

NURSERY PAPERS

MARCH
2025

2025 GUIDE TO PRACTICAL PLANT PROTECTION

INTRODUCTION

Efficiency and sustainability are more than just business buzzwords, they are essential elements of every greenlife nursery. Nowhere is this more important to your business than in the complex and challenging sphere of plant protection.

Among the top challenges facing the greenlife sector are:

1. upskilling in crop monitoring
2. improving support and extension services
3. streamlining crop monitoring and reporting
4. enhancing your workforce
5. managing the costs of inspection and surveillance for plant protection
6. building confidence in biosecurity and navigating regulations.

Luckily, Greenlife Industry Australia (GIA) has your back with tools and resources to help you handle the top six biosecurity challenges facing production nurseries.

CONTEXT

Australia's production nursery industry can expect the landscape to continue to evolve in 2025. Pressures facing the industry such as escalating costs, shifting regulations and a growing skills gap are front of mind for GIA as we continue to develop and offer a broad range of resources to assist nurseries.

Rising pesticide prices, which surpassed \$1000/L at the end of 2024, combined with the ongoing review of older active ingredients, have intensified the need for nurseries to adopt more sustainable pest management practices. In response to these challenges, the Australian Plant Production Standard (APPS) and the Pest ID Tool are proving to be essential resources, offering nurseries access to pest and disease identification tools, integrated pest management (IPM) strategies and practical training materials.

Handling a new pest incursion every week, on average, Australia's biosecurity system places the greenlife industry at the forefront of safeguarding the nation's plant health. With over 30,000 plant species and cultivars managed across the sector, nurseries are integral to industries such as ornamental, food crop, forestry, landscaping and environmental rehabilitation.

Despite these pressures, the industry is responding proactively. Free GIA e-learning modules, a comprehensive Pest ID Tool and diagnostic services through Grow Help Australia provide practical solutions to enhance biosecurity, reduce labour costs and ensure high-quality, pest-free plant products.

With tools like the Audit Management System (AMS) incorporating AI and machine learning to improve pest management and streamline record-keeping, the greenlife sector is better equipped to meet the challenges of 2025.



CHALLENGE 1:

Upskilling in crop monitoring

GIA has produced a broad range of accessible resources to support nurseries in performing effective crop monitoring. These resources cover pest and disease identification, plant protection and biosecurity systems, providing businesses with the tools to train staff or conduct 'toolbox talks'.

Free resources

The Australian Plant Production Standard (APPS) website provides technical information for the greenlife industry through levy funded research and development (R&D).

It includes:

- » free **disease identification** webinars, fact sheets and integrated management plans
- » a **biosecurity section** offering targeted information for Australian production nurseries
- » a wide range of general **technical information**.

The Pest ID Tool, developed by Nursery & Garden Industry Queensland and GIA through levy

funds, offers up-to-date information on pests, diseases, weeds and beneficial organisms.

Each organism profile includes photos and details of:

- » pest morphology (appearance)
- » lifecycle
- » damage caused
- » treatment options
- » integrated pest management (IPM)
- » biological controls.

The Pest ID Tool is regularly updated to meet the needs of the greenlife industry.

Register at no cost to access the Pest ID Tool and add it to your mobile home screen for easy access.

Free industry-focused e-learning courses

GIA offers 52 free e-learning modules, including:

- » **BioSecure HACCP – Crop Monitoring**
- » **Introduction to Integrated Pest Management**
- » **Performing a Dispatch Inspection.**

On completion, users receive a certificate, making these courses a valuable resource for staff training.

The GIA YouTube channel features over 170 videos on topics such as crop monitoring, high-health crop production and disease prevention. These videos can serve as training materials for staff or as a reference for updating best practices.

For businesses accredited with any of the APPS programs such as NIASA, EcoHort or BioSecure HACCP, there are currently 22 free mini-technical skills courses available. These are delivered by state Extension Officers and focus on topics like biosecurity, crop monitoring, pest management plans and pesticide resistance management. Training can be done on-site or via video conferencing, and typically takes about 30 minutes to complete, with certificates of completion for attendees.

For more information or to arrange training for your nursery, contact your local GIA Extension Officer.

Grow Help Australia offers six free diagnostic tests per year for plant pests and diseases. This invaluable service allows businesses to identify and manage pests without the cost of professional inspections. The service is funded through nursery levy funds until December 2025.

Register on the Grow Help Australia website.

Managing two-spotted mite in production nurseries

Background and general biology

Two-spotted mite (*Tetranychus urticae*) is one of the most important pests of horticultural crops worldwide. Other common names include two-spotted spider mite, red mite and glasshouse red spider mite. It has been associated with up to 1,200 host plant species and has become a serious pest on many fruits, vegetables, trees, shrubs, herbs, herbaceous perennials and ornamental plants and many broadleaf weeds in field and protected settings¹.

The two-spotted mite (TSM) is a spider mite, producing fine silk webbing similar to that produced by spiders. It has piercing mouthparts to feed on the contents of individual leaf cells. As TSM numbers increase, infested leaves exhibit characteristic symptoms of yellow speckling (Fig. 1a). Webbing becomes increasingly apparent and may completely cover the plant if left unchecked (Fig. 1b). TSM can increase to tens of thousands of individuals on a single plant.

Adults are only about 0.6mm in length and immature stages are even smaller. When numbers are low they infest the undersides of leaves, allowing populations to remain undetected to casual observation. However, TSM populations can build to high numbers quickly. Females can produce up to 20 eggs per day (up to 200 eggs in about 12 days) on primary host plant species². Development from egg to adult takes 10 to 20 days, depending on the host plant and temperature. Therefore, TSM can seemingly outbreak overnight, once numbers reach a critical mass. Hot, dry conditions favour TSM development, and spider mites in general.

Host range and varietal resistance

While TSM has been associated with many host plant species, the extent to which it becomes a pest across species and varieties is highly variable. This is exemplified by its capacity to reproduce and develop on each host



Fig. 1. TSM on bass (above) showing yellow speckled damage and heavier infestation on strawberry (above).

Nursery & Garden Industry Queensland

Nursery & Garden Industry Australia

Queensland Horticulture Australia

HAL

Nursery Production Plant Health & Biosecurity Project

Pest and disease fact sheets

Pest Identification Tool

Insects, Beneficials, Diseases, Disorders and Weeds of Nursery Production.

Sign In → Register →

Welcome to the Pest Identification Tool

This Pest Identification Tool is brought to you by Nursery & Garden Industry Queensland. The tool is provided to assist the horticultural industries in identifying and treating pest insects, diseases, disorders & weeds. It also includes information on beneficial insects as biocontrol treatments.

You can view the information in the tool on your computer or mobile device. The tool is unique because it is electronic and portable – a virtual library of practical, relevant information at your fingertips. You will discover many uses for the tool in supporting your on-farm operations, including:

- ✓ Pest, disease, disorder, weed and beneficial monitoring
- ✓ Management of endemic plant pests
- ✓ Inspection of incoming stock at receipt
- ✓ Inspection of stock at dispatch.

Additional information will be added to this resource over time as it becomes available, including more images of host plant symptoms and information about new pest threats.

Preview Pages

Pest ID Tool



CHALLENGE 2:

Improving support and extension services

GIA offers extension services in every state and territory, providing technical advice on all aspects of plant production. **GIA Extension Officers** are available on-site, online and via phone.

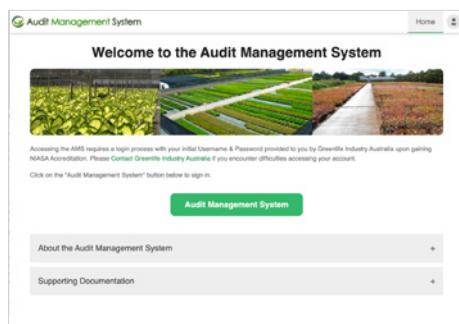
CHALLENGE 3:

Streamlining crop monitoring and reporting

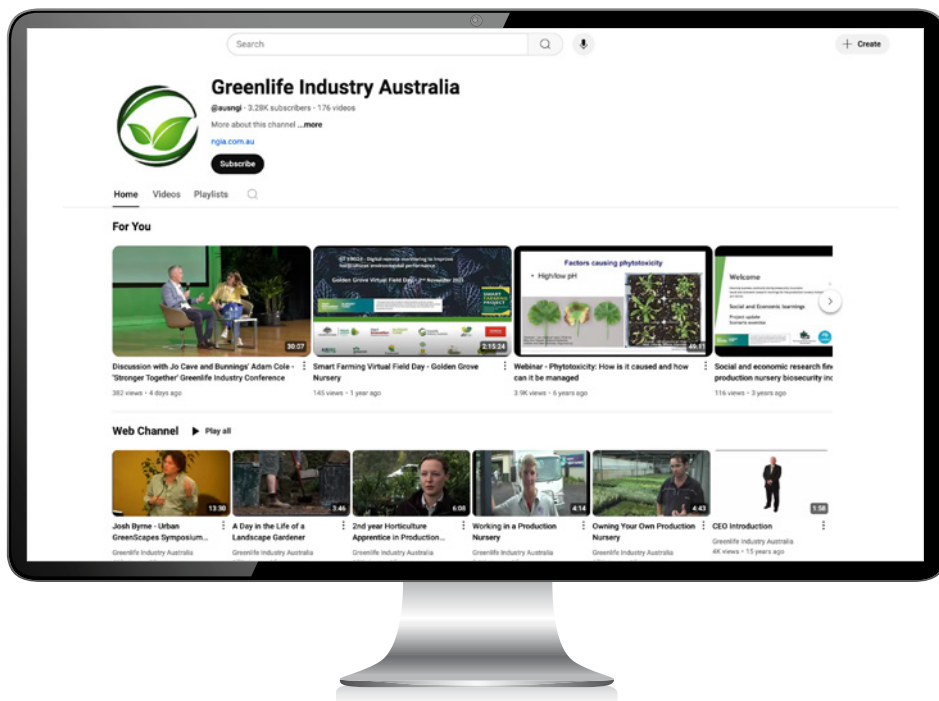
For businesses accredited with APPS programs, the Audit Management System (AMS) offers a time-saving digital solution for crop monitoring and record-keeping. Recent updates incorporate AI and machine learning to automatically track and analyse pest and disease patterns. This allows businesses to make more accurate forecasts and improve pest management strategies. The system also integrates real-time environmental data for enhanced monitoring accuracy, reducing manual input.

AMS generates detailed reports that can be exported in Excel/CSV formats, streamlining compliance and providing valuable insights for better business decisions and crop management.

To access the GIA AMS, contact your local GIA Extension Officer.



GIA Audit Management System (AMS)



Greenlife Industry Australia YouTube channel

CHALLENGE 4:

Enhancing your workforce

Investing in staff training yields significant benefits beyond skill development, driving staff retention and profitability. According to Hort Innovation, businesses investing in staff development see notable improvements in employee engagement and operational efficiency. Recognising employees and offering skill development opportunities lead to higher job satisfaction, fostering long-term engagement and improved retention rates.

New research from the Australian Industry Group highlights that disengagement costs Australian businesses over \$60 billion annually. This underlines the importance of providing consistent development opportunities to retain skilled employees, enhance productivity and boost morale.

GIA's data shows that the nursery and horticulture sectors benefit from upskilling in areas like crop monitoring, biosecurity, pest management and sustainable practices. Engaged employees contribute to innovation and business growth, directly impacting profitability and customer satisfaction.

By fostering a culture of continuous learning, businesses not only retain skilled staff but also position themselves to adapt to evolving industry needs, such as new technologies or sustainability practices.

For training opportunities or tailored resources for your staff, contact your local GIA Extension Officer.



CHALLENGE 5:

Managing the costs of inspection and surveillance for plant protection

While best practice plant protection measures require upfront costs, the long-term benefits far outweigh them.

- **Improved crop quality:** advanced plant health measures reduce waste and improve marketability.
- **Early pest and disease detection:** monitoring systems enable early identification, minimising crop damage.
- **Prevention of pest entry:** proactive pest management prevents cross-contamination and safeguards crops.
- **Reduced pest management costs:** efficient practices like biological controls reduce reliance on expensive chemicals.
- **Enhanced business reputation:** high biosecurity standards boost trust and recognition in the marketplace.
- **Better business data for informed decisions:** regular surveillance provides insights for enhanced planning, forecasting, and resource allocation.

Recent research into AI-powered pest detection and cost-effective biological controls presents sustainable alternatives, further reducing long-term costs and improving pest management efficiency.

CHALLENGE 6:

Building confidence in biosecurity and navigating regulations

Interpreting and navigating state biosecurity regulations can be challenging, leading to confusion and non-compliance. However, industry-led programs like BioSecure HACCP are increasing confidence in the system.

Developed by GIA, BioSecure HACCP provides a comprehensive framework for robust plant protection and biosecurity measures. Accredited businesses gain:

- **support and representation** from industry leaders like GIA
- **streamlined market access** ensuring compliance with domestic and international biosecurity requirements
- **self-certification of interstate plant exports**, saving time and money on inspections

Recent biosecurity updates emphasise digital tools to track and monitor compliance, making adherence more efficient. BioSecure HACCP and other certifications remain eligible for tax deductions, offering a cost-effective solution for improving biosecurity practices.

For more on BioSecure HACCP or other certification programs, contact your local GIA Extension Officer.

MORE INFORMATION

1. Australian Government Department of Agriculture, Water and the Environment (2021), "Performance Standards for Crop Monitors," www.agriculture.gov.au/sites/default/files/sitecollectiondocuments/biosecurity/export/plants-plant-products/plant-exports-manual/performance-crop-monitors.pdf.
2. Hort Innovation (2019), "Presentation on Attracting, Retaining, and Developing a Nursery Industry Workforce," www.horticulture.com.au/globalassets/hort-innovation/resource-assets/n17002-presentation-on-attracting-retraining-and-developing-a-nursery-industry-workforce.pdf.
3. Australian Industry Group (2025), "New Benchmarking Resource on Employee Absenteeism in Australia," www.aigroup.com.au/resourcecentre/research-economics/economics-intelligence/2025/new-benchmarking-resource-on-employee-absenteeism-in-australia/.
4. Past Nursery Papers: www.greenlifeindustry.com.au/communications-centre