R&D Key for Tea Tree Industry

full story pg. 8-9

HONEY INDUSTRY TURNS TO GENETICS FOR PERFORMANCE LIFT
pg. 3

SCHOLARSHIPS FOR AGRICULTURE YOUNG GUNS
pg. 5

AWARD RECOGNISES INSPIRING RURAL WOMEN
pg. 6-7

NEW GUIDE PROVIDES A CLEAR PATH FOR PESTICIDE ACCESS
pg. 13
Message from the Managing Director

This edition of Diversity is my first as Managing Director at RIRDC and since starting in the role in early May I’ve been kept busy meeting with representatives from our portfolio industries and learning about the diverse and exciting R&D the Corporation manages.

Diversity magazine really is a great reflection of RIRDC’s R&D portfolio – the mix of animal, plant and rural issues research is unique amongst the rural research and development corporations (RDCs) and makes a vital contribution to the ongoing prosperity of Australian agriculture.

I’ve come to RIRDC knowing the Corporation has a long and proud history of assisting new and emerging industries develop into well established and globally competitive industries. The Australian canola, olive, rice and grape industries are great examples of how RIRDC-managed R&D has helped those industries lay strong and sustainable foundations to allow for future growth and to meet consumer needs.

One industry in the RIRDC portfolio with huge potential is the Australian tea tree oil industry, and we feature the tea tree oil industry in this edition of Diversity.

Australia leads the world in R&D for tea tree oil production. The industry is considered a maturing industry, has its own industry association — the Australian Tea Tree Industry Association Ltd (ATTIA) — and the oil is now becoming commoditised.

The majority of Australian tea tree oil is exported as bulk or value-added product and most of it is marketed under the ATTIA Code of Practice accredited brand.

Australia exports about 85 percent of its tea tree oil production, which amounts to around 380 tonnes, with the farm gate value of the industry about $32.8 million. The main export destinations for Australian tea tree oil are currently the United States of America (50 percent), Germany (8 percent), the United Kingdom (7 percent), Hong Kong (5 percent), Canada (3 percent), Taiwan (3 percent) and New Zealand (1 percent).

The main competition in the tea tree oil market comes from China, which has the advantage of cheaper production costs. Australian tea tree oil competes effectively by producing high quality, consistent product that is compliant with international standards, and through higher-yielding varieties.

The future for the Australian tea tree oil industry is exciting — it is being used to make value-added product, which includes healthcare, cosmetic, pharmaceutical, veterinary and aromatherapy products.

New uses for tea tree oil are being considered and these include insect pest control in the sheep and cattle industries. Studies have shown that dipping sheep in diluted tea tree oil-based formulations can eradicate lice infestations. The repellent and insecticidal properties of tea tree oil have also been observed against sheep blowflies. These effects have been monitored at concentrations that are viable for commercial-scale application, which presents new opportunities for markets for Australian tea tree oil.

This edition of Diversity has a diverse and interesting mix of stories, including profiles of the seven 2016 Rural Women’s Award Finalists and the 10 new recipients of the Horizon Scholarship; the use of genetics to breed better honey bees; new research on the traceability requirements of Australian primary industries; and the development of a new guide to help farmers in smaller industries access pesticides.

I hope you enjoy the read.

John Harvey
Managing Director, RIRDC
Honey industry turns to genetics for performance lift

Hopes are high that the introduction of advanced genetic techniques for selecting superior queen bee breeding stock will lift production and hive health in Australia’s $90 million-a-year honey industry.

Following a successful RIRDC-supported pilot study, Genetic Evaluation of Australian Honeybees using BLUP procedures, a new project will begin the groundwork required to make genetic improvement a reality.

The research, by Dr Rob Banks from the University of New England, is considered crucial for keeping productivity ahead of the ever-present cost-price squeeze.

Input costs have generally been rising 3-5 percent faster than product prices; meaning the gross margin per hive has effectively been falling at a similar rate.

It was hoped that improving genetics would be the answer — as it has been with other livestock industries — because factors such as honey production, hygienic behaviour in a hive and disease resistance are all hereditable traits.

However, harnessing this genetic potential in queen bees requires detailed pedigree and performance data. The initial study sought to find and enlist breeders with this information and also to ascertain if the preferred statistical methodology for genetic analysis would be suitable for queen bees.

Both these initial goals have been achieved and a follow-up project now aims to progress genetic improvement of Australian honeybees through a combination of actions:

• Analysis of queen relationships in breeding programs to enable more extensive genetic analysis than was possible in the initial project.
• Collection of health data, including hygienic behaviour, for inclusion in this analysis.
• Collection of DNA samples from other breeding programs to build a relationship map of queen breeding programs. This map will underpin genetic evaluation of queens from different breeding programs, and inform breeders on the degree of inbreeding in the Australian population.
• Working with NSW DPI and the industry to develop educational material on practical breeding programs.
• Consultation with industry to scope a coordinated queen evaluation program to extend the work of the Australian Queen Bee Breeders Association and include more traits.

• Genotyping of imported semen, if this becomes permitted, to allow inclusion of new stock in the relationship map of the Australian population.

Dr Banks says he expects industry interest in the project to build strongly as the second phase rolls out. “Genetics is a simple, but powerful, tool with which to address the cost-price squeeze, along with disease risk and other husbandry factors such as temperament,” he says.

“There is a lot of accumulated data in the industry and what we are hoping to do is to underpin this with hard data. It will need a commitment by breeders to record pedigree and performance data, but there should over time be a significant industry pay-off.”

More information: Dr Robert Banks, University of New England, 02 6773 2425, rbanks@une.edu.au

The Australian honey bee industry produces 20,000 to 30,000 tonnes of honey annually, ranking it among the world’s top 10 honey-producing countries. Much of our honey is exported.

Other honey bee products include beeswax, pollen, propolis (a resin that is part of the honeycomb construction) and pollination services.

Honey production in Australia is mainly driven by weather conditions and the impact of weather events, such as droughts, floods and bushfires on the honey bee population. Other factors that can affect production are honey bee pests and diseases, nutritional deficiencies, and the accessibility and health of native vegetation.

Seeking validation for Australian agriculture exports

Smartphone apps, trace mineral markers and micro tags are some of the emerging technologies that can help consumers validate the authenticity of a food or fibre product.

Australia is a high-cost agriculture producer by global standards, its competitive advantage as an exporter has long been its reliably high quality. That reputation has been backed by stringent regulations covering issues like food safety, animal welfare, labour relations and environmental management.

Buyers and consumers internationally are increasingly looking for products with that kind of reputation, but the ability to market such products relies on validation systems that can make the link all the way from farm to market.

Those systems and the requirements of industries using them are examined in a new report soon to be released by RIRDC. The report maps out the array of traceability and validation systems and technologies that are available to Australian agricultural exports, and how they cater to the needs of different agricultural sectors. It also highlights the distinction between traceability systems, which are about tracking a product along the supply chain, and validation systems, which are about confirming the identity of products at the point of sale.

There are two trends in Australian agriculture, according to report author Seamus Hoban of GHD. The first is the shift from commodity products to value-added products, which comes with a greater need for validation.

Second is the changing structure of supply chains in agriculture, so-called ‘paddock to plate’ supply chains where validation systems enable value-adding and differentiation.

“Validation technology not only helps protect brands against counterfeiting and substitution, but also allows manufacturers to add value to products by highlighting and ensuring key features, including providence, production and supply chain practices,” Mr Hoban says.

The report identified three broad categories of validation technology:
• Biological identification techniques (trace mineral markers, spectroscopic analysis, DNA testing).
• Track and trace technology (barcodes and radio frequency ID).
• Anti-counterfeiting packaging and labelling (tamper proof packaging, embedded labelling, traditional labelling).

“...traceability and validation are increasingly becoming as much about marketing as biosecurity and safety,”
Charlie Thomas

The report also found variation in the traceability and validation requirements of different industries.

“Understandably, we found a lot of difference between the bulk commodities and higher-value commodities. We talk about intrinsic versus extrinsic qualities. Traditionally, bulk commodities are traded on intrinsic values like quality specifications, while high-value products are increasingly traded on extrinsic values like animal welfare or origin,” he says.

Australian systems and technologies are some of the best in the world, according to Charlie Thomas from the National Farmers’ Federation, but the traditional approach has focused on the production end of the supply chain.

“Historically, we’ve looked at that from a food safety and biosecurity point of view,” he explains. “I think traceability and validation are increasingly becoming as much about marketing as biosecurity and safety. This is particularly so in some of our key export markets where there’s a growing middle class of consumers who are interested in the provenance of their food.”

High-value products

Wine is one of the leaders in validation usage among high-value products, driven by a key requirement to differentiate products at point of sale.

“A bottle of shiraz could be $6 a bottle or $600 a bottle,” Wine Australia’s Steve Guy says. “It’s critical that the integrity of the description of the wine on the bottle is maintained. They’re differentiated based on provenance, vintage, variety and region. The only way that can be managed is through a record trail.”

With wine dependent on those extrinsic factors, the industry’s requirements are more heavily weighted towards validation systems that give buyers confidence in a product’s integrity at the point of sale. That requirement is driving the wine industry to explore a number of high-tech solutions.

“If it was possible to determine a wine’s origins through some chemical test, then that may overcome the need for a paper trail to be established,” Mr Guy says. “That’s still a fair way off, but it’s worth pursuing.”

Bulk commodities

Bulk commodities like cotton, use validation systems that reach all the way to the consumer.

More information: Seamus Hoban, GHD, Seamus.Hoban@ghd.com, 02 9239 7288
Scholarships for agriculture young guns

Ten of Australia’s brightest first year university students with a commitment to agriculture and the capacity for leadership have been selected from a competitive field of more than 180 applicants as the 2016 Horizon Scholars.

A RIRDC initiative supported by industry and government to address a shortage of graduates pursuing agriculture, the Horizons Scholarship provides a $5000 bursary for each year of study. Mentoring, industry related experiences and professional development opportunities are also provided.

The first of these was a Canberra workshop in June bringing the new crop of scholars together with current scholars to learn about leadership, communicating with influence and podcasting.

Scholars are sponsored by industries and undertake an annual two-week placement as part of the scholarship program.

“Placement experiences have been invaluable for understanding the practical application of my studies in different settings. They have also allowed me to observe the skills and attributes required to be successful in the agriculture sector. The industry mentors I have been paired with have been highly supportive and have provided me with in-depth knowledge of the sector,” says Jana Dixon, South Australia, who is studying Agricultural Science, University of Adelaide; Sponsor: Grains Research and Development Corporation

“Placement opportunities for young people are incredibly important in order to attract and retain the best and brightest new graduates into the agricultural sector. Placements enable students to see the practical application of their studies in a real work setting, and provide them with valuable industry contacts. They also help students gain a better understanding of the potential career paths available to them.”

Ms Medway says the program gives young people studying agriculture or related field a clear pathway forward.

Jana is planning a career in the industry, with an aim to not just make an impact on his own farm, but more broadly through research and development.

“Placement experiences have been invaluable for understanding the practical application of my studies in different settings. They have also allowed me to observe the skills and attributes required to be successful in the agriculture sector. The industry mentors I have been paired with have been highly supportive and have provided me with in-depth knowledge of the sector,” says Jana Dixon, South Australia, who is studying Agricultural Science, University of Adelaide; Sponsor: Grains Research and Development Corporation

“The placements are really important to gain practical skills and knowledge to better understand a particular industry.” says RIRDC Program Manager Jennifer Medway who coordinates the scholarships. “It’s been really positive to have students better understand and appreciate what the types of opportunities are and make some really interesting contacts as well.”

More information: Jennifer Medway, RIRDC Program Manager, Investing in People, 02 6271 4132, Jennifer.medway@rirdc.gov.au

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Scholar Profiles

Isaac Jones, NSW
Studying Sustainable Agriculture and Food Security, University of Western Sydney; Sponsor: Grains Research and Development Corporation

Isaac plans to pursue a career in sustainable agriculture. He is particularly interested in how agricultural technology can make food and fibre more accessible around the world.

Jana Dixon, South Australia
Studying Agricultural Science, University of Adelaide; Sponsor: Grains Research and Development Corporation

A career in agricultural consultancy awaits Jana, who has a strong background in practical agriculture and plans to work with smaller family farms on introducing modern technology to ensure they remain viable.

Jess Capps, NSW
Studying Rural Science, University of New England; Sponsor: Grains Research and Development Corporation

Jess is planning a career in the field of genetics, interested in its role in increasing yield, reducing pesticide use and adding to sustainability. She has a clear goal to help feed people in healthy, ethical ways.

Jonathon Moore, ACT
Studying Science, University of Sydney; Sponsor: Grains Research and Development Corporation

Jonathon is focused on transferring knowledge from Australian agricultural systems into developing countries, implementing more sustainable agricultural systems and improving technology to improve global food security.

Katherine Bain, Victoria
Studying Agribusiness, Marcus Oldham College; Sponsor: Australian Wool Innovation

With a goal to work in agricultural trade and marketing, Katherine sees herself in a role developing networks and markets that attract new business for Australian farmers, and is keen to expand her knowledge into different industries.

Peter Stockwell, Northern Territory
Studying Agricultural Science, University of Queensland; Sponsor: Grains Research and Development Corporation

Whether it’s owning and managing cattle stations, field research or consultancy, Peta from Sunday Creek Station, south of Katherine, aims to benefit Australian agriculture with skills acquired through the Horizon Scholarship program.

Peter has always wanted to work directly with farmers to maximise agricultural production while adopting sustainable tactics. With plant and soil science critical to agricultural production he is attracted to a career in agronomy.

Sam Knight, NSW
Studying Agriculture and Business, University of New England; Sponsor: Cotton Research and Development Corporation

Sam has a passion for cotton growing and is focused on a career in the industry, with an aim to not just make an impact on his own farm, but more broadly through research and development.

Wave Camp, Western Australia
Studying Veterinary Science, Charles Sturt University; Sponsor: Meat and Livestock Australia

Raised on Kalyeeda Station in the Kimberley, Wave has a big picture view of the northern cattle industry, with a goal to make a difference from ‘paddock to plate’ as a rural veterinarian in the sector.

Xavier Burton, Victoria
Studying Agriculture, University of Melbourne; Sponsor: Rural Industries Research and Development Corporation

Xavier is convinced that improving genetics will play a vital role for livestock producers in tackling changing market and environmental conditions, an interest that stems from his upbringing on a prime lamb property.
The creative, entrepreneurial role that women play in rural businesses, industries and communities has been highlighted though the work of the seven 2016 RIRDC Rural Women’s Award finalists.

The finalists from each state and territory each receive $10,000 to help deliver a project benefiting rural people and industries, with the national winner announced at a Parliament House gala dinner on 24 August.

The finalists also attend a RIRDC-run leadership and personal development workshop in Canberra and receive ongoing support and access to a network of Award alumni mentors.

“The workshop will focus on up-skilling the women to make the most of the opportunity,” RIRDC Program Manager and national award manager Jennifer Medway said. “We will work with them to develop a plan for their future and identify the paths, connections and opportunities they need to get there so they can make an even bigger contribution.”

RIRDC Managing Director John Harvey congratulated the finalists. “I am sure we will see them further develop their leadership potential and continue to drive change and inspire their communities and industries,” he said.

Steve Hannan, general manager of Westpac Agribusiness, the award’s platinum sponsor, said Westpac was proud to be involved. “These deserving state winners are a diverse range of exceptional representatives of their industries and communities and play a pivotal role in driving innovation and change to the benefit of agriculture and rural, regional and remote Australia,” he said.

**SOPHIE HANSEN**  
New South Wales/ACT

Sophie manages a holistic deer farm in Orange with her husband Tim and has worked for 15 years in journalism and food writing, focusing on primary industries and producers. She has a popular blog and runs food photography and styling workshops on her farm, as well as tours and cooking demonstrations.

Sophie will use her $10,000 to develop an innovative online learning course ‘My Open Kitchen’, which is designed to empower people in primary industries to use social media platforms to build ‘social capital’. This, in turn, will deliver transparency, engagement, trust and ultimately financial returns. Flow-on benefits range from improved sustainability of regional agribusiness to stronger consumer awareness.

**MARTINA MATZNER**  
Northern Territory

Martina’s 20-year career in mango farming has put her at the forefront of industry technological advances and as manager at Acacia Hills Mango Farm responsible for 50,000 trees and up to 130 staff, pioneering technology such as heat sums for crop forecasting and the introduction of mechanical hedging.

Martina’s project aims to make a career in food production more attractive for young people. She will use the $10,000 to share her industry passion with students, liaising with Stephanie Alexander Kitchen Garden Schools to discuss mango production and organise visits to Acacia Hills. She also intends to develop a course unit with the Charles Darwin Horticulture Faculty with onsite visits to give students experience in industry.
EMMA ROBINSON  
Queensland

Emma owns and operates three grazing properties in Queensland with her husband. She prides herself on innovative practice and is an advocate for family agriculture. Emma has worked in government extension and policy and in advocacy roles to promote industry and respond to challenges and opportunities.

Her vision is to champion producer co-operatives as an alternate business model, building on the research of her 2015 Winston Churchill Trust Fellowship into beef supply chain innovation. She will use the $10,000 to consult with co-operative experts; develop a social media platform to profile producer co-operatives and share resources; and facilitate a producer forum to educate people on the benefits co-operation can have for family farming.

ROBBIE DAVIS  
South Australia

Robbie is Potatoes South Australia’s CEO and also a successful beef cattle producer and agribusiness consultant. She has had a diverse career spanning continents and gaining invaluable insights into global markets. Robbie is passionate about improving Australia’s reputation for premium agricultural produce within the international market and her dream is to reduce the amount of food waste generated from the horticulture supply chain. She will use her $10,000 to investigate how the South Australian potato industry and wider horticulture sector can increase productivity through reducing food waste and loss in the supply chain, examine technologies being used internationally to reduce losses, and determine which could be introduced in Australia.

REBECCA DUFFY  
Tasmania

Rebecca has worked in the wine industry for nearly two decades. Since returning to Tasmania in 2006 to run Holm Oak Vineyards, she has increased the vineyard’s size and production and built a winery. She is also a mentor to industry newcomers, a director of Wine Tasmania and Tamar Valley Wine Route group secretary.

Rebecca’s passion for promoting the industry as a whole has inspired her project and she aims to use the $10,000 to undertake a national and international cellar door study learning about creating new, exciting and dynamic experiences for customers offering more than just tasting. She will share her findings with industry and recommend opportunities.

DR JESSICA LYE  
Victoria

Jessica is the national manager of scientific affairs at AUSVEG, managing its Vegetable and Biosecurity program and actively raising awareness about biosecurity risks within the vegetable and potato industries and best practice for pest, weed and disease management throughout the agricultural sector.

Jessica’s proposed project focuses on enhancing biosecurity preparedness for the vegetable and potato industries and she will use her $10,000 on an overseas study tour to visit research institutions and growing operations to gain information on high priority pests and emerging pest threats. Findings will be communicated to industry and she hopes to encourage biosecurity champions and networks throughout vegetable and potato communities across rural Australia.

KALYN FLETCHER  
Western Australia

With an agribusiness background, Kalyn manages Kununurra family businesses RB Dessert Seed Co and The Hoochery Distillery, producing seed for growers across the Ord Irrigation Area and award-winning rum and liqueurs. Working with industry on new crop development, she conducts research trials for emerging crop species and a sorghum breeding program for varieties suited to tropical conditions. She has also established an agricultural tours operation promoting the area and industry.

Kalyn will use her $10,000 for a study tour of Brazil’s Cerrado Region to learn from a successful tropical agriculture industry. She will share her knowledge and insights to help promote and support the growth and success of tropical agriculture within Australia.

More information: Jennifer Medway, RIRDC Program Manager, Investing in People, 02 6271 4132, Jennifer.medway@rirdc.gov.au
Building on a strong history of development through research, Australian tea tree oil producers will vote in August on a proposal to implement a compulsory levy to secure research funding for future industry growth.

The proposed levy would initially be set at 25 cents per kilogram, with funds of up to $125,000 matched by the Australian Government, meeting a commitment in its Agricultural Competitiveness White Paper. If the vote succeeds and Federal Parliament passes the legislation, the levy would be introduced from July 2017.

Australian Tea Tree Industry Association (ATTIA) CEO Tony Larkman says there is overwhelming industry support for the levy. “If we don’t have a levy we don’t have R&D and we are a heavily R&D driven industry; without the R&D we wouldn’t be where we are,” he says.

The timing, he says, is right for the 30-year-old industry to take control of its research budget and direction as it matures into a phase of stability, with high prices and increased yields built on a strong foundation of R&D supported by RIRDC over decades.

The RIRDC-funded research has been alongside the successful development of the industry, he says, both on and off farm, developing the safe reputation of tea tree oil along with continually improving agronomic practice.

“It’s a web of research and it encompasses all points in the supply chain,” he says. This is from breeding to agronomy, efficacy, safety, storage and transportation methods, by-product usage and increased energy efficiency in distillation.

Breeding program

Among the most valuable factors in the industry’s growth, he says, is the tea tree breeding program using conventional selective breeding to improve yield over 21 years of research funded by CSIRO, NSW Department of Primary Industries and RIRDC.

Selecting for plants with more leaf and less stick, big tap roots, strong growth post-harvest and resistance to diseases, insects and frost has led to individual harvests increasing from 120 kilograms of oil per hectare to 250 kg/ha, he says. From 2009 (when a voluntary levy was introduced) to 2015, national production increased from 350 tonnes of oil to at least 820 tonnes. These are important gains for Australian growers competing for market share with developing countries who have lower labour costs. “We have given ourselves a production volume advantage that’s kept us ahead of the game and continues to keep us ahead of the game,” Mr Larkman says.

A ‘fourth generation’ of seeds is soon to be tested, and Mr Larkman has high hopes.

“I think we’ve got the potential to go to 450 kg (of oil) per hectare and with a price of $40/kg there are very few crops that can beat that,” he says.

Proving credentials

Long-term ‘foundation’ research is crucial to the industry’s progress, he says. A 20-year program largely undertaken by the University of Western Australia and funded equally by RIRDC and ATTIA demonstrates tea tree oil’s efficacy and safety.

This program has helped establish tea tree oil’s properties, proving it works to kill bacteria, and the levels at which it is safe to treat a range of problems from acne to dandruff to cuts and thrush, as well as for industrial applications such as a sheep dip and air-conditioning system cleaner.

RIRDC Plant Industries Senior Program Manager John de Majnik says this research, which is peer reviewed in scientific journals, has been vital in bringing credibility to the therapeutic claims of tea tree oil, particularly as it is categorised as a natural therapy. “It validates claims that marketers might say about Australian tea tree oil,” he says. “It authenticates it scientifically, that there are active ingredients in the oil having a real measurable effect.”

Mr Larkman says it’s vital to back the claims for Australian tea tree oil with solid scientific evidence, not only for safety but to ensure the legitimacy of the product in a crowded market and increasingly regulatory environment.
Clean and green

With concerns about adulterated tea tree oil products from other countries being sold in Europe, an ATTIA certified 100% pure Australian tea tree oil product provides a clear delineation point and market advantage. “We can guarantee that it’s clean, it’s green, it’s highly sustainable and it’s derived naturally,” he says.

Dr de Majnik says Australia has a clean green competitive advantage in the global commodities market - and the tea tree industry is well-placed to use it.

“... we are a heavily R&D driven industry; without the R&D we wouldn’t be where we are.”

Tony Larkman

Continued international market access, countering adulteration, safety and efficacy and new product development are among the off-farm priorities for future research funded by a new levy, Mr Larkman says. On-farm, breeding programs would continue, the possibility of cloning explored and work advanced on soil management and nutrition. Distillation refinement is also on the research agenda that would be managed by RIRDC.

Emerging disease threats on-farm, like myrtle rust and root rot, and ever-changing market regulatory requirements are just some of the challenges ahead. But he says a well-managed and funded research program will leave the industry well-placed to deal with them.

“Bringing together different areas of research so that you can produce what a grower needs – and be agile enough to adapt to an ever-changing environment is what it’s all about,” Mr Larkman says.

More information:
Tony Larkman, CEO, ATTIA Ltd, 02 4017 1336, tlarkman@attia.org.au, www.attia.org.au
John de Majnik, Senior Program Manager Plant Industries - RIRDC, 02 6271 4138

Industry at a glance

Tea tree oil is extracted from Melaleuca alternifolia and distilled via steam injection. Most plantations are in the Northern NSW coastal regions and Queensland’s Atherton Tablelands. About 85% of the product is exported.

2014–15 production:

With a steady price of $40/kg for tea tree oil and production of at least 820 tonnes, the farmgate value of the Australian tea tree industry in 2015 was about $32.8 million.

Planting Tea Tree yield trials at Bungawalbyn, NSW. R&D has been a key factor in the growth of the Australian industry.
John Harvey: New RIRDC Managing Director

John Harvey has been appointed Managing Director of RIRDC. Mr Harvey, who took up the role in May, said he was excited about the Corporation’s future.

“My focus will be to ensure that we continue to provide a high level of service to our portfolio industries and I’m confident we can do that,” he said.

Mr Harvey’s appointment followed the retirement of previous Managing Director Craig Burns in February. He has joined RIRDC after 18 years at the Grains Research and Development Corporation (GRDC), the last five as Managing Director.

RIRDC’s Chair, Professor Daniela Stehlik, said Mr Harvey brought a wealth of relevant experience to the role and would provide leadership through a time of change and opportunity for the Corporation.

“Mr Harvey’s long experience in the agricultural sector and proven leadership skills will ensure RIRDC’s quality work and high standing among its stakeholders will continue under his management,” Professor Stehlik said.

Mr Harvey said there were enormous opportunities for RIRDC to build on its strong history to continue to play a vital role in Australian agriculture’s growth.

“Through innovation and building R&D partnerships we will see new and emerging industries grow and flourish, as well as seeing established industries become more productive, sustainable and efficient,” he said.

“I look forward to meeting RIRDC’s industry stakeholders and getting insights into the way RIRDC does business with them, understand what their R&D priorities are and see how we can work with them to deliver on those priorities.”

Mr Harvey said RIRDC’s commitment to regional Australia – and agriculture more broadly – would be further demonstrated by the Corporation’s move to Wagga Wagga this year. “This presents a new and exciting opportunity for our organisation and the rural industries we support,” he said.

Mr Harvey began his career in agriculture as a soil conservationist and extension agronomist with the Queensland Department of Primary Industries.

He joined the GRDC in 1997 and there held several positions including Program Manager, Farming Systems, became an Executive Manager in 2001, and Managing Director and CEO in 2011.

Professor Stehlik said Mr Harvey’s appointment came after a thorough and extensive national search. “We are confident that Mr Harvey will lead RIRDC successfully through what we anticipate will be an exciting time for the Corporation,” she said.

Rural Industries R&D Corporation moves to Wagga Wagga

RIRDC recently announced that it will be relocating its operations from Canberra to Wagga Wagga, with its office to be located on the campus of Charles Sturt University.

As a first step in RIRDC’s move to Wagga Wagga, the RIRDC Board held its most recent Board meeting on 10 and 11 May on the Charles Sturt University campus.

Coinciding with the Board meeting was an informal ‘meet and greet’ to introduce the RIRDC Board and key RIRDC staff to the people of Wagga Wagga.

The Member for Riverina and Assistant Minister for Defence, the Hon Michael McCormack MP attended the event, as did other local industry leaders, including the Wagga Wagga Mayor.

The event allowed Wagga Wagga locals to learn about what RIRDC does and to hear first-hand the plans for the Corporation as it sets to move to Wagga Wagga.

RIRDC’s Managing Director, John Harvey said the move to Wagga Wagga would open up new opportunities for RIRDC.

“RIRDC’s commitment to regional Australia – and agriculture more broadly – is demonstrated by the Corporation’s move Wagga Wagga, which presents a new and exciting opportunity for our organisation and the rural industries we support,” Mr Harvey said.

Rod Kendall, the Vice Chancellor of Charles Sturt University, Professor Andy Vann, the Chair of Regional Development Australia – Riverina, Dianna Gibbs, and the Executive Director of Ricegrowers Australia, Andrew Bomm.

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“RIRDC’s commitment to regional Australia – and agriculture more broadly – is demonstrated by the Corporation’s move Wagga Wagga, which presents a new and exciting opportunity for our organisation and the rural industries we support,” Mr Harvey said.
**RIRDC-funded award tests fungi to control ginger pest**

A microscopic worm is posing a threat to Australia’s ginger industry, but farmers could soon have a non-chemical option to control this pest.

Ginger’s farmgate value is about $36 million, with another $90 million for value-added products such as brewed drinks and confectionary.

In recent years, this RIRDC industry based primarily in southern Queensland has seen significant crop losses because of pathogens in the soil.

The title for the most serious ginger pest goes to a tiny roundworm, known as root-knot nematode.

The good news is that there could be a solution in the form of another soil organism: fungi.

Bundaberg-based researcher Dr Yujuan ‘Jady’ Li is putting fungi under the microscope, using a RIRDC-funded Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry.

During her one-year project, which began in April 2016, she is studying whether nematode-trapping fungi can effectively control the worm in laboratory and glasshouse trials.

It’s a natural fit for the Central Queensland University research officer, who spent her early academic career investigating what happens under the soil’s surface. After finishing a PhD in how roundworms can be used to monitor soil health and underground food webs, Dr Li turned her expertise to controlling them.

The first step is to isolate nematode-trapping fungi that exist in Queensland soils and essentially create a net to trap and kill nematodes as a food source.

Next, Dr Li will plant ginger in pots of soil inoculated with nematodes and trial fungal and chemical products, to compare how effective each control option is at preventing root damage.

“As the name suggests, root-knot nematodes attack roots, restricting the plant’s ability to access nutrients and water from the soil,” Dr Li explains. “With ginger, root-knot nematodes can enter the swollen rhizome (the saleable part of the plant). The infected rhizomes appear with eruptions on the upper surface, significantly reducing their market quality. Affected plants are also more susceptible to infection from other diseases, so farmers should not reuse affected ginger for seed.”

These are the first Australian trials in which a fungal biological control has been used against a roundworm in ginger and, if successful, could lead to the development of similar products for other crops.

“Ginger is just one of a range of host plants susceptible to the nematode, along with tomatoes, capsicum and sweet potatoes,” Dr Li says.

Dr Li is focusing on ginger because the valuable crop faces significant threat from high concentrations of nematodes in local soils, with some farmers losing up to half their commercial crop in a single season.

Currently, ginger growers rely on chemicals to control the nematodes, which can affect the environment and create consumer concern. Many chemical products have also been taken off the market, putting the ginger industry at risk.

Rotating crops is a control option, but not always practical. Crops that are not nematode hosts, such as sorghum, are not a viable fit for intensive farming as the rotation phase removes the core, high-value crop from production.

If fungi prove successful busting nematodes, growers will have a biological control option and, importantly, organic growers will be equipped to sustainably produce chemical-free produce.

Dr Li says she is honoured to receive the RIRDC award, for candidates aged between 18 and 35 years.

“It allows early career research scientists such as myself to implement projects in what can be a very competitive space,” she says. “It will benefit the future of agricultural innovation if more young people get involved in agricultural research.”

Dr Li hopes the 12-month project will pave the way to extend her research out into the paddock.

More information:

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Alison Robb, Senior Program Coordinator, Plant Industries and National Rural Issues, RIRDC (02) 6271 4188, alison.robb@rirdc.gov.au

Dr Yujuan ‘Jady’ Li with her husband Dr Chengyuan (Stephen) Xu, who also works at the Central Queensland University.
Diversification hatches high-demand egg venture

A New South Wales farming couple’s push to diversify into egg production has evolved into a lucrative, standalone business that has outstripped the earning capacity of their sheep and cattle enterprises in the past three years.

In 2013, 50 chickens took their first tentative steps into pasture on Theresa and Craig Robinson’s 366-hectare property at Gunning. Since then, the enterprise has expanded to include 9000 mixed breed chickens (Hy-line Brown and Isa Brown).

Today, their business, Gunning Bum Nuts, supplies about 8000 eggs a day to 50 retail outlets in Sydney, Canberra and the local district. The success of their model has also led to a franchise in Bundaberg, Queensland under a Bundy Bum Nuts label.

Theresa says diversifying the farm business to include pasture-raised chickens has also lifted the productivity, and ultimately, the profitability of their existing enterprises: 1200 Merino ewes joined to White Suffolk rams, and 29 head of Angus cattle.

This is because the birds are rotated over their property in 80-hectare blocks, spreading chicken litter across their pasture paddocks. The chicken manure adds a range of major and minor nutrients to the soil profile that boosts soil fertility and, in turn, pasture growth.

They hope to further diversify, with plans to establish a piggery on their property, and develop another business arm manufacturing and marketing mobile, solar-powered Bum Nut Huts that each accommodate 750 to 1500 birds.

However, Theresa says they plan to limit their egg venture to 9000 birds because their low stocking rates compared with some large commercial egg producers allow for high animal welfare standards, which also help attract a price premium in the NSW domestic market.

“People increasingly care about providence – where their food is coming from and exactly what they’re eating,” Theresa says. “Once you’ve cooked and tasted them, you can tell the difference straight away.”

For mixed farmers Theresa and Craig Robinson, diversification has provided a suite of farm business benefits: spreading risk, increased profitability, improved environmental resilience and better quality of life.

The RIRDC’s farmdiversity.com.au website helped the Robinsons achieve these gains from their egg venture, Gunning Bum Nuts.

Theresa says the website, which details information for about 150 agricultural industries, has been a valuable resource when exploring the options for diversifying.

In particular, the Robinsons gleaned important knowledge and insights from the personal stories of other farmers featured on the website.

“Reading on-farm stories to learn how other people were diversifying was inspirational and that made us think outside the box,” Theresa says.

The ‘pasture-raised’ labelling on a carton of Gunning Bum Nuts eggs shows the Robinsons have a stocking density of just 200 chickens per hectare. Theresa says raising their chicken brood on pasture is reflected in the quality of the eggs sold under the trademark, Bum Nuts Australia.

“The RIRDC website is a good place to start and it enabled us to sift through information relating to every aspect of diversification.”

The free ‘one-stop shop’ covers production and infrastructure requirements, harvesting and processing, markets and marketing, current and potential growth regions, and risks and regulatory considerations. It also includes links to publications, resources and industry contacts.

More information: Theresa and Craig Robinson, Gunning Bum Nuts, 0430 370 670, gunningbumnuts@gmail.com

More information: www.farmdiversity.com.au

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More information: www.farmdiversity.com.au
New guide provides a clear path for pesticide access

Landholders looking for solutions to manage diseases, insects, nematodes, viruses or weeds will find plenty of interest in Access to Pesticides — An Explanation for Minor Industries, a helpful new document developed by RIRDC to guide plant-based landholders through the process of managing unwanted pest damage.

RIRDC Senior Program Manager Plant Industries Dr John de Majnik says feedback from new and emerging plant-based industries highlighted timely pesticide access as their top research and development priority.

“Unfortunately, each industry’s access to the required pesticides is not always straightforward so we wanted to develop a document that provides a clear step-by-step guide to assist people as they move through the process of accessing new pesticides for their industries,” he says.

The document starts by asking the question: ‘do you need to control a pest in your crop?’ For some pests, the use of a pesticide alone may not be the preferred approach, the document explains how to find out what pesticides are available by visiting the Australian Pesticides and Veterinary Medicines Authority (APVMA) website. In addition to providing clear pictures, the document gives users some simple tips to maximise the chance of success when searching for available registered pesticides.

If a search of the APVMA website shows there are no registered pesticides available to control a particular pest, the document describes the steps that need to be taken to register a pesticide and apply for a permit that complies with APVMA regulations. Flow diagrams and checklists of key information required help with data collation.

The consequences of using pesticides that are unregistered or not permitted are also outlined in the document. The role of the AgVet Collaborative Forum, a recent initiative of RIRDC and the Federal Department of Agriculture and Water Resources is also featured. This forum seeks to assist rural industries in identifying solutions to weed, pest and disease challenges using AgVet technologies developed by chemical companies.

To produce the document, RIRDC engaged the services of agricultural consultant Peter Dal Santo, from AgAware Consulting Pty Ltd. Mr Dal Santo has extensive experience working with the APVMA and is available to assist individual producers or industries navigate the process of gaining access to minor or emergency use pesticides should an issue arise.


More information: Peter Dal Santo, AgAware Consulting, 03 5439 5916, pds@agaware.com.au

Levy to secure fodder funding

A proposed levy for Australia’s $295 million export fodder industry would shore-up funding for future research and help producers capitalise on increasing demand for their hay.

The industry-supported levy would be set at 50 cents per tonne and matched by the Australian Government following a commitment in its Agricultural Competitiveness White Paper. Subject to legislation passing through Parliament, the levy could be in place as soon as July 2016.

Australian Fodder Industry Association executive officer Darren Keating says a secure stream of levy-raised research funding would ensure the industry remained competitive by focusing on both production and the needs of the customer. It would help maximise export opportunities, capitalising on significant growth potential in key markets like China, and maintaining long-term customers including Japan, Korea and Taiwan.

Continuing investment in projects such as the National Oaten Hay Breeding Program would maintain the quality edge Australian exporters have over their competitors and ensure hay met specific market requirements.

The research program would be determined by a panel of industry members working with RIRDC to ensure funding was best utilised to meet industry objectives.

Along with breeding and markets, the program’s benefits could include research on hay agronomy, fodder analysis and animal nutrition. These would flow on to the domestic fodder industry, with varieties and research benefits available to all Australian growers, Mr Keating says.

To date, RD&E has been supported by RIRDC and voluntary contributions to develop oaten hay varieties, quality and residue testing regimes, and market and transport research.

“It’s fantastic to see the industry take the future in its hands and the exporters agreeing to work together and pay towards their continued growth,” he says.

More information: darren@afia.org.au

A new pesticide guide has been developed for small industries.
Online extension hub coming soon

A new online resource about extension and adoption for Australia’s rural and fisheries sectors will be launched this year.

RIRDC Program Manager, Knowledge and Adoption Jamie Allnutt says the ‘Extension hub’ will consolidate Australia’s extensive experience and knowledge in one location. It will include relevant and useful resources for extension professionals on how to best achieve adoption through extension.

The hub is part of the RIRDC project Extension and Adoption for Australian Farmers and Fishers funded by the Australian Government’s ‘R&D for Profit’ program. It was developed by RIRDC in partnership with Victoria’s Department of Economic Development, Jobs, Transport and Resources.

Mr Allnutt says the hub is more than a static website. It is a platform for interactive and collaborative extension on any rural topic with Communities of Practice (CoP) functionality.

Online CoP extension has been successfully piloted by the grains industry in Australia via an American platform. Existing grains CoPs will be transferred to the Extension hub platform this year.

“Over time, it may enable hundreds of CoPs to operate across many rural themes,” he says. “These online communities will be able to interact directly with other interested people and sources of knowledge on a particular topic.”

The platform will also enable collaboration across communities to address emerging issues. “It will meet growing demand from experts, extension practitioners, and landholders to be more closely connected with knowledge in a trusted, personalised and convenient manner,” he says.

More information: www.extensionhub.com.au

Jamie Allnut, RIRDC Program Manager, Knowledge and Adoption, 02 6271 4181, Jamie.Allnutt@rirdc.gov.au
Pond design, breeding program to increase marron yields

As a freshwater alternative to lobster, marron is highly sought after by chefs for the more delicate flavour they offer. However, production challenges have made it difficult to establish a commercially sustainable industry, despite the ongoing culinary demand.

Industry-led research, supported by RIRDC, has trialled a new pond design for farmed production, which shows a promising 50 percent increase in marron yields.

The research has also developed a family-based indoor selective breeding program on-farm and an early nurturing system. These have the potential to reduce the time it takes marron to reach market size by a third, down from 36–42 months to 24–30 months.

South Australian producer John Luckens developed the new pond design, changing the traditional rectangular 1000 square metres (m²) to circular ponds of 2000m². The ponds are 50 metres wide, with a central sump, central twin paddlewheel aeration and a floating net for predator exclusion. They have up to five times more protective hides for the marron than previously used.

The result has been consistent yields over two production cycles equivalent to more than 450 kilograms per 1000m² of pond, an increase of at least 50 per cent over previous industry best yields of 300 kilograms per 1000m². Aeration, drain-down and cleaning, and feeding proved to be more effective and efficient in the circular ponds.

An on-farm indoor breeding facility, with 42 aquariums for family pairs and two larger tanks for common breeding, was established at Mr Luckens’ property. The indoor tanks provide the potential to bring forward spawning and to raise juveniles for early release, reducing overall production times.

Researchers from Flinders University in South Australia sampled tissue and have developed a set of genetic markers for marron, which Mr Luckens says provides the foundation for selective breeding to further improve productivity.

Mr Luckens says while future seasons will be needed to confirm the benefits of this work, RIRDC’s support has provided important assistance to advance the industry.

A report summary or a full copy of the report Marron Production Enhancement are available from the RIRDC website, www.rirdc.gov.au.

More information:
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Climate resilience for primary industries

Strategies to help the agricultural sector respond to climate change were highlighted at the 2016 Climate Change Research Strategy for Primary Industries (CCRSPI) conference.

Some 115 delegates heard from producers and industry speakers taking action to deal with climate challenges and embracing new opportunities presented by climate change in both production and the market.

Mark Lettfuss, RIRDC Senior Program Coordinator responsible for CCRSPI, says the conference provided insight into how industries are managing climate risks and, where possible, reaping benefits that may arise from a changing climate.

“It provided tangible examples of how industries are building more resilient organisations to adapt to climate change and getting an economic benefit,” he says.

Brett McClen from Brown Brothers Wines told how the company had shifted some production to Tasmania to benefit from its cooler climate, while tropical fruit grower Peter Salleras spoke about trellises installed to protect his trees from cyclone damage.

The conference, which also featured speakers from commodity sectors, research institutes and government, demonstrated economic benefits could be achieved through changes on-farm as well as responding to shifting market requirements. “A proactive approach can have dual benefits for industry, through productivity gains and also meeting requirements like emission reductions for market access,” Mr Lettfuss says.

Industry programs to reduce emissions such as soil carbon programs, the National Livestock Methane Program (NLMP) and the National Agricultural Nitrous Oxide Research Program (NANORP) showed how primary industries are working to meet such requirements, he says. CCRSPI, whose 22 partners cover all rural Research and Development Corporations, State, Territory and Australian Governments and CSIRO, was established in 2008 and has played an influential role in guiding investment and collaborations to build climate resilience in primary industries.

More information: Mark Lettfuss, Senior Program Coordinator, RIRDC, 02 6271 4126, mark.lettfuss@rirdc.gov.au, www.ccrspi.net.au
Causal factors of ‘wet litter’ in chicken-meat production, 16-015

Wet litter frequently results in the development of footpad lesions and poor growth performance. Importantly, it is gathering momentum as a welfare issue for both meat chickens and meat chicken breeder flocks. In this project the multi-dimensional causal factors of ‘wet litter’ in chicken meat production were reviewed and 15 personnel from the chicken meat industry in Australia and England were surveyed to garner current industry opinion as to the causes and potential best practices to prevent wet litter. The pivotal implication of the review was that maintaining acceptable litter quality is largely dependent on prevention and monitoring.

From farm to retail – how food prices are determined in Australia, 16-013

The aim of this report is to convey a better understanding of the main factors that determine prices (and costs) in value-chains for Australian agricultural food products, involving primary producers, manufacturers, wholesalers, and retailers. This study was done as an update to a 2004 report into Food Price Determination for the (then) Australian Department of Agriculture published in 2004 by the same author. The study takes a whole-of-chain perspective of each sector of the agri-food industry, considering the differing transformations of farm-gate commodities into food products, where value is captured and how participants perform over time.

Scoping Study for Genetic Evaluation of Australian Dairy Goats, 15-109

A key strategy contributing to achieving continuous productivity improvement in all modern, viable industries is genetic improvement. Genetic improvement consists of identifying individuals within the population with superior genes, and using those individuals preferentially as parents of the each successive generation. Identifying the individuals with the best genes is referred to as genetic evaluation. If possible, application of these methods would assist dairy goat breeders to make genetic improvement, almost certainly at a faster rate than is being achieved currently. The results show that there is real potential for genetic improvement of production and health traits in Australian dairy goats. There is some scope for applying the advanced statistical techniques currently used in other industries.

Longitudinal cohort study of horse owners, 16-002

This report summarises the findings of a three-year mixed methods research study designed to capture factors that influence horse owner Hendra virus (HeV) risk mitigation practices. The research project focuses on horse owners, their knowledge, attitudes, and risk mitigation practices, ie uptake of vaccination, property management, and biosecurity practices. A flexible research methodology enabled the tracking of core subject areas over time whilst also responding to new or evolving shifts in the HeV landscape, eg new HeV cases, event management, and issues arising in the vaccine roll-out. By tracking relationships within the data and engaging with stakeholders and the horse owner population, it is hoped that findings from the study will help to identify important linkages and effective strategies for communication/information and policy implementation.