USING THE FGRID COORDINATOR PHENOLOGY OPTION

## 21.1 Introduction

Flowering assessments for phenology trees are described in Section 9. They are conducted by agents to monitor the state of flower or seed development and the density of flowering based on species and geographical location. With this information, forest managers responsible for setting seed collection targets are able to predict where, when, and for which species seed collection efforts should be concentrated.

The flowering assessments by agents are copied to a diskette, as described in Section 9.8, and sent to the coordinator who is responsible for analyzing the data. Summary ouput, in the form of six tables based on flowering status (stage of development and density), species, and location are returned to the respective agents.

## 21.2 Accessing the PHENDMS Coordinator Menu

Highlight **Phenology (PHENDMS)** in the FGRID Coordinator main menu (Fig. 21.2a) and press Enter. The PHENDMS (Phenology Database Management System) Coordinator menu (Fig. 21.2b) is displayed.

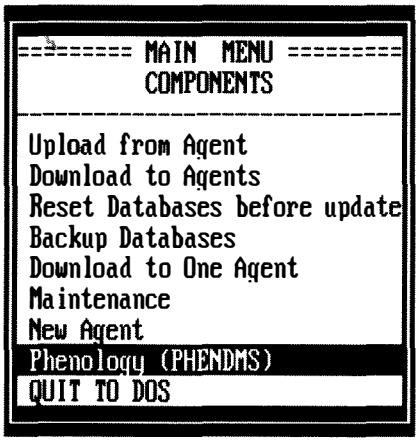



**Figure 21.2a Coordinator Module main menu.**

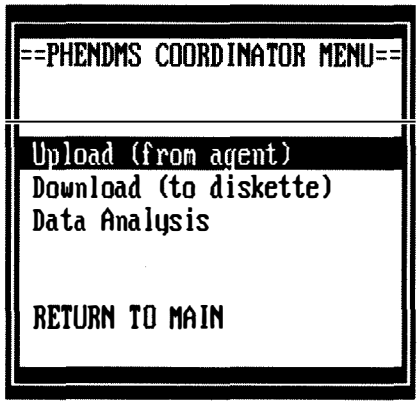



**Figure 21.2b Phenology (PHENDMS) database management system options.**

## 21.3 Upload (from Agent)

The procedure for uploading data from agent to coordinator is different for a single-user system and a multi-user system.

### 21.3.1 Upload (from agent): single-user system

Highlight **Upload (from agent)** in the PHENDMS Coordinator menu and press Enter. The screen displays:

AGENT DATA FILE (CM000000=QUIT) CM000000

To exit and return to the previous screen, press Enter. To continue the procedure, type the agent data file name identified on the diskette. Three files must exist on the diskette. For example, if agent M01 conducted a flower assessment in December, 1996, the file names would be: CM011296, RM011296, and TM011296. See explanation for data file names in Section 9.8 of this manual.

After the agent data file is typed, the screen displays:

INSERT AGENT DISKETTE IN DRIVE A

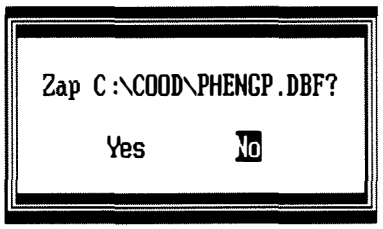
Insert the diskette in your computer's A drive and press Enter. The following message is displayed.

*** DIFFERENT DATE IDENTIFIED FOR THIS DISKETTE ***

N=NEW MONTHLY DATA SET
C=CONTINUE WITH THIS DISKETTE
D=DISCARD THIS DISKETTE AND EXIT
CHOICE=D

The default is set to D. If Enter is pressed, the program will return you to the PHENDMS Coordinator menu.

Since there is only one agent diskette, select N. The information on the diskette is copied to a file named PHENGP.DBF. This database file is necessary to run the data analysis program. If there are old data in this file, the following message is displayed.




Use the arrow key to highlight **Yes** and press Enter. This will delete the old data from the database file.

### 21.3.2 Upload (from agent): multi-user system

Highlight **Upload (from agent)** in the PHENDMS Coordinator menu and press Enter. The screen displays:

AGENT DATA FILE (CM000000=QUIT) CM000000

To exit and return to the previous screen, press Enter. To continue the procedure, type the agent data file name identified on the diskette. Three files must exist on the diskette. For example, if agent M01 conducted a flower assessment in December 1996, the file names would be CM011296, RM011296, and TM011296. See explanation for data file names in Section 9.8.

After the agent data file is typed, the screen displays:

INSERT AGENT DISKETTE IN DRIVE A

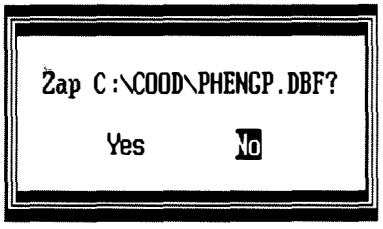
Insert the diskette in your computer's A drive and press Enter. The following message is displayed.

*** DIFFERENT DATE IDENTIFIED FOR THIS DISKETTE ***

N=NEW MONTHLY DATA SET
C=CONTINUE WITH THIS DISKETTE
D=DISCARD THIS DISKETTE AND EXIT
CHOICE=D

The default is set to D. If Enter is pressed, the program will return you to the PHENDMS Coordinator menu.

Since there are several agent diskettes, the procedure is slightly different from that of a single-user system. Select N to indicate that a new set of assessment data is to be uploaded. The information on the diskette is copied to a file named PHENGP.DBF. This database file is necessary to run the data analysis program. If there are old data in this file, the following message is displayed.




Use the arrow key to highlight **Yes** and press Enter. This will delete the old data from the database file.

Data from the first agent's diskette are then copied to the PHENGP.DBF file and the program returns to the PHENDMS Coordinator menu. Continue to run the **Upload (from agent)** option for each of the agent diskettes. If the date of observation is the same as that on the first agent's diskette, the data will be copied and appended to existing data in the PHENGP.DBF file. However, if the assessment date on one or more of the agent diskettes does not match the date of previous agents, the screen displays:

*** DIFFERENT DATE IDENTIFIED FOR THIS DISKETTE ***

N=NEW MONTHLY DATA SET
C=CONTINUE WITH THIS DISKETTE
D=DISCARD THIS DISKETTE AND EXIT
CHOICE=D

In this case, select C to continue uploading the information that will be appended to the existing data in the PHENGP.DBF file. Do not select N and zap the PHENGP.DBF file, or all the

data uploaded from each of the previous agents will be deleted. If you are not sure whether to continue or not, select D to exit the procedure and check the diskette to determine if the data should be uploaded.

## 21.4 Download (to Diskette)

After the coordinator uploads the agent diskettes, the **Download (to diskette)** routine is executed. This option copies the data to a diskette that is used in the data analysis option.

Highlight **Download (to diskette)** in the PHENDMS Coordinator menu and press Enter. The screen displays:

```
FILE NAME OF CURRENT MONTH OBSERVATION DATE IS P____
INSERT DISKETTE IN DRIVE A
CONTINUE WITH DATA COPY? (Y/N)
```

The program generates the file name of the current month's flower assessment. It is based on the month and year of the observation that was previously uploaded from agent diskettes. For example, if a flower assessment was conducted in December 1996, the file name created would be P1296.

Insert a blank diskette in drive A and type Y to copy the current data set from the COOD directory to a file on the diskette. This diskette is used for the data analysis. To exit this procedure and return to the previous menu, type N and press Enter.

Make sure to label the diskette with the file name (e.g., P1296).

After the data copy is completed, the program returns to the PHENDMS Coordinator menu.

## 21.5 Data Analysis

The flowering assessment data (prepared in Section 21.4) is now ready to be analyzed. Highlight **Data Analysis** in the PHENDMS Coordinator menu and press Enter. Figure 21.5a displays the analysis options.

Highlight any of the six analysis options. The output is directed to a printer.

### 21.5.1 Summary output by species

For each species (in alphabetical order), the output summarizes the number of phenology trees by state/province and location, and the flowering status for codes 1 to 9 for the current assessment.

For the species DIPGRA1 (*Dipterocarpus grandiflorus*), six trees were assessed for flowering development. They were all in the state of Selangor. Three phenology trees were selected at location Semangkok 058 and three were selected at location Semangkok 113. The state and locations were identified from the Resource Register.

Flowering development for this species is at a very early stage (only codes 1 to 3). Further observations will be required.

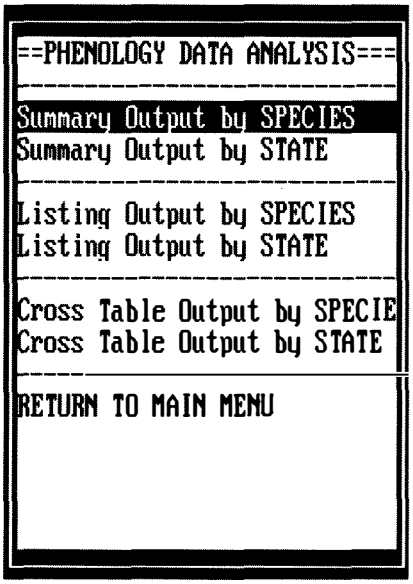



**Figure 21.5a Options for phenology data analysis.**

PHENOLOGY OBSERVATION DATA SUMMARY FOR (MONTH)

| | CODE1 | CODE2 | CODE3 | CODE4 | CODE5 | CODE6 | CODE7 | CODE8 | CODE9 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| SPECIES: DIPGRA1 | | | | | | | | | | |
| STATE: SELANGOR | | | | | | | | | | |
| SEMANGKOK 058 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| SEMANGKOK 113 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| SELANGOR | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| DIPGRA1 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |

### 21.5.2 Summary output by state

For each state and location within the state, the number of phenology trees (by species) is summarized according to the flower development codes. For example, DIPGRA1 (*Dipterocarpus grandiflorus)* has three phenology trees at Semangkok 058. Two were assessed as code 2 and one was assessed at code 3. At location Semangkok 113, three trees were assessed for code 1. Therefore, the observation indicates that flower development is still at an early stage. However, flower development for SHOLEP1 (*Shorea leprosula*) is reaching advanced stages at both locations.

PHENOLOGY OBSERVATION DATA SUMMARY FOR (MONTH)

| | CODE1 | CODE2 | CODE3 | CODE4 | CODE5 | CODE6 | CODE7 | CODE8 | CODE9 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| STATE: SELANGOR | | | | | | | | | | |
| STATE: SELANGOR<br>LOCATION: SEMANGKOK 058 | | | | | | | | | | |
| DIPGRA1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| KOOMAL0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| SHOACU0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| SHOLEP1 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 8 |
| SHOPAR1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 5 | 6 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 19 |
| LOCATION: SEMANGKOK 113 | | | | | | | | | | |
| DIPGRA1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| KOOMAL0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| SHOLEP1 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 7 |
| TOTAL | 3 | 5 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 15 |
| TOTAL STATE | 8 | 11 | 0 | 0 | 8 | 7 | 0 | 0 | 0 | 34 |
| TOTAL ALL STATES | 8 | 11 | 0 | 0 | 8 | 7 | 0 | 0 | 0 | 34 |

### 21.5.3 Listing output by species

For each species, by state and location, the phenology tree number, local identification (if any), flowering status, density of flowering, and date of assessment is printed.

PHENOLOGY OBSERVATION DATA LISTING FOR (MONTH)

| | PHEN TREE ID | LOCAL ID | FLOWERING STATUS | FLOWERING DENSITY | DATE OBSERVED |
|---|---|---|---|---|---|
| SPECIES: DIPGRA1 | | | | | |
| STATE: SELANGOR<br>LOCATION: SEMANGKOK 058 | | | | | |
| DIPGRA1 | PM0100024 | | 2 | 2 | 01/01/96 |
| DIPGRA1 | PM0100023 | | 2 | 2 | 01/01/96 |
| DIPGRA1 | PM0100031 | | 0 | 0 | 01/01/96 |
| LOCATION: SEMANGKOK 113 | | | | | |
| DIPGRA1 | PM0100015 | | 1 | 1 | 01/01/96 |
| DIPGRA1 | PM0100008 | | 1 | 1 | 01/01/96 |

### 21.5.4 Listing output by state

The output information is the same as that for the listing output by species. The only difference is that the output is presented by state and by location within state.

PHENOLOGY OBSERVATION DATA LISTING FOR (MONTH)

| | PHEN TREE ID | LOCAL ID | FLOWERING STATUS | FLOWERING DENSITY | DATE OBSERVED |
|---|---|---|---|---|---|
| STATE: SELANGOR | | | | | |
| LOCATION: SEMANGKOK 058 | | | | | |
| DIPGRA1 | PM0100023 | | 2 | 2 | 01/01/96 |
| DIPGRA1 | PM0100024 | | 2 | 2 | 01/01/96 |
| DIPGRA1 | PM0100031 | | 0 | 0 | 01/01/96 |
| KOOMAL0 | PM0100028 | | 2 | 2 | 01/01/96 |
| KOOMAL0 | PM0100026 | | 2 | 2 | 01/01/96 |
| SHOACU0 | PM0100020 | | 2 | 2 | 01/01/96 |
| LOCATION: SEMANGKOK 113 | | | | | |
| KOOMAL0 | PM0100010 | | 3 | 4 | 01/01/96 |
| KOOMAL0 | PM0100009 | | 2 | 4 | 01/01/96 |
| SHOPAR1 | PM0100014 | | 5 | 5 | 01/01/96 |
| SHOCUR0 | PM0100001 | | 4 | 1 | 01/01/96 |

### 21.5.5 Cross table output by species

The output summarizes, by species, the number of phenology trees that were assessed with flowering status codes of 7 and 8 and the distribution of these trees according to the five density codes. In this case, DIPGRA1 (*Dipterocarpus grandiflorus*) appears to have a heavy seed crop in an advanced stage of development at the two locations. However, for KOOMAL0 (*Koompassia malaccensis*), the number of phenology trees assessed in the low-density categories indicate a light seed crop.

FLOWERING STATUS 7 & 8 DENSITY SUMMARY FOR (MONTH)

| | FLOWERING STATUS 7 | | | | | FLOWERING STATUS 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DEN1 | DEN2 | DEN3 | DEN4 | DEN5 | DEN1 | DEN2 | DEN3 | DEN4 | DEN5 |
| SPECIES: DIPGRA1 | | | | | | | | | | |
| STATE: SELANGOR | | | | | | | | | | |
| SEMANGKOK 058 | 0 | 0 | 2 | 4 | 3 | 0 | 0 | 0 | 5 | 4 |
| SEMANGKOK 113 | 0 | 0 | 1 | 5 | 2 | 0 | 0 | 4 | 4 | 3 |
| SPECIES: KOOMAL0 | | | | | | | | | | |
| STATE: SELANGOR | | | | | | | | | | |
| SEMANGKOK 058 | 3 | 0 | 3 | 0 | 0 | 3 | 2 | 0 | 0 | 0 |
| SEMANGKOK 113 | 4 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 |

### 21.5.6 Cross table outout by state

The summary information is identical to the Cross table for species except that it is presented by state and location within state.

FLOWERING STATUS 7 & 8 DENSITY SUMMARY FOR (MONTH)

| | FLOWERING STATUS 7 | | | | | FLOWERING STATUS 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DEN1 | DEN2 | DEN3 | DEN4 | DEN5 | DEN1 | DEN2 | DEN3 | DEN4 | DEN5 |
| STATE: SELANGOR | | | | | | | | | | |
| LOCATION: SEMANGKOK 058 | | | | | | | | | | |
| DIPGRA1 | 0 | 0 | 2 | 4 | 3 | 0 | 0 | 0 | 5 | 4 |
| KOOMAL0 | 3 | 0 | 3 | 0 | 0 | 3 | 2 | 0 | 0 | 0 |
| LOCATION: SEMANGKOK 113 | | | | | | | | | | |
| DIPGRA1 | 0 | 0 | 1 | 5 | 2 | 0 | 0 | 4 | 4 | 3 |
| KOOMAL0 | 4 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 |

# 22 THE FGRID DEMONSTRATION PROGRAM (FGRIDEMO)

## 22.1 Introduction

The FGRID demonstration program (FGRIDEMO) is provided as a training tool to be used before the full FGRID program is installed. It contains the FGRID User Module that is used for the storage and retrieval of information in the resource, seed, nursery, and phenology databases. The Coordinator Module is not included in the demonstration program.

By using the FGRIDEMO program, you will become familiar with procedures for adding and editing records in all the databases. You will be able to conduct searches and produce output from the query and reporting functions. A Help list, accessed by pressing the F1 key, is included to define the coded fields used in the system.

The FGRIDEMO program contains a small sample of data entries in each of the four databases. After practicing with these data sets, try entering new information by following the instructions in the respective sections of the manual. Make as many mistakes as you like. At any time, you can re-install FGRIDEMO, which contains the original data sets, by following the installation instructions.

## 22.2 Installation

To install the FGRID demonstration program (FGRIDEMO), return your computer's hard disk drive to the C:\> prompt.

Insert the diskette labeled FGRIDEMO INSTALLATION DISKETTE #1 into drive A and type:

A:FDEMO and press Enter

The screen displays:

```
1 file(s) copied
1 file(s) copied
1 file(s) copied
1 file(s) copied

Insert FGRIDEMO INSTALLATION DISKETTE 2 in drive A
Press any key to continue...
```

Continue with the installation and insert the FGRIDEMO INSTALLATION DISKETTE #2 into drive A and press any key. The screen remains blank for a few moments and the message "1 file(s) copied" is displayed. These five files include the FGRID system in a compressed or zipped format. The screen then displays a list of FGRID program, database, and list files (Fig. 22.2a) that are being unzipped from compressed format to the FGRIDEMO directory.

Midway during the display of file names, scrolling stops at:

PKUNZIP: Warning! file: PKUNZIP.EXE already exists. Overwrite? (Y/N)

PKUNZIP is the program used to restore the FGRID files to their full size. The file is insignificant to the operation of the FGRID system.

Type N and the installation is completed.

The DOS prompt is displayed: C:\FGRIDEMO>.

After the C:\FGRIDEMO> prompt type:

FGRIDEMO and press Enter

The FGRID main menu (Fig. 22.2b) is displayed and the program is ready for use.

To access the FGRIDEMO program at any time, return your computer to the root directory C:\>. Change the directory to FGRIDEMO by typing:

CD\FGRIDEMO and press Enter

At the C:\FGRIDEMO> prompt, type:

FGRIDEMO and press Enter

From the main menu, you may access and practice using all the options except Upload (from coordinator) and Database Backup.

```
PKUNZIP (R)    FAST!    Extract Utility    Version 1.1    03-15-90
Copr. 1989-1990 PKWARE Inc. All Rights Reserved. PKUNZIP/h for help
PKUNZIP Reg. U.S. Pat. and Tm. Off.

Searching ZIP: FGRIDA.ZIP
  Exploding: FDISP.EXE
  Exploding: FGRID.EXE
  Exploding: PKZIP.EXE
  Exploding: FGRIDB.PCX
  Exploding: NURBANK.DBF
  Exploding: NURBANK.MDX
UnShrinking: NURDIST.DBF
  Exploding: NURDIST.MDX
  Exploding: NURSERY.DBF
  Exploding: NURSERY.MDX
  Exploding: RESOURCE.DBF
  Exploding: RESOURCE.DBT
  Exploding: RESOURCE.MDX
  Exploding: SEED.DBF
  Exploding: SEED.MDX
  Exploding: SEEDBANK.DBF
  Exploding: SEEDBANK.MDX
UnShrinking: SEEDIST.DBF
  Exploding: SEEDIST.MDX
PKUNZIP: Warning! file: PKUNZIP.EXE already exists.  Overwrite (y/n)?
```

**Figure 22.2a File listing during FGRIDEMO installation.**

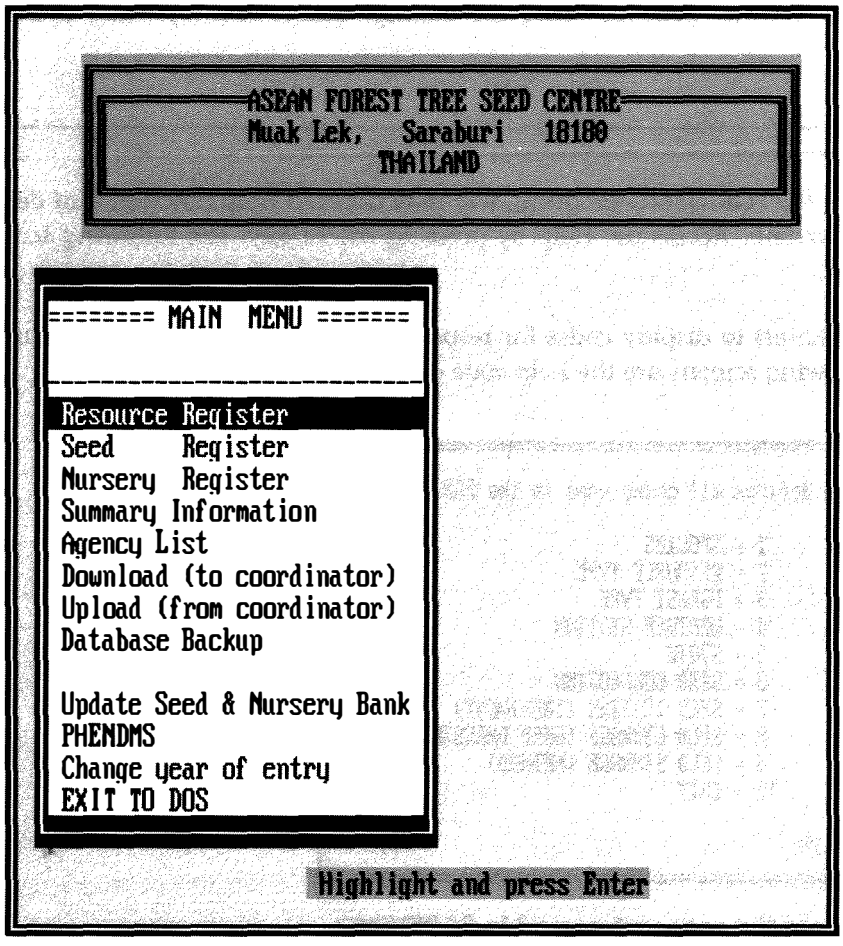



**Figure 22.2b FGRID main menu.**

## 22.3 FGRIDEMO Database Records

Each of the four databases includes a small data set.

| | |
|---|---|
| Resource Register: | 28 records: 14 for agent M01 and 14 for agent M02 |
| | M010000001 to M010000014<br>M020000001 to M020000014 |
| Seed Register: | 40 records: 20 for agent M01 and 20 for agent M02 |
| | M0100001/95 to M0100011/95<br>M0100001/96 to M0100009/96<br>M0200001/95 to M0100011/95<br>M0200001/96 to M0200009/96 |
| Nursery Register: | 4 records for agent M01 |
| | M01/95/00001 to M01/95/00004 |
| Phenology Register: | 32 records for agent M01 |
| | PM0100001 to PM0100032 |

Before adding new records, practice using the editing, query, and reporting options from respective menus.

## 22.4 Help Lists

At any time during the FGRIDEMO program, you may access a Help function that defines the codes used in the system. Access the Help by pressing the F1 key. The following screen (Fig. 22.4a) is displayed.

Type 1 to 9 (press Enter) to display codes for respective categories. Select 10 to return to the program. The following screens are the help code categories used in FGRIDEMO.

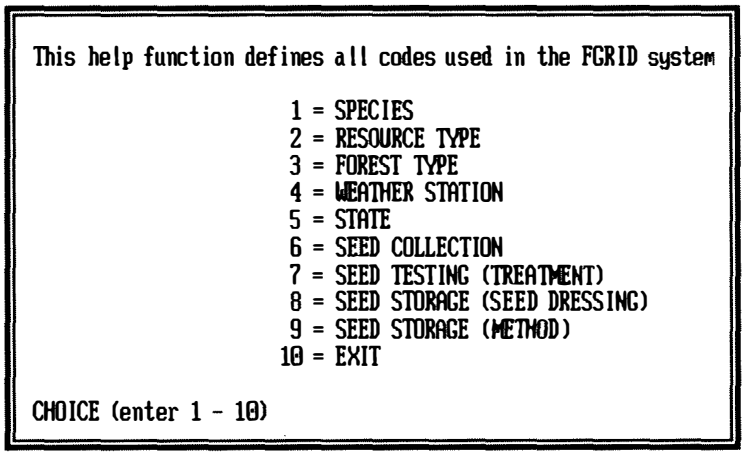



**Figure 22.4a Help list categories used in FGRIDEMO.**

### Species

When species is selected, the screen displays:

> Species code (or ENDSPP to exit from Help)

To exit the species Help, type ENDSPP and the program returns you to the main Help screen. Select 10 to return to the program.

If you want to find a species in the list and you know the species code, type the seven-character code. For example, enter the code DIPGRA1. The screen displays:

| Record # | SPC | SPP |
|---|---|---|
| 1691 | DIPGRA1 | DIPTEROCARPUS GRANDIFLORUS |

If you know that the species is a Dipterocarp, but you do not know the code, enter the first three letters for the general name of the species. For example, type DIP and press Enter. The screen (Fig. 22.4.b) displays all the species beginning with DIP.

Scroll through the list until the desired species is found.

```
Record#  SPC      SPP
   1668  DIPACU0 DIPTEROCARPUS ACUTANGLUS
   1669  DIPALA0 DIPTEROCARPUS ALATUS
   1670  DIPAPT0 DIPTEROCARPUS APTERUS
   1671  DIPBAN0 DIPLANTHERA BANCANA
   1672  DIPBAU0 DIPTEROCARPUS BAUDII
   1673  DIPBEC0 DIPLOSPORA BECCARIANA
   1674  DIPCAU0 DIPTEROCARPUS CAUDATUS
   1675  DIPCHA0 DIPTEROCARPUS CHARTACEUS
   1676  DIPCON0 DIPTEROCARPUS CONCAVUS
   1677  DIPCOR0 DIPLYCOSIA CORDIIFOLIA
   1678  DIPCOR1 DIPTEROCARPUS CORIACEUS
   1679  DIPCOR2 DIPTEROCARPUS CORNUTUS
   1680  DIPCOS0 DIPTEROCARPUS COSTATUS
   1681  DIPCOS1 DIPTEROCARPUS COSTULATUS
   1682  DIPCRI0 DIPTEROCARPUS CRINITUS
   1683  DIPDAL0 DIPLOSPORA DALZELLII
   1684  DIPDYE0 DIPTEROCARPUS DYERI
   1685  DIPELL0 DIPLYCOSIA ELLIPTICA
   1686  DIPELO0 DIPTEROCARPUS ELONGATUS
   1687  DIPERY0 DIPLYCOSIA ERYTHRINA
   1688  DIPEUR0 DIPTEROCARPUS EURYNCHUS
Press any key to continue...
```

**Figure 22.4b Species help list.**

### Resource

The resource type Help list (Fig. 22.4c) contains 16 codes. These codes are used in the Resource Register.

```
RESTY RESNAME
    1 NATURAL FOREST
    2 LOCAL PLANTATION
    3 EXOTIC PLANTATION
    4 SPECIES TRIAL PLOTS
    5 PROVENANCE TRIAL PLOT
    6 PROGENY TRIAL PLOT
    7 SITE MATCHING PLOTS
    8 GROWTH AND YIELD PLOT
    9 SAMPLE PLOTS
   10 PLUS TREE PLOT
   11 SEED PRODUCTION AREA
   12 SEED ORCHARD
   13 CLONAL ORCHARD
   14 VIRGIN JUNGLE
   15 WATER CATCHMENT
   16 FOREST PARK
```

**Figure 22.4c Resource type help list.**

### Forest type

The forest type Help list (Fig. 22.4d) contains 13 codes. These codes are used in the Resource Register.


**Figure 22.4d** **Forest type help list.**

### Weather station

This Help list (Fig. 22.4e) contains one code. Weather station codes are used in the Resource Register.


**Figure 22.4e** **Weather station help list.**

### State

The state Help list (Fig. 22.4f) contains 13 codes. State codes are used in the Resource Register.


**Figure 22.4f** **State/province help list.**

### Seed collection

The Help list (Fig. 22.4g) contains nine codes for eight data fields used in the Seed Register for Collection.

| CODE | ASP | STAND | STANDEN | ESTB | POLLIN | COLMETH | DRYING | EXTRACT |
|---|---|---|---|---|---|---|---|---|
| 1 | N | U J R | Group | Young | Open | Crown | Shade | Manual |
| 2 | NE | Natural | Open | Matured | Control | Ground | Sun | Semi mech |
| 3 | E | Logged | Thin | O/mature | Poly X | Trap | Kiln | Mech |
| 4 | SE | Plantation | Dense | | | | Fan | None |
| 5 | S | Seed prod area | | | | | | |
| 6 | SW | Seed orchard | | | | | | |
| 7 | W | Cl&Seed orch. | | | | | | |
| 8 | NW | Road side | | | | | | |
| 9 | | Garden | | | | | | |

**Figure 22.4g Seed collection help list.**

### Seed testing (treatment)

This Help list (Fig. 22.4h) contains five codes used in the Seed Register for Seed testing.

| CODE | TREAT |
|---|---|
| 1 | No treatment |
| 2 | Soak for 2 hours |
| 3 | Soak for 24 hours |
| 4 | Boil for 1 hour and soak for 24 hours |
| 5 | Soak in HCL (2N) for 5 min and 24 hours in water |

**Figure 22.4h Seed testing (treatment) help list.**

### Seed storage (dressing)

This Help list (Fig. 22.4i) contains two codes used in the Seed Register for Collection.

| CODE | DRESSING |
|---|---|
| 1 | 5% SOL H2O2 |
| 2 | FUNGICIDE |

**Figure 22.4i Seed storage (dressing) help list.**

### Seed storage (method)

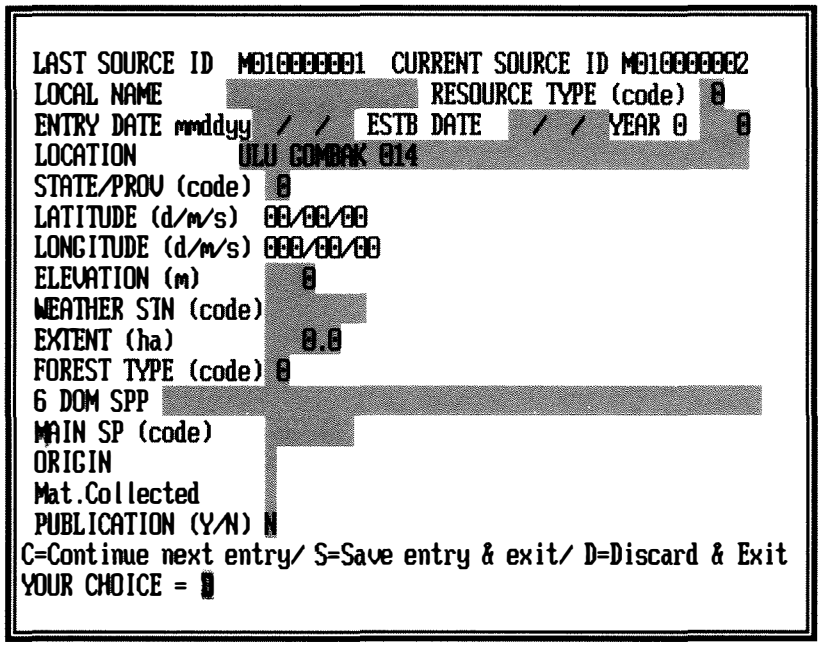
This Help list (Fig. 22.4j) contains three codes used in the Seed Register for Collection.


**Figure 22.4j** **Seed storage (method) help list.**

# APPENDIX 1
# FGRID CODES AND DEFINITIONS

The codes defined in this appendix are related to the Resource and Seed registers. All other codes used are defined in respective sections of the manual.

**RESOURCE REGISTER**




Source ID — The identification code allocated to each entry in the database. It consists of a 10-digit alphanumeric code that identifies the agent entering the data and a sequential number for each resource ranging from 1 to 9 999 999. Although not probable, almost 10 million records can be entered. The first three spaces for agent must begin with a letter (e.g., M=Malaysia) and a two digit number, 01 to 99, to complete the identity of the agent.

Local name — Field length: 15
A unique name given to a resource,e.g., seed production area managed by forestry headquarters: FDHQ SPA1.

Resource type — Field length: 2
A number from 1 to 99 representing the resource type category. Codes are established in the Coordinator Module.

Entry date — The date the resource record is entered into the database. The order month/day/year must be followed or the entry will not be accepted.

| | |
|---|---|
| Estb date | The date the resource was established. The order month/day/year must be followed or the entry will not be accepted. |
| Year 0 | Field length: 4<br>Represents the year an area was logged that contains the resource. It can be used to plan future logging activities. If this date is unknown, enter 9999. |
| Location | Field length: 40<br>A code established to identify the location of the resource to the smallest geographical area. For FGRID to be used as a national system for a country, the code should be standardized. |
| State/prov | Field length: 2<br>A number code to identify state or province in which the resource is located. A total of 99 codes is available. Codes are established in the Coordinator Module. |
| Latitude | Used to identify precise location of resource. Enter data in degrees/minutes/seconds for the center point of the resource. A GPS would provide quick and accurate position. |
| Longitude | Same as latitude. |
| Elevation | Field length: 4<br>Land elevation of resource measured in metres. The field allows for elevations up to 9,999 metres. |
| Weather stn | Field length: 8<br>A code used to identify the nearest weather station to the resource. Codes are established in the Coordinator Module. |
| Extent | Field length: 5<br>Area in hectares of the resource. The maximum area is 9,999.9 hectares. One decimal place is allocated for resources with a small area such as a seed orchard. |
| Forest type | Field length: 2<br>A code used to identify the forest type in which the resource is located. A total of 99 codes is available. Codes are established in the Coordinator Module. |
| 6 dom spp | Field length: 42<br>Often a resource contains several dominant species. This field allows the entry of six dominant species located in a resource. Codes are established in the Coordinator Module. |
| Main sp | Field length: 7<br>The main species of interest in a resource. Codes are established in the Coordinator Module. |

Origin

Field length: 1
Identifies the origin of the resource. Codes ranging from 1 to 8 are used to identify the origin as 1=natural; 2=seed; 3=clone; 4=wilding; 5=natural plus seed; 6=natural plus wilding; 7=natural plus seed plus wilding; 8=seed plus wilding. The codes are displayed on the data entry and data edit screens when the field is selected. They cannot be changed.

Mat. collected

Field length: 1
A code used to indicate if vegetative material has been collected from the resource. Codes include: 1=seed; 2=clones; 3=wildings; 4=seed plus clones; 5=seed plus wildings; 6=clones plus wildings; 7=seed plus clones plus wildings. The codes are displayed on the data entry and data edit screens when the field is selected. They cannot be changed.

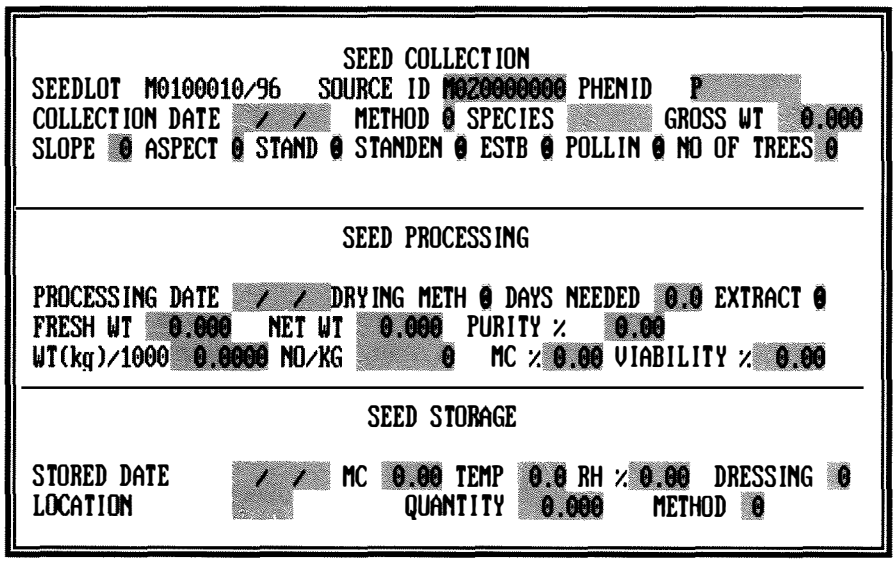
Publication

Field length: 1
A yes or no response indicating whether or not information has been published on the resource.

Note (memo)

Field length: unlimited text
Used to provide additional information related to the resource. Although pages of text can be entered here, it is advisable to keep the memo as brief as possible to minimize database size.

## SEED REGISTER




### Seed collection

Seedlot

A unique number assigned to each seedlot collected. The first three spaces indicate the agent code. The next 5 digits are consecutive numbers from 1 to 99,999 and the / plus two digits represent the year of collection. Therefore, each agent using FGRID can enter up to 99,999 seedlots each year. The seedlot number is generated by the program and cannot be changed.

| | |
|---|---|
| Source id | Field length: 10<br><br>A source identification code must be entered to identify the resource from which seed is collected. It is advisable to maintain a hard copy of the Resource Register for this reference code. |
| Phenid | Field length: 9<br>In the phenology (PHENDMS) database, information on selected or plus trees is maintained. These trees are often used to forecast seed crop production. If seed is collected from the plus tree a phenology code identifying the tree should be entered. |
| Collection date | The date seed is collected. It must be entered as month/day/year. |
| Method | Field length: 1<br>Method of collection. Codes are established in the Coordinator Module. |
| Species | Field length: 7<br>A seven space alpha numeric code to identify each species in the FGRID system. Codes are established in the Coordinator Module. |
| Gross wt | Field length: 6<br>Total weight of seed collected including debris (leaves, branches) measured in kilograms. Three decimal places are allowed for small seed collections. |
| Slope | Field length: 2<br>Estimate in percentage of hill gradient of seed collection site. |
| Aspect | Field length: 1<br>Normally one of eight choices: north; northeast; east; southeast; south; southwest; west; northwest. Codes are established in the Coordinator Module. |
| Stand | Field length: 1<br>Indicates the nature of the stand from which seed is collected. Examples include natural forest, logged area, roadside, plantation, etc. Codes are established in the Coordinator Module. |
| Standen | Field length: 1<br>Describes the density of trees at the seed collection site. Examples include open, thin, dense, group. Codes are established in the Coordinator Module. |
| Estb | Field length: 1<br>Describes the general age of the trees in broad categories such as young, mature, over-mature. Codes are established in the Coordinator Module. |
| Pollin | Field length: 1<br>Describes the pollination mechanism for the seed collection. Examples include open pollination and controlled pollination. Codes are established in the Coordinator Module. |

No of trees

Field length: 2
The number of trees from which seed is collected as one seedlot. Seedlots can range from one tree (single tree collection) to 99 trees (bulk collection).

**Seed processing**

Processing date

The date when the seed is processed. It must be entered as month/day/year.

Drying method

Field length: 1
Method used to dry seed during processing. Codes are established in Coordinator Module.

Days needed

Field length: 3
The total number of days for the seed drying process. One decimal place is included to represent hours, if necessary.

Extract

Field length: 1
The extraction method used during seed processing. Codes are established in the Coordinator Module.

Fresh wt

Field length: 6
Total seed weight after the extraction process (removal of debris, branches, leaves) measured in kilograms. Three decimal places are allowed for small seed weights.

Net wt

Field length: 6
The final weight of the seedlot prior to storage or distribution. It is determined after small debris (resin) and empty seed are removed. Three decimal places are allowed for small seed weights.

Purity

Field length: 4
The percentage of seed in relation to total content of seedlot including any remaining debris. Maximum purity is 99.99 percent.

Wt(kg)/1000

Field length: 7
The weight of 1000 seed measured in kilograms. Four decimal places are allowed for small seed weights.

No/kg

Field length: 8
The number of seed in one kilogram. Maximum number of seed per kilogram is limited to 99,999,999.

MC%

Field length: 4
Moisture content of seed, measured in percent, prior to storage or distribution.

Viability %

Field length: 5
The percentage of filled seed in the seedlot. Viability is determined using various techniques such the cutting or floating method.

**Seed storage**

| | |
|---|---|
| Stored date | The date when seed is placed in a storage environment. It must be entered as month/day/year. |
| MC | Field length: 4<br>Moisture content of seed, measured in percent, at the time of storage. |
| Temp | Field length: 3<br>Temperature, measured in degrees centigrade, in the storage environment. |
| RH% | Field length: 4<br>Relative humidity, measured in degrees centigrade, in the storage environment. |
| Dressing | Field length: 2<br>Treatment of seed to prevent spoilage. For example, seed may be treated with a fungicide while in storage. Codes are established in the Coordinator Module. |
| Location | Field length: 5<br>Identifies the location of the seedlot in the seed storage environment. Commonly, seed storage units are divided with shelving into rows and columns, which facilitates coding locations. |
| Quantity | Field length: 6<br>The weight of the seedlot, measured in kilograms. Three decimal places are allowed for small seedlots and/or small seed. |
| Method | Field length: 2<br>Indicates the container type in which seed is stored. Codes are established in the Coordinator Module. |