# SOILLESS
## AUSTRALIA

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Since 1990 www.protectedcroppingaustralia.com

# Contents



## Front Cover

PCA member and Nuffield Scholar 2016, Wade Mann researched Integrated Pest Management (IPM) strategies around the globe. Here he inspects a variety of strawberry called 'Mailing Centenary' at Kearns Fruit Farm, in Ireland.

Full story page 4





*You're invited!*

# Join Other Growers

## Who learn from the best

Since 1990 PCA has been hosting biennial conferences which include a trade exhibition and hydroponic greenhouse farm tours.

This popular event fills a desire in the industry for technical how-to grow skills, making contacts, networking and site visits.

The upcoming 'Future Growing' Apex Brinkman PCA Conference 2017 is being held at the Adelaide Convention Centre and will be the 14th biennial conference convened by PCA.

For new or intending producers or suppliers, it is a valuable chance to meet people at the forefront of high - tech horticultural production.

It is a rare invitation to tour a series of working hydroponic greenhouse farms and hear other growers' comments, questions and answers. Those who attend swap stories and learn both what to do and what not to do, and why, and they compare growing systems, prices and packages.

For greenhouse industry participants, whether you're a grower or supplier, you can get together with your peers who are walking the same path and are just as interested in the future of intensive food production.

You can rendezvous informally or formally for business meetings, purchases and catch-ups.

Taking part, whilst away from the day to day operations of your farm or business, is the best way to gain insight into the future and provide a fresh perspective on technology and market developments.

Senator the Honorable Anne Ruston Assistant Minister for Agriculture and Water Resources, will officially open the event followed by a host of keynote speakers and high level technical presentations during the Monday plenary sessions.

Topics covered will include LED and plant lighting, robotics in intensive agriculture, vertical farms, medical marijuana and more.

On Tuesday we will conduct five streams of concurrent sessions focusing on specific crops;

- **Berries**
- **Aquaponics**
- **F&V Vine Crops**
- **Leafy Greens**
- **Floriculture**

The 60+ trade booths will showcase 'state of the art' equipment and consumables to the fastest growing sector of horticulture and future food production in Australia.

Do not miss this opportunity to learn and participate in the excitement of this biennial event.

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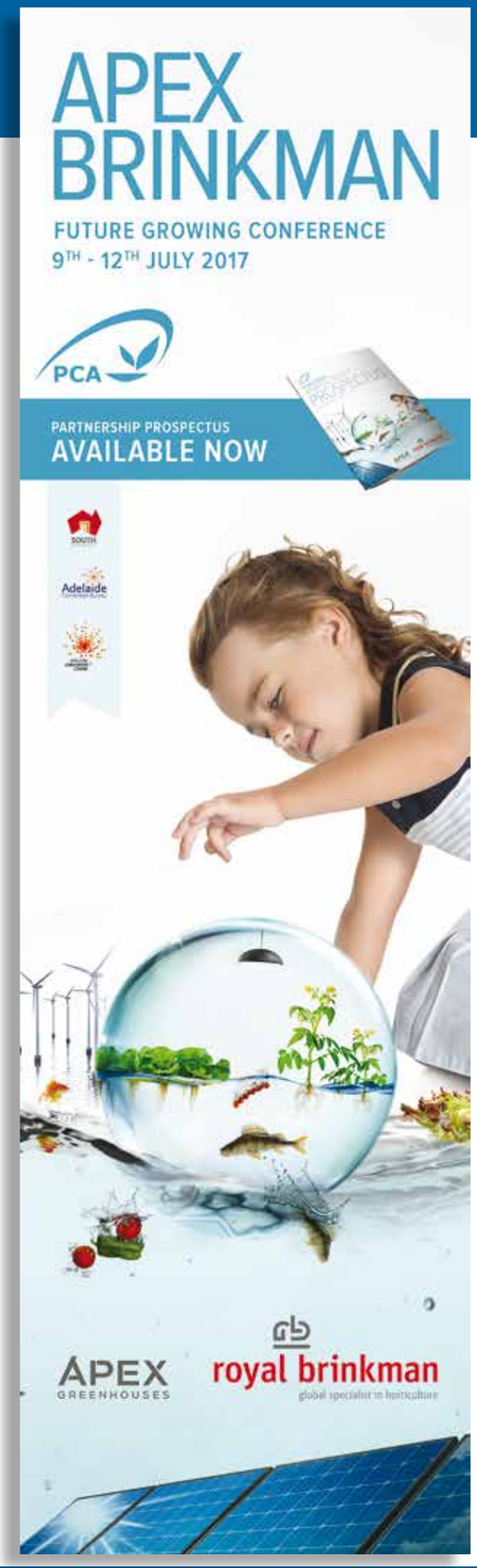

# Berry Crop

## Alternative 'Pest-Pective'

### Nuffield Study Tour 2016

Report by WADE MANN

### Background to Pest Management in Greenhouse Berry production

Berries by nature are an easy pick and ready to eat fruit without the necessity for peeling.

Food safety and the limited number of chemical controls are the underlying motivation for primary producers to adopt Integrated Pest Management (IPM)

Berries are also seasonal due to the chilling requirement or vernalisation to ensure flowering.

Protected cropping structures provide the option to modify the growing environment and manipulate crop production opportunities.

Using a soilless substrate or growing media safeguards consistency in moisture retention, air porosity, nutrient management and regulation of drainage.

However inadvertently, these adjustments of the environment and the root-zone can lead to conditions conducive for pest and disease proliferation!

## Integrated Pest Management Strategies for Greenhouse Berries

### Nuffield Study Objectives

My primary objective was to look for emerging and innovative technologies in IPM globally.

With the Nuffield golden key I could explore and assess best practice IPM strategies for greenhouse hydroponic berry crops.

I wanted to identify new technologies associated with bio-control agents (BCA's) for commercial application whilst maintaining the overall quality of soft fruit.

I needed to learn about entomovectoring when a pollinating insect is used as a vector to spread a substance used in bio-control for plant diseases.

Above all I was looking for practical and commercially viable recommendations for growers adopting IPM in intensive greenhouse hydroponic production of berries within Australia.

### Study Method

My plan of attack to complete this study was to meet with researchers and scientists to get background on what is known and new in this field.

I also met with suppliers of bio-controls and beneficial insects and the breeders of the berry crops to see what they are doing through their breeding programs to assist with pest and disease management.

Plus, I made sure that I covered a cross-section of large and small scale growers with entry level as well as sophisticated protective structures. Growers willingly showed me what is currently and successfully being used and implemented on a regular basis on their farms.

NUFFIELD AUSTRALIA FARMING SCHOLARS

PCA MEMBER

Ross Mitchell of Castlerton Fruit, Scotland linspecting a petri dish of mason bees with Wade Mann.

IPM for greenhouse hydroponic berry growers equates to a common sense, proactive approach to crop protection.

IPM includes the following factors with the respective weighting;

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Alternative 'Pest-Pective'

# Berry Crop

*Continued*

### 1) Action Thresholds

These need to be established by the grower in order to set parameters and boundaries for when to take action.

### 2) Physical Controls

These are geared towards creating the optimum growing environment and protection from various climate and pest and disease elements.

The limitations and variations of physical control correlates with the level of investment and the cost / benefit outcome, including;

- Greenhouse structures
- Covers
- Ventilation
- Screens
- Heating
- Cooling
- Floor covers
- Raised growing benches

Wade Mann and Anthony Snell of AJ & Cl Snell, UK with his good clean crop of new season raspberries grown using best practice IPM. (May 2016)

### 3) Natural Controls

Advancements in the benefits of non-commercial crops provides a range of options in managing and implementing biological pest control.

a) Banker plants provide a host for non-pest insects and also for the establishment of beneficial insects.

b) Indicator and trap plants provide for early detection.

c) Companion plants attract pollinators and provide alternative food sources.

d) Nature strips attract and repel in a push / pull scenario.

Banker plants provide a host for non-pest insects and also the establishment of beneficial insects. (Keelings, Ireland May 2016)

### 4) Cultural Controls

The focus of cultural controls is to prevent or suppress an incursion by altering the environment and / or the condition of the host and / or the behaviour of the pest and disease.

This disruption of the normal relationship between pest and host makes pests less likely to survive, grow or reproduce.

- Propagation material
- Plant nutrition
- Water management
- Growing media
- Crop maintenance
- Genetics and resistance
- Hygiene
- Sanitation
- Biosecurity
- Sterilisation
- Site selection
- Greenhouse orientation

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