

In A Nutshell

Summer 2019/20

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RESEARCH & DEVELOPMENT FORUM & FIELD DAY

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In A Nutshell

The Official Newsletter of the Australian Almond Industry

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On the Cover: ABA CEO, Ross Skinner (sixth from left) with Spanish delegates pictured at the Almond Centre of Excellence Experimental Orchard as part of the 2019 Australian Almonds R&D Forum & Field Day.

In A Nutshell

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The Almond Board of Australia is the peak industry body representing the interest of almond growers, processors and marketers in Australia. In A Nutshell is published by the ABA to bring news to all industry contacts and members.

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ABA Membership

Why become a member?

The ABA is the peak representative body for the Australian almond industry and as such addresses many issues that impact on all participants in the industry including growers, processors and marketers and those that supply inputs. These impacts can be positives such as free trade agreements or promotion to stimulate demand and hence prices or they can involve minimising negative situations such as food safety issues, market access problems, chemical registrations etc.

The ABA develops and drives the implementation of the Australian industry's strategic plan which is done to benefit all producers and other industry participants. The strategies involve building domestic and export markets, the key to strong grower returns, addressing a wide range of risks from the availability of production inputs to government policies that impact on costs and yields. These matters effect on the bottom lines of almond enterprises.

The ABA's whole of industry strategies have been successful and have worked to ensure the large increases in production have been cleared.

The ABA operates a number of activities that support industry and generate revenue to fund its operations and keep membership fees at a low and affordable cost. Being an ABA member provides crucial support for your industry body that we need and appreciate. A strong membership base provides added force in our representation of industry to government and in the wider community.

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and will reopen on Thursday
2 January 2020.

Wishing all a safe and
festive holiday
season.

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RESEARCH & DEVELOPMENT FORUM

2019 REVIEW pgs 10-13

2020 crop looking good but no increase in size expected



NEALE BENNETT & ROSS SKINNER: The Australian almond crop for 2020 is shaping up as one of similar size to 2019 at just above 100,000 tonnes. Frost, hail and wind damage combined with poor pollination in some orchards has reduced the crop's potential to build on the record 2019 tonnage.

This is disappointing given the strong global appetite for Australian almonds that has resulted in record monthly shipments of almonds to export markets during the period from April through to August. During these months, the smallest tonnage increase was 23 percent whilst the largest was 92 percent in June with 13,754 tonnes shipped. 62,445 tonnes have been shipped from March to the end of September, surpassing total exports for the entire 2018/19 marketing year. Compared to the same period in 2018, export volume has increased 33 percent whilst the value of exports has lifted 55 percent to \$636 million. With five months of the marketing year still to go, the vast majority of the 2019 crop is committed, if not already shipped.

The domestic market is also performing strongly with a 9 percent increase in sales volume during the marketing year to September.

The increase in popularity of eating plant-based meals, if not moving entirely to vegetarian and vegan diets, is a major influence on almond sales. Consumer concerns for animal welfare and global warming is influencing the plant-based eating movement.

During the year to October, a total of 311 new supermarket products



Put simply, almonds are good for people's health, good for the economy and good for the environment.



contained almonds as an ingredient. The increased demand for almonds as an ingredient has reduced the price differential between the pollinator varieties and the premium snacking variety, Nonpareil.

Water continues to be a major issue for irrigated horticulture in the Southern Murray-Darling Basin with the almond industry bearing the brunt of criticism. Water use is the measure used by critics rather than water use efficiency where the revenue generated per megalitre of water used is the criteria for assessing the value of an industry to its participants, dependent communities and the nation. The almond industry's capacity to compete for water lies at the heart of criticism.

Critics' blinkered view also fails to take into account that almonds have

many health benefits for consumers. The industry produced 270,000 tonnes of hull that has fed drought impacted cattle, improved soil health in the Mallee and provided a source of renewable energy generation. Instead of the clearing land for farm production, the almond industry has now planted over 13 million trees that convert CO2 to oxygen and are a valuable carbon sink at a time when climate change is at the forefront in the minds of many, particularly the younger generation.

Put simply, almonds are good for people's health, good for the economy and good for the environment.

With the festive season and the new year upon us, the ABA Board and staff wish our Australian almond industry participants all the best for 2020.



“
A lot of irrigators are doing it tough this year and it is likely to bring about a lot of change in dynamics across the basin especially if the dry conditions continue.
”



5 minutes with...

Deidre Jaensch,

ABA Industry Development Manager

In recent months, Deidre Jaensch was appointed as the ABA's new Industry Development Manager. Many may be already familiar with Deidre as she was thrown in the deep end and did a great job as MC at the R&D Forum in October. Deidre brings a wealth of knowledge and experience to the team so we caught up with her to find out a bit more about herself and her goals in her new role.

Tell us a bit about yourself and your previous role(s).

I live on a small vineyard just outside of Mildura with my husband and two teenage boys, a couple of dogs and a chook.

Since I graduated from Adelaide University (Bachelor of Agricultural Science) I have had many and varied roles working in government agencies, commercial companies and with industry groups but all of my roles have focussed on irrigated agriculture. Roles relevant to my current position include:

- Managing the distribution of millions of grapevine cuttings throughout the Victoria and Murray Valley during the winegrape boom in the late 1990s (Vine Improvement Association)
- Project managing the conversion of a potato farm into a 2,000+ hectare irrigated Almond orchard just north of Swan Hill (Timbercorp)

- Reporting to state and federal governments on irrigation expansion and maintaining the balance of salinity credits for continued irrigation (Mallee Catchment Management Authority)
- Co-ordinating a community-wide engagement strategy to control Queensland fruit fly in the greater Sunraysia region (Greater Sunraysia Pest Free Area Industry Development Committee)

What are some of the key focus areas of your role as Industry Development Manager with the ABA?

The position of industry development manager is funded by a number of projects funded by Hort Innovation. I will be focussing on the delivery of the almond research and development program, working with the industry development team to make sure we deliver the most relevant and useful information and support services to our grower members.

What would you say motivates you to do what you do?

I really enjoy working with people and in high functioning teams. It's really motivating to see what can be achieved when everyone is working together.

What are some of the difficulties or challenges facing the almond industry as you see them? How do you think you can help to deal with these challenges?

It's hard to get past the water situation at the moment. It is by far the biggest challenge facing the almond industry and all irrigators. A lot of irrigators are doing it tough this year and it is likely to bring about a lot of change in dynamics across the basin especially if the dry conditions continue.

What are you most excited or passionate about? What are you most looking forward to in your role?

I am keen to visit each of the almond growing regions across Australia and getting to meet more growers. I want to better understand the unique challenges for each region so we can tailor our information and services better.

What are some of your interests outside of work?

Raising two boys, travelling, oil painting, making preserves and spending time with friends and family.



Stewart Ford and Stephen Richards, Farm Waste Recovery (FWR), with baled bulk fertiliser bags during a collection at Olam's 'Menegazzo' almond orchard in the Kenley area of Victoria's Sunraysia region. Each bale comprises about 65 bags and weighs around 210 kilograms.

Almond industry moves promptly to manage big bag waste

The Australian almond industry has taken a lead with the management of waste and recyclable packaging in the horticulture sector under the weight of looming environmental regulations and new State laws already in place that are ramping up the pressure on producers and fertiliser suppliers.

Used fertiliser packaging, particularly large bulk bags predominantly used by the horticulture industry, has largely been exported to Asia for recycling; found its way into landfill; or been disposed of inappropriately.

However, by mid-2021 and in-line with international agreements, exports of waste and recyclable plastics will no longer be permitted from Australia. With new laws in several States, incorrect disposal deemed to be harming the environment may result in heavy fines and/or imprisonment.

It means fertiliser users are under a legal obligation to ensure correct disposal, while fertiliser manufacturers must develop systems for future regulatory compliance and

to protect the environment and meet their social responsibilities.

Farm Waste Recovery (FWR) has been collecting large bulk bags from farms supplied by some major manufacturers that have signed up to the industry stewardship program.

Stephen Richards, Managing Director of FWR, has advised that the almond industry was already participating with most major producers supporting the program.

“The participating growers are committed to sustainable production methods and the program provides an outlet for plastic recycling” he said.

Neale Bennett, Chair of the Almond Board of Australia (ABA), said the recycling program was an initiative the ABA Board immediately supported, as it saved on landfill and was a more efficient use of resources.

“It makes a lot of sense to reuse materials through recycling than to use raw materials that will be discarded after one use,” said Mr Bennett.

He added that the Australian almond industry was committed to sustainable farming practices that included not only recycling but also efficient water use by applying the best technology to schedule irrigations.

FWR has recently been collecting bags from almond properties in Victoria's Sunraysia region. Bags are collected seasonally from late spring, through December and again post-harvest in March. Haifa Australia has been a major advocate of the program along with other suppliers and producers to help ensure the industry's future environmental sustainability.

Trevor Dennis, Haifa Managing Director, has been very proactive in encouraging other suppliers to join the program.

The program is nationally run and has been growing as growers within different industries have joined.

“For growers, the risk is linked to the fact there is nowhere to dispose (Cont...)

ENVIRONMENTAL RESPONSIBILITY

Gideon van Zyl, Orchard Manager at Olam's 'Campbell' almond property in the Kenley area of Victoria's Sunraysia region, with Stephen Richards, Farm Waste Recovery (FWR), and another used bulk fertiliser bag from Haifa, one of the first companies to sign up to FWR's stewardship program for fertiliser bag collection.



of the bags, so it has been pushed back onto the brand owners.", said Mr Stephens.

"Haifa has been really important for us and their customers because they have taken a lead in industries like almonds in conveying an understanding of the new requirements."

Olam recently had the packaging collected from their almond orchards in the Sunraysia region, with all their fertiliser suppliers part of the stewardship program.

The FWR service has collected more than 3,000 tonnes of plastic

since commencing four years ago and will soon come under the new banner, Big Bag Recovery, covering all agricultural industries. Recovery is expected to jump to around 48,000 tonnes annually, being the volume of bags imported into Australia. FWR will continue to collect unbranded waste plastics.

The business has plans to build a network of regional processing facilities to establish a full circle recycle industry across the country under its parent, Industry Waste Recovery. This will create hundreds of regional jobs and refine the waste back to a resin before manufacturing various new plastic products.

_"Ultimately, it is about preventing the need for manufacturing new plastic", said Mr Stephens.

The bags have been recycled into outdoor furniture, including park benches. About 60 bulk bags, converting to 200 kilograms of plastic, can be recycled into a park bench.

"The resin can be used to manufacture products like evaporation balls to go on water storages for seven to ten years before being harvested, refined back to a resin and starting again. This is true recycling," said Mr Richards.



Stacked bulk fertiliser bags ready for collection from the fenced-off site at Olam's 'Campbell' almond property in the Kenley area of Victoria's Sunraysia region.

australian almond

RESEARCH & DEVELOPMENT FORUM

REVIEW

30-31 October 2019



Some of the speakers from DAY 1 2019 Australian Almond R&D Forum
Agriculture Victoria; Katja Hogendoorn, University of Adelaide; Tim Pitt; SA
Bottom L-R: ABA Industry Development Manager Deidre Jaensch, Dr Paul
Ecotek; Ben Hooper, South Australian Apiarists Association; Phil Grahame,

The Almond Board of Australia (ABA) hosted its 5th Australian Almonds Research and Development Forum and Field Day, its largest forum to date, over the 30th and 31st October at the Loxton Research Centre and ABA's experimental and demonstration orchard. Researchers from Universities, Ag Departments, CSIRO and international research organisations took part in the biennial forum to present the latest knowledge and technologies from their work. Experts on key inputs such as bees and water also presented.

ABA Chairman, Neale Bennett, welcomed 226 registered delegates from as far away as New Zealand, Spain and the United States to this year's major industry event. Updates on a range of projects were delivered covering topics including integrated disease and pest management, pollination, tree fruitfulness and architecture and climate change. Newly appointed

ABA Industry Development Manager, Deidre Jaensch was the MC for the event ensuring the event ran to schedule.

The content of the forum was a combination of practical here and now project updates as well as the work happening to move the industry towards advanced production systems for the future that improve yield and better manage crop risks. Delegates were able to visualise what the future orchards of the Australian almond industry would look like. Presentations provided an understanding of the research being conducted that will enable the Almond Board of Australia to implement the industry strategic plan.

Agriculture Victoria's Paul Cunningham provided an update on the integrated pest management project whilst Jacky Edwards, also from Agriculture Victoria, discussed the current findings of the integrated disease management project. Both these projects are extremely

important to the almond industry as pest and disease issues can impact on both productivity and product quality. It was pleasing to delegates that the projects were progressing well and the promise of better management methods appeared to be on track.

Topical subjects were also discussed with Ben Hooper from the South Australian Apiarists Association and Mark Goodwin from Ecotek discussing the challenges and concerns around pollination services for the almond industry.

With water trading front of mind for many growers, Ruralco's Phil Grahame provided a timely and interesting insight into the water trading market within the Southern Murray Darling Basin. He painted a clear picture on the current status of the water market, deliverability and what to expect if current conditions persist. Of great interest was the analysis that permanent crops including grapes, citrus and almonds (cont...)



Top L-R: ABA CEO Ross Skinner, ABA Chair Neale Bennett, Anthony Kachenko, Hort Innovation; Dr Jackie Edwards, SARDI; Everard Edwards; Commonwealth Scientific & Industrial Research Organisation. **Bottom L-R:** Mark Cunningham, Agriculture Victoria; Grant Thorp, Plant and Food Research Australia; Dane Thomas, SARDI; Mark Godwin, RuralCo Water.



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RESEARCH & DEVELOPMENT FORUM



Some of the speakers from DAY 2 2019 Australian Almond R&D Forum and Field Day. L-R: Mark Heywood, Phytech; Upul Gunawardena, Select Harvest Ltd; Michael Coates, Plant & Food Research Australia; Mark Skewes, SARDI.



used 1,100 gigalitres last irrigation season and that after accounting for reduced State allocations and water for the environment 1,100 gigalitres was available this year. The analysis left many growers wondering why the price of temporary water was so high this year.

The introduction of an electronic question platform at this year's event was well utilised by delegates, offering the opportunity to ask questions throughout the presentations via the online portal.

Despite the less than ideal weather conditions, the Field Day was hugely successful with 15 exhibitors taking advantage of the opportunity to link with industry members and demonstrate their products and services. Further presentations were held throughout the morning and early afternoon covering the topics

of the effect of winter banding on nitrogen with compost application, on-farm hulling and moisture management, irrigation best practice management and an update from Michael Coates on the Almond Board of California's harvesting and drying trials.

The ABA Chair, Neale Bennett, believes the Conference held last year and the R&D forum were events that showcased the industry to growers and the wider community with the record attendance reflecting the interest in the industry and what it delivers to the regions.

"Almonds are a crop that is in demand as more and more consumers turn to healthy plant based diets and particularly products like almonds that offer so many health benefits".

"The research day highlighted the ongoing movement towards higher yields that enhances input efficiency even further for a crop that already delivers in terms of strong returns for growers and the production regions. One of the things that has been overlooked by many is that in addition to the nut, the industry has also produced 270,000 tonnes of hull that is helping to meet the shortage of fodder for drought affected animals or alternatively some is being used to improve the health of Mallee soils by adding nutrient and organic matter".

Mr Bennett advised that the industry was investigating how the benefits of carbon capture as trees grew could be recognised by government. "The carbon sink of 13 million large almond trees is enormous as is their production of oxygen through photosynthesis".

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Domestic Market Development Program

LOU MARTIN: The Australian Almonds nutrition program included several exhibitions over the past couple of months.

Sports Dieticians Australia Conference - Melbourne

In October, Australian Almonds were promoted at the SDA Conference in Melbourne. This was a two day conference that featured some of Australia's leading accredited sports dietitians, scientists and health professionals. The topic of discussion was educating people on nutritional strategies to combat heat during exercise. More than 200 sports nutritionists attended the conference with approximately 100 people requesting almond tins and brochures.

Nutrition Australia Breakfast

Australian Almonds supported a Nutrition Australia Breakfast promoting National Nutrition Week. Australian Almonds donated 500 heart shaped tins to support healthy eating and heart health. The theme of this breakfast was based on how to incorporate five serves of vegetables each day and how to reduce food wastage. It was

great that Australian Almonds could support this event and a huge thank you to Nutrition Australia for all their efforts in health promotions. The Hon. Natasha MacLaren-Jones MLC, Parliamentary Secretary for Health was present at the event which was hosted by Mr Mark Coure MP, Member for Oatley.

Royal Australian College of General Practitioners Conference - Adelaide

On October 23, Australian Almonds also exhibited at the Royal Australian College of General Practitioners Conference in Adelaide. This is a four day educational conference where 2,000 General Practitioners come together to learn topics that affect GPs in their clinical settings. As part of this conference we added additional engagement on the stand with introducing Almond Bliss Balls, made by Salt & Pepper Catering in Berri SA. Our 30 gram almond tins and Almond Balls were very well received, making it a very successful and engaging conference.



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Export Market Development Program



JOSEPH EBBAGE: During the week, November 4 to 9, the Australian almond industry conducted a trade mission in Delhi, India. The Austrade team at Delhi facilitated the two key industry functions of the mission:

- November 6: Lunch for social media Influencers at the Australian High Commission;
- November 7: Australian Almonds Seminar at the High Commission and a Reception at the High Commissioner’s Residence.

The Wednesday lunch for Indian social media influencers, nutritionists and fitness trainers provided the opportunity to present the key health benefits of almonds and also to learn about their perceptions of Australian almonds.

Yaser Siddiqui, Austrade Trade Development Manager, was our Lead for the Trade Mission and provided the following feedback:

“Hi Joseph, I have been tracking some of the folks which we invited today. #Australianalmonds is trending on Instagram amongst over 1.3 million followers of the major folks invited today. There is also a follow-up request from two fitness magazines editors to write articles on Australian Almond.”

The key industry event for the week was the Australian Almonds Seminar and Reception on November 7. The Seminar commenced at 4.30pm at the Australian High Commission and the Reception was held at the High Commissioner’s Residence at 6.30pm.

All five Australian almond marketers participated in this event.

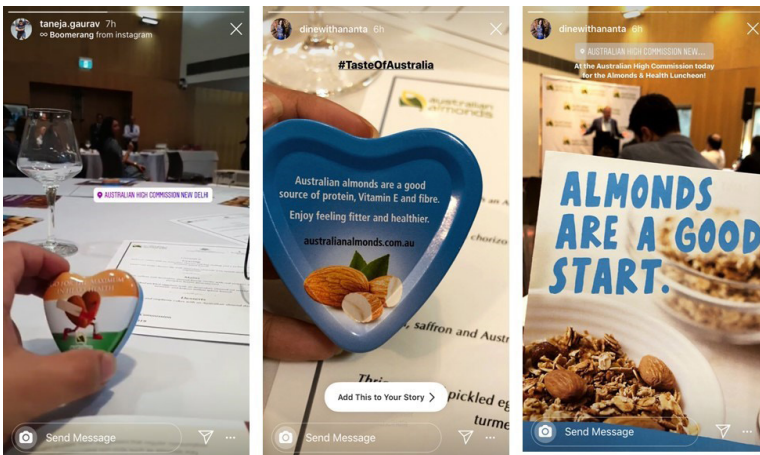
More than 40 Indian customers attended the Seminar and Reception. The event was regarded as valuable by our key customers, partly because it was an invitation-only event that was limited in numbers and held at the Australian High Commission.

The Seminar included:

- a presentation by Neale Bennett comprising an Industry Update with particular focus on product quality improvement;
- a Q&A session with Toby Smith, Laurence Van Driel, Nigel Carey and Tim Jackson;
- a short marketing update by Joseph Ebbage
- an interview session conducted by Tim Jackson with our special guest speaker, Ishant Sharma, India’s current Test Fast Bowler.

The industry update presentation included two videos: a video of Ben Brown providing a summary of our industry’s pest management and orchard hygiene program and a video from the October R&D forum featuring Paul Cunningham’s presentation on the research program.

The feedback from our marketers and our Indian customers has been very positive to the program and is a feature of our 2020 calendar.



This project has been funded by Hort Innovation using the almond research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Industry-wide survey of diseases in Australian almond orchards

TONYA WIECHEL¹, BRITTANY OSWALD², SIMONE KREIDL¹, PETA FAULKNER³, KHAGESWOR GIRI¹, LEN TESORIERO⁴, SUZANNE MCKAY², MARK SOSNOWSKI² & JACKY EDWARDS¹

¹Agriculture Victoria, AgriBio Centre, DJPR, Bundoora, Victoria

²South Australian Research and Development Institute (SARDI), Plant Research Centre, Urrbrae, South Australia

³Agriculture Victoria, DJPR, Mildura, Victoria

⁴NSW Department of Primary Industries, Ourimbah, New South Wales

To improve our understanding of the diseases affecting the Australian almond industry, researchers from Agriculture Victoria, SARDI and NSW DPI are collaborating on the Hort Innovation project ‘An Integrated Disease Management Program for the Australian Almond Industry’ led by Agriculture Victoria. Accurate knowledge of the prevalence and impact of the diseases affecting this rapidly expanding industry is lacking. Therefore, an extensive disease survey was designed and conducted in 2018-19.

Growers were asked via a Survey Monkey questionnaire for their perception of disease issues and details of their agronomic practices. The feedback provided baseline information for designing an industry-wide disease survey to effectively cover all major almond-growing districts. To ensure consistency in surveying methods across the national survey, a protocol was developed by a biometrician to ensure that disease distribution was accurately represented. A hierarchical sampling method known as ‘two-stage cluster sampling’ was chosen. This methodology is commonly used to conduct national health surveys. Disease incidences in regions were scaled based on the total area of the region. As Sunraysia accounts

for the largest planted region, the disease incidences in this region have the largest effect on the overall disease incidences of the industry-wide survey. In contrast, Adelaide Plains and WA have the smallest plantings so have only a minor influence on the overall disease incidence for the industry.

Orchard disease surveys began during flowering in August 2018, to look for blossom blight. Very little was observed as conditions across industry were too dry for this disease to be present, so surveying was stopped. The full survey was undertaken in spring (October to December 2018) and summer (January to February 2019). More than 2,000 trees were tagged and assessed in 126 blocks from approximately 10,000 ha of orchards across New South Wales, South Australia, Victoria and Western Australia.

Planting year of orchards ranged from 1981 to 2018, with most orchards (42%) being planted from 2000-2009. The main varieties included the industry standard Nonpareil (45%), plus Carmel (27%), Price (7%), Monterey (6%) and other (4%; Independence, Peerless, Fritz, Wood colony). The most common rootstock was Nemaguard (61%).

Industry wide disease prevalence

The most prevalent diseases were lower limb dieback (LLD), hull rot and trunk diseases (which included Phytophthora) (Figure 1). While shot hole symptoms were consistently observed, they were not considered serious as the disease is well controlled by spraying.

In some cases, grower perceptions were different to the survey results: eg. growers rated anthracnose, rust and bacterial spot highly (Figure 2), but they were not commonly observed this season. This may reflect the variability between seasons.

Regional differences

Regional differences were evident for most diseases (Figure 3).

Lower limb dieback was more prevalent in the Riverina, Riverland and Sunraysia, but very little was present in Western Australia.

Hull rot was most prevalent in the Riverina and Sunraysia, with little in Adelaide Plains and Riverland, and none in Western Australia. Hull rot is a late season disease and the summer surveys were timed to (Cont...)

INTEGRATED DISEASE MANAGEMENT



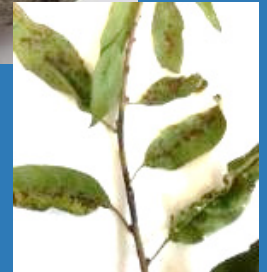
Shot hole 72%



Hull rot 34%



Bacterial spot 1%



Trunk disease 26%



Anthracnose 1%



Lower limb dieback 70%



Rust 1%



Blossom blight <0.1%

Figure 1: Incidence of almond disease observed during 2018-19.

INTEGRATED DISEASE MANAGEMENT

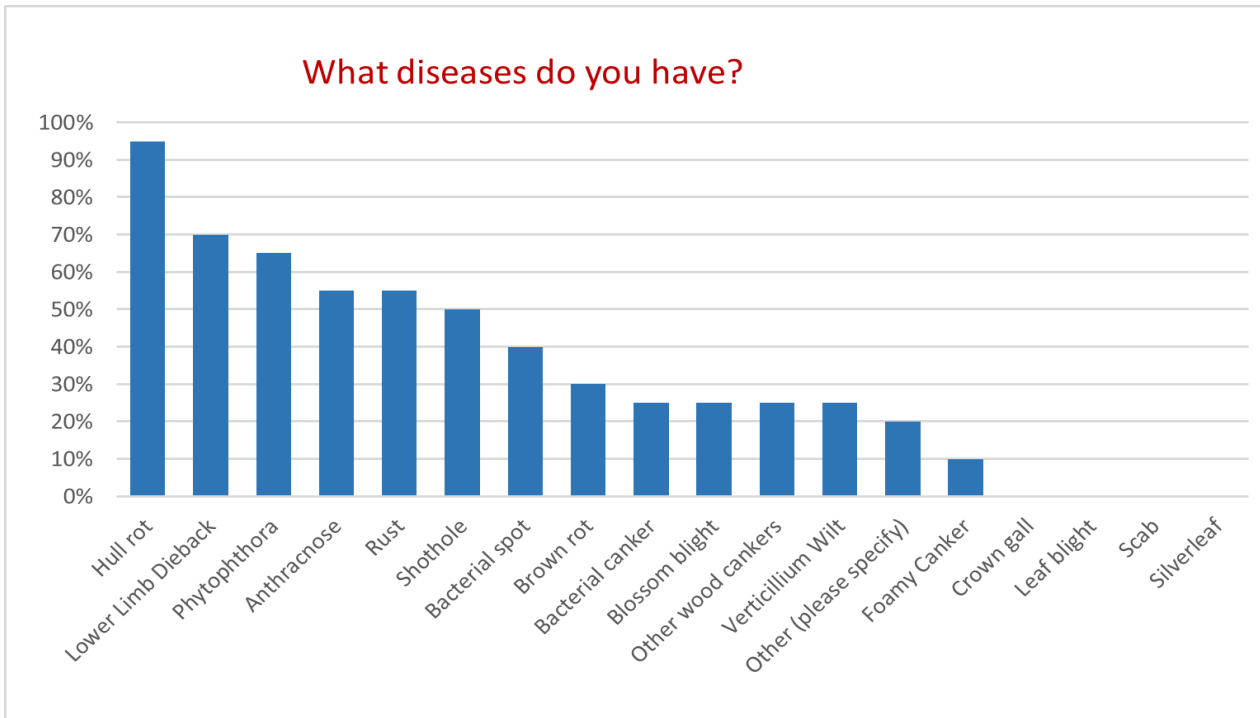


Figure 2. Growers' perception of almond diseases from Survey Monkey questionnaire.

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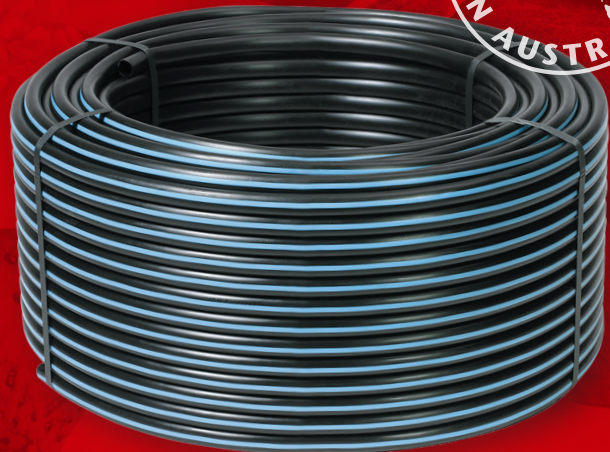
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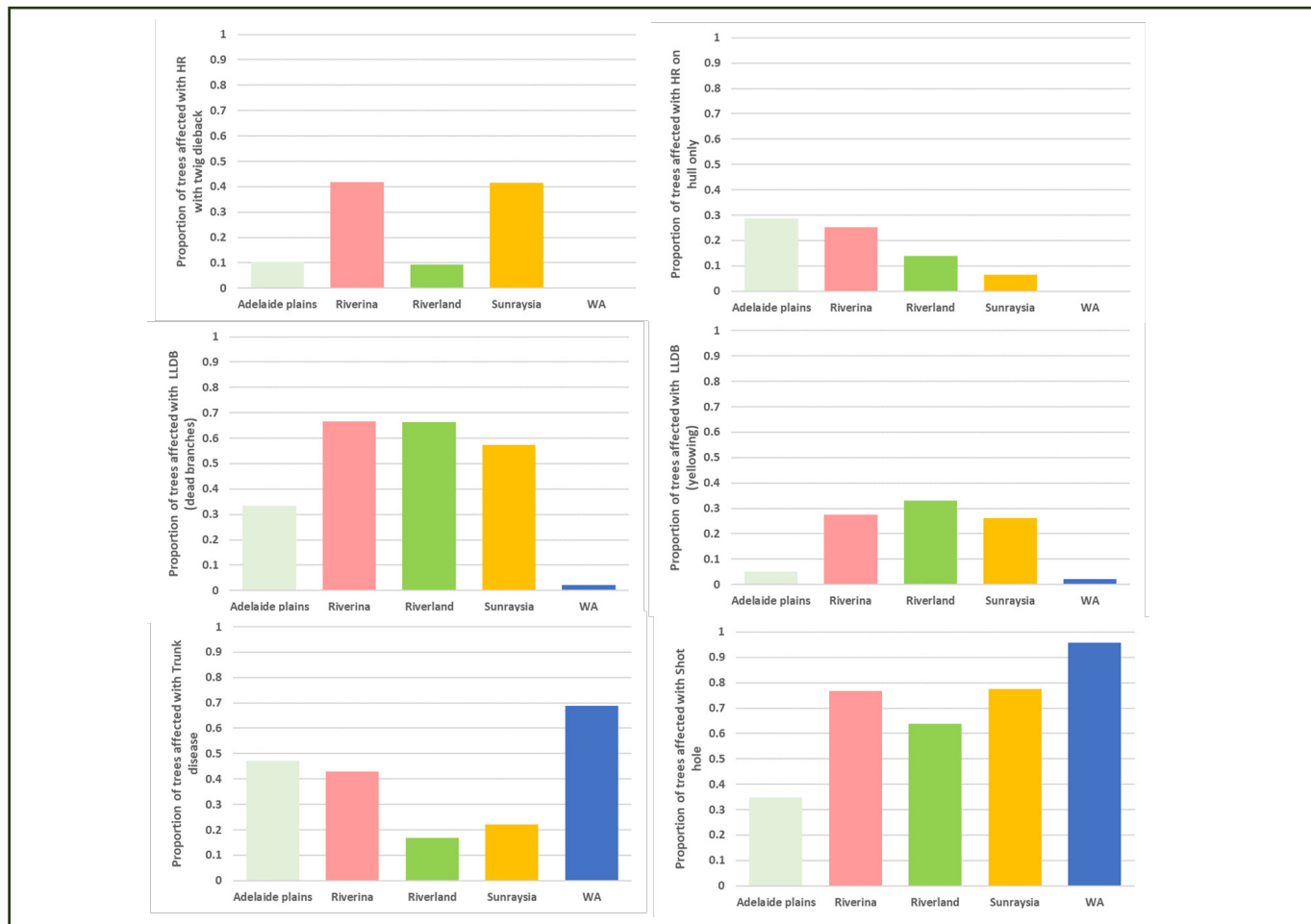


Figure 3. Regional differences for the diseases hull rot (HR), lower limb dieback (LLDB), trunk disease and shot hole.

assess hull rot as close to Nonpareil harvest as possible.

It is weather-driven, so differences in rainfall between the regions will have influenced the incidence observed.

Trunk diseases were more prevalent in Adelaide Plains, Riverina and Western Australia. In Western Australia, high soil salinity may contribute to the trunk disease symptoms observed.

Adelaide Plains had less shot hole than the other regions. This may be due to smaller orchards allowing more effective spray coverage.

Rust and anthracnose were observed in Western Australia but were rare elsewhere (data not shown). What's next?

This research aims to improve our understanding of the major almond diseases affecting the Australian industry. Surveys and sampling will

continue throughout the 2019-2020 season. We have already completed the spring surveys and are gearing up for the pre-harvest surveys. Analysis of two years of data will provide guidance for identifying factors influencing disease and assist in the development of strategies for management in the future.



This project has been funded by Hort Innovation using the almond research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Bureau of Meteorology (BOM): Information to manage your orchard

The Bureau of Meteorology (the Bureau) is Australia's national weather, climate and water agency. Weather data has been collected for over 110 years and water data for over ten years. This data is used to create services, referred to as products, on the Bureau's website.

This article will help you navigate some of the many products on our website. The products discussed are just a small subset of the total offering.

The Bureau's website offering can be grouped into three categories that might be useful to growers:

- Looking back
- What's happening now and in the coming week
- Looking ahead

Looking back

The **Australian Landscape Water Balance** allows users to generate maps at various scales showing precipitation, soil moisture, runoff, evapotranspiration or deep drainage on a daily, monthly or annual aggregation. The data goes back to 2005 and can be compared to historic records. Figure 1 is an example of a map produced through this product showing precipitation in the Riverland area of South Australia for 1 January to 4 December 2019, relative to historic records from 1911 to 2016.

What's happening now and in the coming week

"**MetEye – your eye on the environment**" provides current air temperature, relative humidity, rainfall, wind speed and direction and sea surface temperatures as well

as forecasts for various parameters, including frost. The maps below show the current temperature for southern Australia (Figure 2a) and frost forecasts for south-western NSW (Figure 2b).

Visit MetEye here: <http://www.bom.gov.au/australia/meteye/>

Looking ahead

The **Climate outlooks**, looking one week to four months ahead, are issued every Thursday. The one and two weekly outlooks are also updated on Mondays. This product provides outlooks for rainfall and temperature (Figure 3a) as well as the accuracy of past outlooks (Figure 3b). Visit Climate Outlooks, which include a monthly updated video and

a written summary, **here**.

To find out more about the Bureau's weather, climate and water information, visit the website: www.bom.gov.au.

Sign up to one or more of the Bureau's email updates, which include E-newsletters, Climate Outlooks, Seasonal Streamflow Forecasts or media releases **here**.

Information on the Bureau of Meteorology's website can help support almond growers' decisions around weather, water and climate. Visit the website, www.bom.gov.au Sign up for updates and e-newsletters

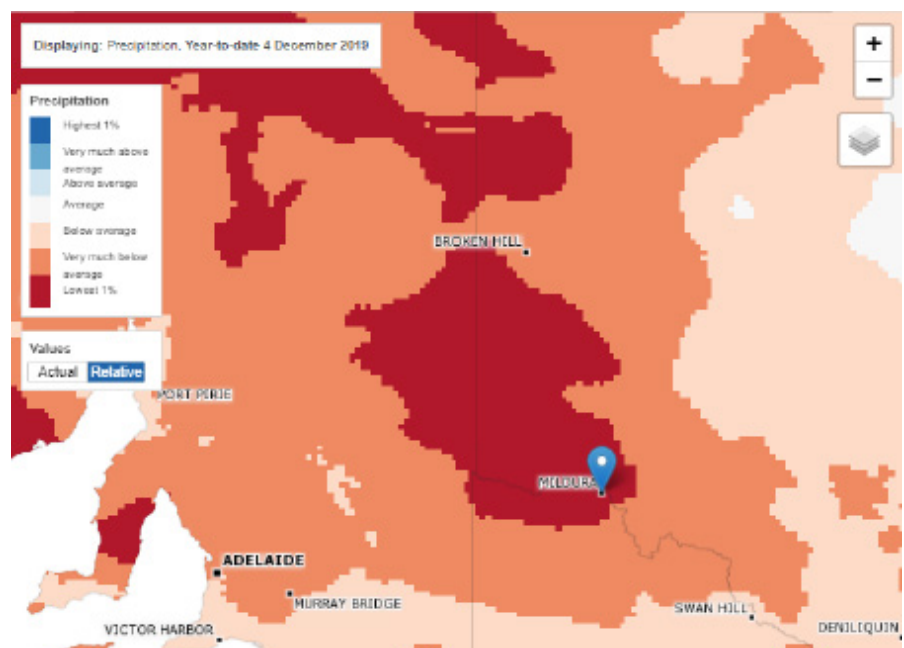


Figure 1: Australian Landscape Water Balance
(<http://www.bom.gov.au/water/landscape>)

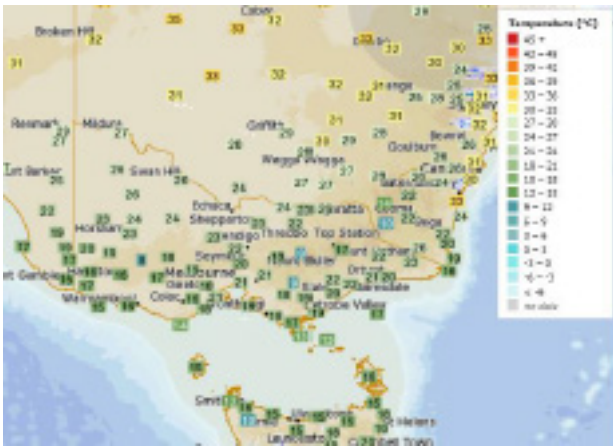


Figure 2a: MetEye current temperature



Figure 2b: MetEye frost forecast

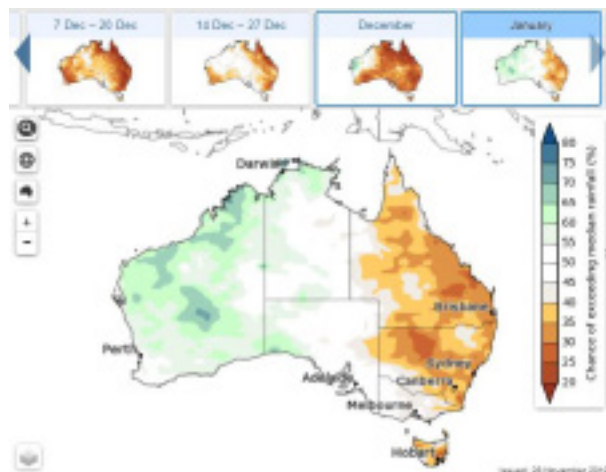


Figure 3a: Chance of above median rainfall for next month

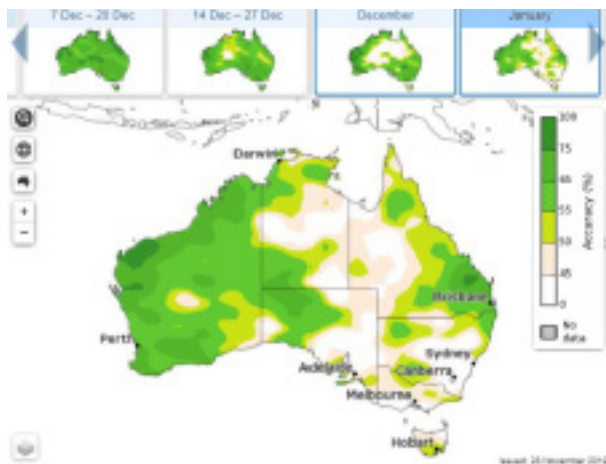


Figure 3b: Past accuracy of one month rainfall outlooks

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2019 R&D FORUM: Some quick notes



JOSH FIELKE & BEN WIBLIN: The Australian Almond Research and Development Forum held over 30-31 October in Loxton was packed full of information, providing insights into a number of different projects being conducted throughout the almond growing regions of Australia. We have come up with some quick notes that provide a snapshot of what was presented by some of the speakers. To view the full presentations [CLICK HERE](#).

An Integrated Pest Management Program for the Australian Almond Industry – one season in
Paul Cunningham, Agriculture Victoria

Progress is being made with the trap and kill mass trapping technology. The project team has used electroantennography to develop a new lure. This process involves wiring the beetles antennae and penetrating a node into the brain. Various odours are then passed by the beetle to see whether they react or not. A pheromone has been identified and trialled to show four times the amount of *Carpophilus near dimidiatus* caught than *Carpophilus hemipterus* (stone fruit pest). Further evaluation of the compound will be conducted in the upcoming season.

Winter sanitation remains and will always play a significant role in population control of *Carpophilus*. Work is being done on the methods for destroying mummies to develop a best practice. The team is currently evaluating mulching, terminating and burying the nuts.

Almond Productivity: Tree Architecture and Development of New Growing Systems
Grant Thorp, Plant and Food Research

Structural spacing is important when minimising limb breakages in orchards, especially in single leader trials which have demonstrated no breakages. When grown naturally

and/or in a single leader design, almonds will distribute limbs in a way where they are structurally sound around the scaffold. When the trees are headed at 1.2m it causes the apical dominance to be broken and the buds below to shoot. This makes this section of the scaffold quite congested increasing the risk of breakages.

Changing current architecture to a narrow canopy will allow for more trees per hectare resulting in greater yields. This is achieved by pruning the large branches growing into the midrow and making heading cuts to develop more fruiting wood. There will also be greater light interception allowing for more fruit to be produced in the lower half of the canopy.

SARDI projects at the Almond Centre of Excellence (ACE) Experimental Orchard
Tim Pitt, SARDI

The first growing season of the Soil Management Strategies trial is now complete. There is a positive correlation for the spading treatment (irregularly cultivating to ~500mm) in relation to canopy height. The replicate consistently produced trees over 2.25m in height, which was higher than any other replicate. It is early in the trial and this data should be viewed in this context, but it will be interesting to see how this trend develops over time.

Due to the number of trials SARDI

are running out at the ACE orchard in Loxton, SARDI are in the process of developing a light bar to automate canopy assessment of the trees. This technology enables physical parameters to be measured as well as evaluating light interception based on the research of Bruce Lampinan from the University of California.

Update on Agriculture Victoria's Mildura Experimental Orchard and Victorian Research Developments
Michael Treeby, Agriculture Victoria

The experimental orchard at Mildura is continuing to develop and with six trials currently in place under H1, H2 and H3 orchard design. The H1 block or 'traditional' block is planted to Nonpareil, Carmel and Monterey on Garnem, Nemaguard and Rootpac40. This trial is under different fertiliser management practices to determine best practice for tree establishment and early bearing.

A light interception trial is also being undertaken which aims to determine the optimal light exposure needed to create a highly productive canopy. This trial is known as the 'sundial' trial and is set up in the 'X' structure.

The H2 and H3 trials have incorporated new varieties, dwarfing rootstocks and various tree densities. The data from these trials will then enable modern orchard design specifications to be produced taking into account all aspects of what has been trialled. It is important to

note that all work being undertaken across the two experimental orchards (Loxton and Mildura) is being done in collaboration to ensure maximum value for industry research dollar.

Pollination Supply Issues *Ben Hooper, South Australian Apiarist Association*

Throughout the coming years there will be a larger discrepancy in the number of beehives available and the number of almonds that need to be pollinated. In order for this discrepancy to be minimised there will need to be an increase in the accessibility to public land sites and floral resources to build bees on. The South Australian Apiarist Association has been working in conjunction with PIRSA to develop a financial model that describes the economic benefits of increasing public land site access to build bee populations. This will be a significant step to the expansion of the apiary industry and increasing the number of hives available for almond pollination.

Bee Friendly Plantings *Katja Hogendoorn, Adelaide University*

Trials have been completed to measure the impacts of planting a cover crop in the mid-row on pollination when. All data collected has shown that both nut set and pollen collection was not influenced by having a cover crop.

There has been a drastic loss of land available for native honeybees to feed on due to burning-off and land clearing. However, there is potential for almond growers to utilise their buffer zones to plant native flora to supply bees with alternative food supplies. Designing

plantings that produce bioactive mono-floral honey may also enable the production of Manuka honey from manuka bush (*Leptospermum sp.*) which is highly sought after and valuable.

Managing Almond Production in a Variable and Changing Climate *Dane Thomas, SARDI*

There are a range of climatic conditions that are becoming more severe and more irregular which may mean common orchard practices need to be altered or new practices introduced. As the climate is predicted to continue warming in the future, it is prudent to expect a water constrained future with higher evapotranspiration and fluctuations in the quantity of irrigation water. Warmer winters will influence the number of chill portions that the trees receive which potentially influences the time of flowering. These changing climatic conditions are important to take into account when considering future risks that may be faced by an almond orchard.

On Farm Hulling and Moisture Management *John Fielke, University of South Australia*

On-farm hulling is currently being investigated to try retaining the nutrient rich hulls on farm and to save in transport costs as they make up over half the total mass per cubic metre of product. The initial results have shown positive signs with almond hulls successfully removed by the on-farm hulling machine. Further modifications will enable the machine to increase its hulling capacity to make it suitable for commercial use.

Irrigation Best Practice Management *Mark Skewes, SARDI*

The irrigation best practice management project is assessing the industry's drip irrigation systems across the four major almond growing regions of Australia. The aim of this project is to determine best practice for maintaining dripper efficiency, filters and maintenance scheduling. This has been achieved by running an irrigation audit on 50 properties to develop an industry online benchmarking tool that enables growers to test their system's performance against industry standards. Soon to be released is the online benchmarking tool which will be made available to all growers through the ABA's website.

Spray Application *Jason Deveau, Sprayers 101*

There are many factors that spray applicators must take into consideration to ensure optimum effectiveness. One key factor is to consider how the air moves when you are applying spray, which largely comes down to the operation of the machinery. The "Sprayers 101" website describes best practices in safe, efficient and effective agricultural spraying with a library of articles, videos, presentations, apps, calculators, tables and ePubs. The site is designed in a blog format that allows growers to provide feedback and ask questions, via Twitter, Facebook or email. The Airblast 101 Handbook is a useful tool that can assist in breaking down the science that underpins airblast spraying applications. This publication is currently being reproduced and will be more applicable to Australian agriculture (due April 2020).



GROWING MATTERS

A NEW PODCAST SERIES JUST FOR GROWERS



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- What you need to know about the future of pollination in Australia
- Harnessing the power of good fats in horticultural produce

Listen at www.horticulture.com.au/podcasts or on one of the platforms below.



STEERING RAPID GROWTH: New Board members join Hort Innovation

New and returning Board members will help oversee the nation's horticulture Research and Development Corporation (RDC), Hort Innovation, following an election at the not-for-profit's Annual General Meeting in Sydney last month.

Hort Innovation Chair Selwyn Snell said the new and returning recruits – Jan Vydra (new), Paul Harker (returning) and Robert Clark (returning) – will be among those positioned at the helm during a never-before-seen period in the RDC's history.

"The 2018/19 financial year has been our biggest year yet," Mr Snell said. "On top of utilising levy funding, we brokered millions in co-investment dollars from a range of partners and sources. And we secured a significant amount of extra grant funding for investment, through various federal programs.

"In all, we turned around and invested more than \$122 million on behalf of the horticulture sector, including Australian Government contributions, across some 600 projects.

"That is a record at close to \$12 million more than the previous year. And I would like to thank all the growers and the industry bodies that helped make that happen."

Mr Snell said each of the Board members will bring their own set of unique and valuable skills to the RDC, as it works toward helping Australian agriculture reach its goal of delivering \$100 billion in production by 2030.

Jan Vydra is a passionate agri-business leader with a proven commercial track record over more than 15 years. As a first-generation farmer, Jan co-founded Australian Fresh Leaf Herbs in 2008, and has been intimately involved in all aspects of operating a successful horticulture production company.

Mr Vydra was also awarded a Nuffield Scholarship in 2016, and received the Australian Young Farmer of the Year Award in 2011 as well as Rabobank Emerging Leader of the Year 2016.

Previous sitting Director, Paul Harker, was re-elected after serving one term with the Hort Innovation

Board. Mr Harker is currently the Director of Fresh Foods and Group Replenishment for the Woolworths Group.

In this role, Mr Harker leads a team of 300 people who source and buy fresh foods for 1000 Woolworths supermarkets in Australia and a team of 280 who manage the forecast and supply of product through from supplier to over 2800 stores across the Woolworths Group.

Re-elected recruit, Professor Robert Clark was appointed as a Director of Hort Innovation at its registration and re-appointed in November 2016. He is an Emeritus Professor of Agricultural Science at the University of Tasmania. Professor Clark is also a horticultural producer, as owner and Managing Partner of Lanoma Estate, 500 hectares of intensive agricultural properties in the Derwent Valley, Tasmania.

Selwyn Snell was re-appointed as Chair, and Dr Mary Corbett retained the Deputy Chair position.



Tune in to brand-new Growing Matters

Created just for horticulture growers, the second series of the *Growing Matters* podcast is here. Promising something for everyone, it's chock-full of practical and interesting info that you can listen to whenever and wherever you want.

The all-new episodes feature our very own Hort Innovation R&D Managers and staff talking with

industry experts about hot topics such as using data and insights, accessing information and support on trade, all things pollination, and how to talk to consumers about healthy fats.

The podcasts can be accessed through the Hort Innovation website. You can also search and listen on Spotify, Apple Podcasts and Stitcher.



Have your say on the important issues for sustainability of Australian horticulture

Hort Innovation is inviting all people interested in horticulture to share their thoughts on the sustainability of fruit, vegetable, nut, cut flowers, turf and nursery production in Australia.

This short, 10 minute survey will help industry to understand and respond to the issues that are most important to you.

[Click here to have your say](#)

Thank-you for your time. Please also share this with anyone with an interest in horticultural production around Australia.

For more information on this initiative, go to the Hort Innovation website at www.horticulture.com.au/sustainability.

If you have any further queries, please contact Ingrid Roth, Horticulture Sustainability project lead, on 0428 195 485 or ingridroth@roth.net.au

**Hort
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Want to know how your levy was invested in 2018/19? Download a copy of your Hort Innovation Almond Fund Annual report today!

Pay a levy? Then you won't want to miss everything your levy dollars got up to during the most recent financial year, with the release of Hort Innovation's 2018/19 Fund Annual Reports.

Each industry-specific report includes key investment and project information from the year, and is available to download from www.horticulture.com.au/annual-report-portal

From this link you can also access a copy of the Hort Innovation 2018/19 Company Annual Report, detailing activities and highlights across our entire portfolio of work.

Fires impacting hives in NSW

The recent bush fires which devastated large parts of New South Wales have destroyed large numbers of hives and caused damage to many others.

Stephen Targett, President of the New South Wales Apiarist's Association, is encouraging growers to communicate with their apiarists early in the lead-up to the 2020 pollination season to ensure adequate supply.

"Experience has shown that the damaged hives take at least 12 months to fully recover from the effects of the fires", explains Mr Targett.

"In reasonable years, the destroyed hives can be replaced quite quickly however in this drought it may take more than 12 months to replace all these hives. Figures are being collated on how many hives have been lost."

Mr Targett believes that the effects of these horrific fires will be felt by the apiary industry for over 20 years. That is how long a lot of these burnt forests will take to recover to be useful to apiarists.

"Over one million hectares of forests have been burnt. This area is now unsuitable for logging and thus will concentrate logging in other areas of the state of New South Wales. This combined will make it very hard for beekeepers to expand their businesses to meet the increased demand for pollination."

"The flow on effects of lightning strikes which burnt out 3,000 hectares near Batemans Bay, after back burning, the total area burnt was 14,000 hectares. This was prime area for a lot of the state's southern beekeepers to build bees for pollination."

The ABA encourages all growers to make contact with their apiarists as soon as possible regarding the 2020 pollination season.



Almond growers, don't gamble with frosts.

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Andrew Doecke
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2019/20 Events

DECEMBER

SUN	MON	TUES	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

December

10-12 US Almond Conference, Sacramento, California

JANUARY

SUN	MON	TUES	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

January

30 ABA Plant Improvement Committee Meeting, Loxton
ABA Almond Centre of Excellence Committee Meeting, Loxton

FEBRUARY

SUN	MON	TUES	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

February

3 ABA Market Development Meeting, Mildura
ABA Production Committee Meeting, Mildura

4 ABA Board Meeting, Mildura

12-14 Japan Supermarket Show, Tokyo

15-20 Gulfoods, Dubai

21-23 JGoifex Fitness Show, Jakarta, Indonesia

ORANGE, FIG & ALMOND Christmas Pudding

INGREDIENTS

- 110g sultanas
- 110g raisins
- 100g currants
- 175g dried figs (roughly chopped)
- 3 x zest of an orange
- 40g candied orange Peel
- Juice of 3 oranges
- 1 tablespoon dark rum
- 100ml Cointreau liquor (plus another good dash for the end)
- 110g vegetable suet
- 4 slices of white bread (blitzed into breadcrumbs)
- 1 teaspoon mixed spice
- 225g dark brown sugar
- 40g almonds (roughly chopped)
- 50g self raising flour
- 2 eggs
- Pinch of nutmeg

METHOD

1. In a bowl mix together the sultanas, raisins, currants, chopped dried figs, candied orange peel and the zest of one orange.

2. Pour over the Cointreau, dark rum and juice of one orange. Give it a really good mix, cover the bowl and leave over night.

In the same bowl add the suet, breadcrumbs, mixed spice, dark brown sugar, chopped almonds, flour, eggs and nutmeg. Give it all a good mix.

3. Finally add the two remaining juices of orange and the zest. Again give it all a good mix. Leave the mixture covered and in the fridge over night or you can cook straight away.

4. Line a 2 pint pudding bowl with butter and a little grease proof paper at the bottom.

5. Before tipping your mixture into the pudding bowl, make sure it is a sloppy consistency. Add a

dash of Cointreau to loosen it up if needed.

6. Pour in your mixture making it nicely packed in to the bowl. Cover the bowl with greaseproof paper and tin foil. I tied mine with string to make the cover secure but some pudding bowls come with lids.

7. Put the pudding into a pan of hot water (about ¼ full - so it is touching the outside of the pudding bowl) and steam cook with a lid on for 5 - 6 hours. Make sure you check that water does not evaporate and top up when needed.

8. Once cooked, leave to cool and change the lid (a new piece of tin foil will do). Your pudding will keep for around 2 months until Christmas. Heat up the same way as you steam cooked it for around 2 hours. Enjoy with lashings of orange flavoured white sauce.

Recipe and image source:

Cook Bake Eat <https://www.cookbakeeat.com/orange-fig-almond-christmas-pudding-recipe/>

