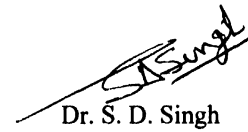
CERTIFICATE

This is to certify that the project work entitled "Quarantine Information System (QIS)" using Visual Basic 6.0 in Plant Quarantine Unit submitted in partial fulfillment for the award of the degree of Post Graduate Course in Computer Applications to CMC R&D Centre is a bonafide work carried out by Mr. Venkata Hari Krishna G. and Mr. A. Mohan Shanti Swarup Under my guidance and supervision.

The results embodied in this dissertation have not been submitted to any other university or institution for the award of any degree or diploma.



Dr. S. D. Singh
Senior Scientist
Cereals Pathology
GREP, ICRISAT
Patancheru, 502 324
Andhra Pradesh
India

ACKNOWLEDGMENTS

We express our deep sense of gratitude to Dr. S.D.Singh, Senior Scientist, Cereal Pathology, ICRISAT, Patancheru for his guidance, supervision, and valuable suggestions during the project work and keen interest in finalization of this report.

We are grateful to Mr. Shaik Babu, Mr. Surender, Mr. Prasad Rao, Mr. Murali and Mr. Girish, Plant Quarantine Unit, for their cooperation and encouragement for valuable suggestions and help in finalization of this project.

We are thankful to Dr. B. Diwakar, Head Training and Fellowships Program, ICRISAT for providing us an opportunity to work in ICRISAT.

CHAPTER 1

1.1 Introduction
1.2 Requirements Study
1.3 Need for the System
1.4 Hardware Specification
1.5 Software Specifications

CHAPTER II

2.1 Overview of System Analysis & Design
2.2 System Study
2.3 Input Design
2.4 Output Design

CHAPTER III

3.1 System design
3.2 Data Dictionary
3.3 Forms Design

CHAPTER IV

4.1 Coding

CHAPTER V

IMPLEMENTATION

CHAPTER VI

USER MANUAL

CONLUSIONS

BIBILIOGRAPHY

DECLARATION

C E R T I F I C A T E

CHAPTER 1

1.1 INTRODUCTION

*International Crops Research Institute for the Semi - Arid Tropics (***ICRISAT)** was established in 1972 at Patancheru near Hyderabad, India. **ICRISAT**'s research is geographically divided into Africa and Asia. ICRISAT's mandate is both global and regional. ICRISAT 's mandate:

1. Serve as a world center for the improvement of grain yeild and quality of sorghum, pearl millet, finger millets, chickpea, pigeonpea and groundnut.
2. Develop improved farming sysytems that will help to increase and stabilise agricultural production through more effective use of natural and human resources in the seasonally dry semi-arid tropics.
3. Identify constraints to agricultural development in the semi-arid tropics and evaluate means of elevating them through technological and institutional changes.
4. Assist in the development and transfer of technology to the farmer through co-operation with national and regional research programs and by sponsoring workshops and conferences, operating training programs, and assisting extension activities.

In order to achieve its mandate, ICRISAT entered into a memorandum of agreement with the Government of India on March 28th 1972. The government agreed to operate through a Quarantine Unit within the Institute to ensure prompt and expeditious inspection and

clearance of seed shipments and receipts. In 1978, the *Indian Council Agricultural Research* (ICAR) accorded permission to set up 'Export Certification Quarantine Laboratory'and a Post Entry Quarantine Isolation Area, at ICRISAT, Patancheru , Hyderabad. This Laboratory is generally known as Plant Quarantine Unit (PQU).

The PQU facilities seed and plant material exchange across different counties from the quarantine angle. In 1985, ICAR authorised the *National Bureau Of Plant Genetic Resources* (**NBPGR**)as the sole plant quarantine authority for safe germplasm exchange of ICRISAT's mandate crops.

PQU in conjunction with NBPGR conducts germplasm health tests of mandate crops seed and plant material for export. It also conducts the grow-out tests of all the seed released by NBPGR, Rajender nagar, Hyderabad for use in ICRISAT.

1.2 REQUIREMENTS OF THE STUDY:

Seed export, import and domestic seed dipatch are among the primary activities of the Plant Quarantine Unit (**PQU**).

The process for the seed Export is as follows:

The consignors (Scientists) sned their requests, along with seed samples, to the PQU. The request forms contain the details like the name and department of the consignor, the name and other details of the consignee to whom the samples are to be sent, the crop name and the number of samples of the seed to be exported. The PQU conducts several mandatory

and additional tests on these samples, the samples along with the test reports, in the form of a process document, are then submitted to NBPGR. The NBPGR scientists reviews the results of the phytosanitary certificate (PSC) is issued. The seed samples and the PSC are given to the PQU. Here the seeds are treated, packed and dispatched to the consignees. In the whole process the details of the shipment are maintained in the files.

The Domestic seed dispatches through PQU were started in June !998. The process for Domestic seed dispatch is as follows:

The Scientists and farmers across the country, send their seed request to the concerned crop scientists in ICRISAT. The scientist sends the request form along with the seed samples to the PQU. The request form contains the details of the consignor and consignee to whom the consignment is to be dispatched and also the pedigree of the seed sample. The PQU after packing and labeling the consignment dispatches to the consignee. Here also the PQU maintains the details of the dispatch in files.

The new computerized system called the Quarantine Information System (QIS)

Maintains the details of seed export and domestic seed dispatch in two different modules namely: Export, and Domestic.

These modules have to function in two phases namely Request and Process. These modules are also responsible for generating yearly and monthly reports based on the countries and crops. During the Request phase the system should generate a unique identification number for each record. This ID_NO signifies the crop name and also the type (export or domestic) and year of dispatch. The system should take care that the data entered is in proper format and is correct.

1.2.1 **Present status of the system:**

The PQU presently maintains all its data manually in different registers. A separate register is maintained for each crop. This is the case with both the seed export and the domestic seed dispatch. The yearly and monthly reports for export as well as domestic dispatches are generated manually upon referring all the registers.

1.2.2 **Disadvantages of the present system:**

Maintaining large volumes of data manually is a tedious process. Since the data regarding a single dispatch is entered in different phases, updating the records is time consuming, as the existing record is to be retrieved manually by verifying each register. This was time consuming. Entering the data into manually maintained registers is error prone. Generating the yearly and monthly reports is a tedious and tiresome process as all the registers of corresponding year or the month are to be checked.

1.3 **Need for the System:**

Maintaining a large amount of data manually is tedious, consumes a lot of time and human effort. This is also error prone due to the very nature of the mankind. To overcome these shortcomings the PQU requested the ICRISAT management to get the PQU record keeping system computerized.

1.3.1 **Benefits of the computerized system:**

Computerization of the present system will have varied benefits. All the drawbacks of

the present system can be overcome with the help of a computerized system. Once the system is computerized the PQU need not maintain separate registers for different activities. Retrieving of records will be instantaneous. Queries based on different criteria will be answered instantly. With the computerized system the chances of entering erroneous data are almost nil. The time and human effort can also be minimized.

1.4 HARDWARE SPECIFICATIONS:

To run the system the minimum hardware components, that are required, are as follows:

- Any IBM compatible machine with an 80486 processor or higher
- A hard disk with a minimum capacity of 1.2 GB for full installation
- A 3.5 inch disk drive
- Any monitor supported by windows 95
- A minimum of 8 MB RAM
- Any IBM compatible mouse or any other pointing device
- Any IBM compatible printer

1.5 SOFTWARE SPECIFICATIONS:

- Microsoft Windows 95
- Microsoft Access 97

CHAPTER 2

2.1 OVERVIEW OF SYSTEM ANALYSIS AND DESIGN:

The main activity in the system analysis phase is to transform the user requirements into a structured specification. This involves modeling the user's environment with data flow diagrams, entity relationship diagrams and other tools.

The step by step process of system analysis involves the development of an environmental and behavioral model. these models combine to form the essential model, which represents a formal description of what the new system must do, independent of the technology that will be used to implement those requirements.

The activity of design is concerned with the development of an appropriate hierarchy of program modules and interfaces between those modules to implement the specifications created during system analysis.

In addition the design activity is also concerned with transformation of entity relationship data models into a database design.

2.2 SYSTEM STUDY:

The primary objectives of the **Quarantine Information System** are to

1. Meet the functional requirements stipulated by the users
2. To render a flexible design to enable future modifications
3. Meet the performance requirements laid down by the user

For the purpose of modularity the system is broken into different modules as follows:

- **Domestic**
  - Request
  - Process
  - Reports
    - Yearly
    - Monthly
- **Export**
  - Request
  - Process
  - Reports
    - Yearly
    - Monthly

2.3 INPUT DESIGN

To ensure that correct data is entered in a proper format, in the underlying tables used by the Export and the Domestic modules, all the inputs are validated and checked at the time of data entry itself. The input design consists of various input screens

INPUT FORMS

Module name	:	Export Request
Forms used	:	EXPORT_REQUEST
Tables used	:	EXPORT
Description	:	1. Get all the details from the export request document 2. Generate ID_NO
Validation	:	1. Ensure that values entered in the numeric and date fields is in the correct format 2. Ensure that the user has entered values in all the fields without leaving any field empty

Module name	:	Export Process
Forms used	:	EXPORT_PROCESS1, EXPORT_PROCESS2
Table used	:	1. EXPORT
		2. ACCESSIONS
		3. FUNGI
Description	:	1. Get the PSC_NO
		2. Get details from export process document
Validation	:	1. Ensure that the user enter data into numeric and date fields in a proper format
		2. Ensure that the user enters data in all the fields without leaving any field empty

Module name	:	Domestic Request
From used	:	DOMESTIC_REQUEST
Tables used	:	DOMESTIC
Description	:	1. Get details from the domestic request document. 2. Generate ID_NO
Validation	:	1. Ensure that the user enters correct data in a correct format into the numeric and date fields. 2. Ensure that the user doesn't leave any field empty

Module name	:	Domestic Process
Form used	:	DOMESTIC_PROCESS
Table used	:	DVARIETY
Description	:	1. Get details from the domestic process document 2. Get the name of the pedigree
Validation	:	1. Ensure that the user enters data in all the fields 2. Ensure that the user enters correct values into the the numeric and date fields

2.4 OUTPUT DESIGN:

The outputs of the Export and the Import modules are as follows:

Export module:

- Export yearly report
- Export monthly report

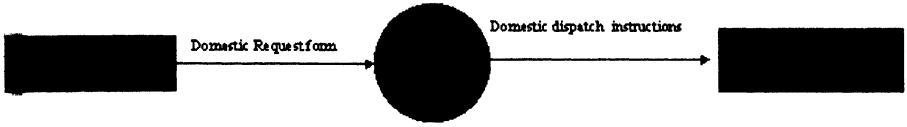
Domestic module:

- Domestic yearly report
- Domestic monthly report

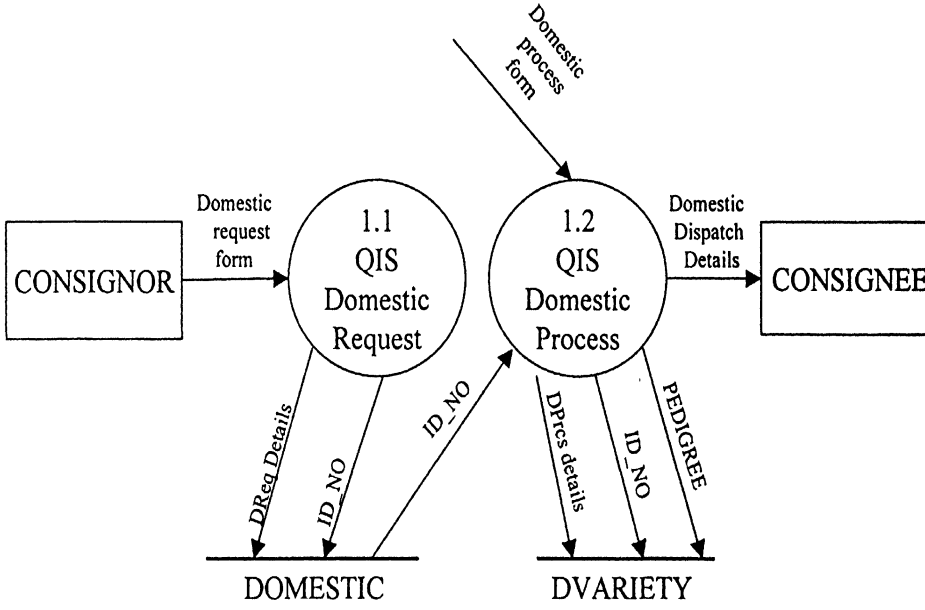
TOP LEVEL DFD (Data Flow Diagram)

for

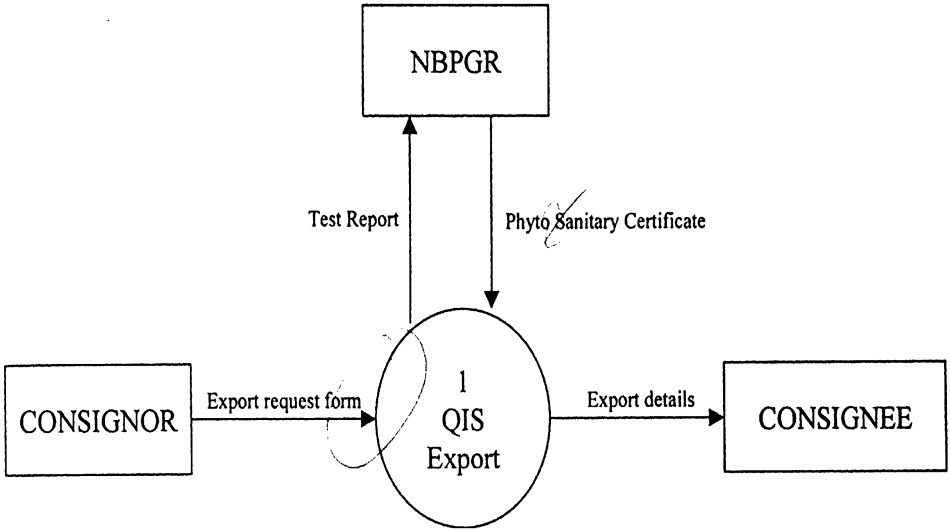
Domestic seed dispatch



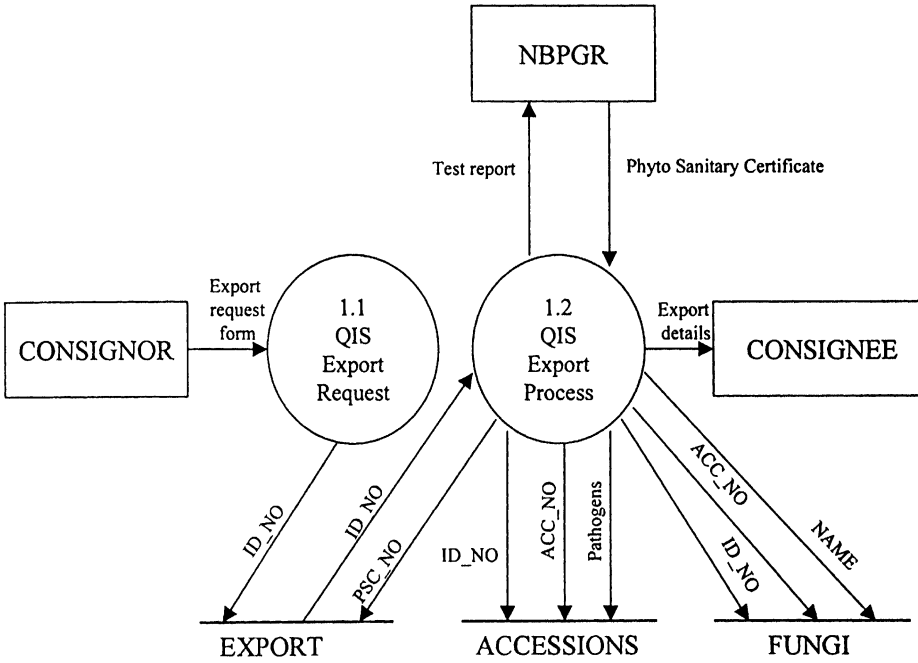
FIRST LEVEL DFD



TOP LEVEL DFD



FIRST LEVEL DFD



CHAPTER 3

3.1 SYSTEM DESIGN:

Quarantine Information System (**QIS**) is a menu driven system. Here different modules of the actual system are implemented using menus; each menu option corresponds to one module. The main modules in QIS are as shown:

- Export
- Domestic

Each of these modules have been further subdivided as follows:

- Export
  - request
  - process
  - reports
    - yearly
    - monthly
- Domestic
  - request
  - process
  - reports
    - yearly
    - monthly

The above structure is designed in such a manner that each module is independent of the functioning of the other. This gives flexibility to the system, and the user does not have to bother about the effects of the results of one module over the other.

3.2 DATA DICTIONARY:

This section contains a detailed description of all the data stores and data flows used in the **Export** and **Domestic** modules of the **QIS.**

- **Structure of the EXPORT table**

COLIMN NAME	TYPE	SIZE	DESCRIPTION
ID_NO	Text	15	Primary key
RECEIPT_DATE	Date/Time	8	Date of receipt
CROP	Text	15	Name of the crop
NO_RECEIVED	Number(long)	4	Number of samples received
CONSIGNOR	Text	25	Name of the consignor
PROGRAM	Text	10	Name of the consignor's program
SUBPROGRAM	Text	24	Name of the sub-program
WEIGHT	Number(double)	8	Weight of the sample
SOURCE	Text	25	Source of the seed material
ORIGIN	Text	50	Origin of the seed material
DESCRIPTION	Text	50	Description of the seed material
CONSIGNEE	Text	25	Name of the consignee
ADDRESS	Text	150	Address of the consignee
COUNTRY	Text	20	Name of the country

COLUMN NAME	TYPE	SIZE	DESCRIPTION
CONTINENT	Text	20	Name of the continent
TELEPHONE	Text	15	Telephone number of the consignee
FAX	Text	15	Fax number of the consignee
EMAIL	Text	30	e-mail address of the consignee
FUMIGATION_DATE	Date/Time	8	Date of fumigation
PLATING_DATE	Date/Time	8	Date of plating
OBSN_DATE	Date/Time	8	Date of microscopic observation
MTA	Text	50	MTA attached or not
NO_DISPATCHED	Number(long)	4	Number of samples dispatched
NO_DETAINED	Number(long)	4	Number of samples detained
IP_NO	Text	10	Import Permit Number
PSC_NO	Text	10	Phyto Sanitary Certificate number
DISPATCH_DATE	Date/Time	8	Date of dispatch
MODE_DISPATCH	Text	15	Mode of dispatch of the consignment
OBJECTIVE	Text	30	Objective of the consignee
ACK_DATE	Date/Time	8	Date of receipt of acknowledgement
CON_STATUS	Text	50	Status of the consignment
COMMENTS	Text	50	Comments from the consignee

- **Structure of the ACCESSIONS table:**

COLUM NAME	TYPE	SIZE	DESCRIPTION
ID_NO	Text		Refers to the ID_NO in EXPORT number
ACCESSION_NO	Text		Accession number
GERM_PERCENT	Number(single)		Germination percentage
INSECT	Text		Name of the insect present
BACTERIA	Text		Name of the bacteria present
VIRUS	Text		Name of the virus present

- **Structure of the FUNGI table:**

COLUM NAME	TYPE	SIZE	DESCRIPTION
ID_NO	Text	15	Refers to the ID_NO in the EXPORT table
ACCESSION_NO	Text	25	Refers to the ACCESSION_NO in ACCESSIONS table
NAME	Text	50	Name of the fungus present

Structure of the DOMESTIC table:

COLUMN NAME	TYPE	SIZE	DESCRIPTION
ID_NO	Text	15	Primary key
REC_DATE	Date/Time	8	Date of receipt of the seed sample
CROP	Text	15	Name of the crop
CONSIGNOR	Text	20	Name of the consignor
PROGRAM	Text	15	Program name
SUBPROGRAM	Text	15	Name of the subprogram
CONSIGNEE	Text	25	Name of the consignee
ADDRESS	Text	100	Address of the consignee
CITY	Text	20	City of the consignee
STATE	Text	20	State of the consignee
COUNTRY	Text	50	Country of the consignee
TELEPHONE	Text	20	Telephone number of the consignee
FAX	Text	20	Fax number of the consignee
EMAIL	Text	20	Email number of the consignee
NO_SAMPLES	Number(long)	4	Number of samples received
SOURCE	Text	20	Source of the seed material
WEIGHT	Number(double)	8	Weight of the seed material
DESCRIPTION	Text	30	Description of the seed material
TRIAL	Text	25	Name of the trial

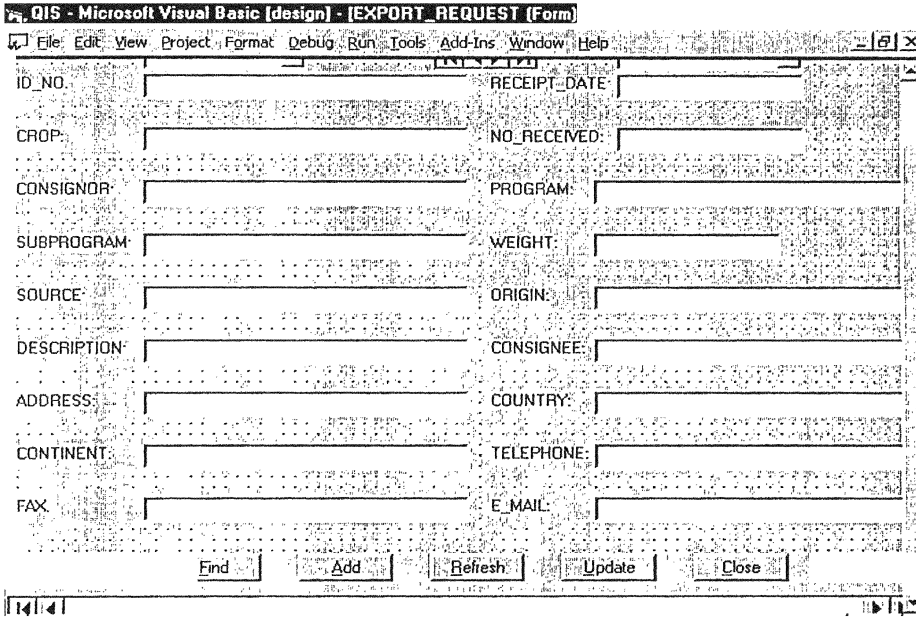
COLUMN NAME	TYPE	SIZE	DESCRIPTION
DIS_DATE	Date/Time	8	Date of dispatch
DIS_MODE	Text	15	Mode of dispatch
ACK_DATE	Date/Time	8	Date of receipt of acknowledgement
CON_STATUS	Text	50	Status of the consignment
MTA	Text	50	MTA attached or not
PURPOSE	Text	50	Purpose of the consignee
COMMENTS	Text	50	Comments of the consignee

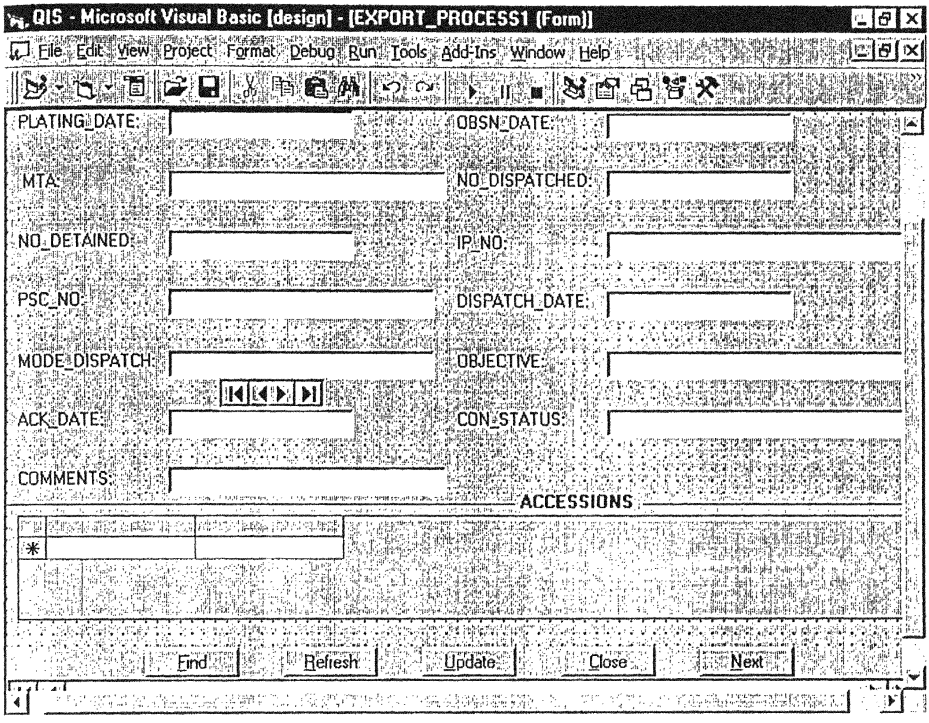
Structure of the DVARIETY table:

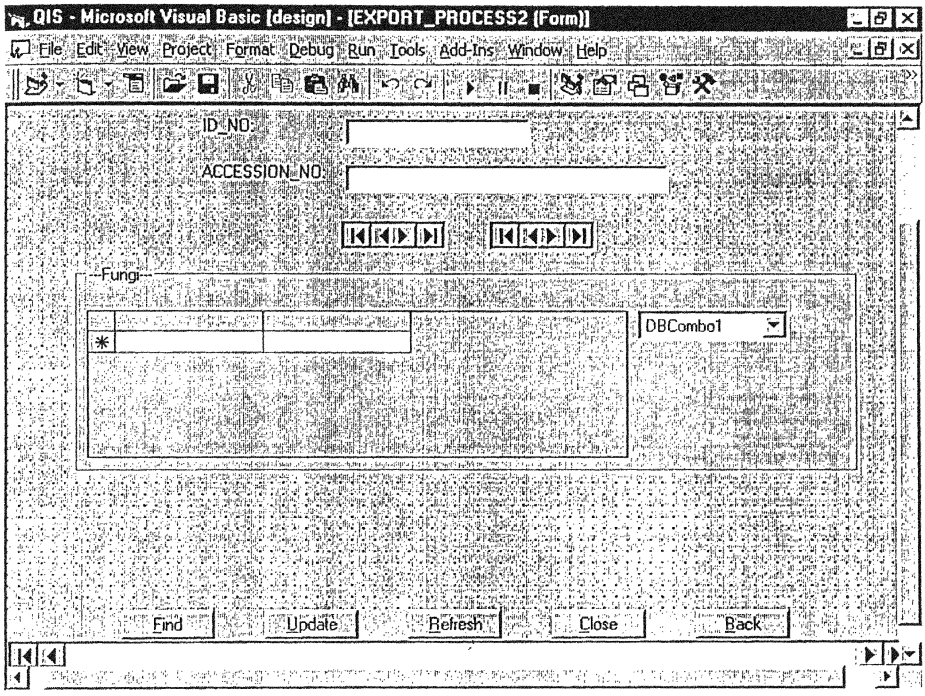
COLUMN NAME	TYPE	SIZE	DESCRIPTION
ID_NO	Text	15	Refers to the ID_NO in the DOMESTIC table
PEDIGREE	Text	50	Pedigree of the seed sample

3.3 FORMS DESIGN:

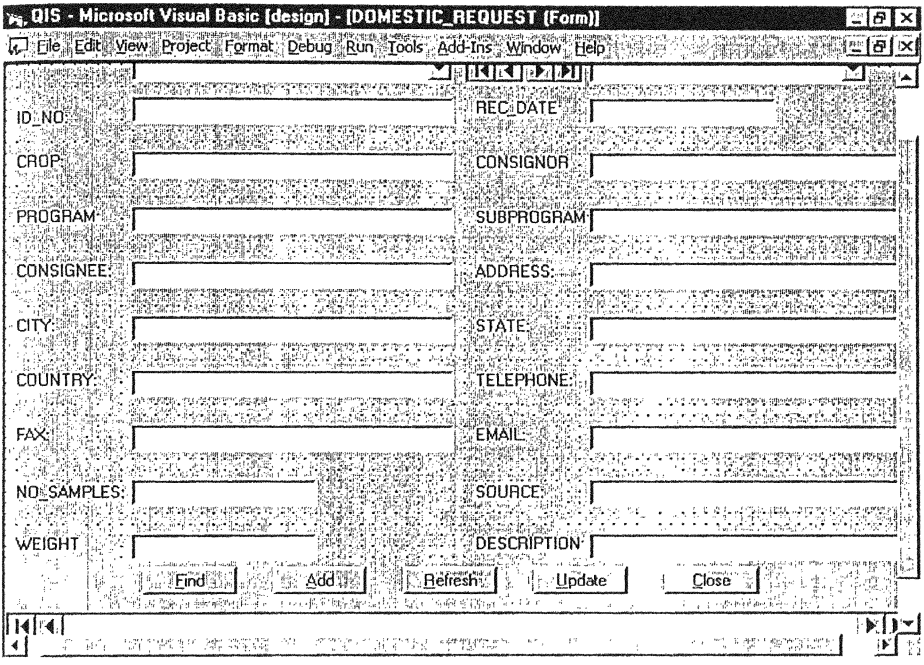
The **Export** module consists of forms namely EXPORT_REQUEST, EXPORT_PROCESS1, and EXPORT_PROCESS2. The design of these forms is given as follows:

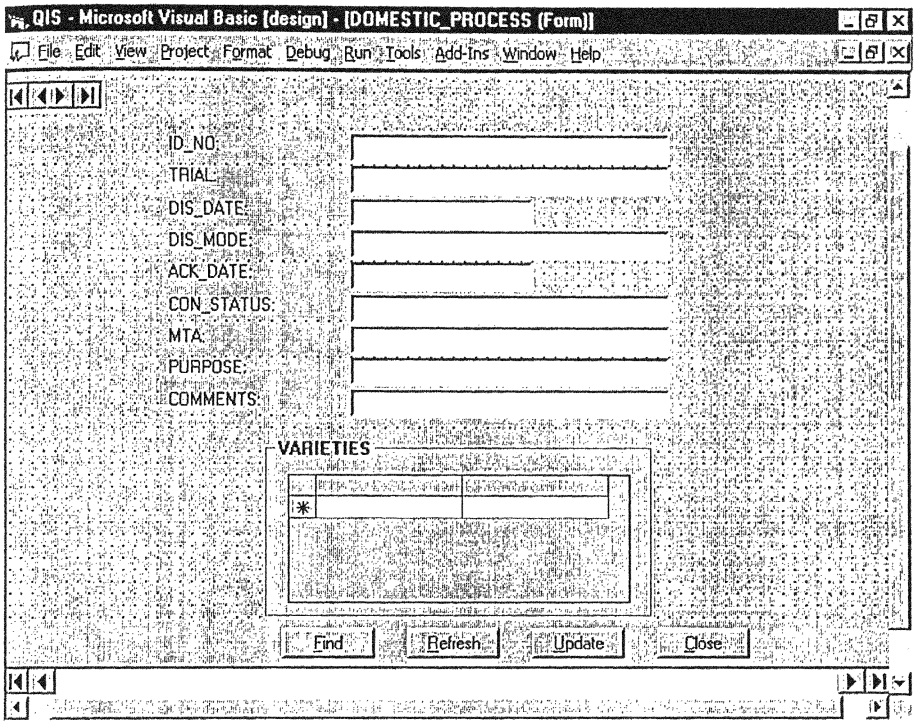



QIS - Microsoft Visual Basic [design] - [EXPORT_PROCESS1 (Form)]
File Edit View Project Format Debug Run Tools Add-Ins Window Help
PLATING_DATE:
OBSN_DATE:
MTA:
NO_DISPATCHED:
NO_DETAINED:
IP_NO:
PSC_NO:
DISPATCH_DATE:
MODE_DISPATCH:
OBJECTIVE:
ACK_DATE:
CON_STATUS:
COMMENTS:
ACCESSIONS
Find
Refresh
Update
Close
Next


QIS - Microsoft Visual Basic [design] - [EXPORT_PROCESS2 (Form)]
File Edit View Project Format Debug Run Tools Add-Ins Window Help
ID_NO:
ACCESSION_NO:
Fungi
DBCombo1
Find
Update
Refresh
Close
Back

The **Domestic** module consists of the forms namely DOMESTIC_REQUEST, DOMESTIC_PROCESS. The design of these forms is as follows:




QIS - Microsoft Visual Basic [design] - [DOMESTIC_PROCESS (Form)]
File Edit View Project Format Debug Run Tools Add-Ins Window Help
ID_NO:
TRIAL:
DIS_DATE:
DIS_MODE:
ACK_DATE:
CON_STATUS:
MTA:
PURPOSE:
COMMENTS:
VARIETIES
Find
Refresh
Update
Close

3.4 PROGRAM DESIGN:

The QIS is developed using Visual Basic Professional Edition Version 5.0 as the front-end and Microsoft Access 97 as the back-end.

AN OVER VIEW OF VISUAL BASIC:

Microsoft Visual Basic is the quickest and easiest way to create applications for the Microsoft Windows Operating System. The Visual Basic allows us to create attractive and useful applications that fully exploit the Graphical User Interface (GUI). Graphical User Interfaces or GUI's have revolutionised the microcomputer industry. Windows applications generally have a consistent user interface. This means that users can spend more time mastering the application and less time worrying about which keystrokes do what within menus and display boxes. Visual Basic makes us more productive by providing appropriate tools for the different aspects of GUI development. We create the GUI for our application drawing objects in a graphical way. We set properties on these objects to refine their appearance and behaviour.

Using Visual Basic, We can create powerful, applications that exploit features of Microsoft Windows, including Multiple Document Interface (MDI), Object Linking and Embedding (OLE), Dynamic Data Exchange (DDE), graphics etc. Visual Basic can be extended by adding custom controls and by calling procedures in a dynamic link libraries (DLLs). In particular Visual Basic lets us to add menus, text boxes, Command Buttons, Option Buttons, Check Boxes, List Boxes, Scroll bars and file and directory boxes to blank windows. We can use grids to handle tabular data and we can access databases.

Image	:	Displays bitmaps, icons or windows metafiles acts like a Command button when clicked.
Data Control	:	Enables you to connect to an existing database and display information from it on your forms

Introduction to Data Access with Visual Basic:

The Microsoft Visual Basic programming system for the windows operating system enables you to create databases and to build applications that serve as front-ends to many of the popular database formats. Visual Basic makes database management principle simple, fast and trouble free. Visual Basic implement data access by incorporating the same database engine that powers Microsoft Access. Combined with Visual Basic this technology gives you seamless access to many standard database formats. Which include Microsoft Access, dBase, Microsoft FoxPro, Oracle, Paradox and Microsoft SQL Server. If we have an existing database created in one of those supported formats specified above we can use Visual Basic to manipulate databases with a minimum of programming. The data object model simplifies the code we need to write and insulates us from the underlying structure and mechanics of retrieving and updating data. We can use the same data access objects and the same properties.

Database Management Using Visual Basic:

This mainly focuses on the Data Definition Language (DDL) .We can use to define database structures. It explains how can use of functions, statements, methods, properties and data access objects to define our database tables, fields and indexes. It includes mainly the following:

A. Opening a Database
B. Closing a Database
C. Creating a Database
D. Modifying the structure of a Database
E. Managing a Database

A. Opening a Database:

Any existing database can be opened with Visual Basic; we can use two different methods to open a database in Visual Basic. They are

1. Use the Data Control
2. Use the Open Database function

Using the Data Control can significantly reduce the amount of code we need to open and manipulate a database. The data control imposes few limitations on the functionality, flexibility, or robustness of our applications. That is why we can use the data control in most situations. If you choose not to use the data control to open a database, we will not be able to use bound controls to display or edit our data, as each bound control must be assigned to a data control. There are also restrictions on using the data control with the Open database function.

We may not be able to open a database if:

- Another user in exclusive mode already opens the database.
- A specific database file cannot be found.
- We do not have permission based on the database's or the network's security settings.

B. Closing a Database:

After using a database, we must close it. Closing Database releases the resources that it holds, releases any locks or other shared resources that the database was holding, and rolls back any uncommitted transactions. Note that closing Database variable is especially important if we use Global or Static database variables.

We do not need to explicitly close a database or records opened with the data control as these databases are closed automatically when you unload the form upon which the data control resides.

C. Creating a Database:

If we do not already have a database, we can use Visual Basic to create one. These are four different approaches we can take to create a database.

- Use the Data Manager Application. With the Data manager we can create a Visual Basic/Microsoft Access native format database.
- Use the Create Database function. We might use Create database when we want to provide a greater depth of programmatic control over a database or when we want the application itself able to create a new database at run time. The Create database function supports only the Visual Basic/Microsoft Access native format.
- Use Microsoft Access or an external Database or ODBC application to create a new external database. So we can create a new external database by creating a directory on our disk.
- Use the Open database function to create a new external database.

D. Modifying the structures of a database:

Once we have created a database, or have a database that needs to be modified, we can use the Visual Basic to change the structure. Before we attempt to modify a database structure, we must begin by closing any open recordset variables.

We can add new Tabledef objects to a database, or add new Field and Index objects to existing tables. We can also delete a Tabledef from a database or delete an Index from a Tabledef.

INTRODUCTION TO CRYSTAL REPORTS:

Crystal reports is a powerful yet easy to use program for creating custom reports, lists, and labels using data from your existing databases. The program works by establishing connections with one or more of your databases. Crystal Reports was designed to work with all kinds of data: numbers, currency, text, dates and Boolean (Yes/No) fields. It has a wide range of built-in tools that you can use to manipulate that data to fit your needs.

Using these tools, you can:

Make calculations and comparisons of data values.

Calculate subtotals, and grand totals of field values.

Calculate group averages, count the records in a group, and test for minimum and maximum values.

Test for the presence of specific values.

Present data only if certain conditions are met.

Evaluate logical relationships between values.

Convert data from one type to another.

Merge text with another text

Perform numerous other useful, data-related activities.

KINDS OF REPORTS

Lists and Reports:

You can create simple columnar lists from a single database or you can create a report that includes data from different sources, that subjects the data to extensive calculations, that merges text with data and that highlights key data with display fonts and other character attributes.

Cross-Tab:

You can create cross-tab reports that enable you to make comparison and identify trends in a hurry.

Graphs/Chart:

You can create graphs and charts in a variety of formats to help you present elements of your report in a more visual manner.

Label-type items:

You can create mailing labels with you data, and you can also create name tags, rotary file cards, disk labels, and other similar label type items that are available for dot matrix or laser printers.

Data analysis:

You can analyse mountains of data in multiple databases. You can assign priority numbers to alternatives or flag in the items of greatest interest.

Form Letters:

You can create customised form letter that simply draw data from a database for an address and salutation, or you can create sophisticated letters that include different blocks of text depending on relationship found in the data.

Invoices:

You can create custom invoices to be printed as a batch on specific dates, or you can construct a point of sales system that generates an invoice on demand, once the appropriate data is entered.

SECTIONS

A Title Section: This section is generally used for the report title, and other information you want to appear at the top of the page.

A Page Header Section: This section is generally used for field headings and other information that you want to appear at the tope of each Page.

A Details Section: This section is the body of the report. The bulk of your report data will generally appear in this section.

A Page Footer Section: This section usually contains the Page number and any other information that you want to appear on the bottom of the Page.

A Summary Section: This section allows you to include a summary at the bottom of your report. You can choose to print the summary on only the first page, or on all pages.

FIELDS

Page Number Field: Use Insert | Special Field | Page Number Field to insert a field that prints the current page number

Record Number Field: Use Insert | Special Field | Record Number Field to have Crystal reports number each record printed in the Details section of your report.

Print Date Field: Use Insert | Special Field | Print Date Field to insert a field that prints whatever is the current data when the report prints.

An overview of Microsoft Access 97:

Access makes it easy for users to work with databases. In other database management programs, the term database is sometimes used to refer to tables that hold data. Access uses the term more broadly.

A database is a collection of information related to a particular subject or purpose, such as tracking customer orders or maintaining a music collection. If the database isn't stored on a computer, or only parts of it are, you may be tracking information from a variety of sources that you're having to co-ordinate and organise yourself.

Using Microsoft Access, one can manage all the information from a single database file. Within the file, one can divide the data into separate storage containers called tables; view, add and update table data using online forms, find and retrieve just the data you want using queries; and analyse or print data in a specific layout using reports.

To store data, a table has to be created for each type of information one tracks.
To access data from multiple tables together in a query, form or report, relationships between tables can be defined.

To find and retrieve the data that meets conditions one specifies, including data from multiple tables, a query can be created. A query can update, delete multiple records at the same time, and perform built-in or custom calculations on the data.

To view and edit data directly, a form has to be created. When a form is opened, Microsoft Access retrieves the data and displays it on the screen using the layout, one chooses in the Form Wizard or using a layout that one has created from scratch.

To analyse data or present it in a certain way, a report has to be created. For example, one might print a report that groups the data and calculates totals, and another report with different data formatted for printing mailing labels.

Tables:

In table Data sheet view, data in a table can be added, edited. One can also check the spelling and print the table's data, filter or sort records, change the data sheet's appearance, or change the table's structure by adding or deleting columns.

In table Design view, one can create an entire table from scratch, add or delete, customise an existing table's fields.

Forms:

Forms can be used for a variety of purposes. Most of the information in a form comes from an underlying record source. Other information in the form is stored in the form's design.

A link between a form and its record source by using graphical objects called controls. The most common type of control used to display and enter data is a text box.

Queries:

Queries can be made to view, change and analyse data in different ways. One can also use them as the source of records for forms and reports.
The most common type of query is a select query. A select query retrieves data from one or more tables using criteria specified, and then displays it in the order wanted.

Reports:

A report is an effective way to present data in a printed format. As one has control over the size and appearance of everything on a report, the information can be displayed in any way.

Most of the information in a report is accessed from an underlying table, query, or SQL statement, which is the source of the report's data. Other information in the report is stored in the report's design.

The information in a report can be divided into sections. Each section has a specific purpose, and prints in a predictable order on the page and in the report.

In design view, sections are represented as bands, and each section that the report contains is represented once. In the printed report, some sections may be repeated may times.

Macros:

A macro is a set of one or more actions that each performs a particular operation, such as opening a form or printing a report. Macros can help you to automate common tasks. For example, a macro can be run that prints a report when a user clicks a command button.

Modules:

A module is a collection of Visual Basic for applications, declarations and procedures that are stored together as a unit.

Events:

An event is a specific action that occurs on or with a certain object. Microsoft Access can respond to a variety of events: mouse clicks, changes in data, forms opening or closing, and many others. Events are usually the result of user action. Using either an event procedure or a macro, a custom response can be added to an event that occurs on a form, report or control.

CHAPTER 4

CODING:

In this phase of software development, actual code for the system is written. This phase depends a lot on the design phase. The QIŞ is designed in such a way that the whole system is split into several modules and each module is independent of the other. This gives a lot of flexibility in writing the code. As code for each module can be written without bothering about its impact on the other modules.

Sample code for the Export module is given below:

```
Public Sub new_id()
Dim ttxt As String, strtemp As String, yr As String
Dim tempdb As Database
Dim tqdf As QueryDef
Dim trs As Recordset
Dim tfl As Field
Dim slno As Integer, count As Integer
On Error GoTo errhandler:
  Set tempdb = DBEngine.OpenDatabase("c:\my documents\quarantine")
```

```
If UCase(txtFields(2).Text) = "SORGHUM" Or UCase(txtFields(2).Text) = "OTHERS"
Then
  Set trs = tempdb.OpenRecordset("select max(cint(mid(ID_NO,5,len(id_no)-5-2)))as
maxid from IMPORT where CROP = '" & txtFields(2).Text & "' and year(REC_DATE)
='" & Year(CDate(txtFields(1).Text)) & "';", dbOpenDynaset)
 Else
  Set trs = tempdb.OpenRecordset("select max(cint(mid(ID_NO,6,len(id_no)-6-2)))as
maxid from IMPORT where CROP = '" & txtFields(2).Text & "' and year(REC_DATE)
='" & Year(CDate(txtFields(1).Text)) & "';", dbOpenDynaset)
 End If
 If trs.Fields("maxid").Value <> 0 Then
  ttext = (trs.Fields("maxid").Value)
 Else
  ttext = 0
 End If
 count = 1
 slno = ttext + 1
 yr = CStr(Year(CDate(txtFields(1).Text)))
 Select Case UCase(txtFields(2).Text)
  Case "SORGHUM":
    txtFields(0).Text = "S/E/" + CStr(slno) + "/" + Right(yr, 2)
  Case "CHICKPEA":
    txtFields(0).Text = "CP/E/" + CStr(slno) + "/" + Right(yr, 2)
```

```
    Case "PEARL MILLET":
        txtFields(0).Text = "PM/E/" + CStr(slno) + "/" + Right(yr, 2)
    Case "MINOR MILLETS":
        txtFields(0).Text = "MM/E/" + CStr(slno) + "/" + Right(yr, 2)
    Case "PIGEONPEA":
        txtFields(0).Text = "PP/E/" + CStr(slno) + "/" + Right(yr, 2)
    Case "GROUNDNUT":
        txtFields(0).Text = "GN/E/" + CStr(slno) + "/" + Right(yr, 2)
    Case "OTHERS":
        txtFields(0).Text = "O/E/" + CStr(slno) + "/" + Right(yr, 2)
  End Select
 Exit Sub
errhandler:
 MsgBox Err.Description
End Sub
Private Sub cmdadd_click()
  datPrimaryRS.Recordset.AddNew
  txtFields(1).SetFocus
  croplist.Left = txtFields(2).Left
  croplist.Top = txtFields(2).Top
  croplist.Width = txtFields(2).Width
  subprogrs.Left = txtFields(6).Left
  subprogrs.Top = txtFields(6).Top
```

```
  subprogrs.Width = txtFields(6).Width
  croplist.Visible = True
  subprogrs.Visible = True
  cmdAdd.Enabled = False
End Sub

Private Sub cmdDelete_Click()
On Error GoTo errhandler
  With datPrimaryRS.Recordset
    .Delete
    .MoveNext
    If .EOF Then .MoveLast
  End With
  subprogrs.Visible = False
  croplist.Visible = False
  cmdAdd.Enabled = True
Exit Sub
errhandler:
  MsgBox Err.Description
  Screen.MousePointer = 1
End Sub
```

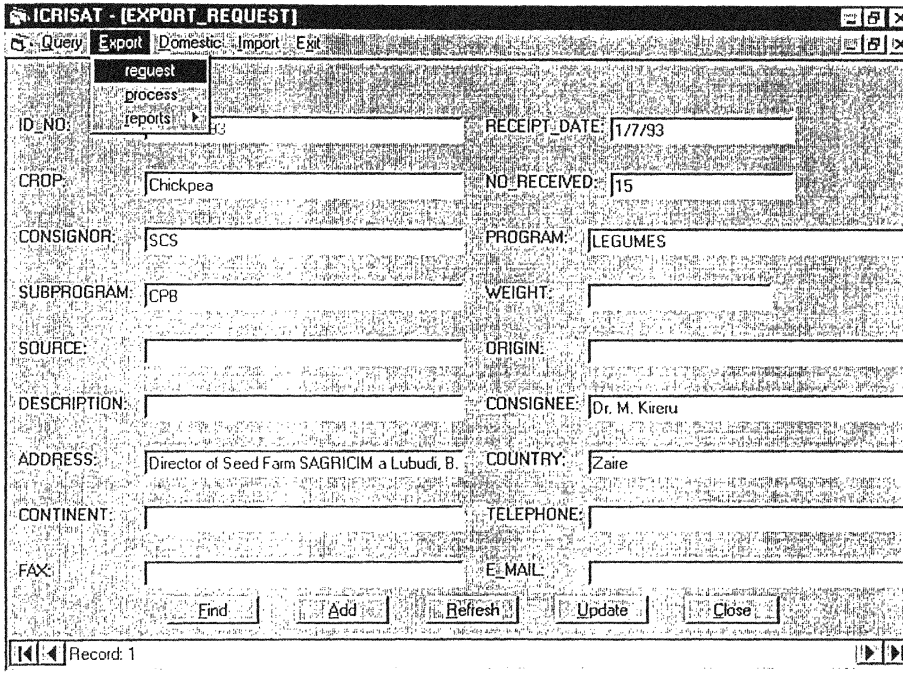
```
Private Sub cmdfind_Click()

Dim fnd As String

  fnd = InputBox("Enter the ID_NO", "Find", " ")

  If fnd <> "" Then

    datPrimaryRS.Recordset.FindFirst "ID_NO = '" & fnd & "'"

    If datPrimaryRS.Recordset.NoMatch Then

      MsgBox "There is no record with the given ID_NO as  " + fnd, vbExclamation,
"Find Failed"

    End If

  End If

End Sub
```

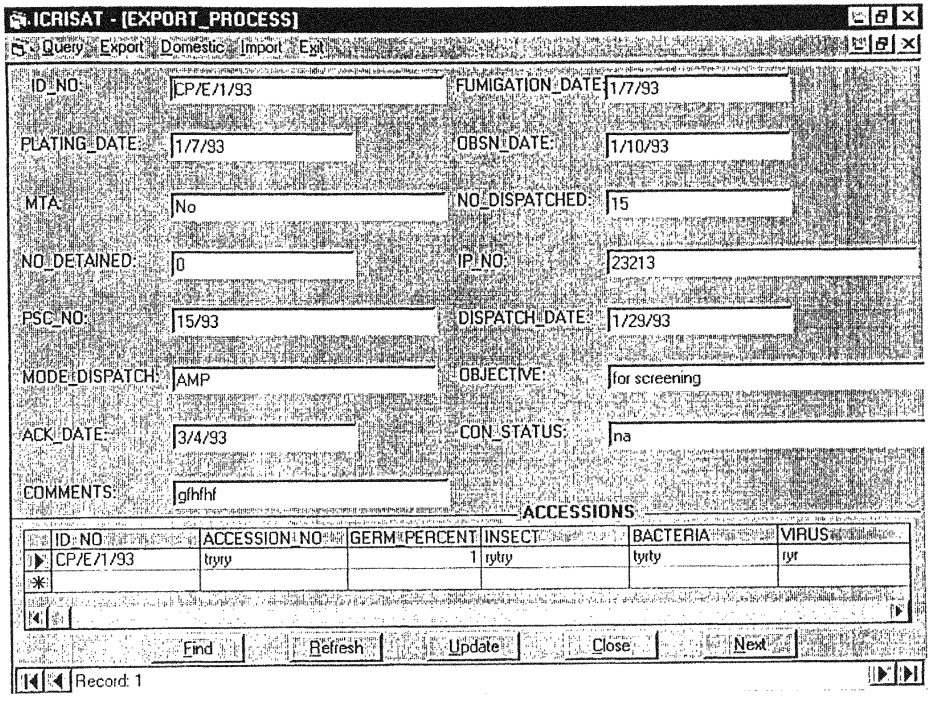
CHAPTER 5

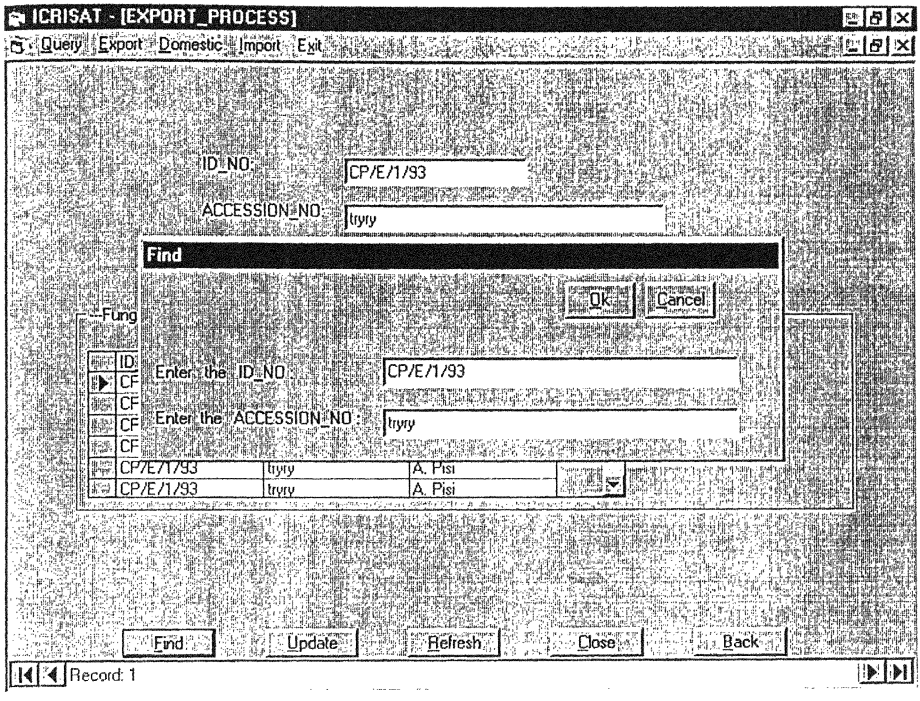
IMPLEMENTATION:

The Export and the Domestic of QIS are implemented using menus, where each option the main menu corresponds to one module. Some of the sample forms in these two modules are shown below.

Sample forms:




ICRISAT - [EXPORT_PROCESS]
Query Export Domestic Import Exit
ID NO: CP/E/1/93
FUMIGATION DATE: 1/7/93
PLATING DATE: 1/7/93
OBSN DATE: 1/10/93
MTA: No
NO DISPATCHED: 15
NO DETAINED: 0
IP NO: 23213
PSC NO: 15/93
DISPATCH DATE: 1/29/93
MODE DISPATCH: AMP
OBJECTIVE: for screening
ACK DATE: 3/4/93
CON STATUS: na
COMMENTS: gfhfhf
ACCESSIONS
ID NO
ACCESSION NO
GERM PERCENT
INSECT
BACTERIA
VIRUS
CP/E/1/93
tryry
1
rytry
tyrty
ryr
Find
Refresh
Update
Close
Next
Record: 1


ICRISAT - [EXPORT_PROCESS]
Query
Export
Domestic
Import
Exit
ID_NO:
CP/E/1/93
ACCESSION_NO:
tryry
Find
Ok
Cancel
Fung
ID:
CF
Enter the ID_NO
CP/E/1/93
Enter the ACCESSION_NO :
tryry
CP/E/1/93
tryry
A. Pisi
CP/E/1/93
tryry
A. Pisi
Find
Update
Refresh
Close
Back
Record: 1

EXPORT YEARLY REPORT

9/17/96

COUNTRY	CROP	CONSIGNEE	NO DISP	PSC NO	DISP DATE	MODE DISP
Algeria						
	Chickpea					
		Monsieur le Director Gene	13	229/96	9/ 3/96	AMP
		Dr Mellouhi M Seghir	122	200/96	8/ 7/96	AMP
		subtotal of the crop	135.00			
	grand total of the seeds dispatched to the country		135.00			
Argentina						
	Sorghum					
		Dr Guillermo Scheidl	120	106/96	5/28/96	AMP
		Ricardo R Scilliero	4	223/96	9/ 3/96	AMP

1 of 27 Cancel Close Today 13:58 Total 774 100%

CHAPTER 6

USER MANUAL:

The **Export** and **Domestic** modules of the *Quarantine information System* **(QIS)** are designed to be user friendly and consistent. Following the Microsoft Windows 95 conventions. A particular button in form does the same task as any such button in any other form throughout the system; this is done so as to maintain the consistency throughout the system

This chapter contains useful information that will help the users to navigate through the system. To activate the **Export** or the **Domestic** module click on the corresponding option in the main menu. One should note that the underline under a particular letter in the menu options means that the particular letter can be used as the short cut key to activate that menu.

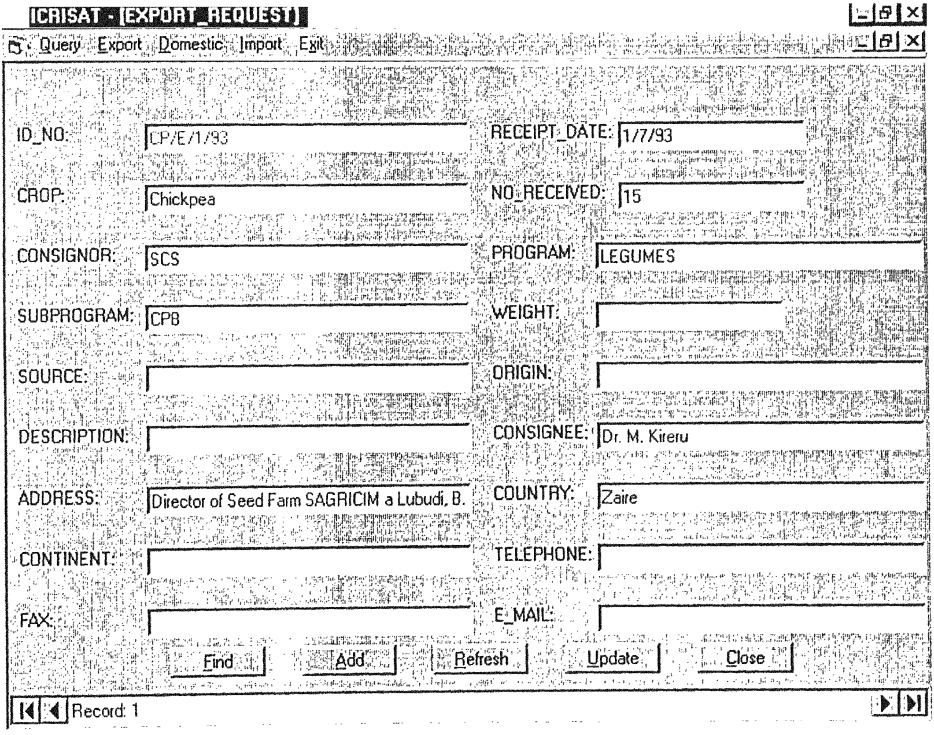
When you click on the Export or Domestic options in the main menu, it expands to reveal the submenus:

request, process and reports

as shown below

Each option in the submenu represents kind of activity that is done by the actual system (PQU). The request option in any submenu is used to enter records into the master tables (EXPORT, DOMESTIC), when a request form is received. The process option is used to enter records into the tables after the request has been processed and the consignment is ready for dispatch. The reports option is used to generate monthly or yearly reports.

On clicking the request option the request form of the corresponding module, appears as shown

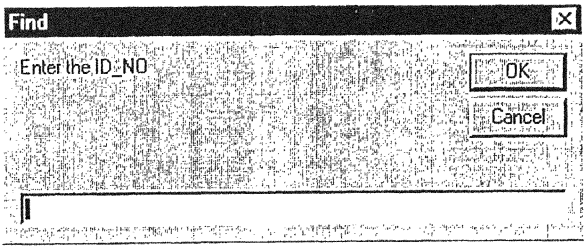


The request form displays the data in the tables. This form also allows the user to navigate through the records, add new records, edit old records, and to search for a specific record in the table.

This form contains the following buttons:

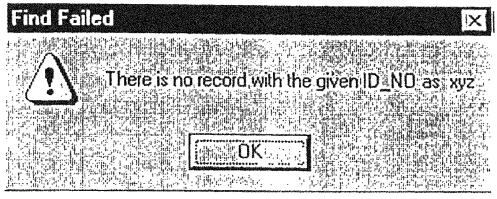
- Find
- Add
- Refresh
- Update
- Close

The **Find** button is used when the user wants to search for a particular record in the table. When this button is clicked the find dialog box is displayed prompting the user to enter the values on which the search is to be carried.

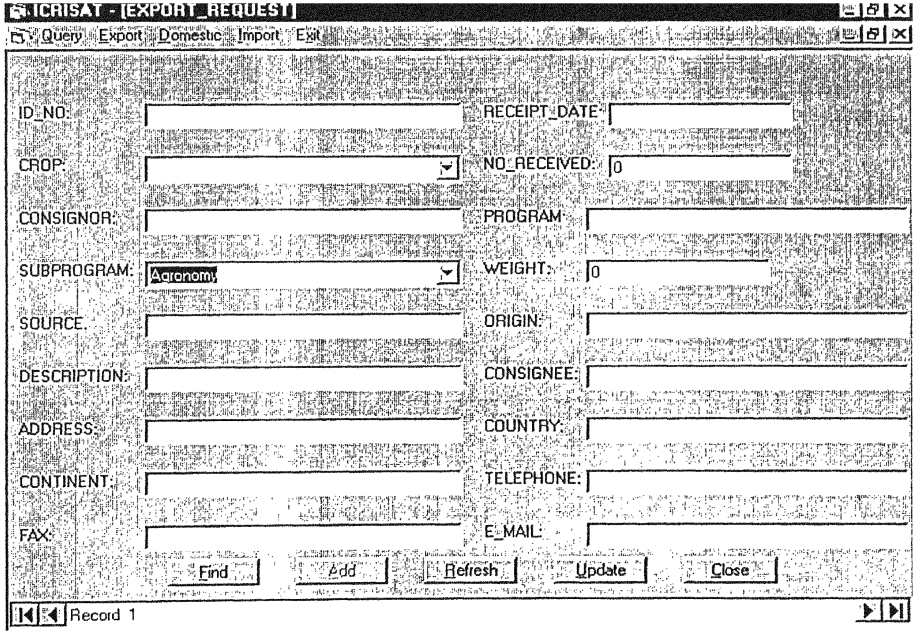


The Find operation can be cancelled at any time by pressing the cancel button in the Find dialog box shown above.

After entering the specified value press the Ok button. If a matching record is found the form, displays the field values of the corresponding record otherwise a message is displayed, which tells the user that the search was not successful

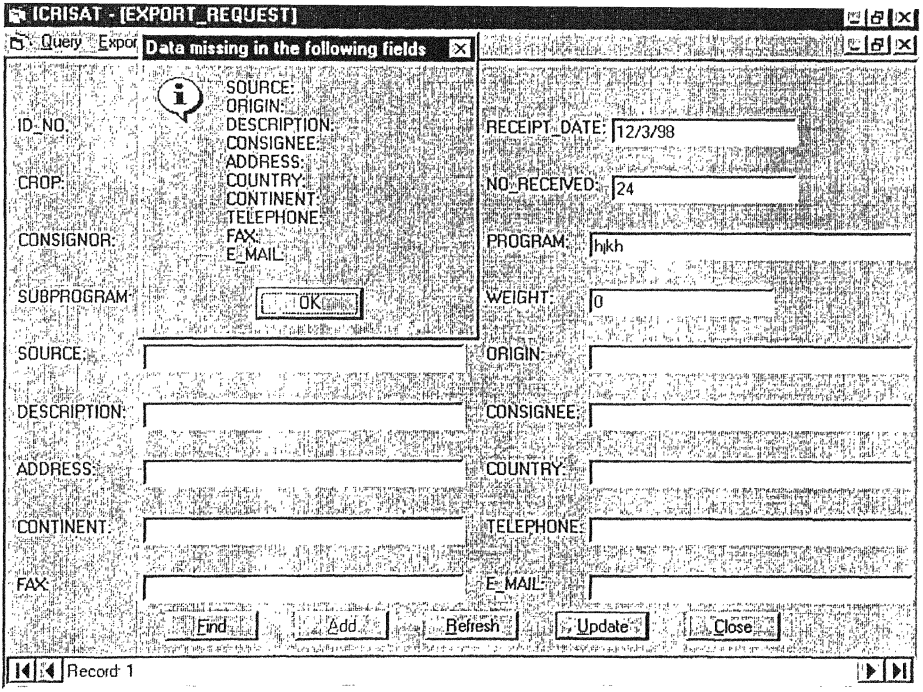


The Add button, on the form, is used to insert new records into the table. When this button is clicked the form displays an empty record structure, with all the fields empty. The user can then enter the data into the fields by navigating into the corresponding text box in the form.



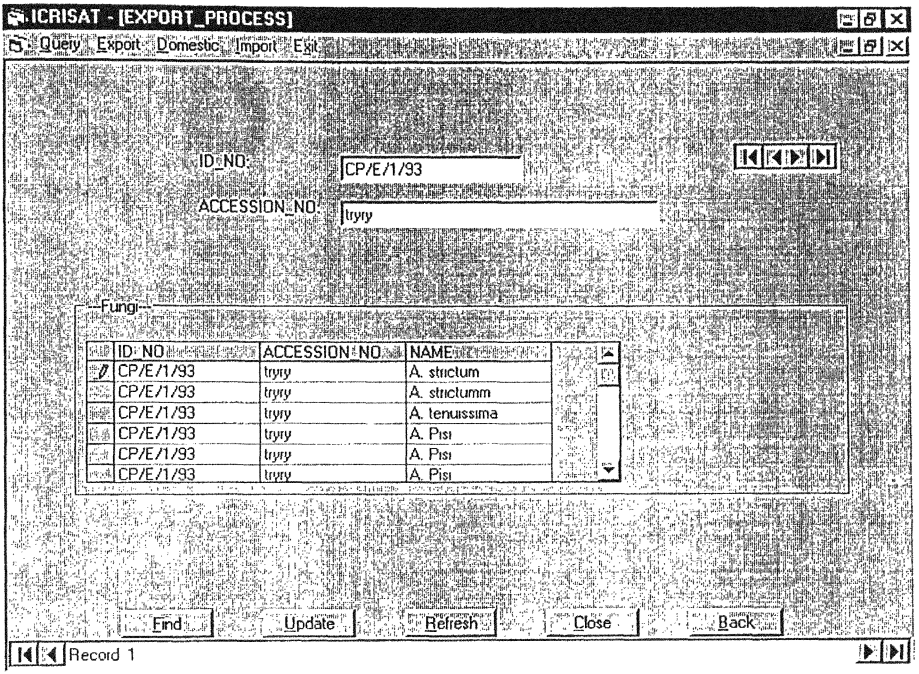
The Add button is disabled once it is pressed, so that the user may not accidentally press it and lose any unsaved information. It is activated as soon as Update or any other button is pressed.

The Update button on the form is used to update the changes made to the table, these changes may be in the form of insertion of a new record or editing of an existing record. The changes are updated immediately if values have been entered into all the fields, if this is not the case then a message is displayed, which gives a list of the fields where data Was not entered



The close button, when clicked closes the currently visible form

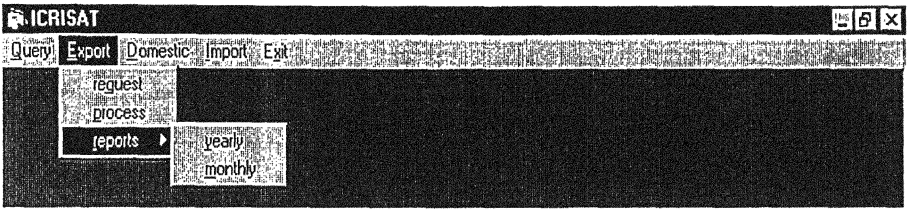
In some cases a form contains master and detail tables, as is the case below:



In such forms, while entering values in the details table (as the FUNGI table above), it should be kept in mind that the values of the fields, that refer to the corresponding fields in the master table, are generated by the system itself after a row is edited. As is the case with ID_NO and ACCESSION_NO fields in the above form

Finally clicking on the reports option in the submenu of the corresponding module can generate export and domestic reports. When the report option is clicked the menu expands to show the options

- Yearly
- Monthly



Click on the appropriate option to view the desired report

The report appears in a new window, in this window buttons are provided to either print, mail the report or save the report as text, click the appropriate button as required.

CONCLUSIONS:

I have made sincere efforts towards the development of the **Export** and the **Domestic** modules of the Quarantine Information System (**QIS**). These modules take care of the basic activities of PQU.

The **Export** module of the Quarantine Information System (**QIS**) keeps track of all the activities involved in export of seeds from ICRISAT through the PQU. The module is also successfully generating required reports and catering to the user's requirements.

The **Domestic** module of the Quarantine Information System (**QIS**) looks after the Domestic seed dispatch from the PQU in ICRISAT. This module maintains all the data regarding the domestic seed dispatch.

I hope this work of mine will live up to the expectations of the Plant Quarantine Unit staff, and the ICRISAT management. Though still there is some scope for further development.

BIBLIOGRAPHY:

- Database Programming With Visual Basic 5

  Michael Amundsen & Curtis Smith

  Techmedia

  SAMS PUBLISHING

- Peter Norton's Guide to ACCESS 97

  Techmedia

  SAMS PUBLISHING

- Visual Basic 5 Developers Guide

  Techmedia

  SAMS PUBLISHING

- An Integrated Approach to Software Engineering

  Pankaj Jalote