

Horticulture Innovation Australia

Final Report

Industry Development and Capacity Building using the Nursery Production Farm Management System 2013-2015 - Phase 3

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Nursery & Garden Industry Australia (NGIA)

Project Number: NY12016

NY12016

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Summary

The Nursery Production Farm Management System (NPFMS) has evolved over the past 20 years and now encompasses the industry best management practice through Nursery Industry Accreditation Scheme Australia; NIASA; the industry Environmental Management System, EcoHort; and the biosecurity risk management system, Biosecure *HACCP*.

The Industry program is integrated in that it is managed by a reference committee, the National Accreditation and Certification Committee, NNAC, consisting of growers from each state and the Industry Technical Development Officers network who undertake the audits for the program. This close management of all aspects of the program has seen the program recognized by the Federal Government with a Biosecurity Award at the 2015 ABARES Conference and also received recognition as an independent third party approval tool for interstate plant movement by the Subcommittee on Domestic Quarantine and Market Access.

The management of the program and consistent review has meant that over time the program assists with the uptake of new technologies relating to irrigation, water treatment and management, growing media testing and storage and pest and disease identification and monitoring. The program also meets the key objectives of the Nursery Industry Strategic Investment Plan 2010-2016.

With the changes in how levy funds are managed into the future, it is critical that such a valuable program as represented by NY12016, is not denied future support and growth. While the program clearly needs a financial driver and readily identifiable benefit to get growers who are following the guidelines for the program to commit to certification, this can only be achieved through a close working partnership between industry technical expertise and the growers. Reviews of the Industry Development Officer network and current FMS documentation need to be implemented in a national manner to ensure that both the production sector and the Australian consumers have access to plants that are produced in a secure and risk free environment.

The following table details the changes in numbers of businesses engaged with the industry accreditation program. The reasons for changes are detailed in the evaluation.

Module of FMS	July 2013	May 2015
NIASA Accredited	251	236
EcoHort Certified	100	100
Biosecure HACCP Certified	3	7

Keywords

Nursery Production Farm Management System; FMS; risk management; Audit management; EcoHort; Biosecure *HACCP*; Nursery Industry Strategic Investment Plan; National Accreditation and Certification Committee; Biosecurity; Market Access

Introduction

The nursery & garden industry was one of the first horticulture industries to engage Industry Development Officers (IDOs) and develop an industry accreditation scheme in the 1990s. The Nursery Industry Accreditation Scheme Australia (NIASA) was the first program developed with additional modules EcoHort (Environmental Management System) and BioSecure *HACCP* (Biosecurity Management System) introduced in 2005 and 2007, respectively. These three programs were integrated into the NPFMS in July 2009. The NPFMS is available to all production/wholesale nurseries, growing media manufacturers and greenlife markets (trade markets) and provides participating businesses with the tools and resources to critically evaluate each component of their business to identify areas of concern and manage the identified risks.

Benefits to the Australian community from the nursery industry's investment in the NPFMS were identified and analysed across the environmental, social and economic 'triple bottom line'. The most important environmental benefits realised by the Australian community were improved biosecurity through industry driven risk management of invasive weeds, pests and diseases and improved chemical management.

Community social benefits included increased demand for gardening with associated positive spin offs for health, social and visual amenity. Community economic benefits included employment and regional development.

In 2012, Nursery & Garden Industry Australia (NGIA) made significant changes to the governance and administration framework of the NPFMS. New Terms and Conditions were developed between participating businesses and industry as well as a detailed Heads of Agreement between NGIA (the owners of the program) and the state Associations who administer the program at a regional level through committees and IDOs.

The Nursery Industry Strategic Investment Plan (SIP) 2012-2016 identified that a key objective of NPFMS is to publicise the defence mechanisms of the program to stakeholders whilst enhance industry resilience to biosecurity risks by working closely with government agencies and seeking market access opportunities using with BioSecure *HACCP*.

In 2014, a trial was undertaken between Queensland and Victorian Governments to ground truth the Audit Management System portal for interstate market access. This demonstrated sound traction with the NPFMS in gaining recognition by government as to its use for market access.

This project ensured that the industry met the express needs and investment focus of the Nursery

Industry SIP. It built on work completed and reported on under project NY12002 (Building Industry Capacity through the Nursery Production Farm Management System 2012/2013), NY11009 (Improvement and development of the NPFMS 11/12) and NY10009 and was managed by the National Research and Market Development Manager (NY12014). Strategic guidance, leadership, critical review and support will be provided by the NACC.

The outcomes of this project have been communicated to industry by the Nursery & Garden Industry Australia using a variety of channels including traditional means (such as hard copy print), social media and stakeholder forums.

Methodology

This project was managed by the Nursery Industry National Research and Market Development Manager (NY12014) who also manages NY12006 Industry Development Network for the Nursery Industry. This ensured consistency in meeting the objectives and the priority investment areas identified in the Nursery Industry SIP were focused on.

Central to the success of this project was the strategic guidance, leadership, critical review and support that was provided by the National Accreditation and Certification Committee (NACC) which was funded through this project. The NACC met twice per annum during the project.

The functions of the NACC were to:

- (a) supervise, administer and manage the NIASA Accreditation Services, EcoHort Certification Services and BioSecure *HACCP* Certification Services, privileges and incentives on a national basis on behalf of NGIA;
- (b) provide strategic advice to the NGIA Board and staff in areas relevant to the FMS Program, NIASA, EcoHort and BioSecure *HACCP*;
- (c) consider updates provided by NGIA staff and Technical Officers in relation to the FMS Program, NIASA, EcoHort and BioSecure *HACCP* and provide feedback and guidance for improvement.
- (d) review the implementation of identified strategies and outcomes in the Nursery & Garden Industry Strategic Plan and NGIA Strategic Investment Plan that are relevant to the FMS Program, NIASA, EcoHort and BioSecure *HACCP*;
- (e) contribute ideas and suggest innovative approaches on strategy which if implemented would improve industry outcomes relevant to the FMS Program, NIASA, EcoHort and BioSecure *HACCP*;
- (f) consider, review and address misrepresentations and complaints relating to the FMS Program, NIASA, EcoHort and BioSecure *HACCP*, including appeals against the actions and determinations of a State Association;
- (g) investigate opportunities which allow for reduction in interstate plant movement, quarantine requirements and market access where these requirements are also requirements of the NIASA Accreditation Guidelines and/or Procedures, EcoHort Certification Guidelines and/or Procedures and BioSecure *HACCP* Certification Guidelines and/or Procedures; and
- (h) control the design and use of the logo and the design of the Certificates to ensure uniformity.

The committee was chaired by NGIA Board Director Colin Groom. Representatives from each state/territory advisory committee as well as the IDO network are members on this committee. The

National Research and Market Development Manager managed this committee and provided secretariat support. Several sub-projects were funded through this project:

1. Support and maintenance of the Audit Management System (AMS formerly referred to as the NIASA Audit Portal) to satisfy state/territory government biosecurity requirements (www.ngi.org.au). This sub-project covered hosting fees and key updates as required.
2. Maintenance of NIASA and EcoHort SAWM Service licences which position the NPFMS as an independently recognised program with genuine water savings.
3. Levy funded research and development extension displays under the banner of the NPFMS at the 2014 Nursery and Garden Industry Australia National Conference in Sydney. Other key relevant conferences were also targeted to publicise the risk management mechanisms of NPFMS to stakeholders.
4. Extension and educational resources which include case studies on NPFMS businesses to publicise the benefits of NPFMS to stakeholders.
5. Post project evaluation survey in year two detailing the success and adoption of this project across whole of industry. It identified technical gaps and industry needs in terms of future potential investment opportunities.

Outputs

1. Four meetings of the NACC undertaken in December 2013 and June 2014, December 2014 and June 2015;
2. Operational and updated NIASA Audit Portal to satisfy IDO needs and state/territory government biosecurity requirements (www.ngi.org.au);
3. NIASA and EcoHort Smart Approved Water Mark (SAWM) Service status maintained;
4. Meeting reports developed and circulated. Exhibited Levy funded research and development extension displays covering the key aspects of the program and case studies under the banner of the NPFMS at the 2014 Nursery and Garden Industry Australia National Conference in Sydney as well as relevant conferences Industry Expo's

Case studies on NPFMS businesses and a Nursery paper on the Market Access trial using Biosecure HACCP have been completed. The following nurseries have been featured in specific case studies which are promoted to industry via the Hort Journal, <http://www.hortjournal.com.au/> under the banner of "Nurseries Setting Standards".

Month	Business Featured	State
September 2013	Facey's Nursery	Victoria
October 2013	Cameron's Nursery	New South Wales
November 2013	Alstonville Palms	New South Wales
December 2013	Pohlmans Nursery	Queensland
February 2014	Jongs Nursery	South Australia
March 2014	Zanthorea Nursery	Western Australia
April 2014	Westland Nursery	Tasmania
May 2014	Marlborough Nursery	Queensland
June 2014	Engalls Nursery	New South Wales
July 2014	Post Office Farm Nursery	Victoria
August 2014	RichGro Media	Western Australia

September 2014	Victoria Citrus Farms	Victoria
October 2014	Brindley Nursery	New South Wales
November 2014	Jamberoo Native Nursery	New South Wales
December 2014	Green Fingers Potting Mix	Queensland
February 2015	Edinburgh Parks Nursery	South Australia
March 2015	Workpower Wholesale Nursery	Western Australia
April 2015	Hobart City Council Nursery	Tasmania
May 2015	Wild Valley Propagation	Queensland
June 2015	Howlong Nursery	New South Wales

Undertaking post project evaluation survey in year two detailing the success and adoption of this project across whole of industry. A full review of the FMS project documentation has been undertaken to ensure it is consistent in structure and how it aligns with international schemes.

Australian and international programmes reviewed under this project include:

1. Nursery Industry Best Management Practices for *Phytophthora ramorum* – to prevent the introduction or establishment in California nursery operations Version 1.0.
2. Canadian *P. ramorum* Nursery Certification Program. June 2010.
3. Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado: Moving Toward Sustainability. May 2008
4. Clean Plants Domestic Phytosanitary Nursery Certification Program Standard Version 2.0. Revised January 2013.
5. Phase 1 *Cylindrocladium buxicola* Nursery Certification Standard. Version 7.2. August 2012
6. Enviroveg EMS - Climate Change Chapter.
7. Enviroveg self-assessment form.
8. Florida Nursery Best Management Practices: Past, Present, and Future. Tom Yeager, Jeff Million, Claudia Larsen, and Bob Stamps. HortTechnology, February 2010 20(1).
9. Massachusetts Nursery Industry Best Management Practices Guide. October 2008.
10. Sustainable Small-Scale Nursery Production. A Publication of ATTRA - National Sustainable Agriculture Information Service. June 2008.
11. National Parks Board – Singapore. Nursery Accreditation Singapore. Appendix to Final Report: Stage Nursery Assessment Form. July 2012.
12. Best Management Practices: Guide for Producing Nursery Crops. Third edition 2013. Southern Nursery Association. Web link: <http://contents.sna.org/>
13. Best Management Practices Online Tool. Best Management Practices for Multiple Pests in California Nursery/Floriculture Operations. University of California, Agriculture and Natural Resources Nursery and Floriculture Alliance. BMP web link: http://ucanr.edu/sites/UCNFA/CANGC_Unified_BMPs_Project/Pests/
14. Best Management Practices for Climate Friendly Nurseries. Version 2. 2011
15. Water Quality/Quantity Best Management Practices for Florida Container Nurseries. 2007 edition.
16. Guidelines for Environmental Assurance in Australian Horticulture. Horticulture for Tomorrow. Second edition 2014.
17. Smartcane BMP modules - <https://www.smartcane.com.au/>

Outcomes

1. Strategic guidance, leadership, critical review and support has been provided by the NACC to provide industry with enhanced market development opportunities and initiatives that are interconnected to and supported by the NPFMS, quality product and appropriate governance in line with the Nursery Industry SIP 2012-2016. The review of the program has identified key areas for change in documentation for consistency as the individual components have been developed over time ref appendix 1 The resources to act on the recommendations of this review will need to be sourced.
2. The program has developed an integrated and user friendly Audit Management System which provides IDOs/auditors with a fast, reliable and safe way to conduct audits with emphasis on state/territory government biosecurity requirements for certifying nursery product for export interstate.
3. Recognition of the SAWM Service status associated with NIASA and EcoHort, which will enable business to promote their Water Efficiency status.
4. Greater awareness of Levy funded research and development extension initiatives linked to the NPFMS following exhibits at the 2014 Nursery and Garden Industry Australia National Conference in Sydney as well as relevant conferences. Promotion of the program via the supply of a range of marketing collateral for use by growers at Trade Days etc. A sample of the promotional material utilized is included in the appendices.
5. Case studies developed to drive greater uptake and recognition of on-farm biosecurity, BioSecure HACCP and the NPFMS with key non-engaged businesses and stakeholders. These have been promoted via industry regional publications and included in each months edition of Hort Journal which is widely read by industry. An example of the case studies is included in the appendices. Full copies are available from the Hort Journal website.
6. Awarding of the Federal Government Biosecurity Award for the Industry BiosecureHACCP program at the ABARE 2015 Conference. Details ex the Awards booklet are included in the appendices.
7. Post project evaluation survey is planned to measure the success and future investment opportunities for developing sustained growth in the NPFMS. The key components of the program were considered as part of the review into the Nursery Industry IDO network. As the network and the FMS program are interdependent it is difficult to separate the individual benefits of the programs.

Evaluation and Discussion

The NPFMS is a key component of the industry drive for best management practice and risk management with reference to environmental and biosecurity risks that face production nurseries and media manufacturers.

This project has facilitated the independent management of these programs to ensure that the growers who benefit from the investment actually have input into future improvements and the running of the process. As with many programs that track the uptake of new technologies, ensuring that reporting captures full benefits, financial and social is difficult to achieve, but the Audit Management Portal and the interlinked process manuals mean that this program has achieved this. The production of detailed case studies assisted in non accredited businesses being exposed to how successful businesses utilize aspects of the program modules.

The linkages between the FMS program and NY12006 Nursery Industry Development Officer network were identified in the mid term review that was conducted in 2014. The key recommendation from that review was that there is a need for a clear market driver to facilitate greater uptake by industry of the FMS program. There is also a need for financial quantitative data to be sourced in the future.

The Committee decided at the last meeting to ensure that communication with engaged businesses will explore the key barriers to program expansion as part of the structure for submission to ensure the program continues under the new controls being required by HIA. As businesses were surveyed as part of the IDO review the separation of FMS from the IDO role is difficult to quantify, but the overall benefits of an effective accreditation system and effective technical auditors/advisors is desired by industry.

The FMS program is the basis for the industry Biosecure *HACCP* program which is based on Critical Risk Management Identification and measurements. This program ties all the other aspects together and while future direction for the program will be based on interstate plant movements and management of Biosecurity risk it is important that the foundations of sound production processes and environmental management are not compromised.

The final meeting of the current NACC was held in June 2015 and the minutes reflect the concern that participants felt in the future of the program. This is dependent on the next stages for the project as changes to the HIA process for managing and delivering projects has caused anxiety with businesses involved as to the future direction of the program. There is a need for sound technical debate and discussion on research outcomes and how they get included into the program in the future.

The numbers show that over the period of this project there has been a decline in numbers of businesses actually Accredited/Certified but not a decline in those engaged with key aspects of the program.

Module of FMS	July 2013	May 2015
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EcoHort Certified	100	100
Biosecure HACCP Certified	3	7

The loss of NIASA businesses can be attributed to attrition through poor trading and businesses questioning the value in maintaining accreditation when it does not add value to the prices received for product in a competitive market. This highlights the need for identification of a key market driver, with clearly identified financial benefits. The Biosecure *HACCP* program will be the basis of this in the future.

The full review of the FMS program documentation and opportunities for harmonization need to be followed up. This will ensure that the investment made over the past years in developing the NPFMS is not lost and is recognized by all levels of Government and Customers as critical for the industry to manage the increasing pressures within the market place. An investment in this area will also assist the industry in making the program cost beneficial and a necessity for all production sectors.

Recommendations

The key recommendations from this project are as follows:

- The investment made in the NPFMS is protected into the future so that businesses can ensure effective risk management and continual business improvement.
- The management of any variation to this program in the future includes growers and technical experts.
- The outcomes from a review of documentation of the NPFMS are implemented to ensure consistency in the guidelines and manuals.
- The Nursery Industry levy payers are supportive of the industry Biosecurity program so a new project is formulated that meets all the requirements of the HIA Statutory Funding Agreement so that NGIA can administer the future development of the program.

Scientific Refereed Publications

None to report

Intellectual Property/Commercialisation

No commercial IP generated. Audit management system was developed in 2011 as electronic audit tool.

Acknowledgements

NGIA acknowledge the input into this project from the State based technical committees, the Industry Development Officer Network and the National Accreditation and Certification Committee who give freely of their time and expertise to ensure that the Nursery Industry in Australia has a World Class continuous improvement program.

Appendices

The following are attached as part of the final report:

- Summary of the review of the Documentation for the Industry BMP
- Promotional material used to sell benefits of the FMS program
- “Nurseries Setting Standards” – case study from Hort Journal
- Nursery Paper – Biosecure *HACCP* Trial
- Biosecurity Awards – ABARE



NIASA/EcoHort

REVIEW

Final report

November 2014

Introduction

Over the period of their development, the Nursery Industry Farm Management System's three guideline documents (NIASA, EcoHort & BioSecure *HACCP*) have been updated a number of times. With a number of contributors involved in this process, both the content and layout have been added to, resulting in a document with different writing styles and, some instances, inconsistent terminology and information. This review was initiated to identify the changes in content required, review information from international Best Management Practice programmes, as well as review Australian information that has been developed over the intervening years, and to suggest how these may be incorporated into the existing guideline documents.

This review undertook to address the following areas.

- Review the content of each program to validate currency with industry R&D outcomes
- Review consistency of terminology, graduations, etc between the program resources (manuals, etc)
- Review images and replace as necessary within NIASA & EcoHort Manuals
- Review and update NIASA Audit Checklist
- Review and update EcoHort (Greenlife market flow chart) and Audit Checklist
- Review and update BioSecure *HACCP* Audit Checklist
- Review and update BioSecure *HACCP* procedures and record templates.

The project team completed desktop studies of a number of national and international BMP programs and compared assessable criteria, records required, audit data gathered and technical advice provided against NIASA and EcoHort.

The project team has delivered the results as follows:

- Note criteria, content or processes/system change that are recommended for adoption from national or international standards in Project Report
 - Updates of technical information added to existing program manuals within existing criteria
 - General updates relevant to terminology and consistency of content between the three programs updated in the program manuals
 - Image updates inserted into the program manuals
 - Additions (new criteria) recommended for inclusion into a program drafted and provided within this Project Report
 - Additions (new criteria) recommended however lacking in data or guidelines to assess against noted in this Project Report with a advisory note that further data required before adoption
 - Re-drafted NIASA Audit Checklist with updates included in document
 - Re-drafted EcoHort Audit Checklist with updates included in document plus Greenlife Market flow chart
 - Re-drafted BioSecure *HACCP* Audit Checklist with updates included in document
 - Re-drafted BioSecure *HACCP* procedures and record templates
1. **A desktop analysis and evaluation of the NIASA and EcoHort programmes against national and international guidelines or standards to ensure their currency in terms of information, assessable criteria and content.**

Australian and international programmes reviewed under this project include:

- Nursery Industry Best Management Practices for *Phytophthora ramorum* – to prevent the introduction or establishment in California nursery operations Version 1.0.
- Canadian *P. ramorum* Nursery Certification Program. June 2010.
- Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado: Moving Toward Sustainability. May 2008
- Clean Plants Domestic Phytosanitary Nursery Certification Program Standard Version 2.0. Revised January 2013.
- Phase 1 *Cylindrocladium buxicola* Nursery Certification Standard. Version 7.2. August 2012
- Enviroveg EMS - Climate Change Chapter.
- Enviroveg self-assessment form.
- Florida Nursery Best Management Practices: Past, Present, and Future. Tom Yeager, Jeff Million, Claudia Larsen, and Bob Stamps. HortTechnology, February 2010 20(1).
- Massachusetts Nursery Industry Best Management Practices Guide. October 2008.
- Sustainable Small-Scale Nursery Production. A Publication of ATTRA - National Sustainable Agriculture Information Service. June 2008.
- National Parks Board – Singapore. Nursery Accreditation Singapore. Appendix to Final Report: Stage Nursery Assessment Form. July 2012.
- Best Management Practices: Guide for Producing Nursery Crops. Third edition 2013. Southern Nursery Association. Web link: <http://contents.sna.org/>
- Best Management Practices Online Tool. Best Management Practices for Multiple Pests in California Nursery/Floriculture Operations. University of California, Agriculture and Natural Resources Nursery and Floriculture Alliance. BMP web link: http://ucanr.edu/sites/UCNFA/CANGC_Unified_BMPs_Project/Pests/
- Best Management Practices for Climate Friendly Nurseries. Version 2. 2011
- Water Quality/Quantity Best Management Practices for Florida Container Nurseries. 2007 edition.
- Guidelines for Environmental Assurance in Australian Horticulture. Horticulture for Tomorrow. Second edition 2014.
- Smartcane BMP modules - <https://www.smartcane.com.au/>

2. Review the content of each program to validate currency with industry research and development outcomes.

Each of the documents listed above were reviewed against the existing guidelines documentation as well as current industry research and development outcomes. Suggested changes identified from this comparison have been highlighted within the reviewed guideline documents attached to this report.

3. Review consistency of terminology, graduations, etc., between the program resources (manuals, etc.).

A major part of the review was to ensure consistent use of terminology across the three programmes, and to align with other nursery industry resources available. Additionally, references to external documents were checked to determine their availability and currency. An extensive expansion of a glossary of terms and abbreviations is recommended.

4. Review images and replace as necessary within NIASA & EcoHort BMP Guidelines.

The review assessed the current images used throughout the guidelines against criteria of existing business status, individuals in photographs and current information. No additional photographs have been recommended, only changes of images currently deemed unsuitable against the above criteria. Each State Nursery Industry Development Officer was given the opportunity to provide suitable images to change those images identified as needing replacement and relevant to their State.

5. Review and update NIASA Audit Checklist.

Major changes have been suggested in the Production Nursery Audit Checklist to make it more consistent and align it with the information in the text of the guidelines. The changes made within the Production Nursery Audit Checklist have also been transferred to the Greenlife Markets and Growing Media Supplier checklists to ensure consistency across the three checklists.

6. Review and update EcoHort (Greenlife market flow chart) and Audit Checklist.

The EcoHort guidelines and audit checklist were also reviewed against the same criteria as the NIASA guidelines and audit checklists - currency, consistency and images. The changes suggested for the EcoHort checklist are mainly to synchronise terminology with NIASA. A Greenlife market flow chart has been developed for inclusion in the EcoHort guidelines.

7. Review and update BioSecure HACCP Audit Checklist.

The BioSecure HACCP audit checklist was reviewed against the checklists used in the other programs to ensure currency and consistency.

8. Review and update BioSecure HACCP procedures and record templates.

BioSecure HACCP procedures were reviewed and record templates updated and, where applicable cross referenced in the other guideline documents.

Outputs - NIASA

1. Criteria, content or process/system change recommended for adoption from national or international standards.

- The following items have been identified from the desktop audit and are put forward for consideration for inclusion in the guideline documents:

I. Water Quality/Quantity Best Management Practices for Florida Container Nurseries. 2007 edition.

- p14 - Minimising plant blow over, so fertiliser does not spill from containers.
- p26 - Table of nutritional guidelines for containerised stock. More research required.
- p30 – Use of micro irrigation for containers larger than 30L.
- p30 – Use of rain shut off devices to prevent irrigation system operation and minimise nutrient runoff during rain events.
- p33 - Height of overhead sprinklers to be higher than the canopy of the crop to ensure uniform water distribution.
- p33 – Windbreaks planted upwind of the production area. Increase the strength of comments in the current guidelines on the use of windbreaks to improve sprinkler

How using a Farm Management System can help your business



The Nursery Production Farm Management System (FMS) enables you to critically evaluate each component of your production nursery, identifying areas of concern and managing identified risks. It allows you to validate your business's integrity within the supply chain through an independent auditing process across the disciplines of best practice, environment and biosecurity.

In consultation with a Nursery Industry Development Officer (IDO) you can tailor the FMS to address your unique business risks. By using a systematic approach you will have a pro-active plan for managing change, including technology adoption, resource efficiencies and enhanced profitability.



The Nursery Production FMS includes 3 key programs:

- NIASA - Ensures you maintain a benchmark standard and assists in continuous improvement.
- EcoHort - Demonstrates you have sound environmental stewardship and natural resource management.
- BioSecure *HACCP* - Manages your biosecurity risks for both imported and exported material.





BioSecure HACCP: Nursery Industry Biosecurity Program



BioSecure HACCP is the industry specific biosecurity program designed to assist NIASA accredited businesses in assessing their current and future pest, disease and weed risks. BioSecure HACCP is a set of protocols and procedures that provides the business with a systematic approach to assess on farm biosecurity hazards and responsibilities and how to best manage these.

Hazard Analysis Critical Control Point (HACCP) is the world recognised standard in risk management processes. It is a formal process of risk/hazard identification, nominated risk control points and a verification process used to consistently manage threats to the production cycle.

BioSecure HACCP Certification: Safeguarding the integrity of the Australian Nursery and Garden Industry that provides businesses with:

- Guidelines for implementation of biosecurity risk management strategies
- Processes that protect businesses from internal and external biosecurity threats
- Assistance for growers in meeting their broader obligations
- Independent audits, guidance and technical support from Nursery Industry Development Officers (IDO)





BioSecure HACCP: Case Study



Birdwood Nursery:

Birdwood Nursery is a specialist fruit tree production nursery that commenced operations in April 1978. The nursery supplies both commercial growers and retailers throughout Australia. Today the nursery produces some 150,000 fruit trees, highly sensitive to biosecurity risks, on raised benches and a further 150,000 trees on raised wire pallets on concrete growing aprons.

As a means of verifying sound systems and practices, NIASA Accreditation and EcoHort Certification programs have been implemented at Birdwood Nursery, and the business is currently in the final stages of implementing BioSecure HACCP. In working towards BioSecure HACCP, written procedures for each task/process in the nursery have been drawn up and the associated biosecurity risks for each task/process identified. Critical Control Points such as water chlorination and media pasteurisation have been identified through this process and these are monitored very strictly.

Biosecurity has always been at the forefront of the production processes across Birdwood Nursery operations and the supply of good quality, high health fruit trees to their clients is a key objective.

Currently, 50 employees are dependent on the nurseries ability to ensure the production system has the appropriate biosecurity integrity to maintain access to all relevant markets including intrastate and interstate.

In working towards BioSecure HACCP certification, a strict record keeping system was implemented which has allowed for much quicker management decisions and response times to biosecurity threats. Increased emphasis on biological control through the businesses existing Integrated Pest Management (IPM) system has resulted in additional resources being spent on beneficial insects resulting in improved working conditions. Tighter management of the nursery's environmental aspects has also been realised adding further weight to the businesses product performance guarantee which is anticipated to translate into additional sales.

In working towards BioSecure HACCP certification, several cost savings have been realised. For example, small savings in chemical consumption due to a more rigorous IPM system as well as automation of a steam pasteurisation system has resulted in time and energy savings of 25%. A by-product of a more rigorous IPM approach has resulted in a safer working environment as a direct result of the substantial reduction in chemical application as well as a more sustainable environment. The discipline associated with good governance of Critical Control Points has provided staff with added confidence in all product lines and enhances the business image and reputation as an employer of choice. Staff morale has also heightened due to a cleaner, safer environment.



Nurseries Setting Standards

Growing wild in the Tallebudgera Valley

By John McDonald, NGIQ Industry Development Manager and Steve Hart NGIQ Farm Management Systems Officer

Business success is driven by the application and implementation of considered and thoughtful decisions. Supporting those decisions is the utilisation of resources available to the business that will prevent or mitigate associated risks from allowing the business to expand confidently and meet market expectations.

The Nursery Production Farm Management System programs are designed to assist and support business decision making through scientifically robust guidelines and technical support. Wild Valley Propagation, a family business owned and operated by Paul and De'Arne Veal, developed from a greenfield site in 2005 to be, 10 years on, one of Queensland's most adaptive and progressive propagation nurseries.



Wild Valley Propagation mother stock

The nursery is located in the picturesque Tallebudgera Valley in the Gold Coast hinterland, where the Gibsonville Street site embraces both the nursery operation and the family residence. Wild Valley Propagation specialises in contract growing, producing a range of quality, sun hardened ornamentals, groundcovers and grasses for production nurseries, landscapers and retail nurseries across the eastern states of Australia. The business objective of Wild Valley Propagation is to produce and supply to each and every customer, a consistent quality product, on-time, and ready for immediate planting.

Wild Valley Propagation has been NIASA accredited and EcoHort certified under the Nursery Production Farm Management System since 2007 with an initial 12 months of guidance assisting in the early developmental stages. Paul and De'Arne have embraced the Nursery Production Farm Management System programs, agreeing the programs provide support and direction to their expanding business and have utilised all the technical support available through NGIQ over the last 10 years.

De'Arne said, "The nursery has come a long way since it was established back in 2005. We have greatly appreciated the support, assistance and guidance provided by the Nursery & Garden Industry Queensland's technical support network."

Wild Valley Propagation was also one of the first production nurseries to engage with and participate in the NGIQ operated Rural Water Use Efficiency-Irrigation Futures (RWUE-IF) initiative and have an Irrigation, Drainage & Energy Management Plan (IDEMP) created to assist in improving their water and energy efficiency across the cropping system.

The RWUE-IF initiative helps irrigators (production nurseries) make better use of their on-farm water supplies, through efficient irrigation system design, operation and management. It also helps irrigators to reduce energy consumption associated with their pumping applications and irrigation scheduling. RWUE-IF is a partnership between the Queensland Government and major rural industries, where the government provides financial support to assist industry groups like NGIQ in providing services to irrigators like Wild Valley Propagation.

The strength behind Wild Valley Propagation is the hard working and experienced production team committed to the overall business objective of delivering to meet client expectations. De'Arne has an impressive propagation history

and leads a team of five dedicated staff in ensuring customer orders are satisfied and production schedules are implemented and met.

Paul has managed the building of infrastructure, upgrades and expansion of the business and is currently working on a number of new stock gardens, privacy screens and windbreaks before overseeing the construction of the new propagation mist house.

Business expansion plans have been developed to ensure the propagation nursery can meet the increasing volumes of greenlife demanded by their many customers. In January 2015 De'Arne, stated, "Paul and I are very excited that our expansion plans for Wild Valley Propagation are well underway. This investment in the nursery will allow the business to increase production of our quality tubestock to our loyal customers across Australia". The current expansion is planned to be completed and fully operational by the middle of 2015.

Wild Valley Propagation has continued to expand its facilities and production output since its inception in 2005. During this period the nursery and facilities have grown to approximately 10 times the size of the original business.

Current construction on a new and upgraded propagation mist house facility should double the current holding capacity under mist and deliver an increased output from the propagation shed of around 33%. These new facilities are expected to provide a more suitable propagation environment leading to quicker turnaround of propagation material with lower throw-out rates.

In the latter part of 2014, the new despatch and storage shed was constructed to provide the dedicated space required for detailing and consolidating orders waiting for customer despatch. The new shed also provided upgraded chemical and

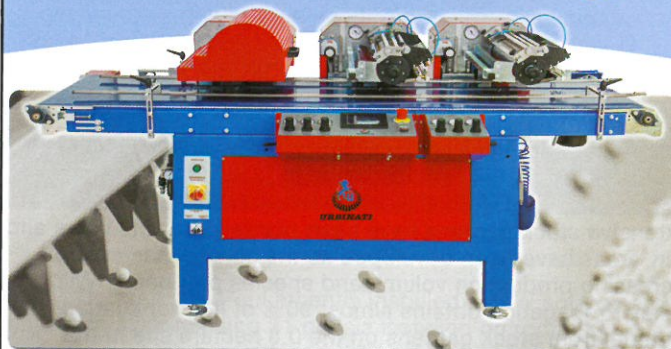


Wild Valley Propagation tubestock hardening area

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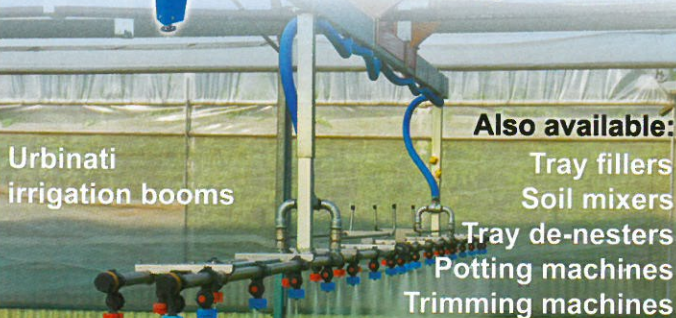


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growing media storage facilities that meet the requirements under the Nursery Production Farm Management System Best Management Practice (BMP) programs. The new shed also provides improved access for transport, efficient access for staff to the stock holding areas, enhanced hygiene due to the separation of despatch from the production processes, and generally allows more space for both production and despatch staff to operate which provides a safer and more positive work space.

The full sun and shade production holding areas have been expanded to double their size earlier in 2014. Part of the upgrade and expansion planning was to ensure all stock in these areas is located off the ground on benches to provide excellent hygiene and a suitable work height for staff managing and working in the area.

The irrigation system in both these full sun and shade areas was already operating to industry BMP target parameters and was expanded as part of the upgrade.

“Technical officer assistance and the industry programs of NIASA and EcoHort have provided valuable guidance with all our upgrades and expansion planning” said Paul.

Extensive stock gardens have been planted over the years and new areas have been developed as the nursery has evolved increasing production volume and species produced. Wild Valley Propagation obtains almost 90% of its propagation material from stock gardens on the 0.8 hectare site in the Tallebudgera Valley. The stock gardens are vitally important to the propagation nursery in maintaining its strict hygiene protocols which prevents major pest and disease outbreaks within the propagation facility. All external material undergoes a strict quarantine process of inspection and treatment before progressing into the plant production processing system.

Wild Valley Propagation was one of the first businesses to participate in the RWUE-IF initiative and have an Irrigation, Drainage & Energy Management Plan (IDEMP) developed for



Wild Valley Propagation

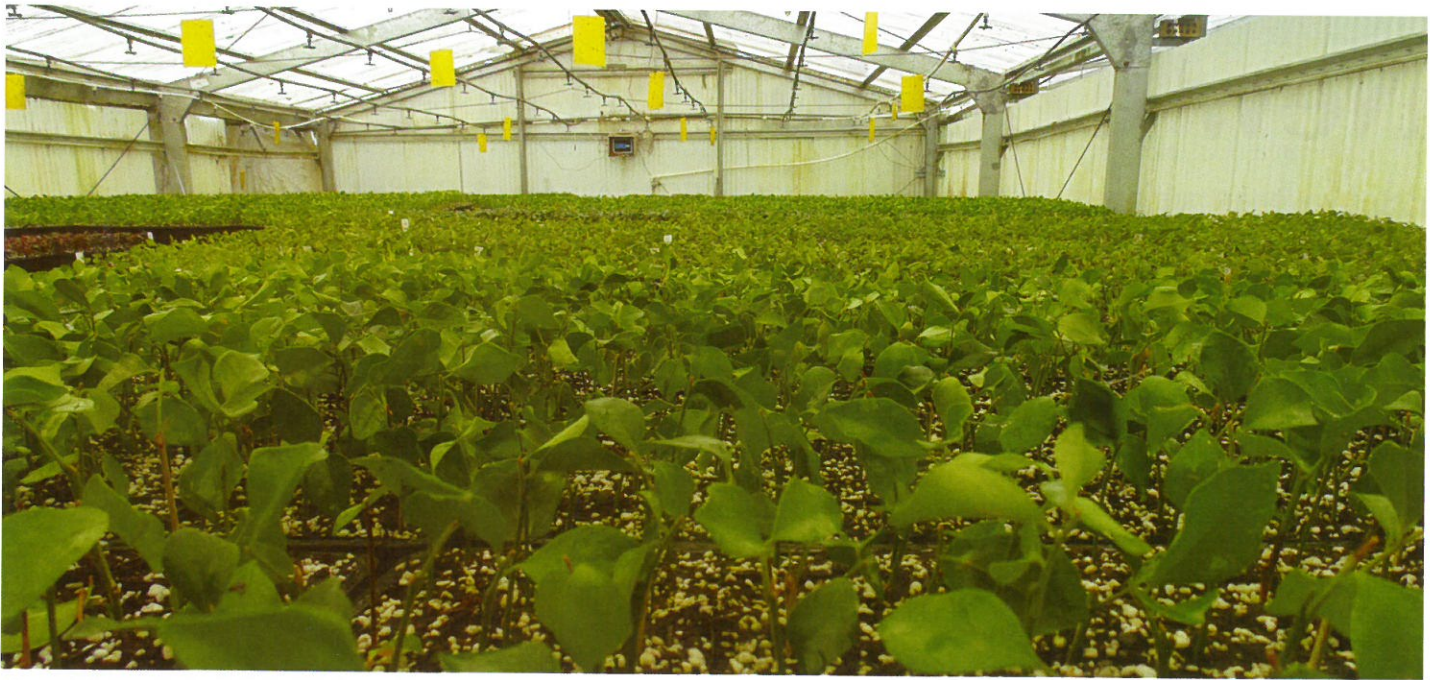
the business. The IDEMP provides an independently assessed snapshot of the current operations of the business focusing on both water and related energy use rigorously documented in a detailed report provided to the grower for future reference.

The IDEMP also provides an action plan of activities and improvements to achieve both water use and energy efficiencies. Wild Valley Propagation has already embraced many of the action plan items from their IDEMP report designed to drive the business forward over the coming years.

“The more efficient the irrigation system, the better the plant growth, the crop uniformity and general plant health” said De’Arne.



Wild Valley Propagation propagating area



Wild Valley Propagation mist house

The business has carefully evaluated the irrigation water source, a 54.5 metre bore, to ensure it can meet the demands of the nursery expansion program. Two storage tanks holding 22,000 litres, coupled with a 30,000 litre tank installed in 2014 is designed to reduce the required pumping flow rate from the bore and provide water security for nursery irrigation. The reduced flow requirement from the bore will in the future allow for a smaller pump delivering a substantial reduction in operating costs.

Rainwater is also being harvested to support the nursery irrigation requirements. The irrigation sprinklers exceed the BMP target parameters for nursery production (MAR < 25mm/hr, CU > 85% & SC < 1.5) and were selected to provide the application efficiency required in propagation nurseries. The inverted NaanDan GreenSpin micro sprinklers apply the irrigation water uniformly and allow the clear working space required in the production areas to set out tubestock trays.

Paul has observed that the inverted sprinkler system provides uniform irrigation, equaling improved scheduling, and a clear workspace for production which maintains productivity.

The propagation media has been adapted using feedback from customers, to provide a substrate that has an improved water absorption rate, a good water holding capacity and holds together for customers at planting.

A new mixing area has also been constructed designed to industry BMP standards allowing the propagation media to be manufactured as required while ensuring the nursery hygiene protocols can be maintained during the process. Raw materials are carefully stored in a new dedicated storage facility reducing the risks associated with contamination from water run-off, weed infestations and general nursery traffic.

The nursery drainage system has been significantly upgraded to divert wastewater, from irrigation and rain events, into subsurface drains quickly and efficiently removing this wastewater from the production areas.

Finally, De'Arne and Paul recently installed a 5kW solar energy generating system using 21 panels installed on roofing in the nursery which has reduced the business's energy costs, particularly with irrigation pumping, by approximately 50%. The current savings, pre-expansion, are expected to pay back the \$20,000 investment within 5 years however, this could be reduced with further efficiencies and higher turnover per kWh of energy use.

For further information on Wild Valley Propagation go to www.wildvalleyprop@onthenet.com.au



Wild Valley Propagation staff with De'Arne and Paul Veal (back right)

A Systems Approach to Managing Pests, Diseases & Weeds BioSecure HACCP

On Monday 21 October 2013 the testing of BioSecure HACCP to meet interstate market access requirements began with a trial between Queensland and Victoria. The BioSecure HACCP trial ran through until 21 April 2014 overseen by Nursery & Garden Industry Queensland, Nursery & Garden Industry Victoria, as well as the biosecurity agencies of Queensland and Victoria. This world leading holistic on-farm biosecurity program delivers a structured on-farm pest, disease and weed management system that has shown it can be used to support interstate market access. In this month's Nursery Paper John McDonald, Industry Development Manager Queensland, gives an account of the trial and records grower feedback on the value of the program.

A Systems Approach to Managing Pests, Diseases & Weeds, BioSecure HACCP

Biosecurity is not just dealing with quarantine pests; it is the protection of a plant production system from the introduction of insects, diseases, weeds and other biological organisms that may adversely impact upon the cropping system. Producers (growers) are in constant battle to grow their crops with as little damage from plant pests as possible, achieving this through exclusion, eradication and/or management. With the integration of various strategies (e.g. protected structures, hygiene, use of beneficials, monitoring, chemical, etc) most producers get their crop(s) to market. However by structuring the entire process around standardised procedures, best management practice and skilled staff this integrated cropping system can benefit downstream from the farm gate through improved **market access**.

BioSecure HACCP is the industry specific biosecurity program designed to assist producers in their on-farm pest, disease and weed management through a systems approach supported by procedures and documentation. The program applies the 12 defining principles of Hazard Analysis Critical Control Point (HACCP) to the management of biosecurity risks at farm level (production nursery) providing a creditable risk identification and management process for growers. Having a clearly defined pest, disease and weed management system operating under best management practice guidelines, which is risk specific and supported by concise and accurate records, underpins the value of pest management and should be recognised by customers and regulators.

The trial was a national industry initiative supported by state, territory and national peak industry bodies as well as the biosecurity agencies across all Australian jurisdictions recognising the two businesses in both Queensland and Victoria which were



Pohlmans Nursery

testing on behalf of the industry. BioSecure HACCP is the first industry developed on-farm biosecurity program in Australia to be used as a legally approved market access instrument allowing the four production nurseries to trade with their clients during the trial phase. It is expected that at the completion of the trial audit report the other states and territories will phase in the adoption and recognition of BioSecure HACCP.

It has taken more than 5 years of interstate negotiations and industry program development to get to this point with industry R&D investment running at more than \$400 000 to date. Costs

associated with interstate market access are constantly increasing with some businesses having annual bills above \$100 000. Added to the dynamic markets growers are operating within it is imperative that an interstate market access system is available which offers recognition of on-farm best management practice and grower skills, is flexible for growers, utilises technology and is cost effective.



Birdwood Nursery

The trial of BioSecure *HACCP* included two certified production nurseries from Queensland (Birdwood Nursery & Pohlman's Nursery) and two from Victoria (Mansfield's Propagation Nursery & Proteaflora Nursery) trading with their clients in the two respective states. Trial oversight was provided by the Project Control Board (PCB) that consisted of representatives from Plant Health Australia, Biosecurity Queensland, New South Wales Biosecurity, Victoria Plant Biosecurity & Product Integrity, Biosecurity South Australia and NGIA. Operational management was through NGIQ and NGIV with support from each biosecurity agency in the respective states (Qld & Vic) provided to ensure the trial met all legal requirements.

General Manager of Pohlman's Nursery Mr. Robert Pohlman said "Industry on-farm programs offer opportunities for self certification, under a biosecurity program like BioSecure *HACCP*, to assess plant stock and implement management programs to ensure crops are pest, disease and weed free and are maintained as per the intra and interstate movement and import regulations".

The BioSecure *HACCP* trial is based on the industry developed on-farm biosecurity program being tested to assess its ability to meet the interstate market access requirements for nursery stock of Queensland and Victoria. Each of the four production nurseries (two in each of two states) operated their interstate trade under robust on-farm plant pest, disease and weed management procedures. The on-farm BioSecure *HACCP* procedures are supported by pest specific **Entry Condition Compliance Procedures (ECCP's)** and, in an Australian first, a web based electronic biosecurity verification and certification system supervised by regulatory agencies in both jurisdictions.

Each business first had to gain BioSecure *HACCP* Certification available to NIASA Best Management Practice (BMP) Accredited businesses because many of the NIASA BMP activities underpin good biosecurity practice. Through the implementation and adoption of the procedures and record keeping in the BioSecure *HACCP* manual the growers developed their biosecurity program and incorporated it into the overall cropping system. Key procedures implemented include:

Table 1. Examples of BioSecure *HACCP* Procedures

Disinfesting plant containers	Vehicle inspection	Crop monitoring
Growing media storage	Monitoring plant growth	Site surveillance
Growing media production	Cleaning & Disinfestation	Despatch inspection

Each procedure is aligned to a relevant record and completion, access for audits and secure record storage are mandatory requirements under the BioSecure *HACCP* program. Some records are only completed once (e.g. Approved supplier register) and updated if the situation changes whereas other records are at least weekly (e.g. crop monitoring at no more than 7 day intervals) and are used to drive internal decision making plus demonstrate that an activity has occurred. Table 2 gives some examples of required records:

Table 2. Examples of BioSecure *HACCP* Records

Approved supplier register	Register of Authorised Inspection Person	Visitor record
Materials import inspection	Materials despatch inspection	Vehicle inspection
Corrective action report	Register of Certification Signatory(s)	Crop monitoring



Proteaflora Nursery

Mr. Rob Furniss, Proteaflora Nursery Production Manager, has said of BioSecure HACCP "The great thing about the BioSecure HACCP program is that it is not just about the quality measure at the end of the line, rather it is a program that when implemented will ensure that quality is achieved at each stage of the process. By identifying the critical control points in our plant production and implementing management strategies to mitigate issues before they arise we have further developed our production and reporting processes. In turn this has strengthened our already successful continuous improvement program as it has provided focus and a



Audit Management System (AMS)

program that encapsulates all facets of quality control.

Throughout the trial and into May 2014 there have been a total of 79 BioSecure HACCP Biosecurity Certificates (BHBC) issued with 46 being from the two Queensland growers sending into Victoria and 33 from the two Victorian growers sending into Queensland. Each BHBC is an electronic document generated within each growers secure account in the web based biosecurity verification and certification system (**Audit Management System (AMS)**) specific to BioSecure HACCP Certified producers. Staff underwent specific training to meet the BioSecure HACCP requirements to be an "Authorised Person" under the approved ECCP. Initially the training was a face to face workshop delivered by the state NGI however during the trial this material was converted (NGIA) into a web based eLearning course with assessable criteria built into it and automatic notification making the process easy to access, very flexible in delivery and cost effective.

The electronic BioSecure HACCP Audit Management System (AMS) allows the certified production nurseries to manage their biosecurity processes in an efficient and practical manner with

all relevant records being stored and retrieved electronically. The businesses complete paper based or electronic records such as monitoring, surveillance, inspection etc. during the normal course of activities across the production system. At nominated intervals (e.g. weekly, monthly, etc) the paper records are scanned and uploaded to the AMS. The AMS also provides the business with the capacity to store client details for automatic insertion into the BioSecure HACCP Biosecurity Certificate (BHBC) template which is the replacement to the government paper based plant health assurance certificate. The BHBC is saved automatically within the AMS and can be printed or emailed to clients or government regulators as required therefore avoiding the current national paper



Mansfield's Propagation Nursery

based system and the associated administration costs.

The benefits of an on-farm biosecurity program gaining legal status for interstate market access are multiple and across all stakeholders including government and industry alike. Producers benefit from a system developed for industry, by industry, that integrates all plant health issues into a farm management system that addresses both endemic and exotic plant pest threats and risk mitigation.

In April 2014 the national Sub-committee on Domestic Quarantine & Market Access (SDQMA) met in Brisbane to address a range of interstate market issues including BioSecure HACCP. On the 30th April, at the invitation of NGIQ and Robert Pohlman, the committee visited Pohlman's Nursery to gain firsthand experience on the application of an on-farm biosecurity program. Growing & Production Manager at Pohlman's Nursery, Mr. Chris Johnson, has been one of the leaders in the implementation of BioSecure HACCP across the production nursery and addressed the SDQMA informing them how he has found that even before using the system to trade interstate the program is delivering benefits on-farm.

Chris went on to explain to the SDQMA how the BioSecure HACCP system allows the business to proactively drill down and look at each step within the plant production process and critically assess how the crops in each of the five cropping systems are produced. Having access to documented BioSecure HACCP procedures



Sub-committee on Domestic Quarantine & Market Access at Pohlman's Nursery 2014

and integrating these into normal work instructions provides rigor around key activities such as crop monitoring, site surveillance, despatch inspections, etc. This enhances their effectiveness and traceability is provided through clear and concise record keeping.

Pohlman's Nursery has found strategic and organised pest and disease crop monitoring is delivering significant rewards to areas of the cropping system that traditionally face cyclic pest pressures that have historically required remedial pesticide management which is costly and labour intensive. The crop monitoring has seen pesticide applications drop by 90% as it becomes localised, target specific with less repetition due to low pest pressure. Crops are improving in quality, throw-out rates

are reducing and turnover is increasing with one significant cropping system increasing turnover by more than 60% in 18 months. In summing up the BioSecure HACCP program Rob Furniss of Proteaflora Nursery said "The implementation program appears to be a lot of work, but in essence it is a set of checks and balances and verification of processes that are happening, or if not should be happening, as a part of any efficient production system. The verification is important, not just to be recognised by external auditors, but for my own confidence as a nursery manager to know that what we plan to do, we do it and we do it well. We hope that when the program moves past it's trial phase and is implemented nationally it will provide us with a system that will either improve or even increase market access, something

that as a national brand and international supplier is critical to our growth."

The trial of BioSecure HACCP has shown there are major cost savings in labour, cropping inputs and efficiency gains in administration that support the value of the program. Government benefits through a greater engagement by and with industry in managing biosecurity threats, improved efficiency in technology adoption and auditing, real time information access and traceability of produce. The trial has been an overwhelming success with the next phase developing a full report on the trial being tabled at the next national Sub-committee on Domestic Quarantine & Market Access (SDQMA) meeting leading to national adoption.



Nursery & Garden Industry Australia (NGIA)

Industry category

Nursery & Garden Industry Australia (NGIA) has developed the BioSecure *HACCP* (Hazard Analysis Critical Control Point), a comprehensive on-farm biosecurity risk reduction, early detection and traceability programme and web based Audit Management System.



Specifically designed for production nurseries, BioSecure *HACCP* is a whole of farm pest, disease and weed management system that identifies and manages endemic and exotic threats.

This unique approach to the traditional manner of biosecurity management, which generally targets a specific pest, disease or weed, applies the 12 defining principles of *HACCP* to the management of biosecurity risks at all farm levels. Each step of the production cycle is mapped and identified along with the potential biosecurity hazards that could be introduced into the cropping system. Upon identification, the critical control points are used and appropriate strategies are employed to reduce risk, including monitoring of the control points and recording the outcome. The process delivers a robust system that is replicable, measurable and assessable.

The programme is not restricted to addressing biosecurity pests but also the protection of the plant production system in the provision and movement of live germplasm throughout regions and interstate.

The BioSecure *HACCP* programme has developed extensive training tools for industry including online workshops, videos, manuals and pest identification resources to give growers the tools and guidance they need to identify risks and the steps needed to control them. Online training for pest specific Entry Condition Compliance Procedures (ECCP) is available to growers and staff which delivers flexible and cost efficient up-skilling.

The web based Audit Management System enables certified producers to upload data records (e.g. crop monitoring and inspection) for safe storage and



retrieval, and generate biosecurity certificates for official plant movements. These records can then be used by third party industry and government auditors to ensure compliance and as a resource to trace stock in the event of a plant pest incursion.

The work done by NGIA provides confidence that best management practices and application of the world standards in risk management and assessment for production nurseries are being applied. The NGIA's design and implementation of the BioSecure *HACCP* is also contributing to increased biosecurity awareness within production nurseries and improvements to Australia's biosecurity integrity.