

NURSERY PAPERS

OCTOBER 2009 Issue no.9

Electronic Pest, Disease, Beneficial & Weed Identification Tool

The Nursery & Garden Industry Queensland (NGIQ) has completed an innovative project transferring a popular pest and disease identification handbook to an electronic format. The resource has all the data stored on a memory card that can be inserted into portable platforms such as Personal Digital Assistants (PDAs) and some Smartphones. The identification tool has almost 200 factsheets with 782 images and uses touch screen menu navigation.

The project was jointly funded by NGIQ and Horticulture Australia Ltd (HAL) and released to industry in August 2009. In this Nursery Paper, John McDonald, NGIQ Industry Development Manager, (IDM) provides an overview of this industry innovation.

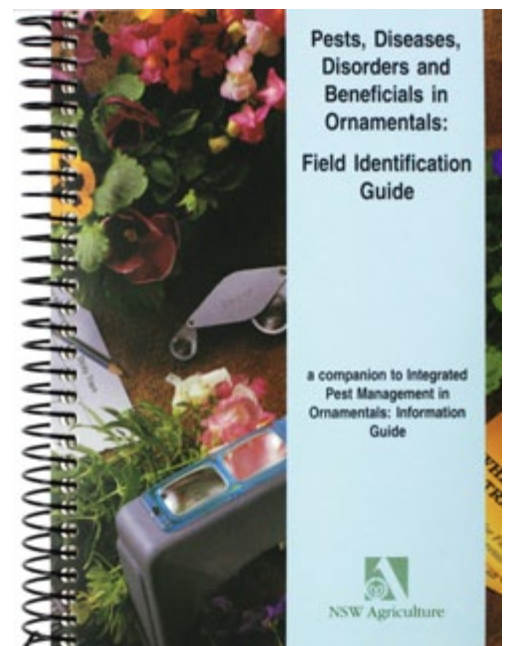


Electronic Pest, Disease, Beneficial & Weed Identification Tool

Under the previous National Greenhouse Integrated Pest Management (IPM) HAL funded project completed in 2000 the outcomes for nursery production included the Agrilink *"Integrated Pest Management in Ornamentals: Information Guide"* and the pocket sized handbook *"Pests, Diseases, Disorders and Beneficials in Ornamentals: Field Identification Guide"*. Both of these resources are valuable tools for guiding industry in their pest and disease management programs. However, due to their bulk they are difficult to have in the field. This lack of portability has limited the holistic use of these tools infield across Australian production nurseries.

In recent years growers have generally kept small comprehensive pest and disease identification booklets in their vehicles or office to allow for speedy recognition of crop pest and disease problems. A number of limiting factors relative to this type of product include the bulk of the guide, the finite information stored in a hard copy reference book plus the cost to print and re-print hard copies to maintain currency of information.

NGIQ has now converted (electronically) the information from the, *"Pests, Diseases, Disorders and Beneficials in Ornamentals: Field Identification Guide"*, allowing it to be loaded onto a PDA via an external Secure Digital (SD) memory card. The result of this project is that the information is now as close as your PDA or mobile phone and is current and updatable.



Pests, Diseases, Disorders and Beneficials in Ornamentals: Field Identification Guide

NGIQ has produced an 'insects, Beneficials, Diseases, Disorders and Weeds of Nursery Production' electronic identification resource. Using HTML, internet language, as the framework it allows the information to be read by the majority of standard internet web browsers loaded on most of the relevant devices (PCs, PDAs & Smartphones) in Australia.

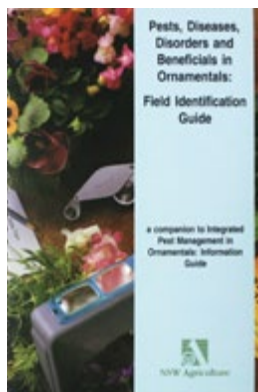
With the increasing use and availability of small handheld computers, this on-farm identification tool, covering pest and beneficial insects, plant diseases, nutritional disorders, and weed identification, has been developed for Australian growers.

The ever-increasing features and capacity of these smart devices means the need for multiple paper-based sources of information will be replaced by a virtual electronic library of information at the user's fingertips. NGIQ anticipates greater use for these devices on production nurseries in coming years including stock picking lists and on-farm record keeping.



NGIQ has converted pest and disease information from hardcopy manual into a format that means it can be loaded onto an SD memory card such as this one.

The new electronic resource 'Insects, Beneficials, Diseases, Disorders and Weeds of Nursery Production' has all the data stored on a memory card that is inserted into the PDA. The identification tool has almost 200 factsheets with 782 images and uses touch screen menu navigation. The electronic package provides current and portable information on Insects, Beneficials, Diseases, Disorders and Weeds, in a format that is mobile and updatable. With a touch screen menu, navigating through the data is easy and fast with information broken down into specific menu items, for example; Insects and further down to sub-menu items, for example; beetles for easy data retrieval.



Common mobile platforms. PDA (left) Smartphone (right)

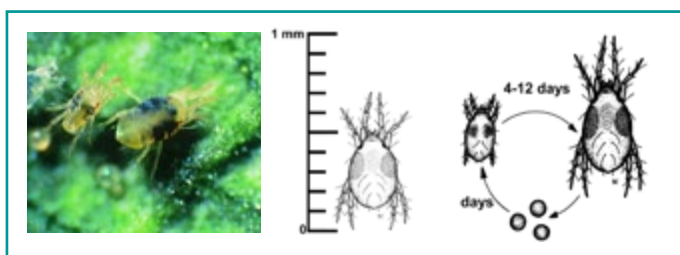
Touch Screen Navigational Menu Includes:

| Main menus on the PDA: | Other menus available: |
|---------------------------------|-------------------------------|
| Pest Insects | How to use the package |
| Beneficial Insects | Information on life cycles |
| Plant Diseases | Introduction to IPM |
| Weeds | Hints for diagnosing diseases |
| Nutritional Disorders | What is a plant disorder |
| Emergency Pest Insects | Contact list |
| Emergency Plant Diseases | |
| Emergency Pest Plants | |

The software package used for the production of the information pages or 'factsheets' was the commercially available program 'Fact Sheet Fusion (FSF)' which was developed by the Centre for Biological Information Technology at the University of Queensland.

This program essentially compiles a database which links headings, subject, text, images and captions and using predefined templates, generates a website with an index page which links the user to the individual factsheets. From the index the factsheet is loaded and information is viewed in the format defined by the template. Images are thumb nailed in the factsheet and can be enlarged to full screen size.

Example of Identification Factsheet Content



Two-spotted Mite
(*Tetranychus urticae*)

The project was funded by NGIQ in partnership with Horticulture Australia Limited (HAL) and contracted to the Queensland Primary Industries & Fisheries (QPI&F) to undertake the initial phase of development. The project brief was to take the hardcopy reference text (Ute Guide size) 'Pests, Diseases, Disorders and Beneficials in Ornamentals: Field Identification Guide' and convert to a complete electronic version for PDA use.

Acknowledging the cooperation and support of NSW Agriculture, the project was able to access all of the electronic files used to develop the hardcopy editions in 2000, 2002 and 2007 with Queensland Primary Industries & Fisheries (QPIF) using various software to finally produce the information in a format that could be read by the mobile platforms above. With the software in place and the programs capable of converting the files into readable data for the PDA, NGIQ proceeded to undertake additional data inclusion for pest identification.

This extra data includes information on emergency plant pests (insects & diseases) not yet present in Australia and pest plants (weeds) that we need to be aware of and proactively monitor our cropping systems to ensure early detection. NGIQ negotiated permission from the Centre for Native Floriculture to include the photographs and text from the published "Common Weeds of Container Nurseries and their Control" in the electronic resource. Also sourced, from QPI&F, was a range of plant pests and beneficials identified in a Ute guide titled "Insect Pest Guide: a guide to identifying vegetable insect pests and their natural enemies in the dry tropics" published in 2004.

The uses for this portable identification technology, in supporting on-farm operations, are as follows:

- Pests, diseases, disorders, beneficials and weed monitoring
- Management of endemic plant pests on-farm
- Inspections of incoming stock at receipt
- Inspections of stock at dispatch



PDA with weed identification photograph



PDA with mite identification photograph

To load the data onto your PDA

1. Insert the memory card into the PDA slot.
2. Go to **Windows > start** then **'File Explorer'**.
3. Go to **'My Device'**.
4. Go to **'SD Card'** – A file named **'LOAD'** and a folder named 'NEW WM' will appear.
5. Open the **'LOAD'** file and touch screen on the word **LOAD**
6. A **Navigation Menu** (illustrated) will appear



7. Go to **'Add Favorites'** – it may be under 'MENU'.
8. Save the **Navigation Menu** as a Favourite.

THEN: *'Insects, Beneficials, Diseases, Disorders and Weeds of Ornamental Plants – Factsheets'* will appear under *'Favourites'*.

To open your on-farm identification tool

- From **'Favourites'** - Choose *'Insects, Beneficials, Diseases, Disorders and Weeds of Ornamental Plants – Factsheets'*
- The main navigation menu will appear
- Touch the screen to move through the menus to access pest indexes and individual factsheets
- Each factsheet has extensive information and identification images
- Touch any image in the factsheets and it will open in a larger format
- From the enlarged image, use **'Back'** to return to the factsheet

'Home' returns to main menu or use the **'Back'** button to stay within a chosen pest area.

Acknowledgements:

This Nursery Paper was written by John McDonald, Nursery & Garden Industry Queensland (NGIQ) Industry Development Manager (IDM). The 'Electronic Pest, Disease & Weed Identification Tool' project was jointly funded by NGIQ and Horticulture Australia Ltd (HAL).

About the project

The system is unique because it is electronic and portable; a virtual electronic library of information at the user's fingertips. The concept can accommodate upgrades and data updates simply by inserting a new SD card and hardcopy publications are no longer required. The SD cards can also be read in desktop PCs and laptops through a portable card reader or via inbuilt card readers in more modern computers.

NGIQ has taken possession of the entire database and will continue to add relevant data on new and emerging plant pests. The project has conducted a training session for a member of the NGIQ staff and a staff member from DPI&F GrowSearch Australia research library so that additions to this publication and subsequent publications can be undertaken at any time as the need arises. For example, if a new pest becomes established in Australia.

How to order

Launched by the Hon. Wayne Wendt, representing Minister Mulherin, at the recent NGIQ Spring Green Expo on the Gold Coast, NGIQ is now offering the package to industry for \$55 (GST incl) per SD Memory Card.

To order a copy of the electronic version of *'Insects, Beneficials, Diseases, Disorders and Weeds of Nursery Production'* please contact NGIQ on (07) 3277 7900.

