

Secretariat of the Pacific Community: Plant Protection Service

Pacific Pest Lists Database: User Manual (Draft)

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Preface

The Pest List Database (PLD) for the Pacific is an information system to record pest occurrences within a country and to provide various reports of those pest occurrences.

The most important report is a list of all pests that have been found on any particular crop in a country especially when the crop is to be exported. Such a pest list is needed by the export destination country and is a requirement under the International Plant Protection Convention, Article 4/2, which states: 'The responsibilities of an official national plant protection organization shall include the following: the surveillance of growing plants, including both areas under cultivation and wild flora, particularly with the object of reporting the occurrence of pests.' Similarly a list of hosts for any given pest is required for Import Risk Analysis and the PLD provides this too.

The system offers other reports also, such as a list of all weeds found in a country, and a supporting bibliography, provided always that the necessary data has been entered into the system. The PLD has also a quarantine module, which is used by quarantine services to record pest interceptions at ports and airports.

The development of a pest list database was recommended by the 1998 and 2001 Plant Protection in the Pacific meetings, and the 1999 Regional Technical Meeting on Plant Protection.

An information system comprises the system and the data it holds. There is a large amount of pest data for most Pacific Island Countries and territories from surveys etc over many years. This data exists in printed reports, in published journal articles, and in electronic form in various formats. Unfortunately much of it has not been readily accessible even to staff of countries from where it originated. The PLD project is gathering such data into the several national PLDs.

The SPC Plant Protection Service provides the PLD system with a country's national pest occurrences data to create a national pest database. This has now been done for Samoa, Tonga, Niue, French Polynesia, Fiji, American Samoa, Cook Islands, Vanuatu and New Caledonia, and other countries' systems are in preparation. Additional often-unpublished survey data is being gathered to provide more complete data sets.

The PLD system runs on MS Access database software. It is designed to be simple to use through a self-explanatory menu system that enables any of a number of pre-designed reports to be selected. A 3-4 day workshop is provided for users. The system is supplied on a CD together with a Users Manual and a training module.

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1 Introduction

1.1 Objectives of the System

The objectives of the system are:

1. Generally, to provide a system for plant protection staff to record all occurrences in their country of any pest on any host within a country, and for quarantine staff to record pest interceptions at ports and airports.
2. More specifically, to enable an exporting Pacific Island country to meet the requirements of the importing country for a country pest list for that commodity i.e. a list of all pests associated with that commodity in the exporting country. Such pest lists are required by international agreements such as the International Plant Protection Convention and the International Standards for Phytosanitary Measures.¹

The system has been kept simple by restricting it to these declared objectives. We have tried to make the system easy to use: it should be usable by quarantine and plant protection staff with no prior experience of databases after three days of training. Those new to databases may find it helpful to read Section 3.5 'Parts of a Database' before proceeding further.

1.2 Installing the System

The current version of the PLD is designed to operate as a single stand-alone system, which should therefore be installed on the desktop computer in the office primarily responsible for its updating. New pest records should be entered only into this master copy of the system.. Copies of the system can be made and installed in any number of other locations; these copies need to be periodically updated with a new copy of the master.

The system is usually delivered on a CD along with the latest version of this User's Manual. Both should be copied to the desktop computer, usually into a sub-folder of your 'My Documents' folder on the C: or D: drive. Create a folder such as C:\My Documents \ Pest_List_Database. Open 'Windows Explorer' or 'My Computer' and click on your CD-ROM drive. Copy the database and User Manual files to your Pest_List_Database folder. Click on the database file name with your right mouse button and select Properties. Deselect the "Read only" box then click OK. Double click on the database file and, provided you have MS Access database software on your computer the system should load. Double click on the User Manual file to have that displayed also on your screen, or print out a copy to paper for easy reference.

The system is usually delivered in the version of Access believed to be used in the quarantine & plant protection services of a country, mostly Access 2000 at this time. Note that an Access 97 version can be read by Access 2000 without conversion, and can also be converted to Access 2000. The reverse is not the case.

1.3 Adjusting your Computer Screen

The PLD displays some forms that need a minimum size of screen. Most modern screens can be adjusted, as follows. Select 'Start' at the bottom left corner of your screen, and then Settings, Control Panel, Display, Settings, and adjust the 'screen area' setting to give at least 1024 x 768 pixels (XGA).

1.4 Which Type of Information do you wish to Manage?

The system addresses separately *pest occurrences*, which are cases of pests found to be living within a country, and *pest interceptions*, which refer to pests detected in or on imported goods at (air)ports, usually by a quarantine staff. Sections 2.2 – 2.5 deal with pest occurrences and Section 2.6 covers the management of interceptions information.

¹ See Section 6.2.2 'Guidelines For The Preparation Of Regulated Pest Lists'

The opening menu (Figure 1) invites you to select between these two areas. So start using the system by making your selection here. One function common to both, to identify a scientific name from a common name, is also available from the opening menu.

Pest lists are derived from pest occurrence data, which is collected mostly by plant protection staff, but the pest lists are often used by quarantine services in their support of trade.

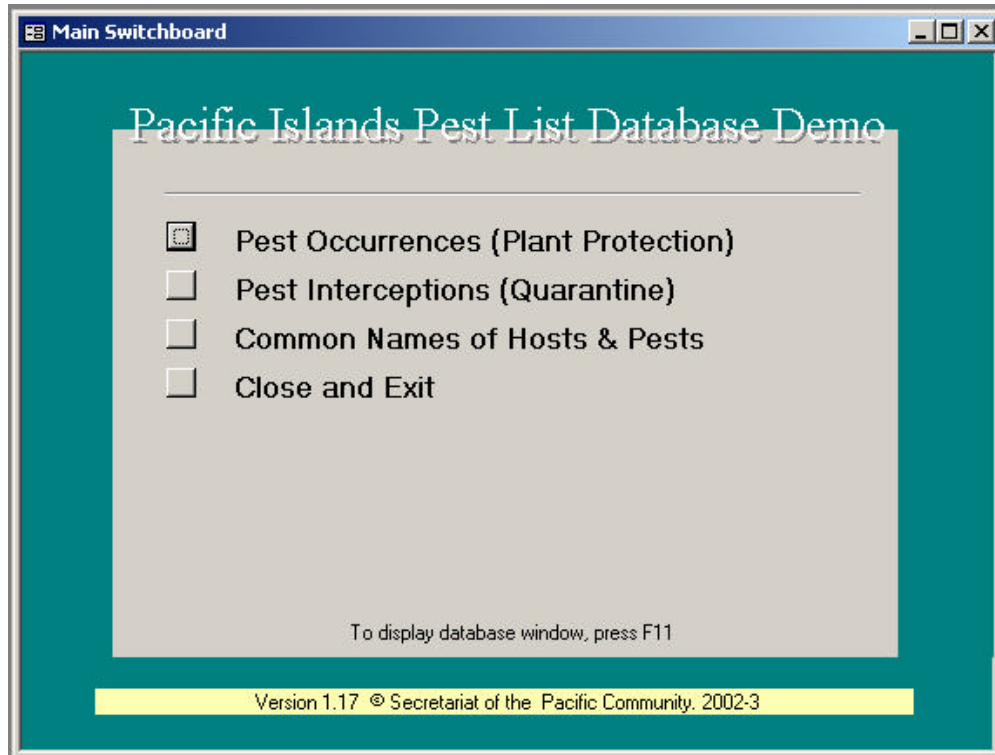


Figure 1: The Opening Menu: offers choice of Plant Protection or Quarantine Use

1.5 Reports

Reports are the system's main information outputs. The reports provided are designed to be printed to A4-sized paper. They can also be 'exported' electronically out of the PLD to an electronic file for sending as an email attachment – see Box 1: 'Export a PLD Report to a Text File'.

2 Using the System: Pest Occurrences

2.1 Reports

Reports for Pest Occurrences are divided in the menus between Pest Lists and Others.

2.1.1 Pest Lists

A key use of these reports is to send export destination countries a pest list for a commodity intended for export. Two reports, when invoked from the menu system, allow the user to choose a single pest or a single host. Figure 2 shows a 'drop-down' list from which a pest can be selected to produce a pest list – a list of all recorded pests for the selected host. See Figure 3. A third report provides a list of all Occurrences for reference purposes.

If the pest list is to be mailed, the report can simply be printed to paper. If the report is to be sent electronically, such as an e-mail attachment, it needs to be exported from the PLD system to a separate electronic file. See Box 1: 'Export a PLD Report to a Text File' for how to do this.

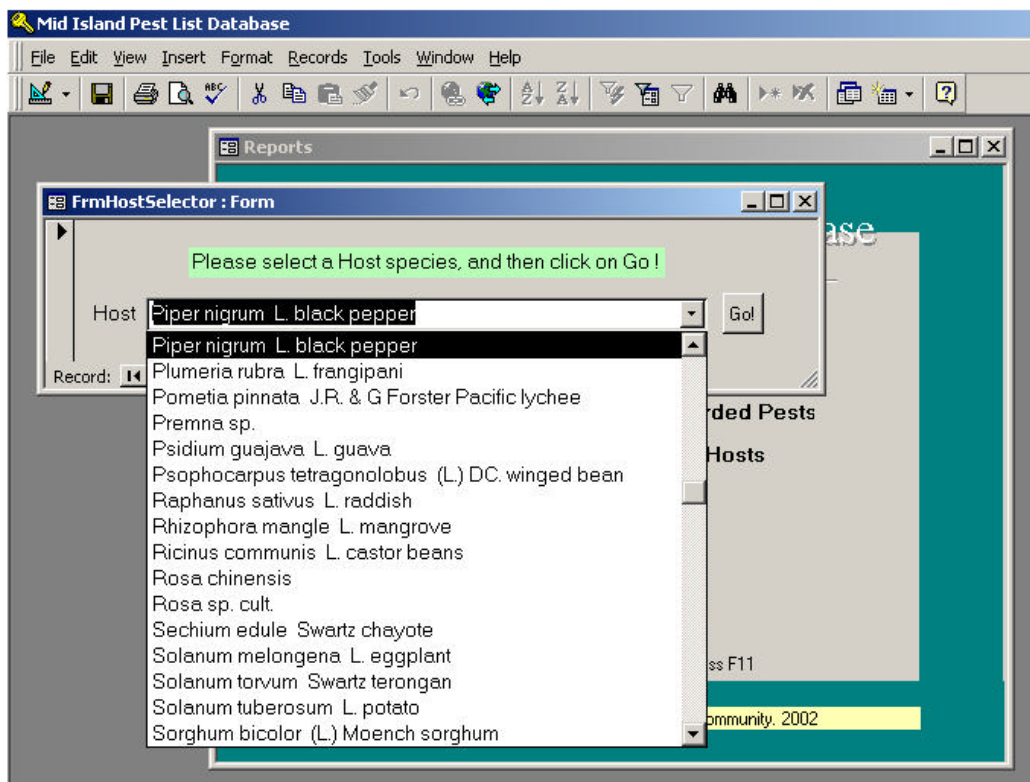


Figure 2. The 'Drop-down' feature to select a Host

The screenshot shows a window titled "Hosts and their Pests" with a menu bar and a toolbar. The main content area displays the following information:

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Hosts with Recorded Pest Occurrences

Host / common names	Pest / Order / common name	Literature reference
<i>Abedus nuchus ascutellatus</i> (L.) / okra	a. <i>Aphis gossypii</i> Glover Cotton aphid	Stout O.O. 1982
	a. <i>Bemisia tabaci</i> (Gennadius) tobacco whitefly	De Barro P. 1998
	a. <i>Pseudaulacaspis pentagona</i> (Targuien-Touzeti) white peach scale	Williams D.J. and Watson G.W. 1983a
	F. <i>Phyllotreta fulvicornis</i> leaf spot	Lynch S.E.P. 1988
	n. <i>Rotylenchulus reniformis</i> Linford & Oliveira, 1940 reniform nematode	Jungle P.H. and Jojo R.A. 1981

Total number of host-pest cases: 5

Prepared in collaboration with the

Page: 1 of 1

Figure 3. Example of a Pest List.

Box 1: Export a PLD Report to an Electronic Text File

With the PLD report on the screen, select on the top menu: File, Save as/Export, To an External File or Database. A window then appears enabling you to specify where you wish the file to be saved to, its name, and importantly its format: the default for the latter is an Access database and you do not want that, so use the drop-down list to select Rich Text Format. This can be sent as an email attachment and the recipient can read it with any modern word processor and then, if they wish, print a copy locally. A smarter output is given by exporting in Snapshot format but the recipient needs the Snapshot viewer.

2.1.2 'Public' Records

Each pest occurrence record has a field called 'Public' that can be set to Yes or No. All Pest List reports are restricted to pest occurrences that have been declared 'Public'. Generally these are pest occurrences that have been *authenticated* by an internationally recognised institute, or have been *published* in an internationally recognised journal and / or by an internationally recognised plant protection specialist (entomologist/plant pathologist/virologist). Separate fields for these two cases exist in the Occurrences table and can be used to determine whether the Occurrences field 'Public?' is to be set to 'Yes'. This is done in the 'Occurrences: add new records' or in the 'Occurrences: edit' forms, described in Sections 2.3: Data Entry, and 2.4: Data Edit, respectively. The field description is "Mark Yes if either the authenticating institute or the source bibliographic reference are of international standing."²

The various forms to examine and edit Occurrences are not restricted to just the 'Public' cases and may therefore offer a larger number of records. These will normally be local entries of pest occurrences not yet confirmed in identification. See also Section 2.3.6 Entering Pest Survey Records for Diagnosis.

² Earlier versions of the PLD may need to update their [Occurrences].[Public?] fields accordingly or their Pest Lists may have no records in them.

The question arises as to whether repeat findings of the same pest need to be sent away for official determination. It is suggested that this may be unnecessary and impractical but due care has to be taken to ensure reasonable confidence that the repeat collections are indeed the same organism. When a pest's occurrence in a locality has been duly authenticated by a type specimen having been lodged with an internationally recognised authority and a determination received back and/or published in an internationally recognised journal, it is not necessary for subsequent specimens found by the same collector to be independently authenticated if he/she is a professional entomologist, plant pathologist, or similarly qualified person in the class to which the organism belongs. Such repeat findings can then be declared 'public'.³

Box 2. Tips when using the look-up (drop-down) lists

- Click on the down arrow to activate the list.
- Type one or a few starting letters of the name you are searching for: this will make the list jump at once to that part of the list, more quickly than scrolling down.
- See the list scroll down as you type: once the genus has appeared in full you can scroll down the list and select the full genus & species.
- Sometimes after entering a new host or pest, it does not appear in the drop-down list in its expected place. This is often due to a spurious double space between genus and species: if you scroll up and down the list a few records you may find the 'missing' species. It may be resolved by running the 'Q Trim Hosts fields' or 'Q Trim Pests fields' queries, which remove any unwanted spaces at the beginning or end of the fields.
- If entering a number of occurrences on the same host, you can quickly enter the second and subsequent record's host by Ctrl-F which copies the content of the same field from the previous record.
- If in data entry an ID Number has been presented during this process, and you decide not to enter a new record, perhaps because the record already exists, press Escape twice to clear the ID Number.

2.1.3 Other Pest Reports

These include:

- Bibliographic references
- Pest Survey Diagnosis Reports
- List of Authenticated Weeds

2.1.4 Designing Queries for Answering Particular Questions

This section is meant for advanced users.

Queries can be written quite easily to extract data to meet particular questions. Sometimes it will be possible to make use of a copy of an existing query (and for a smart output, a copy of an existing Report. Before doing so note the following:

- Always make a **copy** of any existing database object (e.g. query, report) and modify the copy. Never alter one of the original objects.
- **Name** your copy intelligently so that it is clear to you, and others, what it is for.

Example: A plant pathologist asked for 'all disease occurrences of Solanaceous crops.

This is a variation of the Report 'Lists of Hosts and their Recorded Pests'. We just need to restrict Hosts to Family = Solanaceae and Pests to Group = Fungi or Bacteria or Virus. We will do this in the underlying query of the report.

³This is a draft position and is to be reviewed.

Go to Reports and make a copy of the report. Call it 'Solanaceae Hosts and their Diseases'. Open it in design view and change its internal title also. Check its source query: in this case it is: 'Q Occurrences Public'. Go to the Database Window and make a copy of this query, naming the new copy 'Q Solanaceae Hosts and their Diseases'. Open the query in design view and make the necessary changes as above: restrict Host Family to 'Solanaceae' and Pests Group to 'Fungi' OR "Bacteria" OR "Viruses" in the 'Criteria' row.

Open the new report in design view and change its source to the new query: 'Q Solanaceae Hosts and their Diseases' as above. Print the report and examine it to see if it delivers what was requested.

See Box 3 for a more detailed explanation.

Box 3. Designing Queries for Answering Particular Questions: In Detail

Open the database, and then the database window as shown on the opening menu.

Creating the query to select the information the plant pathologist is requesting:

- 1) Click on the Query tab and select the query called "Q Occurrences Public".
- 2) Press CTRL-C to create a copy of the query and CTRL-V for paste.
- 3) Name the query "Q Solanaceae Hosts and their Diseases".
- 4) Bring the field "Pest Group" and "Host Family" down to the design grid if they are not there.
- 5) In criteria for "Host Family" type "Solanaceae" and under criteria for "Pest Group" type "fungi or virus or bacteria".

Representing the information in a Report:

- 1) Click on the Report tab and select the report called "Hosts and their recorded Pests".
- 2) Press CTRL-C to create a copy the report's format and CTRL-V to paste.
- 3) Name the report "Solanaceae Hosts and their Diseases".
- 4) Open the report in design view double click on the small box on the upper left of the report and change the field "Record Source" from "Q Occurrences Public" to "Q Solanaceae Hosts and their Diseases".

Now preview the report.

2.2 Data Entry and Edit

The system comes with 'look-up' lists of common Pacific pests (more than 8,000 species) and the major crops or hosts (several hundred species). The most common thing to be entered will be the occurrences of a pest. Each occurrence will have to link to a pest record already in the system and usually also with one of the hosts in the system and with a bibliographic reference or other authentication data. See Figure 15. Main Tables and their Relationships. Sometimes a pest occurrence will be for a pest not yet in the pest table: in such a case it needs to be added to the pest table before the pest occurrence record is entered.

The forms for entering new records of most objects, pests, hosts, pest occurrences, etc are in most case empty or blank views of the same forms used to edit existing records. The form first appears in the Edit view with data of the first existing record displayed. To enter a new record just select one record beyond the last record: this will be a blank record. Select the right-most icon in the record selector at the bottom of the form, as shown here:



The data entry forms contain fields for various purposes: you will often not have data for all the fields: just fill the fields for which you have data.

2.2.1 Recording Pest Occurrences

Before entering a pest occurrence, ensure that the following are already in the system or if not, put them in, using the data entry form for each:

- the pest (genus, species, etc) – most common Pacific pests are already included
- its host where this is known – most Pacific crops are already included
- and the bibliographic reference, that is the source of the occurrence information.

Each of these objects has its own data entry form that allows the presence to be checked: choose Pest Occurrences on the main menu, and then 'Enter New Pests, Hosts, Persons etc' and then the relevant form. These forms have 'drop-down' lists that enable you to quickly find out if the object is in the database: if not, enter it via the form. Experienced users will quickly learn the hosts (crops) that are in the system so that they do not have to make this check in most cases. Most pests are likely to be already in the system too.

The following fields have drop-down lists to prompt the user for names that are used many times:

- Collector,
- Farmer,
- Research or Extension officer,
- (Authenticating) Institute, to which specimens are sent.
- Authenticating Person

If you would like a drop-down list to include a new name, because you feel it will be used frequently, you need to enter it into the Persons table. To do so, select 'Edit Persons Record' to display a form that will enable you to check if you desired person or institute is already in the table, and if not, to add a new record at the end.

Note that selecting such data from a drop-down list in the Occurrence data entry form copies the item into the Occurrence table, which is then consistent with the full record in the Persons table. If you add a new person or institution directly into the Occurrence data entry form this leaves them out of the Persons table and they will not appear in the 'drop-down' list: this is normally done if you do not expect many more cases of this person or institute.

Then in the menu choose 'Return to Pest Occurrences', 'Occurrences', and 'Add New Occurrence Records'. The New Occurrences data entry form is displayed. This form gives you access to a linked pest and host through their respective IDs (identification codes) that you can select from a drop-down list. Having established the pest, and if appropriate the host, you can enter any or all of several aspects of the occurrence such as the date, the place, who initially made the identification and later on where this was authenticated by an expert.

Occasionally there may be two or more plant diseases or viruses contributing to a plant's condition. They should be entered as two pest occurrence records, cross-referenced by a remark in the Occurrence Comment or the Authentication Note fields. A collector who initially recorded the condition as a single occurrence may wish to enter the second, linked, occurrence with the same Collector's Number to which a suffix 'a' is added, to give for example No. JB 123a.

"See Section 2.5 'Occurrences' below for more information on Pest Occurrences.

2.2.2 Entering a New Pest

Choose 'Pest Occurrences' on the main menu, and then 'Enter New Pests, Hosts, Persons etc' and 'Enter New Pest Record'. See that this form has a facility in the top section to check on existing records. To enable easier searching, three look-up boxes are provided: one each for animal pests, diseases and weeds. This enables you to find if pest and host are already in the system, because if not, these must be entered first, before entering their occurrence in the occurrence form.

Where a pest genus is unknown, as when data is entered during a survey, enter the genus as 'Not known' and fill in the collector's number and other collection site data. Later when the genus and species are determined they can be entered into the same occurrence record, which can be found using the collector's number. Generally in an Access database if you click on a field on a form (or in a query

or a table) you can find a record matching that field by selecting Find (the icon showing a pair of binoculars).

Pests, like all biological organisms, are identified with two names, the genus and the species. Where the species is temporarily unknown i.e. when a specimen has been sent for specialist identification the species is indicated by 'sp.'. Numerous cases are distinguished by the Collector's No – see Section 2.3.6 Entering Pest Survey Records for Diagnosis.

2.2.3 Entering a New Host

This is very similar to entering a new pest except that there is only a single drop-down list to cater for the much smaller number of host species.

Hosts, like all biological organisms, are identified with two names, the genus and the species. There are some cases of pest occurrence in which there is no Host or the host is unknown. The Hosts table includes the following special cases:

- **No Host – pest is a weed**
- **Non-living substrate – see Occurrence Comments:** this allows for cases of pests found on, for example, soil, copra, flour, stored grain, tobacco, wood, or machinery, to be so described in the Occurrence Comments field of the Occurrence table.
- **Not known:** where the Host is not known.
- **Not known – but see Occurrence Comments:** where some indication is available, for example where only the Host family is known this can be entered in the Occurrence Comments field.

2.2.4 Entering a New Person or Authenticating Institute

This is similar to the other entries as above but note that for each person there is an obligatory field for 'Class'. The options here are Quarantine, Research / Extension, Farmer, Importer / Exporter or Other. This person and institute data is used in drop-down lists on several forms so it is important to enter key persons and institutions into it. Key persons include the front-line quarantine staff, plant protection staff involved in collecting specimens, and institutions used for authenticating collected specimens.

2.2.5 Entering new bibliographic references

Select Enter New Bibliographic References. A form is offered with the bibliographic fields. You can check whether the reference is already included by using the Edit sub-menu.

2.2.6 Entering Pest Survey Records for Diagnosis

Pest survey records will usually be identified by a collector's number, will usually include a host (genus, species, common name) and may or may not have an identified pest genus & species. Unknown pests are declared as Genus = Unknown, and are later retrieved by their Collector's name and local collection number. They are nevertheless pest 'occurrences'. Pest survey collection records are entered in the **Add New Occurrence Records** form: see Figure 9 'The Occurrences Menu', and the comments below on some of the fields.

The following tip is helpful when entering or updating many records:

Tip: when entering many records, with some repeated data, Ctrl-" will copy the same data from the previous record

The system has a number of **Pest Survey Diagnosis** reports, which can be used to accompany pests sent to a remote institution (Authenticating Institute) for identification. Various versions of this report are provided, sorted in different ways to suit different purposes. When identifications are received back from an authenticating institute, the form **Update pest survey occurrences** enables each collector's records to be presented for entering the authenticated pest names.

Occurrences

Form to Update Pest Survey Occurrences Records

See separate forms for entering new Hosts and new Pests and new References.

Occ ID: 1

Pest: *Albugo candida* (Gmelin) O. Kuntze - White rust of crucifers

Host: Pinus caribaea Morelet

Date: 28-Jan-03 Public?

Collector's name: Jone Smith

Local collection No.: Jone001

Local identifier:

Farmer name: Farmer 1

Research / Ext'n Staff: Researcher 2

Location, geographical:

Country: Pacific Islands Demo Lat (X):

State, Island or Province: North Island Long (Y):

* Add new names in the form 'Enter New Person Record' for them to appear in these drop down lists.

Authentication of Specimen

Institution: DPIQ

Authenticating person: Fred Blogg

Ref No.: xyz001

Authentication note:

References (bibliographic) (Select from the list)

Ref	Short Title
▶	Lunch S.E.P. 1988
*	

Record: 1 of 3

Figure 4. Form to Update Pest Survey Records

Explanatory notes on some of the fields:

- **Pest Genus:** if not known enter Unknown (already included in the drop-down list)
- **Collector's name:** enter this carefully, normally first name followed by last name, because it is used to generate the pest survey results report for which you have to type in exactly the name of the collector whose records are to be presented in the report. Usually several occurrences will be entered: after the first time of entry you can copy the collector's name from the previous record with <<Ctrl-">>.
- **Local collection No :** each collector has his or her own collection number system; a simple and widely used one is to use one's initials followed by a sequential number e.g. DV 001, DV 002 etc.
- **Farmer name:** this is stored in the Occurrences table
- **Research / Ext'n Staff:** this field links to the Persons table where frequently occurring staff names can be recorded and which will then appear automatically here as a drop-down list.
- Site data such as **Location, Symptoms** etc: fill in as much as possible
- **Public:** to be set to yes () only when a specimen's identification has been determined by an internationally recognised institution or specialist.

2.2.7 Deleting a Record

Records should not be deleted unless they are known with certainty to be false. Deleted records cannot be recovered, except from a backup copy of the database. If an error is made when entering a new record and you wish to withdraw from entering the record, press Escape until all fields including the ID field are cleared. If while entering a record you move to a new record, the first record is automatically saved.

To delete a record in a table view, place the cursor on the record so that it is highlighted. Select in the top of screen menu Edit, Delete Record.

To delete a record in a form view, click with the right mouse button on the record selector along the left side: see a window offering 'cut, copy or paste', and select 'cut'. See Figure 5 below.

The screenshot shows a web-based form titled "Edit Occurrences of known Pests & Hosts". At the top left, there is a search box for "Occ ID" with the value "2127" and a "Ctrl F To find" button. Below this are several input fields: "Pest" (set to "Adelmania dauci (Kuhn) Groves & Skolko"), "Host" (set to "Coccothraux L. cocconut"), "Date" (set to "28-May-02"), and "Public?" (checkbox). There are also fields for "Collector's name", "Location, geographical", "Plant parts infested", "Symptoms", "Advice given", "Pesticides advised", and "Occurrences comments". A "References (bibliographic)" table is visible at the bottom right, with columns "Occ ID" and "Ref Short Title". The table contains one row with "1" in the "Occ ID" column and "Lunch S.E.P. 1983" in the "Ref Short Title" column. A context menu is open over the "References" table, showing "Cut", "Copy", and "Paste" options. The bottom of the form shows a "Record" selector with "1" of "1" records displayed.

Figure 5. Deleting a Record displayed in a Form

2.3 Pest Occurrences

We have already introduced Occurrences in the Data Entry Section 2.2.1 'Recording Pest Occurrences' above, where we described adding new occurrence records. Occurrences of pests are at the core of this system so they deserve some special attention here, and a sub-menu of their own: see Figure 6: The Process Pest Occurrences Menu.

Occurrences of *weeds* are dealt with separately because, although weeds are pests, they are usually addressed in a different context. See the separate menu for Weed Occurrences.

Some explanation of the differences between the three 'Edit' items is called for.

Edit existing Occurrence Records has two functions. Firstly it enables new or changed information about a particular occurrence event to be entered. One can search for a particular pest or host by means of the drop-down list. Secondly it enables the details of an occurrence to be looked up. This often arises from a Pest List report: these reports provide an 'Occurrence ID'. In this form you can click on the Occurrence ID box at the top left, and use Find (shortcut = Ctrl-F) to jump to the correct occurrence record with all its details.

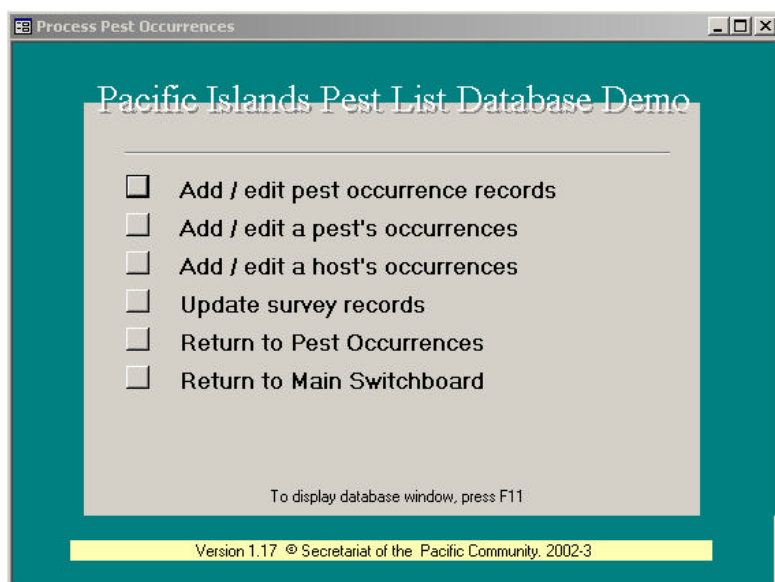


Figure 6: The Process Pest Occurrences Menu.

Edit a Pest's Occurrences (see Figure 8) enables you to select a particular pest, and see all the occurrences of that pest across all hosts, by clicking on the Genus field and using Find (Ctrl-F) to jump to the genus. If the first species of that genus is not the species you want, use the main form *navigation buttons* (at the bottom of the form: see Figure 7) to scroll down to the desired species. Then you can use the sub-form's navigation buttons to scroll through all the occurrence records of that one pest. This form shows only some of the Occurrence details: see the form 'Add or Edit Existing Occurrences of Pests' for more detail.



Figure 7: Navigation Buttons for a form and its sub-form

Edit a Host's Occurrences is similar to the previous case except that it allows you to select a *Host* instead of a pest, and then see in the sub-form all the pest occurrence records for that host.

Update Survey Records was described in Section 2.3.6 'Entering Pest Survey Records for Diagnosis'. It enables each collector's records to be presented for entering the authenticated pest names.

Responsibilities and Liabilities for Occurrence Records

It is the responsibility of the Government Department managing a country's PLD to ensure that new occurrence records are authenticated as soon as possible. Such responsibility is implicit in the following statement, which is found at the end of each Pest List:

This information is provided in good faith from the best records available at the time. The Secretariat of the Pacific Community cannot accept responsibility for any consequences arising from the use of this data. For further information please contact the Government Department concerned and / or the SPC Plant Protection Service.

Pest Pest ID: 828 Pest Genus, species: Abgrallaspis cyanophylli Subspecies: Authority: (Signoret)
 Family, Order: Diaspididae Homoptera
 Pest Common Names: cyanophyllum scale Pest Common Names local: Regulated pest?
 Plant Parts Infested:
 Pest Comments:
 Control Recommendations: Ctrl-F to find a pest

Occurrence(s) Occ ID: 1 Host: 2718 Unknown unknown
 Public? To find a specific Occ. ID, first select the relevant pest above
 Date:
 Collector's name *:
 Local collection No.:
 Local identifier:
 Farmer name *:
 Research / Ext'n Staff *:
 Location, geographical:
 Plant parts infested:
 Symptoms:
 Occurrence comments:
 Authentication of Specimen: Ref No.: Institution *: Authenticating person *:
 * Add new names in the form 'Enter New Person Record' for them to appear in this drop down list.
 References (bibliographic) (Select from the list):

Occ ID	Ref Short Title
1	Williams D.J. and Watson G.W. 1981
*	

 Record: 1 of 9
 Record: 1 of 683

Figure 8: The 'Edit Pest Occurrences' form presents all occurrences of a pest in the sub-form

2.4 Editing Existing Records of Pests, Hosts etc

Select Pest Occurrences, and then Process Objects: Pests, Hosts, Persons etc. This takes you to a sub-menu that offers choices to edit pest and host records, person, and other records.

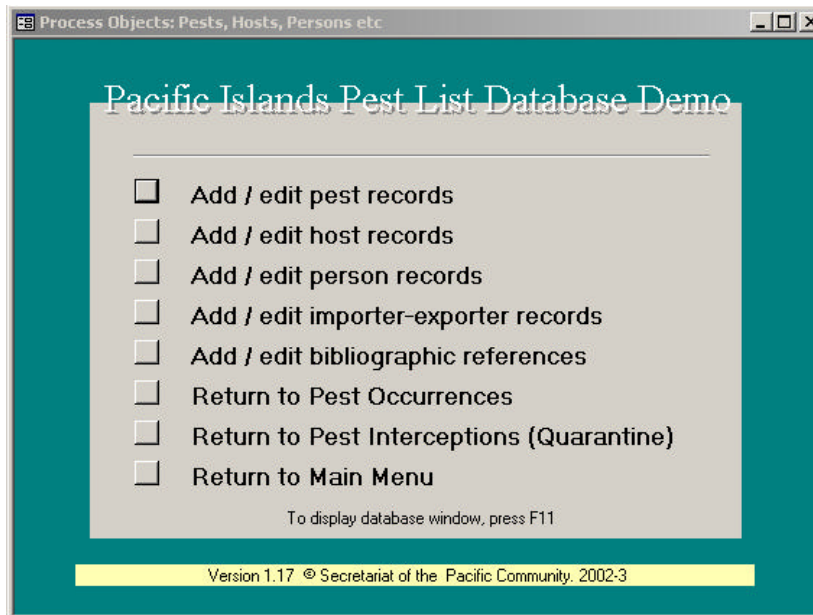


Figure 9. Menu for Editing Records

3 Using the System: Pest Interceptions

Note: The system comes with a few 'dummy' records for demonstration purposes. To use these select the Month as February (Month = '2'), the Year as 2002 and the originating country as 'UK'. When real records are entered, delete the dummies.

Section 2 applies to pest *occurrences*, which are cases of pests found to be living within a country: they may be regarded as indigenous or introduced. This section deals with *interceptions* which refers to pests detected in or on imported goods at (air)ports, usually by a Quarantine Staff. Every effort is made to prevent intercepted pests from entering the country and becoming occurrences. The PLD keeps these records of occurrences (in the country) and interceptions (at the boarder) separate.

Two main types of record are kept on interceptions, each in its own table:

- (a) **Flight / voyage / vessel**: this allows data on each plane flight or ship (e.g. flight No., date, origin) to be entered once only and not repeated for each passenger or cargo interception
- (b) **Interceptions**: Interceptions generally relate to people, such as passengers or crew, and to cargos. All interceptions are linked to a flight / voyage. This enables many interceptions to be recorded for a single record of a flight/voyage, thus saving time in data entry and space for electronic storage and for paper in printed reports.

These two tables are clearly represented in the form to enter interceptions: see Figure 11. Form to add or edit interception records.

3.1 Reports

A number of reports are provided as shown on the menu in Figure 10. Reports on Pest Interceptions.

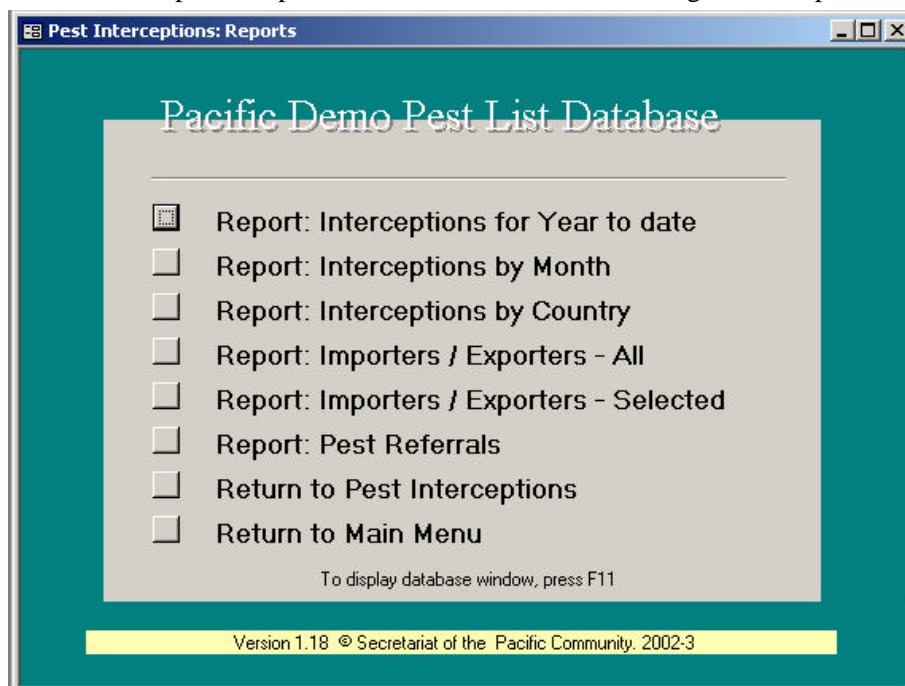


Figure 10. Reports on Pest Interceptions

Report	Purpose
Summary Reports	
1 Interception Actions Taken: Annual	
2 Interception Actions Taken: Monthly	
3 Aircraft / Vessels, People: Annual	
4 Aircraft / Vessels, People: Monthly	
Detail Reports	
5 Intercepted Importers Record: All	To identify & inform on problem importers
6 Intercepted Importers Record: Selected	To identify & inform on a named importer
7 Flight / Voyage Interceptions: Annual	For administrative reporting
8 Flight / Voyage Interceptions: Monthly	For administrative reporting
9 Flight / Voyage Interceptions by Country	For sending to a country (monthly)
10 Intercepted Pest Referrals	To report on pest referrals
11 Intercepted Products	

Information provided by the interceptions reports is as follows.

Interceptions for the Year to Date is an internal administrative report that lists all flights/voyages and their interceptions for any selected year.

Interceptions for the Month is the same but restricted to any selected month.

Interceptions by Country sorts interceptions by source country, each starting on a separate page with its own page numbering. Each country can then be sent a report of interceptions of its own exports' to

alert them to any quarantine issues that they raise. When you print a report, Access software allows you to restrict the printing to selected pages of your choice. You can therefore print the page(s) of just one country by checking its pages using the record counter at the bottom of the window rather than the “Page No.” printed on the report that restarts at 1 for each country.

Importers / Exporters comes in two forms: All and Selected. The ‘All’ report sorts all interceptions by the importer / exporter, each starting on a separate page with its own page numbering. This enables problematic traders to be easily identified complete with detailed evidence of their intercepted goods. The ‘Selected’ version allows the user to type in the name of an importer or exporter to get the report for just that selection.

Pest Referrals selects just those interception records in which there is some report of signs of a pest. It presents interceptions records with entries in one or more of the following fields: Symptoms, Suggested name, Location (of pest) on carrier, State (dead or alive), Infestation level, Referred to.

3.2 Data Processing

Data Entry

There is a form to enter interceptions : it is the blank version of the Edit form shown in Figure 11. Form to add or edit quarantine interception records. It comprises a main form for the flight or voyage and a sub-form below for all their related interceptions. In other words you need enter only once the flight details at the top of the form, and then scroll through one or more interceptions in the lower sub-form.

If you select “Add New Records”, within a session of data entry all entered records are accessible by scrolling back through the records. Closing a session and reopening the data entry form provides a fresh blank form. If you select “Edit Records” and more to the last record and then one more (beyond the last record), a blank record form is offered.


Drop-Down Lists

Several fields in this form have dropdownlists to assist in the use of consistent terms. Five such fields, as listed in Table 1. Built-in Constants for Interceptions, have set contents from which a selection must be made. This arrangement is in the interests of consistency of reporting. The set items could be changed if experienced quarantine specialists so advised.⁴

The **Importer** field dropdown list shows all importers that have been entered into the Importer/Exporter table through the form to add / edit importer/exporter records. If you try to enter a new importer the form to add / edit importer/exporter records is presented for you to enter at least the importer’s name. You can fill in the rest of the detail such as address, telephone number, at the same time or later as desired.

The **Inspector** field dropdown list shows all Inspectors that have been added to the Persons table through the form to add / edit person records.

Pests found on Exports

Pests found on consignments intended for export are entered in the Edit / Add Export Interceptions: a blank form for new entries displays if you select the new record icon:  in the record selector at the bottom of the window.

This is a temporary device for use in field-testing. Pest interceptions on consignments for export are properly pest occurrences (pest is already present in the country) and need to be entered as such in the form to enter pest occurrences. This can be done when the pest has been properly identified.

⁴ The constants currently in the system, as shown in Table 1. Built-in Constants, were developed with the SPC PPS Biosecurity Specialist and senior staff of the Fiji Quarantine Inspection Department.

<i>Fields</i>	<i>Constants</i>	<i>Notes</i>
Action taken	Destroyed Detained Held for Departure Post Entry Quarantine Treated & released	
Condition	canned concentrate cooked dehydrated fresh frozen other powder	
Conveyance	air container amnesty bin baggage bulk cargo hand carried other parcel post sea container	
Products	animal products animals live biologicals machinery & vehicles miscellaneous personal effects plant products plants, living timber timber products	medicines, vaccines including household goods including fresh fruits & vegetables, cut flowers, grains & pulses able to reproduce: whole plants, buds, corms, rhizomes, tissue culture.
Types of packages	cartons crates FCL packets pallets sacks units	full container load

Table 1. Built-in Constants for Pest Interceptions at Borders *

* This table can be presented in the PLD by selecting Pest Interceptions (Quarantine), Pest Interceptions – Data processing, and finally List of Field Constants: the result can also be printed.

Data Editing

This form presents all existing flight/voyage records and their associated interceptions. See Figure 11. Form to Add or Edit Interceptions Records.

The current version of the PLD allows for a single ‘master copy’ of the database for interceptions, normally kept at Quarantine Service headquarters. Interception data is collected at ports and airports on paper forms which are periodically sent to HQ for entering into the PLD. Copies of the PLD can be kept at all the quarantine stations & offices and if so, should regularly be updated from the master copy: this might be done quarterly or monthly.

Interceptions
Form to Add or Edit Quarantine Interceptions

Flight / Voyage ID:

Flight / Voyage No: Scheduled? Date: [Click: inserts today's date](#)

Name of ship: Port of Entry: Number on board: Number searched: Comments on Flight / Voyage:

Last Country (Mail): Crew: VPs:

Last ports (optional):

Intercepted Pests or Goods: InvtID: Inspector: Importer / Exporter: [Click: copies from the previous record](#)

Description of Goods

Origin of goods: Transhipped? Action taken:

Conveyance: Comment on goods:

No. of packages: Total weight: Comment on Interception:

Type of packages: Product: Condition:

Import Permit No: or 'none' International Flight Certificate No: or 'none'

Report of Signs of Pests or Diseases

Symptoms: Suggested name:

Location on carrier: State: Infestation:

Life stage (insects): Treatment applied:

Referred To: Referral Number: Dates referred:

Determination from Laboratory etc: Date received back: Pest name:

Record: of 8
 Record: of 7

Figure 11. Form to add or edit quarantine interception records.

4 Tips on Using the System

4.1.1 The Database Window and the F11 Function Key

So far we have used the PLD through its menu system. For most users this may be sufficient and therefore the only way they choose to use it. For someone who wishes to explore the internal structure of the database rather like a car driver who wishes to know how to service or adjust the engine of his car, the Database Window offers a way of doing this. This calls for special skills so, just as with the case of a car, if you do not have such skills and do not wish to learn them, this route is best avoided.

The database window is displayed when the function key F11 is pressed. It shows several database objects of which the PLD system makes heavy use of the first four: tables, queries, forms, reports, macros and modules. Figure 12 shows the Access 2000 version: earlier versions look different but offer the same facilities.

Caution: if you close the Database Window, you close the whole database; if you wish to only return to the Menu system, just *minimise* the database window.

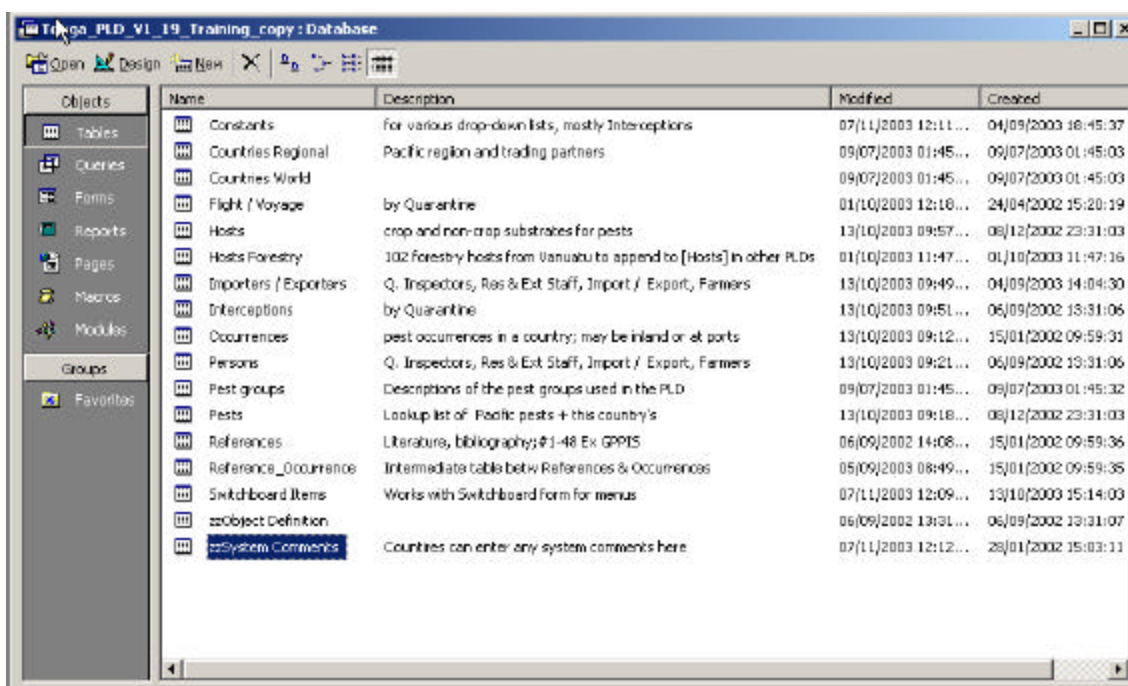


Figure 12. The Database Window showing several types of database object. In this case the 'Tables' object is selected. (MS Access 2000 version)

4.1.2 If the menus disappear

If the menus disappear, press Function Key 11 to open the database window, switch to Forms and click on Switchboard.

If you try to close the PLD by clicking on the 'close' button of the menu you close only the menu: the PLD is still loaded but unseen. To close the PLD always return to the main menu and select the 'Close and Exit' button.

4.1.3 Using 'Find'

Place your cursor in the field in which you want to search.

Select the Find icon on the tool bar, or select Edit on the menu and then Find, or use the shortcut Ctrl-F. The window below should appear. (In earlier versions of Access it appears a little differently but it operates rather similarly)

Note that the 'Look In:' is set to a single field (Collector's name in this case) rather than the whole underlying table. This speeds up the search.

Notice that 'Match' is set to 'Any Part of Field': this allows you to type in just a part of a name and then search.⁵

Ensure these are similarly selected in your case before clicking on the Find Next button

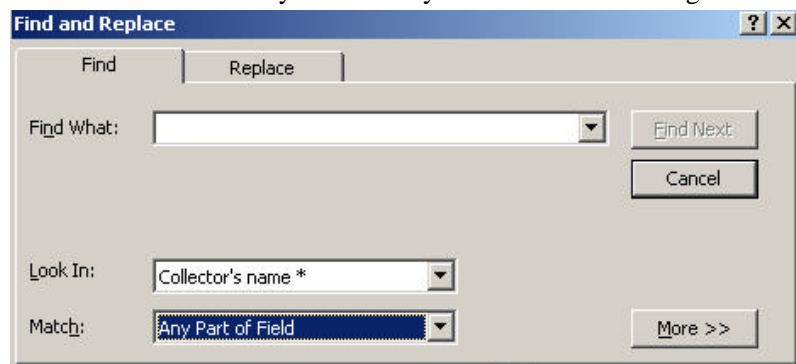


Figure 13. The Find Window

4.1.4 Some Useful Shortcut Keystrokes

These shortcut keystrokes for regular database users make data entry much quicker.

Ctrl-C means hold the Ctrl key down while you tap the C key.

Key strokes	Action
Ctrl-C	Copy selected item into memory
Ctrl-X	Move selected item into memory
Ctrl-V	Paste what is in memory, to the current cursor position
Alt-Prnt Scrn	Copy a marked graphical object into memory
Ctrl - ;	Paste today's date
Ctrl - `	Copy the data from the same field of the previous record

Table 2. Selected Shortcut Keystrokes

⁵ Another useful way is to set the default 'Find' behaviour to always use 'start of field' by selecting Tools, Options, Edit/Search and selecting the 'start of field' option.

4.2 System Maintenance

4.2.1 Backing up and Making copies of the PLD

It is very important that a 'backup' copy of the database is made regularly in case the main copy becomes unavailable: the file may become corrupted and refuse to work, or accidentally deleted, or the computer may develop a problem or even be stolen. Making a regular backup copy will result in your being able to continue work even when such an incident occurs.

The system in most counties is likely to be too big to fit entirely on to a single diskette. (It is possible to break it up into parts to fit on to a number of diskettes but this requires more technical skills.) It can be copied on to a compact disc (CD), which has a capacity of c. 600MB. This needs a 'writable' CD drive. Organisations are urged to procure such drives and preferably as an internal version – that sits inside a PC. If you have been entering or editing much data since the last backup it is sensible to first 'compact' your database so that it takes up less space on the disk – see below: Section 2.8.3: Compacting the Database.

Cancel the 'read only' tag of a file copied from a CD

Sometimes files copied from a CD are set to 'Read only' and you may be able to load it and read its contents but not edit or add anything. If this happens, then to revert to the normal version click on the file name with the right-hand mouse button, select Properties, and clear the Read Only check box by clicking on it. Then load the system in the usual way.

4.2.2 Compacting the Database

After some use of the system it tends to get spread out on the drive in the computer in which it is stored. Access provides a 'compaction' utility that tidies the whole system up, stores it more compactly using less storage space, and may result in faster running. The system should be compacted periodically – perhaps weekly if used intensively.

To compact an Access database, proceed as follows:

- open Access but not the database
- select the following menu options Tools, Database utilities, Compact database, and direct the system to the appropriate folder and database file. When the window offers a file name of 'db1' for the compacted file, click on the original name to have that substituted instead. At this stage I add a 'c' to the file name to indicate the compacted copy, preserving the original just in case something goes wrong. Click on 'Save'. If the Pest Listsc.mdb copy performs satisfactorily, close it again, delete the old copy (Shift-Del avoids the deleted copy being retained in the recycle bin) and delete the 'c' from the new system's name to bring it back to the original name.

5 Description of the System

This section is offered for those who would like to have a deeper knowledge of the system. Section 3.1 Parts of a Database is for those new to databases.

5.1 Parts of a Database:

5.1.1 Tables and Fields

We have already learnt about three 'tables': the Pests table, the Hosts table and the Occurrences table. They are very like a list or table of things you might have on paper, with rows and columns. In a database we call the rows 'records' and we call the columns 'fields'. Each item occupies one line in the table. Features of those items occupy the columns – these are the fields. See Figure 14, which shows the structure of a single table.

Pest ID	Pest Genus	Pest Species	Pest Common Name	Pest Group
1	Peregrinus	maidis		arthropods
2	Tarophagus	proserpina	Taro planthopper	arthropods
3	Colgar	sp.		arthropods
4	Catacanthus	viridicatus		arthropods

← field names (attributes)

← a record

fields

Figure 14. Example of a flat file database

For simple data storage we may have a database with just a single table like this. More usually we have several tables, one for each object e.g. one for pests, one for hosts etc. Then it becomes important to link the tables. Such a system of several linked tables is called a relational database. The Pacific Pest Lists Database is a relational database.

5.1.2 ID Numbers

ID numbers, such as Host ID and Pest ID, are unique identifiers, that is, each ID number occurs only once in a table and identifies that record uniquely. They are also of the Access field type 'AutoNumber' which means that the number is allocated automatically by the database software.

If a record is ever deleted that number is not re-used. This explains why the last ID Number may be greater than the number of records in a table. The ID number should be a reliable identifier to a record whereas the record number as shown in the record selector box at the bottom of most forms and tables is not because it varies with the sort order and other processes. The ID number, allocated automatically to a record by the system, stays with the record for ever, rather like a person's birth certificate.

5.2 The Main Tables

All, or almost all, data in a database is stored in tables. The core of the PLD consists of three tables: Pests, Hosts and Occurrences (see Figure 15).

- the **Pests** table contains most of the common pests & diseases in the Pacific
- the **Hosts** table similarly contains most of the major crops.

These two tables provide 'look-up' lists for the entry of new occurrence records. They are not pest & host lists for an individual country.

- The **Occurrence** table provides the record of each occurrence of a pest in a country. This is where the details such as date, place, identifier etc of the occurrence are recorded. It is this table that records the information of what pests and diseases occur in a particular country. Each occurrence record includes a field for its related pest (the Pest ID field) and, where a host is known, the related host (Host ID field). Figure 15, Tables and their Relationships, shows the three tables, the fields that each has, and the relationship between the tables ⁶.

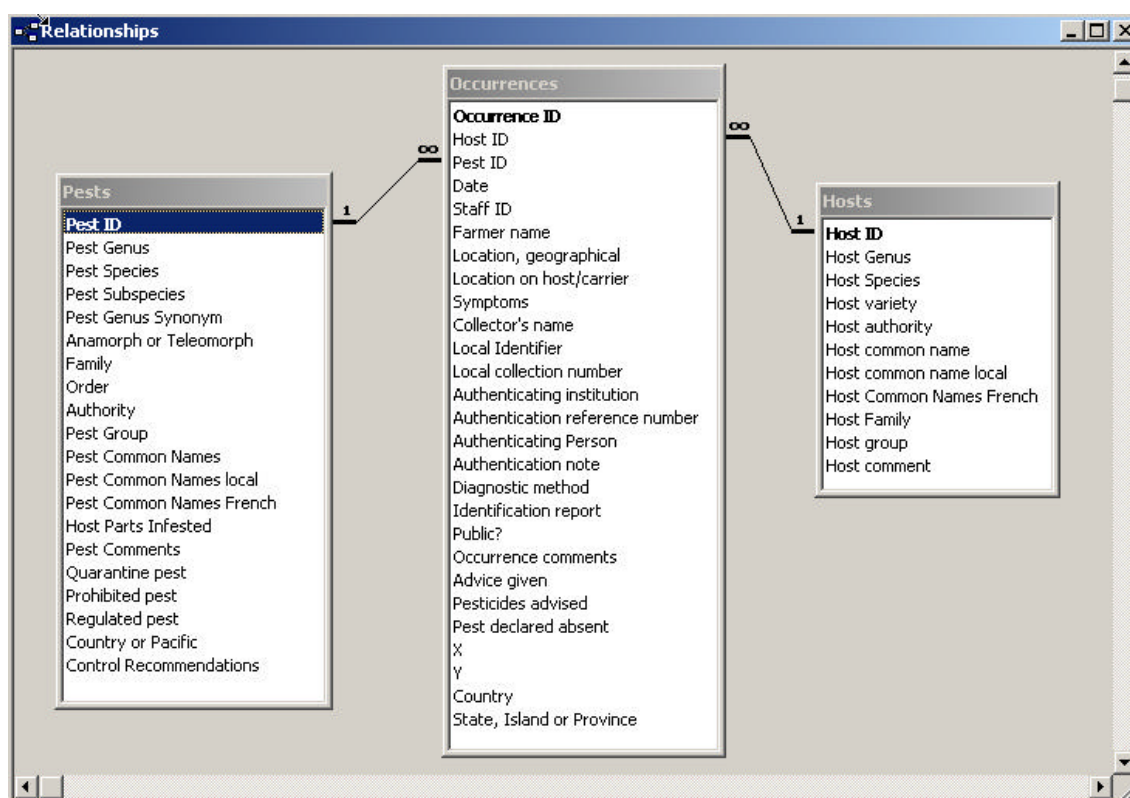


Figure 15. Main Tables and their Relationships

For Quarantine use, two tables are used in place of the Occurrences table because a pest interception at the border has two components: the aircraft or ship, and the usually several interceptions related to each aircraft. The two are the **Flight/Voyage** and **Interception** tables.

Other Tables

The system contains additional tables:

Persons includes Extension agents & Quarantine inspectors, Importers and Farmers

⁶ The relationship between tables is an important aspect of a relational database model. This is covered in the SPC PPS Pest List Database training workshop materials but most users need not be concerned with it.

References: Bibliographic references that are the source of a record. There is an associated Reference-Occurrence table to link it to the Occurrences table.

The following tables may or may not be used in any individual country

Photos : of pests to assist in identification; add considerably to the file size.

5.3 Persons

In several of the data entry forms there are fields for the entry of a person for example a farmer, quarantine inspector, or an internationally recognised expert who can 'authenticate' a pest identification. In most cases each such field offers a drop-down list of repeatedly used names of people matching that particular field. This greatly saves time and avoids spelling & typing errors that might occur if names had to be typed in. For this facility to work, commonly repeated person names need to be entered into the Persons table through the form 'Enter or Edit Person Records', paying attention to the obligatory field 'Class'.

Several classes of persons are recognised:

Person Classes offered in drop-down lists	Appearance in List
(a) Quarantine officers (= Inspector 1, 2, 3 etc in the [Flight / Voyage] table and Inspector in the Interceptions table.	Quarantine
(b) Research & Extension staff	Res / Extn
(c) Research & Extension staff who are also collectors	Res / Extn / Collector
(d) Farmers	Farmer
(e) Collector	Collector
(f) Authenticator	Authenticator

Table 3. Person Classes

Most person-type fields allow any name to be entered in addition to those on the drop-down list. Where a person is not likely to be recorded many times it would be unhelpful to add them to the drop down list. Where it is felt a new person needs to be included in a drop-down list, they can be entered into the Persons table through the form 'Enter or Edit Person Records' as above: check first that the person is not already entered and just in need of an adjustment to the field 'Class'.

5.4 Pest Groups

The following groups of pests are used. Note that the plural form is used and with lower case.

Animals	Diseases	Plants
arthropods : including insects, mites gastropods : including snails nematodes vertebrates : including rats, frogs, lizards, birds	bacteria fungi phytoplasma viruses* : including viroids	weeds

Table 4. Pest Groups

* Viruses: see following comment on the virus naming convention.

A note on virus names

Virologists have chosen a somewhat different naming convention from other biological organisms. Viruses are generally referred to by their species and often by the species alone, but the species typically resembles more the common name of other biological organisms. The table below shows the more common viruses of the Pacific Islands and how they are named.

Pest Genus	Pest Species	Pest Common Names
Luteovirus	Banana bunchy top virus	BBTV
Potyvirus	Bean yellow mosaic virus	BYMV
Viroid	Citrus exocortis viroid	CEVd
not known	Citrus psorosis virus	CPsV
Closterovirus	Citrus tristeza virus	CTV
not known	Colocasia bobone disease virus	-
Cucumovirus	Cucumber mosaic virus	CMV
Potexvirus	Cymbidium mosaic virus	CymMV
Potyvirus	Dasheen mosaic potyvirus	DsMV
Potyvirus	Lettuce mosaic virus	LMV
Tobamovirus	Odontoglossum ringspot virus	ORSV
Potyvirus	Papaya ringspot virus	PRSV
Potyvirus	Passionfruit woodiness virus	PWV
Potyvirus	Peanut mottle virus	PeMoV
Potyvirus	Potato Y virus	PYV
Tobamovirus	Tobacco mosaic virus	TMV
Potyvirus	Turnip mosaic virus	TuMV
Potyvirus	Vanilla mosaic virus	VanMV
Potyvirus	Vanilla necrosis virus	VNV
Potyvirus	Watermelon mosaic virus	WMV
Potyvirus	Watermelon mosaic2	WMV

Table 5: Names of some of the more common Pacific region plant viruses.

In some places within the PLD, such as a pest 'drop-down list', where pests are shown as [the genus + species + common name], viruses show just the species. We use the Pest Common Names field for the acronym.

To bring earlier versions of the PLD into line with this virus naming convention, create a query on the Pests table with the fields Pest Genus, Pest Species, Pest Common Name and Pest Group. In the criterion row under Pest Group, enter : like "vir*" to select only viruses and viroids. Run the query, and carefully correct the names to bring them into line with the above table. Do not change any record to another virus, as there are likely to be occurrence records linked to several of these pest records.

5.5 Occurrences

5.5.1 Field Data, Authenticated and Public Records

The system is designed to allow entry of pest occurrence data as they are first recorded in the field. National plant protection staff are encouraged to do so in order to maintain good records. Data can be entered even if the pest and/or host genus is not known, the term 'not known' being entered into the Pest or Host genus fields: in such cases specimens should be collected for later identification and their collection numbers entered. See Section 2.3.6 Entering Pest Survey Records for Diagnosis.

Such records are not included in the pest lists.

The Occurrences table has a field 'Public?' that signifies whether this record is accepted as authentic and can be publicly declared. The Pest List reports make use only of records where this field is set to 'yes' (shown as '√'). Occurrence records should be marked as public when an internationally recognised institution or person has authenticated them. The former can be shown in the two fields 'Authenticating institution' and 'Authentication reference number'. In some circumstances the field 'Local identifier' may serve the same purpose where the person is of sufficient reputation.

The bibliographic 'References' table has a field named 'International recognition'. Usually such references provide many occurrence records: often they are reporting a pest survey. New country Pest List Databases are usually initiated with the inclusion of several hundreds to a few thousands of pest occurrence records from that country, derived from such literature. In such cases a judgement is made on the status of each reference and the 'International recognition' field set to yes ('√') where appropriate. A query is then used to automatically update all occurrence records derived from such recognised sources, so that each occurrence's 'Public?' field is set to 'yes'. It is these 'Public' records that are presented in the Pest List reports.

Generally bibliographic references more than thirty years old are not accepted unless they are known to be reliable and even then there is a case for reviewing the names of pests in case they have changed.

5.5.2 Latitude (X) and longitude (Y)

The Occurrence table includes fields for latitude (X) and longitude (Y) in decimal format as supplied by a GPS (geographical positioning system) devices. Some geographical information systems such as ArcView recognize decimal degree coordinates declared as X for latitude and Y for longitude

5.6 French Speaking Islands

Recommendation

It is strongly recommended that no changes be made to table and field real names, because such changes will cause errors in the operation of queries, forms and reports.

Displayed names of fields can be changed: this is done in the Database Window (press the F11 key). Open the table in design view, click on the field you wish to have displayed in French, and enter the French name in the Caption box in the lower part of the window.

Built-in facilities

The Pest table comes with an extra field: Pest common name French. This facility is not yet operational and its use needs to be further explored

6 Annexes

6.1 Pest List Database Tables and their Relationships

Access provides a useful ‘map’ of a system’s tables and their relationships. To display the Relationship Diagram, select Tools, and then Relationships. See Figure 16 Pacific Pest Database Tables and their Relationships.

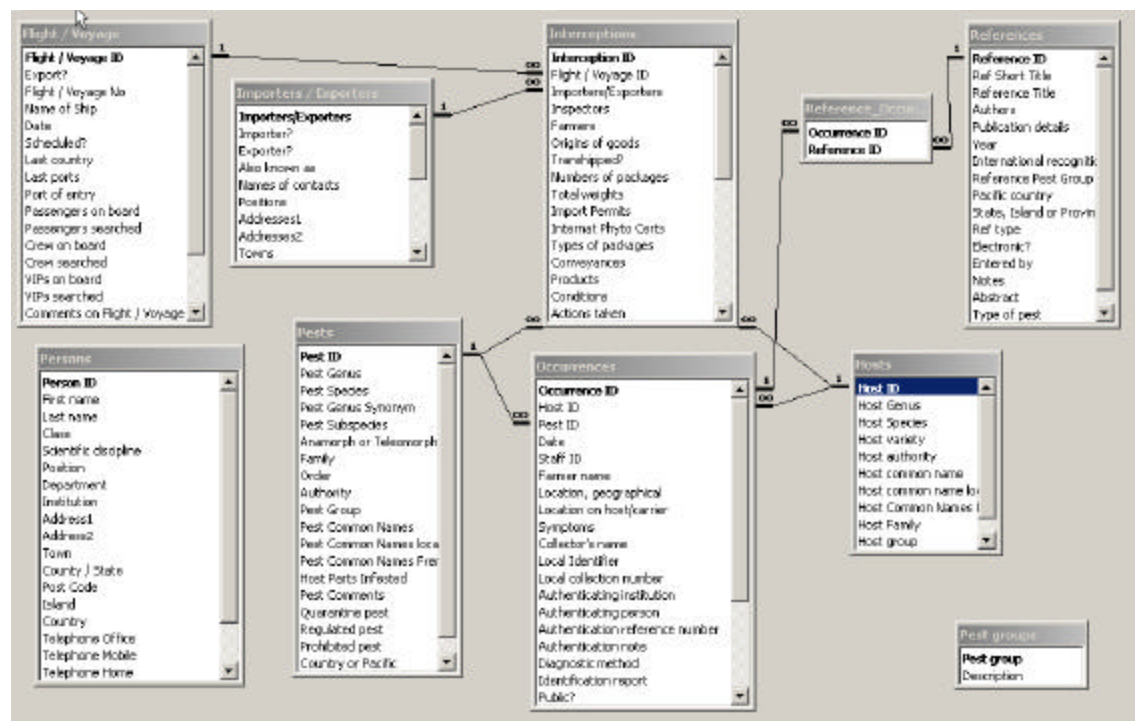


Figure 16. Pacific Pest Database Tables and their Relationships.

Notice the three core tables of pests, hosts, and linking these two, the occurrences.

For quarantine interceptions the three core tables are again pests and hosts, but linking them is the Interceptions Pest Data table.

Do not modify this map of table relationships because the operation of the PLD makes extensive use of it.

6.2 International Agreements & Pest Lists

Pest Lists are required under international agreements and are in many cases necessary for international trade. Some excerpts from these agreements are provided here to give a background to the need for and use of pest lists. These excerpts have been taken from the following references.

The main international agreement is the *International Plant Protection Convention* (1997)(IPPC) 19pp., which is supported by a number of *International Standards For Phytosanitary Measures* (ISPMs):

- *Glossary of phytosanitary terms*(ISPM No. 5; 2002. 72pp)
- *Guidelines for surveillance* (ISPM No. 6; 1998. 10pp)
- *Determination of pest status in an area* (ISPM No. 8; 1999. 17pp)
- *Guidelines on Lists of Regulated Pest* (ISPM No. 19, April 2003. 12pp)
- *Guidelines For The Notification Of Non-Compliance And Emergency Action* (ISPM No. 13. May 2001)

Readers may wish to also consult other ISPMs such as:

- *Guidelines for pest risk analysis*(ISPM No. 2; 1996)
- *Pest risk analysis for quarantine pests* (ISPM in draft)

These documents are given in full on the PPS Internet site www.spc.int/pps : select Publications / International Plant Protection Convention / International Standards for Phytosanitary Measures. Most are offered in both English and French versions. See also the IPPC Internet site: <http://www.ippc.int/IPP/En/isp.m.jsp>

6.2.1 The International Plant Protection Convention (IPPC)

This is a multilateral treaty for cooperation in plant protection, approved and deposited in 1951 with FAO in Rome, having come into force in 1952 and amended in 1979 (the Revised Text) and 1997 (the New Revised Text). This has the following, under Article IV/2:

'The responsibilities of an official national plant protection organization shall include the following: the surveillance of growing plants, including both areas under cultivation (including fields, plantations, nurseries, gardens, greenhouses & laboratories) and wild flora, particularly with the object of reporting the occurrence, outbreak and spread of pests including the reporting referred to under Article VIII /1(a).'

Article VIII /1(a) states:

1. The contracting parties shall cooperate with one another to the fullest practicable extent ... in particular:
 - a) cooperate in the exchange of information on plant pests, particularly the reporting of the occurrence, outbreak and spread of pests that may be of immediate or potential danger...'

6.2.2 Guidelines For The Preparation Of Regulated Pest Lists (ISPM No. 19, April 2003)

This standard describes the role of lists of regulated pests as they relate to the application of phytosanitary measures, and procedures to establish, maintain and distribute these lists as the means for NPPOs to specify the pests for which phytosanitary measures are applied.

Several purposes for pest lists are given:

1. developing and maintaining adequate information on the status of pests occurring within territories under the jurisdiction of the NPPO. This type of information is a prerequisite for the determination of pest status for exotic organisms (see IPPC Art VII.2j) and is therefore crucial to pest listing exercises such as those discussed herein.
2. lists of pests associated with specific crops or commodities are necessary prerequisites for Pest risk analysis (PRA)

3. A *general list of regulated pests* plays a central role in preventing the introduction and/or spread of harmful pests and facilitating safe trade by enhancing transparency.
 - to increase transparency associated with the application of phytosanitary measures by making clear the pest basis for measures.
 - to systematically identify regulated pests that have been determined by the NPPO to be the basis for phytosanitary requirements.
 - to facilitate listing regulated pests that are the object of specific inspection, testing or other specific phytosanitary procedures required for certification purposes
4. A *specific list of regulated pests*, which should be a subset of the general list, is provided by the importing contracting party to the exporting contracting party as the means
 - to make known to the exporting contracting party those pests for which inspection, testing or other specific phytosanitary procedures are required for certification of particular commodities

The standard offers a set of categories for pests:

- Quarantine pest, not present (in the territories of the importing contracting party);
- Quarantine pest, present but not widely distributed and under official control;
- Regulated non-quarantine pest.

See the section 'Some Definitions' below.

6.2.3 Guidelines for surveillance (ISPM No. 6; 1998)

This standard describes the components of survey and monitoring systems for the purpose of pest detection and the supply of information for use in pest risk analyses, the establishment of pest free areas and, where appropriate, the preparation of pest lists. Of interest to the Pest Lists Database is a list of what data items should be recorded for a pest occurrence:

“5. Record Keeping: The NPPO should keep appropriate records derived from general surveillance and specific surveys. Information kept should be appropriate for the intended purpose, for example support of specific pest risk analyses, establishment of pest free areas and preparation of pest lists. Voucher specimens should be deposited, where appropriate.

Information in the records should include to the extent possible:

- scientific name of pest and Bayer code if available
- family/order
- scientific name of host and Bayer code if available, and plant part affected or means
- of collection (e.g. attractant trap, soil sample, sweep net)
- locality, e.g. location codes, addresses, coordinates
- date of collection and name of collector
- date of identification and name of identifier
- date of verification and name of verifier
- references, if any
- additional information, e.g. nature of host relationship, infestation status, growth stage of plant affected, or found only in greenhouses.

Reports of pest occurrence on commodities need not be so specific on locality or verification, but should refer precisely to the exact type of commodity, the collector and the date, and if appropriate the means of collection. Reports of new occurrences of pests should also include information on any measures taken, and such reports made available on request.”

6.2.4 Determination of pest status in an area (ISPM No. 8; 1999)

This standard describes the content of a pest record, and the use of pest records and other information in the determination of pest status in an area. The following excerpt provides an outline.

“Outline Of Requirements: Pest records are essential components of the information used to establish the status of a pest in an area. All importing and exporting countries need information concerning the status of pests for risk analyses, the establishment of and compliance with import regulations, and the establishment and maintenance of pest free areas.

A *pest record* provides information concerning the presence or absence of a pest, the time and location of the observations, host(s) where appropriate, the damage observed, as well as references or other relevant information pertaining to a single observation. The reliability of pest records is based on consideration of the data in regard to the collector/identifier, the means of technical identification, the location and date of the record, and the recording/publication of the record.

The *determination of pest status* requires expert judgement concerning the information available on the present-day occurrence of a pest in an area. Pest status is determined using information from individual pest records, pest records from surveys, data on pest absence, findings of general surveillance, and scientific publications and databases.

Pest status is outlined in this standard in terms of three categories incorporating various final determinations:

- *presence* of the pest - leading to determinations such as “present in all parts of the country”, “present in some areas only”, etc.
- *absence* of the pest - leading to determinations such as “no pest records”, “pest eradicated”, “pest no longer present”, etc.
- *transience* of the pest - leading to determinations such as “non-actionable”, “actionable, under surveillance”, and “actionable, under eradication”.

To facilitate international cooperation among contracting parties in meeting their obligations in reporting the occurrence, outbreak or spread of pests, the National Plant Protection Organizations (NPPOs), or other organizations or persons involved in recording the presence, absence, or transience of pests, should follow good reporting practices. These practices concern the use of accurate, reliable data for pest records, the sharing of pest status information in a timely manner, respecting the legitimate interests of all parties concerned, and taking into account the pest status determinations in this standard.”

6.2.5 Guidelines For The Notification Of Non-Compliance And Emergency Action

(ISPM No. 13. May 2001)

OUTLINE OF REQUIREMENTS

The International Plant Protection Convention (IPPC, 1997) makes provision for contracting parties to report significant instances of non-compliance of imported consignments with phytosanitary requirements, including those related to documentation or to report appropriate emergency action, which is taken on the detection in the imported consignment of an organism posing a potential phytosanitary threat. The importing contracting party is required to notify the exporting contracting party as soon as possible regarding significant instances of non-compliance and emergency actions applied to imported consignments. The notification should identify the nature of non-compliance in such a way that the exporting contracting party may investigate and make the necessary corrections. Importing contracting parties may request a report of the results of such investigations.

Required information for notification includes the reference number, the date of notification, the identity of the NPPOs of the importing and exporting countries, the identity of the consignment and date of first action, the reasons for the action taken, information regarding the nature of non-compliance or emergency action, and the phytosanitary measures applied. Notification should be timely and follow a consistent format.

An importing country should investigate any new or unexpected phytosanitary situation where emergency action is taken in order to determine if actions are justified and if changes in phytosanitary requirements are needed. Exporting countries should investigate significant instances of non-compliance to determine the possible cause. Notifications for significant instances of non-compliance or emergency action associated with re-export are directed to the re-export country. Those associated with transit consignments are directed to the exporting country.

ISPM No. 13 provides details of how these requirements are best met. SPC PPS has incorporated into the PLD an interception records facility that will assist PICTs in meeting these requirements.

6.2.6 Some definitions

These have been taken from the various ISPMs, notably from *Glossary of phytosanitary terms* (ISPM No. 5; 2001. 72pp).

Term	Definition
Commodity	A type of plant, plant product or other regulated article being moved for trade or other purpose
Commodity pest list	A list of pests occurring in an area which may be associated with a specific commodity
Establishment	Perpetuation, for the foreseeable future, of a pest within an area after entry.
Host pest list	list of pests that infest a plant species, globally or in an area .
Interception (of a pest)	The detection of a pest during inspection or testing of an imported consignment.
National Plant Protection Organization (NPPO)	Official service established by a government to discharge the functions specified by the IPPC.
Occurrence	The presence in an area of a pest officially reported to be indigenous or introduced and/or not officially reported to have been eradicated.
Pathway	Any means that allows the entry or spread of a pest.
Pest	Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products
Pest record	A document providing information concerning the presence or absence of a specific pest at a particular location at a certain time, within an area (usually a country) under described circumstances.
Pest risk analysis	The process of evaluating biological or other scientific and economic evidence to determine whether a pest should be regulated and the strength of measures to be taken against it
Pest status (in an area)	Presence or absence, at the present time, of a pest in an area, including where appropriate its distribution, as officially determined using expert judgement on the basis of current and historical pest records and other information
Quarantine pest	A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled.
Regulated article	Any plant, plant product, storage place, packaging, conveyance, container, soil and any other organism, object or material capable of harbouring or spreading pests, deemed to require phytosanitary measures , particularly where international transportation is involved.
Regulated non-quarantine pest	A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party
Regulated pest	A quarantine pest or a regulated non-quarantine pest

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