Annual Report
2020–21

Research and innovation
for rural prosperity
Annual Report
2020-21
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The Hon. David Littleproud MP
Minister for Agriculture and Northern Australia
PO Box 6022
House of Representatives
Parliament House
CANBERRA ACT 2600
Email: minister.littleproud@awe.gov.au

Dear Minister,

In accordance with the requirements of Section 28 of the Primary Industries Research and Development Act 1989 (PIRD Act), section 46 of the Public Governance, Performance and Accountability Act 2013 (PGPA Act) and the Funding Agreement 2020-2030, I present the Annual Report of AgriFutures Australia for the year ended 30 June 2021.

Under section 46 of the PGPA Act and in accordance with the Public Governance, Performance and Accountability Rule 2014, the Directors of AgriFutures Australia have prepared and approved the content of the Annual Report.

The activities of our organisation are reported against the objectives, strategies, outputs and outcomes of AgriFutures Australia’s Strategic Research and Development Plan 2017-22, and are consistent with AgriFutures Australia’s 2020-21 Annual Operational Plan and Portfolio Budget Statement.

In accordance with the requirements under paragraph 39(1)(a) of the PGPA Act, the Annual Performance Statement contained in this Annual Report is based on properly maintained records, accurately reflects the performance of the AgriFutures Australia, complies with sub section 39(2) of the PGPA Act and is in accordance with 16F of the PGPA Rule 2014.

Yours faithfully,

Professor Andrew Harris
Acting Chair
AgriFutures Australia

Mr Andrew Metcalfe
Secretary, Department of Agriculture, Water and Environment
Andrew.Metcalfe@agriculture.gov.au

AgriFutures Australia is the new trading name for Rural Industries Research & Development Corporation. ABN 25 203 754 319
About AgriFutures Australia

Our purpose is to invest in research and development that is adopted and assists rural industries to be productive, profitable and sustainable.

We are guided by an ambition to be known as an organisation that places our people, our rural industries and regional communities at the heart of everything we do.
Welcome to the AgriFutures Australia year in review for 2020-21. As I reflect on the past 12 months, I am most heartened by our producers and rural industries who, renowned for their resilience and responsiveness, have once again been able to see and think beyond the challenges of the past year, to have the strength and courage to visualise a better, brighter future.

At AgriFutures Australia, everything we strive to achieve is driven by our Strategic R&D Plan 2017-2022. Sometimes that includes taking our industries on a journey they may have not experienced before, and while there may be hesitancy in the first instance, the trust between our industries and AgriFutures Australia is something I am very proud of.

The ability to think beyond the day-to-day has propelled many of our industries to excel in the face of adversity. The tea tree oil industry is one example – it has become a world leader in the way tea tree oil is sanitised thanks to blockchain-type technology. This technology has enabled greater access to international markets creating value beyond the farm gate.

For emerging industries to grow, it is vital they understand the opportunity research plays and learn from the hard-fought lessons achieved by our levied industries. This has recently been demonstrated to our industries in spades that COVID-19 has thrown at us. That commitment to keep doing what we have always done.

COVID-19 has meant we were not able to hold the AgriFutures Rural Women’s Award (RWA) ceremony in Canberra. There has been a silver lining with our 2020 State/Territory Winners having had more time for engagement and on their projects. Our future leaders, just believe in yourself and put up your hand up to take up a leadership position.

I would also like to make special mention of our Managing Director, John Harvey. Since we relocated to Wagga Wagga, NSW in 2016, John and I have forged a strong partnership and we share a clear vision of the impact we want AgriFutures Australia to have on the long-term prosperity of Australian rural industries.

For our industries, we encourage you to keep doing what you have always done. We envisage a future where you invest and drive collaboration to benefit all our industries, for the programs they are responsible for. The results achieved are driven by a lot of work behind the scenes. I would like to recognise our Advisory Panel members for the significant roles they play in relation to the Levied Industries Forum, which gives each sector an understanding and knowledge of how the whole process really works. It is structured to bring the best outcomes for those who pay levies and for agriculture in general.

I am grateful and proud of the staff at AgriFutures Australia for overcoming the challenges and hurdles that COVID-19 has thrown at us. That commitment has been demonstrated to our industries in spades with staff who are dedicated to achieving the best outcomes for the programs they are responsible for.

Finally, the world is our oyster, and as we embark on the development of our next Strategic R&D Plan 2022-2027, we are encouraged to hear that you want us to keep doing what we have always done. This nation is the beneficiary of our work at AgriFutures Australia, and we all should be proud of this.

Mrs Kay Hull AO
AgriFutures Australia Chair
Highlights and achievements

2020

Improved Stallion fertility in Thoroughbreds

The impact of environmental conditions on stallion fertility was determined in novel research. Key management factors were identified for Stallion owners, particularly relating to farm design and handling of the horses under conditions of high temperature and humidity.

Code of practice for the commercial kangaroo industry

A new National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (the Code) was released. The latest achievable standards of animal welfare during the harvesting were established in the development of the new Code.

Research roadmap for Australia’s insect industry

The first commercial insect program was established to design and supply new pet foods based on insect protein. An industry-led Research, Development and Extension (RD&E) plan was developed for the Australian insect industry to expand the techniques for insect production and expand market opportunities.

Greater access to floral resources

Research has confirmed that there is minimal risk of residues in honey bee products from a common insecticide seed treatment that means Canola can be utilised as an additional floral resource for honey production.

New quinoa variety transitions from boutique to broadacre

AgriFutures Australia in partnership with WA Government developed a new variety of quinoa, ‘Kruso White’ offers farmers the opportunity to double cash returns compared to traditional winter cereal crops and supply food markets with a healthy gluten free, low GI grain superfood.

Technology improving management options for ginger growers

Artificial intelligence has provided a pathway to automated, integrated disease and weed management for ginger growers. Detection of a key disease in ginger seed-stock will allow growers to plant disease free stock with confidence. Automated weed detection technology has been developed that will contribute to the sustainability of the industry by providing more options for weed control.

Plan Bee

A national research program ‘Plan Bee’ has established the first genetic evaluation system for honey bees. In its first year the program analysed the performance of 198 breeder hives and established a breeding program for elite queen bees.

New lucerne irrigation and variety management trial demonstrated yield improvements with less water

A lucerne irrigation and variety management trial demonstrated an average 26% increase in clean seed yield across 29 commercial and pre-release lucerne varieties under deficit irrigation.

WA honey shows medical potential

The antibacterial activity and physicochemical properties of over 300 honey samples gathered from across WA, provided rigorous scientific data to support the long-held beliefs that many WA honeys, possess relatively high antibacterial activity. This research will help apiculturists understand the likely attributes of each monofloral honey source and will also be of use to health professionals seeking to understand the unique characteristics of honeys derived from an individual floral source.

2021

The forces guiding agricultures future

This report offered a new perspective on the future for Australia's agrifood system over the next decade. It has started a new conversations about opportunities and risks for players along the agricultural value-chain. It provided a set of plausible, provocative possibilities about the future. It challenged our rural industries to consider the use of technology, artificial intelligence, and new design farming systems.

More investment required to achieve NFF’s $100B by 2030 target

A key industry report identified that Australia’s agriculture, fisheries, and forestry sector requires an additional $7.5 billion in capital investment per year to achieve the NFF’s $100 billion annual earnings by the year 2030. The report suggested new and innovative sources of investment would be required to achieve this growth target.

Extension adapts to maintain industry productivity

In response to travel restrictions, the Chicken Meat Extension project went virtual. 41 AgriFutures Chicken Meat funded projects were showcased to more than 600 Australian and international industry personnel through a series of online forums. 78% of the attendees indicated that they were likely or very likely to use the information from the forums in their businesses. The presentations have also been viewed more than 2,000 times online and have significantly increased the accessibility of the research to industry.

New and improved project management system implemented

AgriFutures Australia’s internal Project Management System (Clarity) was replaced with a new and improved platform called K2 in March 2021. It has been integrated with the finance system, DocuSign, and SharePoint. The implementation of the new system has created efficiencies for our external stakeholders across contracting, record management and financial transactions.

Boosting on-farm technology adoption

20 producer groups across Australia were supported through ‘The Producer Technology Uptake Program’ that delivered a practical program to increase producer confidence, know-how and adoption of ag technology on-farm.
Highlights and achievements

2021

Securing our food future through insect pollination

This program developed practical guides for improving pollination by developing web-based resources for beekeepers and a toolkit for revegetation. This $8.6m collaborative research project identified that a wide range of insects, including honey bees, all contribute to pollinate our food producing crops.

New era for oat breeding

Oat breeding in Australia has been reshaped with InterGrain commercialising the breeding program. Greater focus has been placed on varieties for milling and hay oats suited to the changing needs of Australian growers and exporters. The transition was supported by a 5-year, $5.4 million joint investment by AgriFutures and Grains Research and Development Corporation.

Growing capacity of people involved in our levied and emerging industries

Three separate capacity building programs, held exclusively for our levied industries, were delivered via the Australian Institute of Company Directors - Company Directors Course Online, Associations Forum Capacity Building Program and the Inspiring Rare Birds Mentoring Program, with a total of 61 participants involved. 20 participants from emerging industries also completed the Australian Institute of Company Directors - Company Directors Course Online.

growAG

growAG was launched by Minister Littleproud at the AgriFutures Australia offices in April 2021. growAG is a first of its kind platform connecting Australia’s agrifood innovation and commercialisation opportunities and success stories. The platform is a comprehensive database of Australia’s current agrifood research projects in partnership with the Department of Agriculture, Water and the Environment (DAWE) and all of Australia’s 15 Research and Development Corporations (RDCs).

New era for oat breeding

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Building the capacity of people involved in our levied and emerging industries

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Four distinct arenas define our broad commitments in delivering on the priorities of the Australian Government, our stakeholders, and our ultimate goal which is to create thriving rural industries and vibrant regional communities.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Priorities</th>
<th>Outcome</th>
<th>Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>To grow the long-term prosperity of Australian rural industries.</td>
<td>Attracting capable people into careers in agriculture.</td>
<td>Rural industries are equipped with skilled people and the leadership to grow and prosper.</td>
<td>Listening and influencing</td>
</tr>
<tr>
<td></td>
<td>Building the capability of future rural leaders.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To support the people driving the future prosperity of Australian rural industries and regional communities by providing them with learning opportunities and experiences.</td>
<td>Informing debate on issues of importance to rural industries.</td>
<td>Challenges and opportunities that are common across rural industries are identified and addressed.</td>
<td>Delivering results</td>
</tr>
<tr>
<td></td>
<td>Adapting new technologies for use across rural industries.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Working collaboratively on issues common across rural industries.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To identify and nurture research and innovation opportunities that are synergistic across rural industries.</td>
<td>Engaging industry participants in determining RD&amp;E priorities.</td>
<td>Industry participants are confident that their levy investment is delivering value.</td>
<td>Partnerships and collaborations</td>
</tr>
<tr>
<td></td>
<td>Investing in innovation that assists levied industries to be more profitable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivering outcomes to maximise industry uptake and adoption.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To enhance the profitability and sustainability of our levied rural industries. Regional communities and the broader Australian economy depend on profitable farms.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To support new and emerging rural industries.</td>
<td>Supporting the early-stage establishment of high-potential rural industries.</td>
<td>High-potential emerging rural industries established.</td>
<td>Efficient business practices</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
Investment and impact

In 2020–21, AgriFutures Australia managed 177 new projects across all four Arenas. The total investment of the new projects is more than $24m.

<table>
<thead>
<tr>
<th>No. of new projects</th>
<th>New project expenses</th>
<th>No. of current projects</th>
<th>Total allocated expense (all current projects over the life of the projects)</th>
</tr>
</thead>
<tbody>
<tr>
<td>177</td>
<td>$24.4m</td>
<td>395</td>
<td>$54.96m</td>
</tr>
</tbody>
</table>

In 2020-21, AgriFutures Australia managed 177 new projects across all four Arenas. The total investment of the new projects is more than $24m.

### AgriFutures Australia’s investment portfolio

#### Arenas

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>People and Leadership</td>
</tr>
<tr>
<td>2</td>
<td>National Challenges and Opportunities</td>
</tr>
<tr>
<td>3</td>
<td>Growing Profitability</td>
</tr>
<tr>
<td>4</td>
<td>Emerging Industries</td>
</tr>
</tbody>
</table>

#### Programs

- **People and Leadership**
  - Rural industries are equipped with skilled people and the leadership to grow and prosper.
  - AgriFutures Rural Women’s Award
  - AgriFutures Rural Women’s Award Alumni
  - Levied Industries Capacity Building Program
  - AgriFutures Horizon Scholarship
  - AgriFutures Ignite Network
  - startup.business
  - Country to Canberra
  - NFF Diversity in Agriculture

- **National Challenges and Opportunities**
  - Challenges and opportunities that are common across rural industries are identified and addressed.
  - National Rural Issues:
    - Emerging National Rural Issues Forum
    - Collaborative cross-sector research
    - Rural R&D for Profit (Securing pollination, Honey bee genetics, Weeds biocontrol, Q Fever)
    - Australian biomass and bioenergy assessment
    - Biosecurity - animal and plant
    - The Rural Safety & Health Alliance
    - The Climate Research Strategy for Primary Industries
  - Agrifood Innovation:
    - grow™
    - evoke™ Network
    - evoke™ 2022
    - FoodAgility CRC
    - Farmers2Founders
    - Bridge Hub
  - Transformational Industry Investment:
    - Rural sector impact research
    - Social, economic and environmental

- **Growing Profitability**
  - Industry participants are confident that their levy investment is delivering value.
  - Rice
  - Chicken Meat
  - Export Fodder
  - Honey Bee and Pollination
  - Thoroughbred Horses
  - Ginger
  - Tea Tree Oil
  - Pasture Seeds
  - Smaller levied industries:
    - Goat Fibre
    - Buffalo
    - Kangaroo
  - • Deer
  - • Ratite

- **Emerging Industries**
  - High-potential emerging rural industries established.
  - New and emerging rural industries
# Measuring success

<table>
<thead>
<tr>
<th>Arenas</th>
<th>Priorities</th>
<th>Key Performance Indicator</th>
<th>Measure Units</th>
<th>Target</th>
<th>Results 2020-21</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>People and Leadership</td>
<td>Attracting capable people into careers in agriculture.</td>
<td>1,800 graduates per annum of an agriculture or agricultural science course at Australian universities.</td>
<td>Australian Council of Deans Agriculture annual survey</td>
<td>1,800</td>
<td>There are no survey statistics available for 2020 and 2021*</td>
</tr>
</tbody>
</table>

80% of our stakeholders feel their confidence as a leader has increased significantly or very significantly as a result of participation in an AgriFutures Australian People and Leadership Program. | Survey of participants | 80% | 97% | |

Grow the AgriFutures Ignite Network Facebook group to 2,000 members with a minimum of 70% participating as “active members.” | | 2,000 | 2,368 | The Ignite Network Facebook group continues to grow, up by 246 members from 2019-20 and with 1,105 active members (47%). Of the group’s members, 60% are female and 40% are male. Of the 2,368 members, 204 live in Sydney, 186 live in Melbourne, 104 live in Brisbane and 102 in Wagga Wagga (representing the group’s top four cities). The majority of members are Australian, however there are overseas members representing New Zealand, India and the United Kingdom. |

Deliver one major capacity building program for AgriFutures Ignite Networking members. | | 1 event | 24 candidates completed the 2020 Australian Institute of Company Directors Course (AICD) Foundations of Directorship Course. Due to the travel restrictions caused by COVID-19, the course which was due to take place in Sydney in May 2020 was held virtually in November 2020. |

*NOTE: 1. Achieved KPI column (-) Insufficient data to report.
### Measuring success

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<tr>
<td>1</td>
<td><strong>People and Leadership</strong></td>
<td>Develop capacity building programs exclusively for AgriFutures levied industries that positively impacts 30 stakeholders from levied industries.</td>
<td>Survey of participants</td>
<td>30</td>
<td>61</td>
<td>AgriFutures Australia ran three separate capacity building programs exclusively for levied industries. Seven webinars were held from February to May 2021 as part of the Associations Forum Capacity Building Program for Levied Industries with 22 participants. In June 2021 the Australian Institute of Company Directors-Company Directors online Course™ involved 20 participants. In June 2020-May 2021 the Inspiring Rare Birds Mentoring Program involved 19 participants.</td>
</tr>
<tr>
<td>1</td>
<td><strong>People and Leadership</strong></td>
<td>80% of stakeholders feel their confidence as leaders has increased significantly or very significantly as a result of participation in the capacity building programs for AgriFutures Australia levied industries.</td>
<td>Survey of participants</td>
<td>80%</td>
<td>79%</td>
<td>80% have secured employment in the agriculture field within six months of graduating. NB: Four Scholars have commenced either a PhD or a Masters degree.</td>
</tr>
<tr>
<td>2</td>
<td><strong>National Challenges and Opportunities</strong></td>
<td>80% of AgriFutures Horizon Scholars secure employment in our rural industries or a related sector within six months of graduating.</td>
<td>Survey of participants</td>
<td>80%</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>National Challenges and Opportunities</strong></td>
<td>80% of stakeholders feel their confidence as leaders has increased significantly or very significantly as a result of participation in the capacity building programs for AgriFutures Australia levied industries.</td>
<td>Survey of participants</td>
<td>80%</td>
<td>79%</td>
<td>80% of AgriFutures Horizon Scholars secure employment in our rural industries or a related sector within six months of graduating.</td>
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<tr>
<td>2</td>
<td><strong>National Challenges and Opportunities</strong></td>
<td>Inform debates of national significance to rural industries and Australia's food and agriculture sectors.</td>
<td>Research projects that address issues of significance that positively affect more than one sector of Australian food and fibre industries.</td>
<td>10</td>
<td>17 outputs</td>
<td>Eight cross industry publications and nine case studies, summaries and factsheets. A further five projects were completed and publications released in early 2021-22.</td>
</tr>
<tr>
<td>2</td>
<td><strong>National Challenges and Opportunities</strong></td>
<td>Adapting new technologies for use across rural industries.</td>
<td>Commercial agrifood partnerships supporting the adoption and uptake of the agricultural sector.</td>
<td>3</td>
<td>6</td>
<td>Through the Farmers2Founders program, AgriFutures Australia supported six commercial opportunities in seaweed, black soldier fly, native foods, dry-powdered honey and hemp.</td>
</tr>
<tr>
<td>2</td>
<td><strong>National Challenges and Opportunities</strong></td>
<td>Working collaboratively on issues common across rural industries.</td>
<td>Large cross-sectoral research projects involving collaborating partners focused on industry-wide benefit.</td>
<td>2</td>
<td>2</td>
<td>Initiatives in carbon management and on-farm waste. Expansion of large scale collaborations in community trust in agriculture, forestry and fisheries and Rural Safety and Health Alliance. AgriFutures Australia led six collaborations, including four Rural RnD4Profit programs, and participated in nine cross-industry collaborations.</td>
</tr>
</tbody>
</table>

*NOTE: 1. Achieved KPI column: (-) Insufficient data to report.*
# Measuring success

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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>75% of stakeholders rate the value of AgriFutures Australia’s information products and services as high or very high.</td>
<td>Annual Stakeholder Survey</td>
<td>75%</td>
<td>65%*</td>
<td>70% of stakeholders used five or more resources, with 67% considering the information to be relevant and 73% finding the products easy to read.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engaging industry participants in determining RD&amp;E priorities.</td>
<td>Annual Stakeholder Survey</td>
<td>80%</td>
<td>58%*</td>
<td>Stakeholders provided a rating of 6.4/10 for satisfaction that their R&amp;D levy was being invested to achieve outcomes they expect. 60% of stakeholders considered that the advisory panels represented the needs of their industry. Across the industry where enough data was collected this ranged from 40% to 89%. The stakeholders recognised the importance of having an organisation like AgriFutures (8.7/10).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivering outcomes to maximise industry uptake and adoption.</td>
<td>Annual Stakeholder Survey</td>
<td>80%</td>
<td>50%*</td>
<td>Where there was a higher level of familiarity with what AgriFutures Australia does, and with the RD&amp;E undertaken there was a 16% and 33% increase in the rating of performance against this KPI.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80% of stakeholders are comfortable or very comfortable with level of engagement between AgriFutures Australia and the industry.</td>
<td>Annual Stakeholder Survey</td>
<td>80%</td>
<td>49%*</td>
<td>Direct feedback from Advisory Panel members indicated that greater engagement from AgriFutures is required when travel restrictions are in place, such as occurred during the COVID 19 pandemic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80% of Advisory Panel members and research providers rate AgriFutures Australia management of the industry RD&amp;E investments as high or very high.</td>
<td>Panel members post-advisory panel meeting surveys</td>
<td>80%</td>
<td>N/A -</td>
<td>87% of panel members considered that industry/levy needs were being adequately considered within the investment program. 82% of panel members were satisfied with the projects that were being progressed to contracting within the investment program. 93% of current researchers rated AgriFutures management of the RD&amp;E investments as high or very high.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Investing in innovation that assists levied industries to be more profitable.</td>
<td>Percentage of KPIs met in each industry program RD&amp;E plan</td>
<td>85%</td>
<td>86%</td>
<td>320 of 373 planned project milestones satisfactorily met objectives.</td>
</tr>
</tbody>
</table>

*NOTE: The stakeholder survey results are based on a sample size of 104 individuals that self-identified as levy payers across 13 levied industries and opted into the survey through existing AgriFutures communication channels. The results include all responses including those from people who indicated they had little, very little and no understanding of what AgriFutures does (but excluded those that responded ‘can’t say’). For these reasons the results need to be treated with caution.
### Measuring success

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>4</td>
<td>Emerging Industries</td>
<td>Supporting the early-stage establishment of high-potential rural industries.</td>
<td>Generate enhanced economic benefit by investing in re-search and development to support at least five new rural industries with potential to exceed $10m per annum (GVP).</td>
<td>Investments at $2-10m per annum; and at greater than $10m GVP.</td>
<td>5</td>
<td>1. Exotic vegetables 2. Native foods 3. Pomegranate 4. Murray cod 5. Cocoa</td>
</tr>
</tbody>
</table>

Identify and prioritise at least five high growth emerging industries for investment.  

| Number of high-growth emerging industries per annum. | 5 | 1. Hemp 2. Seaweed 3. Dragon fruit 4. Pomegranate 5. Manuka honey | The following industries were evaluated for their emerging opportunities. Results of both qualitative and quantitative assessments were combined to give each industry a rating. The below industries rated ‘better’ or ‘best’ and therefore, had new investments made in 2020/21: 1. Hemp • PUJ-012812: Developing a northern industrial hemp industry value chain 2. Seaweed • PUJ-012802: National Seaweed Industry Blueprint Implementation • PUJ-012898: Development of a Seaweed Food Safety program, meeting FSANZ & 3rd party HACCP • PUJ-012795: Developing Asparagopsis cultivation at scale for rapid industry growth 3. Dragon fruit • PUJ-012776: Unite dragon fruit growers to strengthen industry governance and R&D capacity 4. Pomegranate • PUJ-012772: Australian Pomegranate Industry Strategic Plan 2020-2025 5. Manuka honey • PRO-015336: Greenhouse production of high-grade medical mono floral | (Evaluation sources: 2017 and 2020 Coriolis reports) |
### Measuring success

<table>
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<tr>
<th>Arenas</th>
<th>Priorities</th>
<th>Key Performance Indicator</th>
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| Emerging Industries     |            | Partnerships and collaborations across five emerging industries to accelerate growth and foster capacity building programs. | Formalise collaborative partnerships in emerging industries; Support training and or professional development. | 5      | 1. Sesame  
2. Northern Australian industries  
3. Exotic tropical fruits  
4. Seaweed  
5. Perennial wheat | 1. Sesame  
• PRJ-012800 (RD&E Strategic Plan for Australian sesame) brought together a wide range of stakeholders (producers, researchers, and processors) from the Australian sesame industry to develop an industry RD&E Plan. The Australian sesame industry has subsequently formed an industry group to help drive the implementation of the RD&E Plan and industry growth.  
2. Northern Australian industries  
• Sponsorship of the 2021 Northern Australia Food Futures Conference gave Agrifutures the opportunity to showcase the emerging industries that suit the northern Australian environment. The date, tropical fruit, hemp, and sesame industries were provided the opportunity to share their industry stories and potential through a specific emerging industries session at the Conference.  
3. Exotic tropical fruits  
• PRJ-012331 (Exotic Tropical Fruits Symposium 2020) brought tropical fruit growers (jackfruit, dragon fruit, rambutan, durian and longan) from all northern states together in May 2021, in Darwin, to workshop RD&E priorities. This provided a valuable networking and peer-to-peer learning opportunity.  
4. Seaweed  
• PRJ-012802 (National Seaweed Industry Blueprint Implementation) brought together interested seaweed stakeholders to form the Australian Sustainable Seaweed Alliance (ASSA). ASSA is continuing to recruit members and drive the growth of the seaweed industry.  
5. Perennial wheat  
• PRJ-012277 (Assessing artisan perennial wheat material as a new food crop) worked with many industry partners, including artisan bakers, brewers, and large milling companies, to identify the suitability of perennial wheat to the various end products. This culminated in bringing all partners together to discuss their findings. |
# Arena and Industry Reports

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The AgriFutures Rural Women’s Award is Australia’s leading award acknowledging and supporting the essential role women play in rural and emerging industries, businesses, and communities, now and into the future. The Award provides a platform to inspire and support Australian women to use and develop their skills to benefit their industries and communities.

Summary of program

The AgriFutures Rural Women’s Award was approved in April 2021.

1. The book celebrates the contribution of the Award through the lens of the women who have been part of its rich history. The theme of the book is celebrating 21 years with the same question posed to all the participants: “What advice would you give your 21-year-old self?” It was a great opportunity for our Alumni to empower and inspire each other, and the next generation of women in agriculture.

2. To mark the 21-year anniversary of the AgriFutures Rural Women’s Award, a book was launched digitally via a media campaign on the 2020 International Day of Rural Women.

3. The ‘Bud Program’, an informal mentoring program was launched to give a guiding hand, inspire growth, and link our 2020 cohort with Alumni who can help them along their way. All seven State/Territory Winners and five of our 2020 State/Territory Finalists participated.

4. A new strategic direction for the AgriFutures Rural Women’s Award was approved in April 2021, with the following changes being implemented:
   - Updated vision of the Award
   - Tightened criteria for the Award
   - Increased bursaries for the Award
   - Introduction of three categories, in which the project, business or program needs to align
   - Updated values for the Award.

5. Following on from the new strategic direction, we also introduced the new AgriFutures Rural Women’s Acceleration Grant. This will provide Australian women with learning and development opportunities, upskilling them so they can bring their idea, cause or vision to life.

Deliverables for 2020-21

Due to the uncertain environment with COVID-19, AgriFutures Australia made the difficult decision to postpone the 2020 AgriFutures Rural Women’s Award Gala Dinner and National Announcement that was due to be held at the Great Hall at Parliament House in Canberra on Tuesday, 15 September 2020. The National Winner and Runner-Up from the 2020 cohort will be announced in October, 2021.

Applications for the 2022 AgriFutures Rural Women’s Award opened on Thursday, 26 August, 2021 and close on Friday, 8 October 2021. Applications for NT will close on Friday, 28 January 2022.

The new AgriFutures Rural Women’s Acceleration Grant was introduced in April 2021.

Commemorate the 21-year history of the AgriFutures Rural Women’s Award

Compiled and launched the AgriFutures Rural Women’s Award book to mark the 21-year anniversary on the program. The soft launch of the book formed part of the 10-day communications campaign for International Day of Rural Women.

Hold a four-day development workshop

The 2020 AgriFutures Rural Women’s Award State/Territory Winners came together in July-August 2020 to participate in a virtual program.
AgriFutures Horizon Scholarship

Highlights and achievements

1. Given the cancellation of the 2020 AgriFutures Stakeholder Summit, we developed our very first Horizon Virtual Summit experience. This virtual program took place over a nine-week period, starting on 9 July 2020 and running every Thursday evening.

2. Twenty new Horizon scholars were awarded a 2021 Horizon Scholarship in April 2021.

3. Horizon Alumni Matt Nevison and Emma Moss were also invited to emcee and speak at the Young Farmers Business Breakfast panel session at the Northern Australia Food Futures Conference, which was held in Darwin, NT from 18-20 May 2021.

Summary of program

AgriFutures Australia is committed to supporting the next generation of leaders that will drive the future prosperity of Australian rural industries and communities. The AgriFutures Horizon Scholarship is awarded to students studying an agriculture-related undergraduate degree or a science, technology, engineering, maths/finance (STEM) degree with relevant majors aligning to agriculture.

In partnership with industry sponsors, the AgriFutures Horizon Scholarship supports students enrolled in full-time study at an Australian university by providing:

- A bursary of $5,000 per year for the final two years of their degree
- Professional development workshops
- Annual industry work placements aligned with the scholar’s areas of interest and their sponsor’s industry
- Opportunities to network and gain knowledge at a range of industry events.

Deliverables for 2020-21

The AgriFutures Horizon Scholarship applications opened on Monday, 23 November 2020 and closed on Friday, 15 January 2021. A total of 94 applications were received, up from 88 applications in the previous year.

All Horizon Scholarship industry placements and associated travel was suspended in June 2020, due to COVID-19 and not lifted again until March 2021. Scholars have since been busy locking in their industry placements for the remainder of the year.

AgriFutures Ignite Network

Highlights and achievements

1. The AgriFutures Ignite Network has a closed Facebook group for members to connect with each other. As of 30 June 2021, there were 2,368 members who actively use the group to share stories, opportunities and information with each other.

2. The Ignite Advisory Panel were engaged to provide feedback on AgriFutures Australia’s proposed NRI Program, particularly the Emerging National Rural Issues (ENRI) Forum and the proposed pitches.

Summary of program

The AgriFutures Ignite Network is a program for passionate rural leaders, innovators and entrepreneurs. AgriFutures Ignite Network members influence, make changes, innovate and are interested in exploring agribusiness trends. Their ideas and knowledge will shape the future of agriculture and its long-term prosperity. The AgriFutures Ignite Network is made up of two main groups:

1. A Facebook group where members share information, ideas, learning and development opportunities.

2. The AgriFutures Ignite Advisory Panel – 10 members who report directly to the AgriFutures Australia Managing Director on trends, opportunities and challenges facing Australia agriculture.

Deliverables for 2020-21

The aim for 2020-21 was to continually engage passionate rural leaders in the AgriFutures Ignite Network across the following areas:

1. Information and knowledge
2. Ideas and collaboration
3. Unlocking professional development and leadership skills
4. Uncovering emerging initiatives.

In 2020-21, the focus for building the AgriFutures Ignite Network was consistent communication. Members contributed significantly, meaning opportunities were regularly shared online among the AgriFutures Ignite Network.

The term of appointment of the Ignite Advisory Panel members expired in May 2021. Applications for a new panel will not be sought as the role of the Ignite Advisory Panel is being reviewed.

Plan for 2020-21

Grow the AgriFutures Ignite Network to more than 500 members.

Outcomes in 2020-21

As of June 30 2021, the AgriFutures Ignite Network Facebook group had 2,368 members.

Engage the AgriFutures Ignite Network through one major capacity building event.

Outcomes in 2020-21

25 candidates were accepted into the 2020 Australian Institute of Company Directors (AICD) Foundations of Directorship Course. Due to COVID-19 and the social distancing protocols put in place, this was due to be held in May 2020, but was finally held virtually over three days in November 2020.

Advisory Panel members:

Andrew Duver, ACT
Guy Coleman, NSW
Jessica Fealy, QLD
Joshua Gilbert, NSW
Lucinda Hawkins, NSW
Nicolas Lyons, NSW
Oli Madgett, SA
Simone Kain, SA
Susan Hall, WA
Susan Leigo, NT

Annual Report 2020-21
AgriFutures Rural Women’s Award Alumni

Highlights and achievements

1. The AgriFutures Rural Women’s Award has a closed Facebook group for Alumni to connect with each other. As of 30 June 2021, there are 150 members who actively use the group to share stories, opportunities, learning and development ideas and information with each other.

2. Due to the cancellation of the 2020 AgriFutures Rural Women’s Award Gala Dinner and National Announcement, we believed it was a key time to work on the development of the AgriFutures Rural Women’s Award, using the AgriFutures Rural Women’s Award Alumni Advisory Panel’s expertise in the process.

3. The AgriFutures Rural Women’s Award Alumni Advisory Panel Meeting was due to take place in Sydney in March 2020, however it was postponed due to travel restrictions. This face-to-face session was replaced with a series of virtual sessions in November 2020, with the purpose of building a strategy for the future of the Awards.
   • A new strategic direction for the AgriFutures Rural Women’s Award was approved in April 2021.

4. We also launched the Rural Women’s Award Committee of State Chairs, which will replace the Rural Women’s Award Alumni Advisory Panel, in its current form. The new State Chairs were announced at the AgriFutures Rural Women’s Award Alumni Luncheon in Canberra on Wednesday, 25 August 2021.

Summary of program

The AgriFutures Rural Women’s Award Alumni program focuses on fostering a vibrant and active community and delivering tangible personal and professional benefits for its members through engagement across three Program streams – Connect, Mobilise and Inspire.

Deliverables for 2020-21

Due to the uncertain environment with COVID-19, AgriFutures Australia made the difficult decision to postpone the 2020 AgriFutures Rural Women’s Award Gala Dinner and National Announcement that was due to be held at the Great Hall at Parliament House in Canberra on Tuesday, 15 September 2020, along with the Alumni Luncheon that was to be held at Hotel Kurrajong. As a consequence, the RWA Travel Subsidy was not offered in 2020.

The AgriFutures Rural Women’s Award Alumni Advisory Panel were instrumental in gathering feedback and putting forward ideas that led to the creation of the new strategic direction for the AgriFutures Rural Women’s Award Program.

Plan for 2020-21

Assist in the development of a revised strategy for the AgriFutures Rural Women’s Award Program.

Outcomes in 2020-21

A new strategic direction for the AgriFutures Rural Women’s Award was approved in April 2021.

The Rural Women’s Award Committee of State Chairs also replaced the Rural Women’s Award Alumni Advisory Panel.

Advisory Panel members:

Dr Mary Retallack, SA  (retired in November 2020)
Lillian Lever, QLD  (retired in September 2020)
Sandra Ireson, NSW  (retired in November 2020)
Jacqueline Wilson-Smith, QLD
Jackie Jarvis, WA
### Highlights and achievements

1. 81 students from across Australia took part in the 2020 startup.business Entrepreneurial Learning in Action Program.

2. 40 original business ideas were generated as a result of the 2020 startup.business Entrepreneurial Learning in Action Program.

3. The online Brilliant Business Kids Festival took place on Friday, 27 November 2020. More than 70 students and teachers completed a full day of masterclasses, workshops and panel discussions.

### Summary of program

AgriFutures Australia and startup.business have joined forces to deliver an exciting education program to teach high school students in rural and regional Australia how to solve problems facing agriculture using innovation and an entrepreneurial mindset.

### Deliverables for 2020-21

Applications for the 2020 program opened in January 2020 and closed in February 2020.

AgriFutures Australia supported the following five schools through the 2020 program:

- Narromine High School, NSW – 16 students
- Karoonda Area School, SA – 10 students
- York District High School, WA – 12 students
- Launceston Church Grammar School, TAS – 28 students
- St Philip’s College, NT – 15 students

The 2020 program culminated with a Pitch Week where each school held an event for students to pitch their ideas/solutions developed as part of the Program. The winning pitches from each school were then selected to attend the National Pitch Competition, which formed part of the online Brilliant Business Kids Festival on Friday, 27 November 2020. All pitches were based around an agricultural challenge and/or opportunity.

- AgriFutures Australia is supporting the following seven schools through the 2021 program:
  - Katherine High School, NT – 12 students
  - Guildford Grammar School, WA – 17 students
  - Mackay North High School, QLD – 12 students
  - St Brendan’s College, QLD – 21 students
  - Karoonda Area School, SA – 10 students
  - St Philip’s College, NT – 23 students
  - Launceston Church Grammar School, TAS – 6 students

### Plan for 2020-21

Expose more than 100 Year 9 and 10 students to entrepreneurial thinking and agricultural programs through the startup.business partnership.

In 2020, 81 students from across regional and rural Australia participated in the program.

In 2021, 101 students from across regional and rural Australia participated in the program.

### Outcomes in 2020-21

Create opportunities for cross-collaboration for Country to Canberra to link to other AgriFutures Australia platforms.

CEG Hannah Wandel was interviewed on AgriFutures On Air. The podcast titled, “Be inspired: Life begins at the end of your comfort zone” received 186 downloads.

### Country to Canberra

#### Highlights and achievements

1. In 2020, AgriFutures was again the proud Diamond Sponsor of the Country to Canberra Leadership Competition and Power Trip Program, an all-expenses-paid trip to Canberra for high school girls to undertake leadership and media training, be mentored by CEOs and politicians, and meet inspiring role models and more.

2. Due to COVID-19, Country to Canberra made the difficult decision to postpone their 2020 Power Trip to November/December 2021. Instead, they launched an exciting, exclusive virtual program for the winner called ‘C2C On Screen’. This program ran over two days, on Monday 30 November 2020 and Tuesday 1 December 2021. AgriFutures General Manager, Communications and Capacity Building, Belinda Allitt delivered a keynote speech at the beginning of the Mentorship Session.

3. The virtual session included an Empowerment Day and a Mentorship Day, with a wide range of workshops and mentorship from three inspirational women Yasmin Poole, Sophia Hamblin Wang and Maddison O’Grady-Lee. Yasmin Poole was named the recipient of the 2021 Youth Influencer of the Year award from The King Center, is currently the National Ambassador for Plan International Australia and a Board Member for YWCA Australia.

#### Plan for 2020-21

Country to Canberra launched an exclusive new virtual program for the winners called ‘C2C On Screen’. This successful pilot program ran over two days, on Monday 30 November 2020 and Tuesday 1 December 2020.

Sixteen young women from rural, regional and remote Australia participated in a two-day virtual event where they had the opportunity to participate in leadership, empowerment and mentorship workshops, and advocate for issues they are passionate about, including gender equality.

#### Outcomes in 2020-21

- Maddison O’Grady-Lee is a student advocate campaigner and entrepreneur who’s passionate about mental health and education. Maddison has been awarded the NSW Young Achiever of the Year for Community Service and Leadership, a Youth Order of Australia and was the first Australian to make the finals for the Dalai Lama Peace fellowship.

- Country to Canberra also welcomed three new C2C Champions, Dr Anika Molesworth, Elizabeth Brennan and Natalie Sommerville, who will use their platform in the agricultural, gender equality, and advocacy space to advance C2C’s programs and mission.

#### Summary of program

Founded in 2014, Country to Canberra is an award-winning not-for-profit that runs nationwide programs providing education, leadership and mentorship opportunities to regional, rural and remote teenage girls. Country to Canberra is a leading voice for young women committed to strengthening rural communities into the future. In 2020, AgriFutures Australia was again the proud Diamond Sponsor of this important program.

#### Deliverables for 2020-21

Country to Canberra also welcomed three new C2C Champions, Dr Anika Molesworth, Elizabeth Brennan and Natalie Sommerville, who will use their platform in the agricultural, gender equality, and advocacy space to advance C2C’s programs and mission.
Celebrating 21 years of the AgriFutures Rural Women’s Award: What advice would you give to your 21-year-old self?

The Rural Women’s Award (RWA) acknowledges the essential role women play in rural industries, businesses and communities.

The RWA provides a platform to celebrate remarkable Australian women and support them as they use and develop their skills and is recognised as a program of influence among parliamentarians, industry, media and Award alumni.

In 2020, AgriFutures Australia created a publication titled Celebrating 21 years of the RWRD Rural Women’s Award and AgriFutures Rural Women’s Award. More than 100 former State and Territory winners reflected on their experiences of the RWA and shared their advice to their 21-year-old selves, delivering wise, compassionate, honest and sometimes challenging reflections as only rural women can.

“Challenges that really excite you will usually frighten you in equal measure, so be brave!”

Kate Peake
2017 NT Winner

What advice would you give to your 21-year-old self?

Elisha Parker
2020 QLD Winner

You should always believe in yourself and trust your gut instinct. Jump at every opportunity to expand skills, networks and knowledge, as you never know how even small opportunities can benefit yourself or your career. I would also say that you should always do today what you could do tomorrow, as you never know what new opportunities tomorrow will bring. If it is meant to be it will be. There is nothing to be gained from agonising over what does not happen. There is usually a reason and reflecting on this leads to identifying areas for improvement, searching for other options which may in fact be better, and re-focusing. The world really is our oyster, and nothing is unachievable if you set your mind to it and work like hell.

Kate Peake
2017 NT Winner

Don’t limit yourself to the things you know you can do. Your greatest personal growth will occur when you jump in the deep end – take on something you have no idea how you will achieve. Challenges that really excite you will usually frighten you in equal measure, so be brave!

Also, never underestimate the breadth and capacity of your support network, there are more people out there willing to help you than you could possibly imagine, you just need to be open to them. Oh, and most importantly, your imperfections are the best part of you! Value your whole self because you are a role model, no matter the scale of your influence.

Sue Middleton
2010 WA, National Winner

The RWA is the greatest national and state platform I know for rural women. It shines a light on women making change happen in their communities, their industries and the regions. I did not understand before the Award that women aren’t visible. Making women visible is what the Award does. For me, it’s not about building women’s leadership capacity, as the applicants are already enormously capable leaders. It’s about platforming and elevating the importance of what women are doing.

Deborah Bain
2007 VIC, National Winner

I could never have imagined that I would have the opportunity or capacity to have such a level of engagement in speaking on behalf of Australian agriculture – but that is the intrinsic value of the RWA – it encourages success by providing training, mentors and opportunities to maximise and drive the passion and vision of the individual. The formula is powerful as evidenced by the success of so many of the women who have been granted this award.

Jennifer Bradley
2005 NSW/ACT Winner

Have confidence in yourself and don’t sell yourself short. If someone thinks you are capable you probably are – so say yes with conviction, listen to your heart and be true to yourself in your decision-making processes. Don’t spend time questioning yourself or your knowledge. If you are at the table, you are there because you have just as much to offer as the person across the table and it is the simple things in life that will bring you the greatest satisfaction. Your greatest achievement will be the family and friend network you create. Spend time, talk, play and show them how wonderful the rural and agricultural sector can truly be.

Diane Rae
2004 TAS Winner

Remember that a strong woman knows that she has strength enough for the journey, but a woman of strength knows that it is through the journey that she becomes strong. Celebrate your failures and pay attention to them as they will provide you with your true learning during this life’s journey.

Sharon Starick
2003 SA Winner

Life does not always turn out the way you expect but it is what you make of it. When opportunities present themselves that fuel your passion for agriculture – grab them with both hands. Don’t allow the voice of self-doubt to prevent you from stepping into leadership roles as everyone has something to contribute.

Along the way encourage others, particularly women and younger people, to also see agriculture as having exciting career opportunities. Support and mentor others to contribute to our agricultural industries and rural communities by taking on leadership roles. It’s the people that make the difference!

Ms Cindy Cassidy, RWA Alumni & AgriFutures Australia Director, Mrs Kay Hull AO, AgriFutures Australia Chair and Mrs Diana Gibbs, RWA Alumni & AgriFutures Australia Director.

The anniversary book can be downloaded and purchased from the AgriFutures website: agrifutures.com.au/celebrating-21-years
National Challenges and Opportunities

Goal
To identify and nurture research and innovation opportunities that are synergistic across rural sectors.

Australian rural industries are faced with challenges and opportunities that are common across sectors. Beyond the commodity level, our rural industries require leadership to identify and respond to national rural issues and enhance shared benefits.

Unlike other RDCs that represent one or a few similar industries, AgriFutures Australia manages RD&E for a diverse portfolio of plant and animal industries. As such, it is uniquely placed to assist Australian rural industries to prioritise and drive cross-sectoral RD&E.

Outcome
Challenges and opportunities that are common across rural industries are identified and addressed.

Research programs
National Rural Issues:
- Non-intentional Farm-Related Incidents in Australia 2020
- United Nations Sustainable Development Goals: Telling Australia’s Rural Industries Story
- Covid logistics – improved information sharing

Agrifood Innovation
- Farmers2Farmers
- Bridge Hub
- Producer Technology Uptake Program
- evoke24 event
- evoke25
- grow26

Transformative Industry Action
- Carbon initiatives Program
- Pre-farmgate waste Program
- Sector Vulnerabilities
- Import/export IP
- Future Consumer trends
- Capital investment

Cross Sector Programs
- The Rural Health and Safety Alliance
- Biocontrol of weeds
- Securing pollination
- Australian biomass and bioenergy assessment
- Community Trust in Rural Industries Program
- AgChem Minor Use Priority Action Program

Highlights and achievements
1. grow26 was launched by the Minister for Agriculture and Northern Australia, the Hon. David Littleproud MP on 12 April 2021. grow26 is a single platform listing research projects and commercial opportunities arising from investment in impactful agrifood innovation by Australia’s 15 Research and Development Corporations (RDCs).

2. Agricultural Innovation Australia. In October 2020, the Minister for Agriculture and Northern Australia, the Hon. David Littleproud MP announced the formation of Agricultural Innovation Australia (AIA), a not-for-profit, public company established to support Australia to be a global leader in agricultural innovation impact, delivering enhanced returns for investors. Australia’s 15 Rural Research and Development Corporations were founding members, including AgriFutures Australia.

AIA aims to drive collaboration and investment across agricultural industries through a unique funding model, leveraging traditional and new forms of investment at scale: an independent and agile approach, with the ability to draw on cross-sectoral networks, knowledge and expertise; applying a commercial lens; and a focus on optimising financial and non-financial return on investment for all stakeholders. AIA investments will begin in 2021-22.

3. Capital requirements of Australia’s agriculture, fisheries and forestry sector.

4. Producer Technology Uptake Program: An ambitious program was commenced in 2021 to support greater producer awareness and adoption of technology solutions. Through an open call for applications, 20 producer groups from around Australia and across various industries have been chosen to participate in the pilot program. The program works with producer groups to provide access to a targeted workshop as well as funding to deliver events, technology trials and/or expert advice to translate the learning from the workshop into action and practically overcome barriers to adoption, such as a lack of digital literacy, ability to calculate return on investment, connectivity and confidence to adopt.

5. Farmers2Founders (F2F). AgriFutures Australia partnered for a second year in the F2F program, which aimed to attract and develop proactive, innovative Australian primary producers looking to grow and transform their businesses through cutting-edge innovation and adoption of new technologies. Building on the pilot year, AgriFutures Australia supported an additional five teams through the Business Growth Bootcamp and the Early Adopter Program. This partnership has supported producer-led innovations, increased digital literacy across the sector and supported businesses to deliver quality new products to market.

6. Innovative Carbon Initiatives Program. A business case identifying gaps in the agriculture sector was undertaken and found that work was needed to address: innovative and novel solutions for storing carbon or reducing or avoiding greenhouse gas emissions, an evaluation of cooperative models under a carbon market, market development pathways for producers, novel approaches to identifying, developing and commercialising co-benefits from carbon farming for income diversification, increasing producer engagement and alignment of carbon activities across the agricultural value chain. An open call process resulted in 15 innovative and future-thinking investments being made in projects from around the country going forward under the program.
National Rural Issues, Agrifood Innovation, Transformational Industry Investment

Summary of program

The program delivers research to inform national rural policy development by government and industry, and issues important to rural industries. The program focuses on the cross-sectoral issues influencing the sustainability and profitability of Australia’s agricultural sector.

Emerging technologies are changing the way agricultural products are made, marketed and transported. Adapting and creating innovative solutions for Australian farmers is key to remaining globally competitive.

Many rural issues and challenges impact more than one rural industry, for example climate variability, pollination of crops, biosecurity and animal welfare. Collaboration and information sharing is central to research partnerships, and enabling the national agricultural innovation system.

Deliverables for 2020–21

In 2020–21, AgriFutures Australia delivered:

- Nine research reports and 10 case studies, fact sheets and report summaries were published on issues of national significance to rural industries and distributed to key stakeholders through media releases and publications.
- Continued to lead two large cross-industry programs of work in community trust and health and safety. Other positive collaborations between Rural Research and Development Corporations, government, industry and the commercial sector were in cross-sectoral investment initiatives that positively impact the rural sector.
- Delivered transformative industry investments, including two large new programs in carbon and pre-farm gate waste. Fifteen new investments were made in carbon and five new investments in waste. One large new investment in addressing sector vulnerabilities.
- Delivered programs to address producer technology adoption, extension and entrepreneurship, including the roll out of the Producer Technology Uptake Program, working with 20 producer groups to build the skills, capacity and confidence of producers to adopt technology. Also invested in the Farmers2Founders program and Bridge Hub.
- Delivered evoke™, an international agricultural technology forum to lift the prosperity of Australian agrifood industries that engaged people and business to share ideas and connect.
- Delivered grow³, the gateway to Australia’s agrifood innovation system. It formalises a shared vision to showcase world-leading agricultural research, unique technologies and commercialisation opportunities online in one, easy-to-use location.

Studies of national significance

Cross-sectoral work was initiated through the Emerging National Rural Issues Forum, a meeting of all the RDAs, the National Farmers’ Federation and the Department of Agriculture, Water and the Environment to identify and discuss cross-sectoral projects for collaborative action.

Now in its fourth year, 129 project ideas have been raised through the forum, of which 56 projects and initiatives have been delivered. The forum is also an important vehicle for supporting direction-setting for the sector in helping identify, cross-sectoral opportunities and threats. Examples of collaborative projects initiated through the forum process and delivered in 2020–21 include: Agriculture – A $100bn sector by 2030, improving carbon markets to increase farmers’ participation, the changing landscape of protein production and the Joint-RDC Community Trust Program.

Positive collaboration

In 2020–21, AgriFutures Australia engaged with all 15 RDAs, including the Council of Rural Research and Development Corporations, to deliver the Emerging National Rural Issues Forum. Seven of the nine publications had strong input from the RDAs, including the Council of Rural Research and Development Corporations. An additional three R&D for Profit program projects were also completed.

In 2020–21, the Rural Safety and Health Alliance (RSHA) continued to deliver improved health and safety outcomes for the rural sector in partnership with nine participating RDAs. The Alliance began to develop activities and investments in a range of initiatives that benefit Australia's health and safety record for agriculture and fishing industries. An example of three projects initiated throughout the year include communications, data and cross-industry death and injury risk comparisons.

Year two of the three-year Joint-RDC Community Trust Program was delivered. Over 400 industry members have been consulted on the results and many industry conversations have been initiated. In total, 14,225 people have participated in the program to date, which provides a roadmap for industry to develop capability across the sector to monitor, anticipate and respond to shifts in the levels of trust, build a common language and collective national narrative around the community trust challenge and identify common best practice approaches, strategies and interventions for building, rebuilding and maintaining community trust.

While AgriFutures Australia leads and supports a number of cross-sectoral, joint-RDC projects and programs, including three Rural Research and Development for Profit (RR&D4P) programs, it participates in other RDC initiatives including the Forewarned is Forearmed RR&D4P project led by Meat and Livestock Australia, and the Plant Biosecurity Research Initiative managed by Horticulture Australia Limited. In 2020–21, AgriFutures Australia also partnered with other organisations, including the Food Agility CRC, Reliable, Affordable, Clean Energy (R4CE) for 2030 CRC, Farmers2Founders and Bridge Hub, on projects outside of the RDAs.
Capital requirements of Australia’s agriculture, fisheries and forestry sector report has identified an additional $7.5 billion in net capital investment per annum is needed if Australia’s agriculture, fisheries and forestry sector is to achieve the National Farmers’ Federation (NFF) $100 billion vision by 2030.

**In the spotlight**

**Why is capital investment critical to grow Australian agriculture?**

AgriFutures Australia’s Capital requirements of Australia’s agriculture, fisheries and forestry sector report has identified an additional $7.5 billion in net capital investment per annum is needed if Australia’s agriculture, fisheries and forestry sector is to achieve the National Farmers’ Federation (NFF) $100 billion vision by 2030.

The sector currently attracts around $1.2 billion of investment annually (farm gate output valued at $63 billion); a long way short of the $8.7 billion per annum the report found was needed over the next nine years to meet the NFF’s 2030 target. Data modelling shows this current investment in agriculture could limit industry growth to just $84 billion in farm gate value by 2030.

But there is a lack of understanding of the capital needed to support growth, something the sector must address if it is to stay at the forefront of global agriculture. Without quality and timely data, including performance benchmarks, investors may struggle to see the merits of investment. In a competitive marketplace, agriculture must demonstrate an attractive risk-adjusted rate of return. Access to data is also important for farmers, fishers and foresters. A better understanding of market opportunities, market and production risk and performance benchmarks will help them focus on improving return on investment.

The sector’s past reliance on increasing land values to fuel debt as a form of capital is unsustainable. To innovate and grow productive farm businesses, the sector needs capital investment to drive agtech adoption and new innovative ways of doing business.

**Capital investment is a key growth driver that creates space for innovation and change. From purchasing machinery, to expanding production, to adopting new farming practices and innovating, access to capital is critical.**

**“If the roadmap is implemented, this should see farmers’ options for sources of capital investment broadening from the current reliance on loans and their own equity to also include investment from other sources,” said Mr Binney.**

**“This will unlock new opportunities to access capital investment and fuel sector growth.”**

In addition to attracting investment at the farm gate level, Mr Binney highlighted the need for industry to improve their attractiveness to investors.

The sector has a competitive advantage with the emerging corporate environmental, social and governance (ESG) trends such as carbon trading and biodiversity.

**“The increasing emphasis on corporate social responsibility and ethical investment makes agriculture an attractive option,” said Mr Binney.**

**“When seeking capital, it is critical the sector respond to climate variability, securing carbon and the provision of essential food and fibre ecosystems is effectively marketed.”**

This report will help start the conversation and ask the questions, allowing feedback and reactions to be sought from key stakeholders. More detailed questions can then be asked, the norm can be challenged and alternative options to grow the sector can be explored.

Since its release in early 2021, the report has generated significant government and media attention and continues to be a conversation starter for the future of Australian agriculture.

The next phase of the project is currently being considered and will focus on where Australian agriculture needs to invest to shift the needle on sector growth and who needs to make a change, including exploring alternative approaches to capital attraction and investment in the sector.

Capital requirements of Australia’s agriculture, fisheries and forestry sector was commissioned by AgriFutures Australia to quantify the capital required to grow the value of agriculture to $100 billion by 2030. The research was undertaken by NCEconomics and funded through the AgriFutures Australia National Rural Issues Program.
### National Rural Issues, Agrifood Innovation, Transformational Industry Investment

#### Projects completed in 2020-21

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRJ-012731</td>
<td>Horizon Scanning: Australian Rural Industries</td>
</tr>
<tr>
<td>PRJ-012718</td>
<td>Regional development: Intersection with agricultural, fisheries and forestry industries</td>
</tr>
<tr>
<td>PRJ-012610</td>
<td>Product Fraud: Impacts on Agriculture, Fisheries &amp; Forestry Industries</td>
</tr>
<tr>
<td>PRJ-012577</td>
<td>Agricultural Health and Safety Statistics 2020</td>
</tr>
<tr>
<td>PRJ-012670</td>
<td>Space-based technologies – opportunities for the rural sector</td>
</tr>
</tbody>
</table>

#### Outcomes for 2020-21

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>PRJ-012731</td>
<td>This report offers a perspective on the agrifood system’s emerging landscape over the next decade. It aims to start new conversations about opportunities and risks for players along the value chain and within the agricultural system. Rather than providing probabilistic answers about the future, it aims to provide a set of plausible – yet provocative – possibilities that stretch our preconceived notions about the future.</td>
</tr>
<tr>
<td>PRJ-012718</td>
<td>Analyzing the relationships and intersections between regions, agricultural industries operating in those regions, and the government policies (and programs) which support the competitiveness, growth and resilience of agriculture and regions. It provides a framework for integrating analysis of agricultural and regional development.</td>
</tr>
<tr>
<td>PRJ-012610</td>
<td>Quantifying the current size of the product fraud problem facing Australia’s rural sector and highlighting opportunities that exist both domestically and internationally to overcome this problem. The scope of analysis and quantification includes not only dominant agricultural products but also fisheries, seafood products and wood products.</td>
</tr>
<tr>
<td>PRJ-012577</td>
<td>AgHealth Australia has been leading research into deaths and injuries on farm since 2004, providing the most comprehensive evidence on which to build prevention approaches to enhance the safety and well-being of people in Australian agriculture. This report focuses on injury events that occurred between January 1 to December 30, 2020.</td>
</tr>
<tr>
<td>PRJ-012670</td>
<td>Consolidation of information to identify the technologies and applications that are suitable for the Australian context. The report focuses on three main components of space-based technologies that can help address challenges in the rural sector – remote sensing, connectivity and geolocation.</td>
</tr>
</tbody>
</table>

#### Strategic objectives for 2020-21

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Strategic Objectives</th>
</tr>
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<tbody>
<tr>
<td>PRJ-012731</td>
<td>Informing debate on issues of importance to rural industries.</td>
</tr>
<tr>
<td>PRJ-012718</td>
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</tr>
<tr>
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<tr>
<td>PRJ-012577</td>
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</tr>
<tr>
<td>PRJ-012670</td>
<td>Adapting new technologies for use across rural industries.</td>
</tr>
</tbody>
</table>

#### Projects completed in 2020-21

<table>
<thead>
<tr>
<th>Project Code</th>
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<tbody>
<tr>
<td>PRJ-012728</td>
<td>Attract and develop proactive, innovative Australian primary producers looking to grow and transform their businesses through cutting edge innovation and adoption of new technologies.</td>
</tr>
<tr>
<td>PRJ-011469</td>
<td>The Bridge Hub is a regional agrifood tech innovation hub that identifies, tests and commercialises ideas and technologies of Australian researchers and entrepreneurs. The Bridge Hub is a collaborative program that brings together the three pillars of industry, research and government to create pathways to test and commercialise great ideas and research for the benefit of farmers and consumers.</td>
</tr>
<tr>
<td>PRJ-012469</td>
<td>Provide information to assist rural industries and governments understand how innovation and technology can provide practical solutions and improve management of the key phases of natural disaster - preparedness, response, and recovery. It examines the opportunities and barriers to implementation of these new technologies. The need for reliable connectivity, not just at the homestead or farm office but across farms and out to sea is a fundamental requirement as underpinning the reliability of technology in disaster management and warning systems.</td>
</tr>
<tr>
<td>PRJ-012934</td>
<td>A resource for producers, the agricultural services industry and technology industry to understand the opportunities and use cases for the adoption of 3D printing technologies. This will include how the technology is currently being used as well as likely emerging uses.</td>
</tr>
<tr>
<td>PRJ-012612</td>
<td>Exploring the current investment gap by analysing the amount of capital required for the sector to reach the $100 billion goal. It also highlights opportunities to attract investment into the sector, including alternative avenues to traditional debt and equity finance.</td>
</tr>
</tbody>
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#### Strategic objectives for 2020-21

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<tr>
<td>PRJ-012934</td>
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</tr>
<tr>
<td>PRJ-012612</td>
<td>Working collaboratively on issues common across rural sectors.</td>
</tr>
</tbody>
</table>

1. Projects relating to evokeAG and growAG (Agrifood Innovation) are listed under the program report (pg. 58,59,61).
Future forces shaping Australian agriculture

We cannot predict the future, but we can explore trends on the horizon that are set to have a major impact on the future of Australian agriculture. To address this, AgriFutures Australia, Agthentic Advisory and the Institute for the Future (IIFT) teamed up to explore what possibilities and risks the future might hold.

The report Future Forces: a ten-year horizon for Australian agriculture offers new perspectives on the agri-food system’s emerging landscape over the next decade. It aims to start new conversations that challenge views on the state of food production in Australia, and the opportunities and risks along the value chain and within the agricultural system.

Rather than providing probabilistic answers about the future, the report offers a set of plausible, yet provocative, ‘what if’ scenarios that stretch people’s preconceived notions about the future.

Building on past research including the 2015 AgriFutures Australia (RIRDC) project by CSIRO Megatrends impacting Australian agriculture over the coming twenty years, the report calls for rural industries to come together and consider the unique implications for agriculture so they can prepare today for the future of tomorrow.

Agthentic Advisory CEO and report author Sarah Nolet said, “Looking at the future of Australian agricultural production demands a cross-disciplinary approach. We must look beyond emerging technologies and businesses toward the type of world in which those technologies and businesses will operate.”

Future-thinking differs from other forecasting methods, in that its primary aim is not to be strictly ‘correct’. It is a tool that can be used today, to change the way strategies are developed.

“Attempting to accurately predict the future tends to be more harmful to strategic decision making,” said Ms. Nolet.

“People and organisations who use future-thinking can prepare to respond with more agility to the unexpected changes that will inevitably arise in the future.”

The significant changes that will shape the future of Australian agriculture are defined by measurable shifts that are already happening in the world today. They represent disruptions across a broad category of social, technological, environmental, and economic domains.

The first is that the food system is becoming increasingly susceptible to intentionally misleading and incorrect information.

As observed by Co-Founder and Co-CEO of Alpha Food Labs and Founder of the Future Market, Mike Lee, “The internet has become a force multiplier for weaponising information both good and bad, true or false, and getting huge numbers of people to act on it in an emotionally fueled mob.”

“Savvy consumers have to train themselves to be mindful of dubious food claims.”

Australia’s agricultural sector must keep pace, adapt, and work with the social channels to engage their customers and maintain trust.

The second future force is that rapidly maturing digital technologies and the blockchain are opening new opportunities to agricultural supply chains.

The third future force is that distributed energy production is becoming easier with advancements in renewable and alternative technologies. The fourth key force is the transformation of the natural and built world because of synthetic biology, and finally the sector must consider how climate change will define a new era of uncertainty.

The boundaries of traditional food products and the categories of food are already becoming blurred with the rise of blended products; food whose inputs are mixed to meet multiple consumer demands.

Gene editing and biological programming in the next decade will completely disrupt the boundaries of food. Artificial intelligence, 3D printing and customised molecular production will see companies use inputs to potentially design products that look like one thing, taste like another, and have a tailored profile.

Regulations around food safety standards, nutritional guidelines and marketing will change over the coming decade, and the demand for food traceability will continue to grow, increasing the importance of managing trust in food systems.

“The future is uncertain and filled with challenges and the only thing we control is how we prepare ourselves to manage and sustainably benefit from change,” said Ms Nolet.

Ms Nolet explained that a clear take home message from the research is that future developments are inevitable and will occur across the supply chain and across industries, with new competitive forces and stakeholders moving into new roles.

“New technologies will shape the roles of producers into the future, and training and education will need to change as a result. This is something that must be addressed to ensure people thrive,” said Ms Nolet.

“There is no ‘one size fits all’. Solutions to future challenges will require a strong focus on communication between the producer and consumer and must be grounded in both strong research as well as commercial drivers.

“And importantly, the future will favour collaboration not competition. Collaboration within and across rural industries is key to solving the increasingly complex industry challenges ahead.”
### National Rural Issues, Agrifood Innovation, Transformational Industry Investment

<table>
<thead>
<tr>
<th>Projects completed in 2020–21</th>
<th>Outcomes for 2020–21</th>
<th>Strategic objectives for 2020–21</th>
</tr>
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<tbody>
<tr>
<td>PRJ-012965</td>
<td>Challenge-led and Open innovation to help drive solutions for industry issues</td>
<td>A guide to best practice challenge-led and open innovation methodologies for rural industries in Australia. It aims to understand the role of different challenge-led innovation and open innovation approaches to solving complex industry problems, driving multi-stakeholder collaboration, and ultimately commercialising technologies and approaches (new and existing) that lift farmer productivity and resilience.</td>
</tr>
<tr>
<td>PRJ-012362</td>
<td>United Nations Sustainable Development Goals: Telling Australia’s Rural Industries Story</td>
<td>The application, relevance, and potential opportunities posed by the United Nations Sustainable Development Goals (SDGs) for Australia’s rural industries. Leveraging the SDG framework to enhance the sustainability credentials of Australia’s rural industries presents a compelling narrative to strengthen our global competitiveness on the international stage.</td>
</tr>
<tr>
<td>PRJ-012671</td>
<td>Identifying and prioritising WHS overlaps across the rural sector</td>
<td>A comprehensive overview of the commonalities of injury, illness and deaths, plus health and safety risks associated with the agricultural and fisheries sectors.</td>
</tr>
</tbody>
</table>
Highlights and achievements
evokeAG maintained momentum despite the cancellation of the evokeAG 2021 event and continued uncertainty caused by the COVID-19 global pandemic. Investing in bringing key activities to a redesigned website, evokeag.com provided a platform to continue to achieve the original evokeAG objectives in a COVID-19 environment.

Focusing on building capacity across the agrifood startup community, evokeAG partnered with Cicada Innovations to deliver the Grassroots Series, which attracted 23 startup applicants, resulting in 21 of these applicants being matched with industry mentors.

Broadening the remit of the evokeAG Startup Program to not only connect startups to investors, evokeAG partnered with AgriStart to design a capacity building program to connect agritech startups to their customers – the farmer. This program was called the evokeAG Startup Network and worked with nine Australian agritech startups through a program which included leaders in Australian agrifood innovation and investment, along with mentor farmers to work directly with the startups to refine their customer pitch.

evokeAG continued to work with local and global startup ecosystem partners, including Tech23, THRIVE Challenge, Future Food Asia, GRAVITY Challenge, Rabobank FoodBytes!, Beef Week’s ‘Pitch in the Paddock’ and Southstart to connect agrifood innovators with Australian and international audiences.

While a global event may not have been delivered, evokeAG continued to collaborate globally, building meaningful networks that were accelerated by an increase in video calls and remote meetings.

Working largely with InnovateUK, Department for International Trade UK, Austrade, Iowa Cultivo, AgritechNZ, Future Food Asia, Omnivore and THRIVE Challenge, international engagement has increased through the curation of webinars focusing on expanding into global markets.

This global engagement is set to continue into 2022, with further collaboration and planning for resumed travel and returning international delegations.

A new website for evokeAG designed to house continuous editorial, video and podcast content has provided the platform for this continued engagement. Over 90 pieces of content were created, along with 18 webinars and recordings - featuring 99 industry leaders – over 12 months.

Plans for evokeAG 2022 were announced in June 2021, with two one-day events taking place in Perth, WA (23 February 2022) and Sydney, NSW (15 March 2022). evokeAG 2022 is designed to mitigate the continued risks associated with COVID-19 while focusing on face-to-face connections, collaboration, investment and agritech adoption.

Summary of program

evokeAG is a leading international agrifood event that aims to connect the global agrifood community, attract investment into innovation and connect technologies back to farmers.

In 2017, initial consultation with the agritech and food innovation leaders in Australia took place and AgriFutures Australia committed to leading this event, with the first evokeAG event taking place on the 19–20 February 2019 at the Royal Exhibition Building, Melbourne, to a sell-out audience.

After the resounding success of the inaugural event, the AgriFutures Australia Board approved the event to go ahead on 18–19 February 2020 at the same location. The event attracted 1478 delegates from 20 countries to connect, collaborate and invest in the future of farming.

On the 27 February 2020 Australia declared that COVID-19 would become a global pandemic, and extended its travel ban on visitors from China, leading to a state of lock-down nationally and travel uncertainty that has continued past June 2021.

As a result of COVID-19, evolveAG 2021 was cancelled. When evolveAG launched to the public in February 2018, AgriFutures Australia promised to deliver a world-class event that would:

1. Create one location to see what is happening across agrifood tech in Australia, New Zealand and Asia
2. Bring a global lens to Australia, New Zealand and Asia for agrifood tech and related research excellence
3. Increase the capability of Australia, New Zealand and Asia’s ecosystems
4. Attract the entire ecosystem – leaders, farmers, innovators, accelerators, researchers, universities, corporates, government and investors
5. Provide an opportunity for startups across Australia, New Zealand and Asia to showcase their innovations to global investors
6. Position Australia, New Zealand and Asia as active players in the international agrifood tech ecosystem
7. Build a productive bridge between research and industry
8. Provide direction to innovators on where agrifood tech gaps are so that growers and producers are able to seek solutions.

Despite the global COVID-19 pandemic, the objectives of evolveAG still needed to be supported and the evolveAG team set about delivering these objectives in a digital environment through a redesigned website and global engagement.

Objectives for evolveAG for 2020-2021

• Protect evokeAG brand, reputation and the community it has built
• Maintain optimistic leadership position across the agrifood sector
• Retain staff – even if this means deploying into other areas of the AgriFutures Australia business
• Maintain momentum of the evolveAG project by continuing to highlight investment opportunities, celebrate industry success stories and support a culture of collaboration and high-value networking opportunities
• Remain true to original objectives of evolveAG and think outside the square to deliver these events
### Program

<table>
<thead>
<tr>
<th>Program</th>
<th>Projects completed in 2020-21</th>
<th>Outcomes for 2020-21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Attract $700,000 of partnership revenue for evokeAG 2021</td>
<td>Event cancelled</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Attract 60 applications (including five international applications) to evokeAG Startup Program</td>
<td>Event cancelled</td>
</tr>
<tr>
<td><strong>Revised project:</strong> Attract 20 startup applications through the Grassroots Series to be mentored</td>
<td><strong>Revised outcomes:</strong> Grassroots Series received 1267 views</td>
<td><strong>Revised outcomes:</strong> Grassroots Series attracted 23 applications and matched 21 startups with mentors</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Attract 20 startup applications to the evokeAG Startup Network to connect with Australian farmer mentors</td>
<td>25 applications received for the evokeAG Startup Network to connect with Australian farmer mentors</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Build a database of high-quality startups and scale up to populate the Startup Directory; both local and international</td>
<td>49 startups listed in the evokeAG Directory</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Attract 50 investors (VC, corporate, traditional) to the 2021 Investor-Only Dinner</td>
<td>Event cancelled</td>
</tr>
<tr>
<td><strong>evokeAG</strong></td>
<td>Deliver 40 interviews across written, audio and video channels</td>
<td>Delivered 91 interviews across written, audio and video channels featuring 99 industry leaders</td>
</tr>
</tbody>
</table>

### Program

<table>
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<tbody>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Collaborate/host international stakeholder webinars</td>
<td>Delivered four international specific webinars, co-hosted another four international webinars, delivered eight startup webinars and supported promotion of 18 stakeholder webinars</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Increase newsletter subscribers to 25,000 subscribers</td>
<td>Increase to 25,000 subscribers</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Launch and grow evokeAG Podcast listeners to 800 per month</td>
<td>evokeAG Podcast achieved a maximum of 893 listens per month (March 2021)</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Increase evokeAG social media following by 50% across all channels</td>
<td>Increased evokeAG social media following by 78.93% across all channels</td>
</tr>
<tr>
<td><strong>evokeAG Event</strong></td>
<td>Total evokeAG network expenditure to be within 15% of the budget ($853,000)</td>
<td>Total evokeAG network expenditure was 17.48% under budget</td>
</tr>
</tbody>
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**evokeAG**
Highlights and achievements

1. growAG is the first of its kind, globally. The single platform makes it easy to explore, find and connect with research projects and commercial opportunities arising from investment in impactful agri-food innovation by Australia’s 15 Research and Development Corporations (RDCs). Many of these projects were not readily accessible previously.

2. As well as connecting pathways to commercialisation that enable research innovation to be delivered back to the farm and the food supply chain, growAG is enabling research organisations and funding bodies to reduce duplication and readily identify potential collaborators. growAG was collaboratively designed by a Steering Committee made up of individuals from 19 organisations across the Australian and New Zealand agricultural innovation network.

3. Commercial opportunities showcased by growAG have received significant interest from qualified prospective partners interested in helping commercialise these opportunities – whether as strategic partners, investors or trial customers. growAG is playing an active role in qualifying interest and facilitating warm introductions.

Summary of program

growAG was launched by the Minister for Agriculture and Northern Australia the Hon. David Littleproud MP on Monday, 12 April 2021 at the AgriFutures Australia office in Wagga Wagga, NSW.

The growAG program is designed to create a global gateway into the Australian research and innovation system, with a focus on deal-flow, attracting capital investment and driving collaboration. It makes research and development (R&D) outcomes transparent for growers and the community. It positions Australia as a global agri-food innovation hub and makes it easy to explore, find and connect with potential partners and opportunities.

growAG is a collaborative effort by the Department of Agriculture, Water and the Environment (DAWE) and Australia’s 15 Research and Development Corporations (RDCs).

growAG works alongside other AgriFutures Australia projects - evokeAG Network and evokeAG 2022 event – to place Australia front-of-mind globally in agri-food R&D, technology and innovation.

growAG Steering Committee

To inform development of the growAG platform, a Steering Committee was created comprising representatives from 11 RDCs, the Council of Rural RDCs, the Department of Agriculture, Water and the Environment (DAWE) and the broader ecosystem including Bungulla Farming, CSIRO, Myriota, Woolworths and AgriTech NZ. The group met eight times from July 2020 to February 2021, to collaboratively design the platform.

Deliverables for 2020-21

- Collaborate with the RDCs to launch the growag.com platform to create a global gateway into the Australian research and innovation system, with a focus on deal-flow, attracting capital investment and driving collaboration.

Plan for 2020-21

- Website launch
  - Launch a platform to house and promote commercialisation-ready research, research projects and organisation profiles of ecosystem contributors.

Projects completed in 2020-21

- Total program expenses 2020-21
  - $434,151

- Website launch
  - growAG was launched 12 April with 2,003 research projects, 23 commercial opportunities and 102 organisation profiles. growAG attracted users from 18 countries within the first month.

- Commercial opportunities
  - Eighty-six enquiries have been generated and received through growag.com since launch (12 April to 30 June 2021).

- Research projects
  - 2,108 page views of the research projects page (12 April to 30 June 2021).

- Stakeholder engagement
  - One hundred per cent ongoing engagement post launch.

- Content
  - One hundred per cent of RDCs listed current research projects and contributed content to growAG.

- Content and promotion of commercialisation pathways
  - Thirty-one commercial opportunities have been published by growAG since launch (12 April to 30 June 2021). Twelve of these have been showcased and promoted by growAG and evokeAG communications channels since launch.

- Website analytics
  - Average engagement time is 2m 6s. Of the 10,000 users, 2,200 are returning users.

- Marketing
  - 7% referral rate from other sources to the growAG platform.
  - There were 4,515 referrals of a total of 10,000 users. Engagement rate of these referrals is 54% (12 April to 30 June 2021).
Australian startup
BuggyBix develops sustainable insect protein pet food range

BuggyBix, with support from AgriFutures Australia, has developed a novel insect-based pet food range – BuggyBlend – to reduce our pets’ environmental pawprint and accelerate the development of Australia’s insect protein industry. An exciting opportunity awaits for commercial partners to assist in the scaling and distribution for Australian and international markets.

There’s a growing appetite for alternative protein sources, fuelled by concerns about sustainability, climate change, and resource constraints exacerbated by population growth. With one of the highest global rates of pet ownership, Australians are increasingly looking to sustainable alternatives to nourish their furry friends, too.

Around 48% of all Australians have a dog, with estimates putting the total number at 5.1 million. Worldwide, it’s as many as 470 million. But feeding an industry that many mouths comes at a cost to the planet.

Across the globe, the equivalent of 49 million hectares of agricultural land – more than twice the size of Victoria – is used every year to produce dry dog and cat food. To BuggyBix Founder, Shaun Eislers, the moral challenge of using such vast resources to feed our pets while the global population struggles to feed itself was too great to ignore.

“At a dog park in Sydney in 2018, my wife and I got to talking about food security: how the global population is forecast to grow to nearly 10 billion by 2050, yet we don’t have enough protein to feed everyone. I was looking at the ‘for babies’, wondering how we could feed them more sustainably. Could we feed them insect protein instead? The answer was yes. Edible insects are rich in protein, essential fatty acids, vitamins and minerals. And commercial insect farming is considered to have a low environmental footprint, requiring minimal water, energy, and land resources. “The value proposition not only spoke to pet health, but it also has really compelling environmental and sustainability benefits,” said Mr Eislers.

Collaboration delivers pioneer product with an enviable environmental footprint
With funding from AgriFutures Australia, the BuggyBix team partnered with Western Sydney University (WSU) to develop BuggyBlend – a nutritionally optimised pet food product using edible insects as the primary protein source.

BuggyBix uses mealworms and black soldier fly larvae to deliver a pet food product that is nutritionally high in protein, amino acids, vitamins and minerals, essential fatty acids and fibres. “We add all natural ingredients to ensure a complete nutritional profile and optimal taste, so pets love it. This is why BuggyBlend means their stools are well formed and inoffensive to the nose, so owners love the product too,” said Mr Eislers, keeping the “environmental footprint” as low as possible as a key tenet. “One hundred percent of mealworms and black soldier fly larvae are used in our products, so there is no waste. Our packaging is completely biodegradable, leaving no plastic particles behind. Even the labels – completely soluble and using natural dyes – just dissolve into wood pulp.”

For now, BuggyBlend is being developed and tested at the WSU facility. Mr Eislers said, “It’s an amazing opportunity for someone in the pet food industry. And that could be either a retailer or a wholesaler, or a contract manufacturer. It’s someone who has the connectivity that we can leverage to get our products out the door and onto the shelf.”

BuggyBoost meal toppers are already in the market. “As a meal topper, they are very versatile and give pet owners access to a novel ingredient,” Mr Eislers explained.

Experience takes the guesswork out of product development and commercialisation
BuggyBix has walked the commercialisation pathway before. Their insect-based dog treat line and BuggyBoost meal toppers are already sold in boutique pet stores across Australia. Mr Eislers calls these their MVPs [Minimum Viable Products].

“We put something into market that no one else had done, so we wanted to do it properly. All our products have undergone complete nutritional and shelf-life lab testing with DTS Laboratories and Massey University (NZ). And we want people to know the same way you’d see on a human food packet.”

“Transparency is really important to us, because we’re dealing with ingredients that people don’t really know about. It’s an education piece, too.”

With palatability trials in the works, BuggyBix is looking for commercial partners to assist scaling and distribution of their product range in Australian and international markets. They’ve already attracted commercial interest from major pet food distributors and boutique pet stores in Australia – and international interest from the US, Asia and the Middle East. “We’re really looking for people who have all the ducks in a row and can connect us with retailers and pet food industry. And that could be either a retailer or a wholesaler, or a contract manufacturer. It’s someone who has the connectivity that we can leverage to get our products out the door and onto the shelf.”

BuggyBix hopes to normalise insect protein in dog bowls – and one day, on dinner plates
While insects as food is a commonplace across Asia and Africa, in Western countries, the ‘yuck factor’ remains. “The novelty aspect is what’s played up in the media – when junior picks the stock image showing fried spiders or mealworms on toast – so that’s what people naturally associate with the insect industry. But that’s not the norm. In reality, it’s an ingredient like a flour that will go into bread or a protein meal that goes into BuggyBlend. It’s not a confronting visual.”

Cracking the Australian pet food market is a smart move – serving as an entry into this new protein source for Australian consumers. And it’s a lucrative testing ground, with Australians spending almost $4 billion on pet food alone. Market research commissioned by BuggyBix is overwhelmingly positive, showing eight out of 10 Australians would consider insect-based pet food. “So, whilst it’s so new, so unknown and so different here, we’re seeing a lot of open-mindedness and momentum in what we’re doing.”

Farming insects – the most abundant creatures on Earth – could transform Australian agriculture
AgriFutures Australia believes Australia’s emerging insect industry will have a key role to play in achieving the National Farmers Federation’s vision of a $100 billion farming economy by 2030. AgriFutures Australia is working with the National Farmers’ Federation and the National Farmers’ Federation Research Foundation to develop a roadmap to help the Australian insect industry reach its potential. “Australia is well-placed to lead the way in insect farming and production,” Mr Eislers explained. “We’ve got all the ducks in a row and we’re just getting on with it.”

Our partnership with AgriFutures Australia is critical in that sense. It’s more about BuggyBix. It’s the insect industry being able to say, ‘We’re pushing forward with projects to show that there is value in what we’re creating for our products – and commercialisation is realistic’.”

Mr Eislers agreed. “For any industry to thrive, you need a strong association. We’ve got people creating products in laboratories and establishing our social licence to operate. We’re just getting in and doing it.”

“Capitalising on the global buzz for insect protein
Right now, most Australian insect farmers are startups or small businesses – many of which are yet to reach a commercial scale. But, they are working hard to establish and grow their industry. Mr Eislers explained, “We’ve got all the ducks lined up. We have an industry association. We have growers here. We’ve got people creating products in laboratories and establishing our social licence to operate. We’re just getting in and doing it.”

“Our partnership with AgriFutures Australia is critical in that sense. It’s more about BuggyBix. It’s the insect industry being able to say, ‘We’re pushing forward with projects to show that there is value in what we’re creating for our products – and commercialisation is realistic’.”

Mr Eislers agreed. “For any industry to thrive, you need a strong association. We’ve got people creating products in laboratories and establishing our social licence to operate. We’re just getting in and doing it.”

“The growth of insect farming is underpinned by its potential to address several challenges, such as pressure on natural resources, climate volatility, a growing global population, and increased protein demand. Insects are vital to addressing these challenges because they are the most numerous and successful creatures on Earth.”

And as the global buzz around edible insects continues to grow, the future for BuggyBix looks bright.
Cross Sector Programs
Australian Biomass for Bioenergy Assessment (ABBA)

Highlights and achievements (2015-21) completed

A major highlight of the ABBA project was the strong and engaged project team of nine partner organisations. The Bioenergy Government Network is a forum of information sharing, collaboration and networking across states enabled to continue beyond the ABBA project.

1. Geospatial mapping of biomass resources in terms of location and availability across Australia is now publicly available on the National Map website at: https://nationalmap.gov.au/
2. The geospatial data is available to renewable energy developers and others ensuring accurate and reliable information is available for planning and investment.
3. A consortium of state government departments and two university partners, led and co-ordinated by AgriFutures Australia, undertook the $6.3 million project. It was funded by the Australian Renewable Energy Agency (ARENA), the NSW, QLD, SA, TAS, and WA state governments, the Queensland University of Technology and the University of the Sunshine Coast.

Overview of the program
Bioenergy is renewable energy made from biological sources or biomass. Bioenergy can be used for heat, power and liquid fuels. Currently, bioenergy provides about 1% of Australia’s electricity and less than 1% of transport fuels. Bioenergy encompasses multiple feedstocks from agriculture, forestry, and urban sources, and uses a variety of technologies.

Bioenergy provides very low or zero net emissions of carbon dioxide, one of the main greenhouse gases. Opportunities now exist for bioenergy projects across Australia, particularly in regional areas. Bioenergy projects provide energy and waste solutions for businesses, reduce landfill, generate local employment and have the added value of by-products such as biochar.

The significant challenges for the bioenergy sector relate to market knowledge and familiarity.

Outcomes
• The ABBA data has been the first source of information for handling enquiries on bio-industry.
• Formation of the Bioenergy Government Network exploring the growth of the bioenergy sector across Australia.
• Raised the profile and represented bioenergy in government policy.
• Established a platform for continuing bioenergy development and sources for biomass datasets.
• Development of analytic tools to support users in extracting and accessing information for biomass sources.
• Delivered a biomass dataset for public access on the National Map website.

Project funding
Australian Renewable Energy Agency (ARENA)

$546,114
$484,076
$183,849

Total program expenses
2018-19
2019-20
2020-21

Taking the Q (query) out of Q Fever

Developing a better understanding of the drivers of Q fever spread in farmed ruminants. (Rural R&D for Profit)

Outcomes
• Research activities were significantly compromised by the impacts of the COVID-19 pandemic restricting site travel and access to testing laboratories.
• Goat herd reproductive performance monitored in three herds due to effects of Q fever exposure and related milk production performance.
• Continued investigation of the role wildlife plays as a reservoir of C. burnetii and transfer between wildlife and farmed livestock in the life-cycle of Q fever.
• A new immunofluorescent assay (IFA) was tested and was found to be markedly more accurate than commercially available ELISA tests.
• A method for monitoring serosurveillance of Q fever in rabbit populations was developed.
• The research team accessed blood serum banks from relevant animal health agencies to develop a national Q fever profile.
• Further bulk goat milk sampling and testing is being recruited to the study, including previously disease-free herds.

Overview of the program
Q fever is a disease of humans and livestock caused by Coxiella burnetii bacterial infection. This project is developing a better understanding of factors influencing the risk of Q fever spread within and between Australian ruminant livestock enterprises, and developing national guidelines for an emergency response plan to be used in the event of a human outbreak.

It will improve the knowledge around reservoirs, amplification and transmission pathways of the C. burnetii bacterium to improve and focus biosecurity and human health resources for reducing the incidence of the disease in the community. Finally, the project will provide knowledge to support agricultural policy that enables Australia to maintain export market access in the circumstance of a large and prolonged Q fever outbreak.

Highlights and achievements (2020-21)
• The project has received media interest in the CSU team patient experiences survey, stakeholder workshops and developing guidelines for a Q fever emergency response plan.
• Peer-reviewed publications
  • A new diagnostic assay has been developed to detect antibodies for C. burnetii in macropod (kangaroos and wallabies) serum samples. This new immunoassay is more accurate and twice as sensitive as the existing multi-species ELISA test method.

Peer-reviewed publications
Securing Pollination

Securing pollination for more productive agriculture: Guidelines for effective pollinator management and stakeholder adoption. (Rural R&D for Profit)

Highlights and achievements (2016-21 completed)
The project has developed a number of guides for securing pollination including planting guides, simulation models for economic benefits of revegetation, a combined fact sheet about native pollinators: “Know your bees: Crop pollinator guide for eastern Australia” and web-based resources:

- University of Adelaide – https://www.adelaide.edu.au/) – Secure pollination

Overview of the program
The program provided scientific information on pollinator effectiveness and densities, bee movements and pollination distances. Australian agriculture relies on pollination from honey bees. It is estimated 65% of crops require pollination services.

Outcomes
The key findings of the research included:

- Whilst a wide range of insects visit flowering crops, the most effective and efficient pollinators vary by crop type, by region and over time.
- The presence of flowering species in the landscape, including native vegetation, influences the abundance and diversity of crop pollinators.
- Floral resources include pollen and nectar, and support in the environment comes from nesting hollows and water.
- Most insect pollinators have a broad diet and are generalist feeders.
- Planting designs for improved pollination may include understorey species, hedgerows or whole area plantings.
- Nesting substrate for volunteer pollinators can be provided via: sticks with pithy stems for reed bees; open, compacted, well-drained soil for ground-nesting furrow and nomia bees; old trees for feral honey and stingless bees.

Project funding
This project was supported by the then Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit Program. Under the Rural R&D for Profit program, AgriFutures Australia received:

- Grant funding: $5,255,000
- Cash contributions from partners: $3,409,447
- In-kind contributions from partners: $5,135,457
- Total project resources: $13,799,904

Total program expenses

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Protecting agricultures most valued asset – our people

Since 2001, a staggering 1,548 people have lost their life on-farm as a result of non-intentional injury in Australia. Work health and safety (WHS) is a challenge common to all rural industries, and the annual statistics on farm injuries and deaths reinforces the need for a serious culture shift in WHS if Australia’s agricultural sector is to shake its hazardous reputation.

The statistics show there is still a long way to go before agriculture can shake its ‘dangerous industry’ reputation. It’s well known there are significant risks with fatalities and injuries continuing to occur at higher rates than other sectors. This is why AgriFutures Australia is taking a collaborative approach, partnering with other RDCs, to reshape the conversation around WHS in Australia’s agricultural, fisheries and forestry industries.

Through the RSHA, data is compiled and used to develop creative and different solutions to address current safety and health challenges. The RSHA has successfully provided coordinated and collaborative leadership for health and safety. The RSHA brand has become a visible symbol of the commitment of the RDCs to improve health and safety, and the management committee, with representation from each funding RDC, an independent chair and the RSHA Executive Officer, provides direct oversight over the cross-sectoral research development and extension (RD&E) collaboration and acts as a conduit back to the RDCs and industry.

Former RSHA Executive Officer Andrew Barrett said, "People are agriculture’s most important asset and to save lives we need to address the risks with fatal potential." The RSHA focuses on projects to leverage leadership on health and safety, decision making with better data, and improving communications around this important topic, ensuring we give the sector the best chance of making real impact at the farmer and fischer level.

Three projects have been delivered through the RSHA Investment Plan, with an additional four projects included on the forward investment plan.

- The project, identifying and prioritising WHS overlaps across the agriculture and fisheries sectors, combined qualitative and quantitative data to develop a comprehensive overview of the commonalities of injury deaths, and health and safety risks associated with the agricultural and fisheries sectors. The information is used by the RSHA, industry and government to guide investment in priority projects to reduce the burden of death and serious injury.

While not specific RSHA projects, a number of partnerships have been established that align with the RSHA’s objectives and strategic priorities.

These include:

- A strong and collaborative partnership with Farmsafe Australia.
- Active engagement with Safe Work Australia in RSHA projects.
- Solid connections in the broader WHS ecosystem.
- Supporting RDCs and their levy payers through communications, industry forums and surveys.
- Development of promotional, extension and education activities (e.g. podcasts, conference presentations).
- Input to the sustainability framework development and the National Agriculture Labour Advisory Committee.

SA grain grower Paul Daniel said, “It’s often a planning and resourcing issue. Farmers need to think ahead and plan for jobs to reduce risks. Where a farmer thinks they may need a hand, they should ask for help from a neighbour, employee or family member to avoid doing the dangerous jobs on their own.”

Mr Barrett reinforced the need for proactive planning, “Using effective controls to manage health and safety risks is good business and is the only way we are going to slow the industry’s concerning safety record.”

“The commitment to change has already begun with leadership from the Minister, government, National Farmers’ Federation, RDCs and some industry peak bodies.”

“Other sectors have accepted that ‘inherently dangerous’ is not a condition of work, rather a call to action. Actions that target known and persistent risks, using risk controls provided to reduce the potential for death and serious injury, need to be enforced if we are going to see any noticeable change to these statistics,” explained Mr Barrett.

The 2020 statistics also reveal the huge economic impact on the sector, with on-farm fatal injuries costing the sector more than $113 million, on average $1.35 million per incident. But what the numbers don’t measure are the social costs associated with fatalities and serious injuries.

The true impact of serious safety incidents is felt much wider than the economic evaluation would suggest, but fortunately we are starting to see a trend towards an improved safety record for the sector.

The RSHA is jointly supported by AgriFutures Australia, Australian Eggs, Australian Pork Limited, Australian Wool Innovation, Cotton Research and Development Corporation, Daily Australia, Fisheries Research and Development Corporation, Grains Research and Development Corporation and Meat and Livestock Australia.

*Fatal cases for the reporting period could increase due to a lag in data collection.*
AgriFutures Australia received a grant in 2019 from the Australian Government to promote the role of bees and their impact on the entire food chain to help protect bees and reduce their decline. In addition, the program received an additional grant in 2021 to support drought and bushfire recovery following the events of 2019-20. This will provide critical support for research into managing floral resources, bee nutrition and viability.

**Highlights and achievements (2020-21)**

Whilst impacted by the COVID-19 pandemic, the program has initiated initiatives for delivering services using digital communication tools and increasing the focus on adapted extension methods.

The project provided new support measures for key extension and communications to increase knowledge and build capacity in the honey bee industry.

- A national communication program through the Australian Honey Bee Industry Council (AHBIC) to develop digital resources, industry extension and unification.
- Provide professional development to the beekeeping industry through information and extension services. This includes digital services provided through the extensionAUS web platform available at: https://extensionaus.com.au/professionalbeekeepers/home.
- Investigations to improve chalkbrood disease protection using probiotics (Lactobacillus or Bifidobacterium) and prebiotics (isolated yeasts from bee gut bacteria).
- Findings from legume pasture-based research confirmed an opportunity to expand the floral resources for honey bees and coincidingly drive a market opportunity for producing high-grade medicinal honeys.

**Overview of the program**

The purpose of the program and initiative is to promote the role of bees and their impact on the entire food chain, to help protect bees and reduce their decline.

**Outcomes**

The key outcomes of the program included:

- Publication and distribution of the AgriFutures Australia Honey Bee 2020-21 Research Report to industry stakeholders.
- Progress to develop sensor technology in detection of American Foulbrood (AFB) biomarkers in honey bees. Development of a chemistry filter system to quantify the volatile compounds in detecting AFB. Fine tuning the type and concentration of diagnostic compounds for improved accuracy in AFB detection.
- Completed a study on the production of medicinal honey from annual and perennial clover species adapted to low-rainfall environments. The key findings demonstrated that the honeys and nectars from clover species cover a broad range of bioactivities (antibacterial and antioxidant), including medicinal use. The flowers of legume plants are high in crude protein (over 25%) and sucrose contributing to nectar sugars.

**Outcomes**

Key outcomes of the program included:

- A capacity building bootcamp for over 30 CoP leaders and professional extension practitioners to share skills and knowledge in program planning, delivery and evaluation.
- A strategic review of the extensionAUS program delivery and business case for management.
- A number of collaborative meetings with senior management of extensionUSA, focused on the business model for a similar international extension platform.
- New business CoPs were inducted and onboarded.

**Total program expenses**

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Biocontrol of weeds

Overview of the program
This project will focus on identifying biocontrol agents for 11 weeds of importance to grains, pasture and hay production, rangelands, dairy, sugar and irrigation sectors across Australia: African boxthorn, Cabomba, Prickly acacia, Hudson pear and Silverleaf nightshade – all Weeds of National Significance that affect multiple jurisdictions and sectors; fleabane – widespread agricultural weeds that have developed herbicide resistance and are now extremely difficult to manage with currently available methods; giant rat’s tail grass – reduces pasture productivity by up to 80%; Clidemia – renders grazing lands unprofitable and was until recently an eradication target; Naviga sedge – an aggressive weed affecting beef, dairy and sugarcane production; African lovegrass – a low-forage-quality exotic grass that reduces pasture productivity.

Outcomes
The rust fungus Puccinia cnici-oleracei (ex. Conyza) is the first candidate agent for fleabane for which an application for release has been approved. In addition, the release application is currently awaiting approval. Consultation with GRDC identified the need to replace Sow Thistle with Saffron Thistle. A draft document on “Nomination of African lovegrass as a suitable candidate for biological control research in Australia” has been revised and will include outcomes from a behavioural national survey for affected parties.

The project team has initiated several collaborative opportunities between the team members that will enhance achievement of current milestones and provide additional value-add opportunities. For example, a successful collaboration was established with another Rural R&D4P round four project led by GRDC entitled “Area Wide Management for cropping systems weeds – investigating the weed management, social and economic opportunity”. As both projects share a similar biogeographical area of interest, this collaboration will enable efficiencies to be realised in the establishment of plots to monitor fleabane populations pre- and post-release of biocontrol agent(s). This collaboration between the two projects also enhances opportunities of integrating biocontrol of crop weeds with traditional control technologies across multiple interacting land tenures.

Several partners are engaged in collecting baseline data, establishing release sites, establishing nursery sites, or providing access to biological materials. Field days targeted at identification of plants and of released agents have proved successful despite the obvious COVID-19 restrictions.

As an example, the collaboration established with Townsville City Council (TCC) will enable the integrated management of Cabomba in central QLD. This will enable cross-jurisdictional management and knowledge sharing to manage this aquatic weed, and other weeds. The importance of early and effective communication and engagement with project partners is evident, with TCC and SEQ Water identifying several nursery and baseline monitoring sites which will enable both the efficient deployment of the agent to be immediately released and the monitoring of its performance.

The maintenance of long-term relationships for weed biocontrol efforts has enabled project collaborators to achieve significant outcomes (e.g. investigations of biology of candidate agents at home) to support the deliverables of this project. Several international collaborations have resulted in access to biological materials and important data that has enabled the project to continue to scan for viable biological control agents despite the COVID-19 challenges.

A key barrier to the success of the release of biological agents is community and landholder attitudes. Two projects have partnered with behavioural scientists to build surveys that will further identify barriers to adoption. The diversity of external linkages within the team will provide the opportunity to extend those surveys to greater numbers of affected stakeholders.

A strong focus on the collection of baseline data has been adopted by all R&D providers. As an example, key baseline and impact data collected thus far include on-ground measures of cochineal dispersal and impact on Hudson pear as well as drone-acquired, high-resolution multispectral imagery. Such innovative metrics provide very good data for determining the cost-benefit of biological control of weeds in Australia.

Annual Report 2020-21

Total program expenses

2019-20
$2,932,538

2020-21
$4,688,333

Underpinning Agricultural Productivity and Biosecurity by Weed Biological Control (Rural R&D for Profit)
The project is undertaking foundational and applied research for the integrated management of important weeds that affect Australian agriculture and water resources.

Highlights and achievements
Despite significant COVID-19-related disruptions to native range research, restrictions with activities of international collaborators and the difficulties of importation of candidate agents into quarantine in Australia, considerable progress has been made by all four R&D providers in all the activities within the project. However, delays have resulted in a 12-month no-cost extension being approved by DAWE for this project, to enable recovery from the impacts due to the COVID-19 pandemic.

• Two applications for release of biocontrol agents for African boxthorn and fleabane were submitted to the authorities.
• The engagement of local or regional partners in this project has been a highlight.
• The project has continued to build a substantive presence in the international scientific community with nine peer-reviewed international journal papers being submitted.
• The project has continued to engage with a range of key stakeholders through attendance at field events, release of control manuals and YouTube videos, updates at local conferences and forums and the provision of technical articles and news items to a range of collaborating partners.

Section
Improved natural disaster management through innovation and technology

Technologies and innovation play a key role in improving preparedness, response and recovery to natural disasters. So, what technologies are already available and how can these provide practical solutions to natural disaster management for rural industries?

Australia is prone to natural disasters, and the scale and intensity can be catastrophic, devastating life, the environment, and the economic viability of rural and regional communities.

Sophisticated technologies and innovations to gather and use data more effectively are emerging, and can assist Australia’s agriculture, fisheries and forestry industries to prepare earlier, make more informed decisions and emerge stronger from natural disasters.

Learning about and investing in these technologies and sharing them across government agencies will assist in putting Australia at the forefront of natural disaster management, building more resilient, sustainable and economically vibrant rural industries.

The report *Innovation and Technology to Improve Natural Disaster Management in Australian Agriculture* examines how technologies and innovation can assist farmers, fishermen and foresters, and government, to improve resilience and viability in the face of natural disasters, across all three management phases: preparedness, response and recovery.

**Data analytics**

While some data analytics can be automated, there is a requirement for skilled individuals to analyse key insights. More data analytics and modelling in the preparedness phase could improve risk-based decision making in the response and resilience phases.

The concurrent development of technologies and processes to exploit data effectively and quickly will ensure the best possible intelligence and actionable insights to reach emergency services and decision makers in time to make a difference, said Mr White.

Integrated systems for data sharing could be a single source of information for understanding and managing risk and impacts before, during and post events. This could also improve communication between stakeholders who require information at different times and for different purposes.

**Digital connectivity and communication**

Regional, rural and remote Australia is generally less disaster-resistant than their metropolitan counterparts, partly due to digital connectivity and infrastructure constraints. Improved digital connectivity and communication channels will bolster natural disaster management, while also benefiting broader business management, health and education.

Social media is changing the way people communicate. Engaging with and using social media as an early warning system and to assist in data collection could help facilitate better responses to disasters, but it should not replace current communication methods. An multiplicity of communication channels will continue to ensure broad coverage across demographics.

As an example, the continued rollout of the Mobile Blackspot Program will improve digital connectivity and assist in unlocking the potential for many existing and new technologies,” said Mr White.

A case study of the 2019 Queensland monsoonal event was undertaken to demonstrate how technologies and innovations could benefit rural industries. The case study reinforced the key points in the *Innovation and Technology to Improve Natural Disaster Management in Australian Agriculture* report; sophisticated data gathering and analysis, early warning systems and communication are critical to improved management of natural disasters.

The costs associated with management and recovery of natural disasters are significant and impact all levels of government, regional communities and individual producers.

Rural industries, emergency services and government will benefit from more timely and localised information, allowing management decisions to be tailored to suit local and regional conditions.

Off the back of the report, conversations with government and emergency services are focusing on a more coordinated approach to management in the preparation and response phases.

Projects that are tailoring localised information and communicating this in a timely and efficient manner are also being trialled to see if they validate the report outcomes.

The report *Innovation and Technology to Improve Natural Disaster Management in Australian Agriculture* was commissioned by AgriFutures Australia to help understand how innovation and technology can provide practical solutions and improve management of the key phases of natural disasters. The research was undertaken by GHD and funded through the AgriFutures Australia National Rural Issues Program.

**Collaboration is key**

Cross-government collaboration, shared responsibility and timely communication are at the core of successful natural disaster management and are critical to the future integration of new technology solutions.

A strong focus on practical activities is also of high importance to rural industries and communities.

Emergency services are likely to be early adopters and investors in new innovations and technologies that improve disaster management performance, while government is likely to be a significant investor in large or critical technology infrastructure to support emergency services.

Mr White said, “Enhanced data gathering, analysis and communication is at the core of better natural disaster preparedness, response and overall resilience.”

“Providing rural industries with tailored information earlier will also enhance local decision making. Deploying quality data analytics and early warning systems in a timely and meaningful way will allow more effective preparation and potentially minimise economic losses.”

Further research opportunities also exist to analyse early warning systems for public benefit beyond rural industries.

**In the spotlight**

*Annual Report 2020-21*
Plan Bee

Honey Bee Genetic Improvement Program (Rural R&D for Profit)

Using innovative breeding technologies, this project will help secure Australia’s honey bee population and transform their performance. The program will focus on identifying and selecting traits of importance to beekeeping, horticulture and broadacre industries (dependent on pollination services) and will develop a national database to assist beekeepers choose their breeding stock according to these traits.

Highlights and achievements

- A national Honey Bee Genetic Database was initiated.
- Development of a software application for recording of hive trial data, with 198 hives over 32 lines evaluated.
- Hygienic behaviour testing using the freeze test method was conducted.
- Performance data has been collected on NSW hives and national genetic testing commenced.
- The first pollination season resulted in bee behaviour data collection on almond and avocado crops.
- A literature review of international honey bee breeding was completed.

Overview of the program

The project will:

- Facilitate an economic evaluation of the feasibility and sustainability of a national bee breeding scheme through collaboration with established international R&D programs on bee genetics and genomics.
- Conduct genetic and genomic analysis to establish pedigree and genetic merit of bees and hives.
- Implement standardised selection criteria that enables accurate assessment of bees and hives to improve honey bee genetic performance, decrease costs, reduce the impact of disease, increase the amount of honey produced and increase the value of hives as pollination units.
- Evaluate new technologies for performing standardised hive assessments.
- Develop a database of genetic merit to assist queen breeders with marketing their stock and help beekeepers make purchasing decisions; this will also act as a proof of concept around a database of this capacity.

Outcomes

The program is developing the world’s first honey bee genetic evaluation system. As a collaboration between major research organisations (NSW DPI, University of Sydney), industry (Better Bee WA, Wheen Bee Foundation) and the Animal Genetics & Breeding Unit (AGBU), the program seeks to bring all the major contributors to create an international best practice genetic program.

Total program expenses 2020-21

$1,656,940
Rural industries on track with trust – collaborative program reveals key drivers, risks and opportunities

Australian rural industries are collaborating to enhance trust by developing an aligned approach to proactive, transparent, long-term engagement with the community via a three-year research program which commenced in 2020.

Insights into the drivers of community trust and acceptance for the rural industries sector were examined in the program’s first year of research, indicating that trust in rural industries is high (87% of respondents trust rural industries). Australians believe fishers, farmers and foresters play an important role in society (80%) and are a vital part of Australia’s history; however, there are areas of community uncertainty that present risks and opportunities for the sector.

Three drivers of trust

Key take-outs include that trust in rural industries is dependent on three drivers: environmental responsibility, responsiveness to community concerns and the importance of products produced by rural industries.

The research also uncovered a number of topics that large sections of the community are uncertain about: The extent to which rural industries listen to and engage with community is an opportunity to address waste products/run-off. There and impact coastal areas through and engage with community is an opportunity to address waste products/run-off. There and impact coastal areas through and engage with community.

“Almost half of the respondents agreed that if they hear about a rural industry acting irresponsibly, it negatively affects their opinion of all rural industries, and 58% strongly believe that environmental management is a shared responsibility across all Australian rural industries. There are big implications for any industry that is not proactively, work together to build on the strong trust and acceptance that exists, as well as stay ahead of community expectations,” explained Dr Moffat.

“Key take-outs include that trust in rural industries is dependent on three drivers: environmental responsibility, responsiveness to community concerns and the importance of products produced by rural industries.”

“Insights inform industry action

Rural industries are already using the insights from the research to underpin and inform their own industry sustainability strategies and framework development, to inform external communication campaigns and align existing approaches to trust with the program’s insights. The program is also seeking to understand how food and fibre industries relate to each other in the minds of the community and see how the actions of one industry affect how Australians feel about other rural industries. This will help to understand the sector-wide risks and the role of collaboration in addressing them.”

“The findings show the pathway to building and maintaining community trust is to be genuinely responsive to community sentiment, particularly around environmental, sustainability and resource use. The key is to demonstrate responsiveness through action, and there are huge opportunities for industries who do this,” said Dr Moffat.

Over the next two years the program will undertake a series of industry-specific local studies as well as a sector-wide initiative to address a shared issue.
Goal
To enhance the profitability and sustainability of our levied rural industries. Regional communities and the broader Australian economy depend on profitable farms and industry.

There is a clear link between economic prosperity and our capacity for innovation and uptake of new technology. Rural industries that are well placed to adopt new ideas and use technology to create productivity benefits are more likely to establish a competitive advantage and are better structured for sustainable growth.

That’s why AgriFutures Australia invests in research, innovation and learning initiatives that enhance the profitability and sustainability of the agriculture, fisheries and forestry sectors.

AgriFutures Australia empowers our levy-paying industry participants to shape RD&E priorities, encourages industry uptake of innovation and supports our rural industries to adapt to changing environments at operational, market and regulatory levels.

Outcome
Industry participants are confident that their levy investment is delivering value.

Research programs:
- Chicken Meat
- Export Fodder
- Ginger
- Honey Bee and Pollination
- Pasture Seeds
- Rice
- Tea Tree Oil
- Thoroughbred Horses

Smaller levied industries:
- Buffalo
- Deer
- Goat Fibre
- Kangaroo
- Ratite
Industry Advisory Panels

The role of Industry Advisory Panels
AgriFutures Australia currently partners with eight key levied agricultural industries for the delivery of RD&E through Industry Advisory Panels. These panels perform key tasks to guide and assist AgriFutures Australia with investments, including:

1. Advising on the industry requirements for research and development through the development and monitoring of RD&E Plans
2. Advising on proposals for RD&E investment in accordance with the objectives and strategies of industry-specific RD&E Plans
3. Monitoring, reviewing and advising on research support for the relevant industry
4. Advising on, and assisting in, the dissemination, adoption and commercialisation of the results of RD&E activities.

Industry Advisory Panels are representative of the RD&E programs implemented by AgriFutures Australia. Panel members are selected on a skills-basis and may contribute with capacities in strategic management, governance, industry-specific knowledge, science, technology, leadership and ethics. AgriFutures Australia encourages diversity through age, gender and geographic location, working with specific industry sectors to foster leadership skills to support succession planning for future panel members.

Industry Advisory Panels typically meet quarterly or as business needs require. Panels convene for the purpose of research planning and assessment in investment areas identified in the RD&E Plan for their individual industry. Members are encouraged to be advocates for their industries, be active in extending research outcomes for recipients who are directly involved with our levied industries and emerging industries. The Levied Industries Capacity Building Program was launched in November 2019 and has continued to develop in 2020 with the launch of the Emerging Industries Capacity Building Program. The opportunities are outlined below:

Capacity building for industries
AgriFutures Australia is committed to supporting the people who are driving, and will drive, the future prosperity of Australian rural industries and communities.

The Growing Profitability, Emerging Industries and People Leadership arenas have come together to deliver capacity building programs for recipients who are directly involved with our levied industries and emerging industries. The Levied Industries Capacity Building Program was launched in November 2019 and has continued to develop in 2020 with the launch of the Emerging Industries Capacity Building Program. The opportunities are outlined below:

Australian Institute of Company Directors (AICD) – Company Directors CourseSM for Levied Industries
Twenty individuals working across our levied industries participated in the Australian Institute of Company Directors – Company Directors CourseSM Online, the world’s most established director program. The course is designed to ensure that participants not only understand their roles and responsibilities, but also improve their contributions to Board performance. The 19-week course aims to be informative, thought-provoking and practical. Upon completion, it is trusted that participants’ confidence will be enhanced to face the challenges and reap the rewards of directorship, both in the short-term and as their director career progresses.

The following industry stakeholders were selected from an application process: Professor Gavin Ash, Charmein Bukovec, Julianne Christopher, Brenton Davis, Melissa DeBortoli, Natalie Doran-Browne, Angela Embam, Russell Ford, Alison Glenn, Pat Guerin, Anthony Ivers, Fiona Lacey, David Leah, Amy Lollisato, Rodney Lush, Richard Prusa, Thomas Reilly, Oliver Tait, Jason Walsh, David Whishaw.

Total investment: $139,980

Australian Institute Company Director’s Course (AICD) - Company Directors CourseSM for Emerging Industries
Twenty individuals working across our emerging industries participated in the Australian Institute of Company Directors – Company Directors CourseSM Online, the world’s most established director program. The course is designed to ensure that participants not only understand their roles and responsibilities, but also improve their contributions to Board performance. The 19-week course aims to be informative, thought-provoking and practical. Upon completion, it is trusted that participants’ confidence will be enhanced to face the challenges and reap the rewards of directorship, both in the short-term and as their director career progresses.

The following industry stakeholders were selected from an application process: Chris Andrew, Darren Baguley, Joanne Barber, Emma Burchell, Shaun Eklers, Suzanne Gearing, Matthew Hall, Mic Jakobi, Jo Kelly, John Lever, Joshua Mauder, Alexandra Mitchell, Judith Ockerby, Aaron Pollack, Marie Redman, Jeffry Ross, Paul Saeki, Jude Tyzack, Dr Christopher Van, Karlie Wilson.

Total investment: $139,980

Levied Industries Virtual Capacity Building Program
One of the key messages and ideas presented by industry at the 2020 Levied Industries Forum was the expansion of capacity building opportunities to help industry associations develop their skills in governance, financial acumen, and strategic planning (to name a few), and the introduction of a resource toolkit to support this. To facilitate this, AgriFutures Australia engaged Associations Forum to host a series of seven two-hour virtual webinars, designed to develop the skills of industry associations.

These webinars included:
- Webinar 1: Board and Advisory Panel Roles & Responsibilities
- Webinar 2: Effective Meetings
- Webinar 3: Minutes
- Webinar 4: Membership, Promotions & Communications
- Webinar 5: Member Services
- Webinar 6: Financial Fundamentals
- Webinar 7: Importance of a Strategic Plan

The resources toolkit can be found on our website. Total investment: $45,000 incl. GST

Emerging Industries Virtual Capacity Building Program
Most of this Program will run in 2022.
The AgriFutures Chicken Meat Program places a strong focus on investing in projects that develop and implement measures to improve the industry’s impact on the environment. Investments in litter management on farm, water quality, developing industry-specific environmental guidelines and reducing the reliance on imported products like soybean are helping the industry to meet this objective. The outputs from these projects include the development of best management practice guidelines for industry.

Extension and training continued to be a strong focus of the AgriFutures Chicken Meat Program. A series of webinars were held over the year to ensure that research outcomes were delivered to industry despite the challenges faced during COVID-19 travel restrictions. The webinars were popular with industry and covered biosecurity, litter management, environment and nutrition and engaged with Australian and international audiences. Due to the success of these webinars, they will continue as a platform for the extension officers and researchers to extend their research to industry.

Free-range chicken meat farms represent a quarter of the total production. To ensure continued improvement to production through the whole supply chain the AgriFutures Chicken Meat Program invested in projects to understand how range use by chickens can be optimised. This comprehensive study aims to help the industry understand how to get younger chickens to access the range earlier and more frequently.

**Highlights and achievements**

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**Summary of program**

The GVP for the Australian chicken meat industry in 2020-21 was $2.8 billion static from 2019-20. Through strong investment in projects that support all aspects of the production process, the AgriFutures Chicken Meat Program seeks to grow the long-term prosperity of the industry. The Program is approximately halfway through its three-year Strategic RD&E Plan which focuses on four key deliverables: food safety, environment, consumer markets and production throughout the whole supply chain. It achieves this through 19 key focus areas. The research is supported by a comprehensive Extension and Training program that delivers research outcomes in meaningful and targeted ways to the industry for both farmers and processors.

In 2020-21 the Advisory Panel welcomed two new members bringing research expertise and veterinarian experience to the panel. The Advisory Panel also farewell chair Guy Hebblewhite and thanked him for his valuable contribution in his role. Guy’s strength was providing a grower’s view as well as invaluable creativity in promoting the industry to consumers and customers. Despite restrictions on travel due to COVID-19, the Advisory Panel continues to engage with researchers. Throughout 2020-21 a number of researchers were invited to virtually present their research at Advisory Panel meetings.

The AgriFutures Chicken Meat Program continues to contribute to a number of collaborative investments with Australian Eggs, Australian Pork Limited, Meat and Livestock Australia and Dairy Australia. These cross-industry collaborations aim to deliver benefits to animal industries in the areas of welfare, antimicrobial stewardship and carbon neutrality.

**Deliverables for 2020-21**

The AgriFutures Chicken Meat Program continued to deliver targeted high-impact research to the chicken meat industry and is well on track to deliver on its three-year Strategic RD&E Plan. Additional resourcing allocated in the past year was identified as a key priority and this helped to drive the growth of the Program.

Over the past 12 months the Program has consolidated the produced research into several industry guidelines and best management practice manuals. These publications focused on practical outcomes to enable improved implementation and adoption. Manuals and guidelines completed during this past year were:

- Litter management
- Water quality and sterilisation
- Welfare
- Environmental guidelines for assessors and applicants.

An industry-first online search tool for poultry-related legislation was developed to enable fast and easy access to legislation that is relevant to the chicken meat industry. The legislation can be searched by jurisdiction and key word and is located on the extension AUS Chicken Meat RD&E website to enable ease of access.

The Program continued to deliver relevant training and capacity building opportunities which is identified as enabling activities in the Strategic Plan. Training workshops were held for industry on stunning and slaughter at processing and on-farm welfare. These workshops were adapted to an online delivery due to COVID-19 and were well received by industry. The Chook Chat Shack (a joint-funded initiative between Poultry Hub, AgriFutures Australia and Australian Eggs to recognise the intrinsic linkages across the poultry sector) held collaborative capacity building activities that focused on improving the capacity of research providers and attracting capable people into the industry. Activities delivered in this joint initiative were:

- Meet the Media workshop
- Media and Communications Masterclass
- Poultry grad
- Researcher in Industry
- Chook Chat Hack
- Undergraduate research scholarships

**Advisory Panel members**

- Ms Katherine Balding (Chair)
- Ms Susan Klein (Deputy Chair)
- Dr Anthony Keyburn
- Dr Sheridan Alfirevich
- Mr Jason Fry
- Dr Timothy Wilson
- Dr Greg Underwood
- Professor Eugeni Roura
- Ms Georgina Townsend (Feb 2019 – May 2021)
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**Annual Report 2020-21**

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## Chicken Meat

### Projects completed in 2020-21

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<th>Outcomes in 2020-21</th>
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<tr>
<td>PRJ-012355</td>
<td>Executive Support – National Animal Welfare R, D &amp; E Strategy</td>
<td>This project provided co-investment for the executive support services of the National Animal Welfare RD&amp;E Strategy for 2021. This strategy invests in cross-sectoral welfare research for the benefit of Australian livestock industries. Improve chicken meat production through the whole supply chain</td>
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<tr>
<td>PRJ-010967</td>
<td>Antimicrobial Sensitivity Testing – a survey of laboratory capacity</td>
<td>The outcome of the laboratory capacity survey found that only a few laboratories provide antimicrobial sensitivity testing services for the Australian chicken meat industry. The survey highlighted that testing capability varies within individual laboratories and the varying levels of expertise at the national level. It also identified where future capacity and capability with the national laboratory network could better service the industry. Improve chicken meat production through the whole supply chain</td>
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<td>PRJ-012452</td>
<td>Chicken Meat Articles and Publications of Interest</td>
<td>This project collated journal articles relevant to the Australian chicken meat industry into the four key objective areas of the RD&amp;E Strategy. The linked journal articles, which were mostly open access, were sent to industry members each month. Over the 12-month period, they consisted of two projects. Improve chicken meat production through the whole supply chain</td>
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<td>PRJ-011665</td>
<td>Undertake a comparative analysis of state legislation Published: Final report: A comparative analysis of state legislation – Biosecurity, animal welfare, food safety</td>
<td>This project identified all industry-relevant legislation and standards in Australia applicable to chicken meat production. This information was then used to develop a searchable and easy-to-use portal for use by industry stakeholders available on the Chicken Meat RD&amp;E extensionAUS website. Improve chicken meat production through the whole supply chain</td>
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### AgriFutures Chicken Meat Program Strategic RD&E Plan 2019-22

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<td>PRJ-012274</td>
<td>Water Security in the Chicken Meat Industry</td>
<td>This research provided recommendations on water security options for the chicken meat industry, novel solutions to improve water use efficiency and water harvesting, and barriers to closed loop water usage and identified opportunities for improved water utilisation that can be implemented by industry. Develop and implement measures to improve industry’s impact on the environment</td>
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<td>PRJ-011589</td>
<td>Best practice manual for managing litter</td>
<td>A manual was developed to make the relevant information regarding litter management available in one place. This best practice manual covers: litter selection; management of litter in sheds, including reuse; and options for spent litter following removal from sheds. It allows users to access concise information and guidance on the best management practice for each process involving litter. Develop and implement measures to improve industry’s impact on the environment</td>
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<td>PRJ-011560</td>
<td>Assessment of sexing options to perform nutritional research in meat chickens</td>
<td>Improve chicken meat production through the whole supply chain</td>
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<tr>
<td></td>
<td>Published: Final report: Meat chicken sexing methods and the use of single or mixed-sex chickens in research</td>
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<td>Final report summary: Meat chicken sexing methods and the use of single or mixed-sex chickens in research</td>
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<tr>
<td>PRJ-012200</td>
<td>Effective stunning and slaughter for poultry training workshops</td>
<td>Improve chicken meat production through the whole supply chain</td>
</tr>
<tr>
<td></td>
<td>Published: Final report: Effective stunning and slaughter of poultry: Training workshops</td>
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<tr>
<td>PRJ-011935</td>
<td>Risk assessment of alternative litter types</td>
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<td></td>
<td>Industry tool: AgriFutures Screening and Risk Assessment Tool</td>
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<tr>
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<td>Published: Final report: Risk assessment of alternative litter types</td>
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<td>PRJ-010999</td>
<td>Future market insights for Australia’s chicken meat industry</td>
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#### Outcomes in 2020–21

- This study demonstrated that when using chickens for research purposes, that vent sexing or feather DNA sexing chicks soon after hatching can reduce the variation between experimental treatments compared to using ‘as hatched’ chicks. Using this method can also lead to fewer replications required and fewer animals used for research purposes.
- This project delivered online training workshops to processors to ensure they are familiar with best practice for stunning and slaughter processes. Stunning and slaughter practices are critical to maintaining good animal welfare and can also impact product quality and market acceptability.
- This project delivered a focused risk assessment method to assess various alternative litters to enable the industry to make more informed choices. This output will help chicken growers choose suitable alternative materials if unable to source current litter materials due to reduced supply.
- This comprehensive study of current demand drivers for chicken meat and future market opportunities in Australia found that the demand for chicken meat is unlikely to decline in the future. This is provided it continues to deliver consumers value for money, versatility and good eating quality in terms of flavour, taste and tenderness.
- Improve the ability to meet consumer needs

#### AgriFutures Chicken Meat Program Strategic RD&E Plan 2019–22

- Improve chicken meat production through the whole supply chain
- Develop and implement measures to improve industry’s impact on the environment
### Chicken Meat

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<td><strong>PRJ-011090</strong> Development of National Environmental Guidelines for the chicken meat industry</td>
<td>This project delivered comprehensive nationally consistent guidelines to facilitate better planning and environmental outcomes for industry and community. National guidelines for modelling odour and dust impacts were incorporated into the framework for the environmental management of chicken farms.</td>
<td>Develop and implement measures to improve industry’s impact on the environment</td>
</tr>
<tr>
<td><strong>PRJ-011701</strong> An investigative study of shed management simulation training tools</td>
<td>This study found that various international predictive modelling and computerised shed management training tools do exist. However, these tools in their current form do not fit all the requirements of the Australian chicken meat industry. There is the opportunity to adapt current tools for the industry that builds upon current knowledge and digital technologies available to benefit on-farm training in shed management.</td>
<td>Improve chicken meat production through the whole supply chain</td>
</tr>
<tr>
<td><strong>PRJ-011578</strong> Case study of pathogen pathways post-processing</td>
<td>This project provided insights into the pathways that chicken meat can follow from primary processing to secondary processing through to retail and the differences that occur. The tracing and testing results provide industry with the knowledge of how the product is treated and if this can impact key food safety pathogen levels.</td>
<td>Improving food safety of Australian chicken meat</td>
</tr>
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<td><strong>PRJ-011513</strong> Review of National Chicken Meat welfare standard and development of BMP materials</td>
<td>This project demonstrated the commitment the chicken meat industry has to the high levels of welfare throughout the life of the chicken. This project set out to revise the National Animal Welfare Standards for the Chicken Meat Industry and produce an industry best practice manual for chick handling at the hatchery, ‘fit-to-load’, lairage conditions and live bird handling at processing plants.</td>
<td>Improve chicken meat production through the whole supply chain</td>
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<tr>
<td><strong>PRJ-010984</strong> Seasonal variation in the processing plant</td>
<td>This project gathered information on the natural variation that occurs in the presence and levels of key food safety pathogens over time. This research will inform industry and lead to the continued provision of safe food products that meet the expectations of consumers and the relevant regulatory authorities.</td>
<td>Improving food safety of Australian chicken meat</td>
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<tr>
<td><strong>PRJ-011986</strong> Co-designed Scoping study to unlock the power of digital</td>
<td>This scoping study assembled and synthesised information relating to digital transformation of the chicken meat industry. The report presents strategic actions, investments and milestones to help the industry make progress towards the industry-defined goals. The report also identified and proposed potential investors, funding and payment mechanisms, and sources of funding. The final output of the project was a strategy and roadmap for the industry.</td>
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Fighting pests with fungi: Using natural fungi to control lesser mealworm in Australian chicken sheds

New research supported by AgriFutures Australia is optimising the use of an alternative control measure for the lesser mealworm based on live fungi.

In the spotlight

The lesser mealworm, also known as a darkling beetle, is a common insect-pest to the chicken meat industry due to the damage it can cause to the structure of chicken sheds through tunnelling and its ability to carry pathogens. Lesser mealworms are often found in poultry production systems where deep litter and open-floor housing provide optimal survival and reproductive conditions.

Following on from preliminary research that developed a proof-of-concept for non-toxic fungus-based pesticides (mycopesticides) to control lesser mealworm populations, new research is underway to optimise the use of mycopesticides for this purpose.

Leading the current research project is Department of Agriculture and Fisheries (QLD) Technical Officer Steven Rice. He said, “What we’re doing now is testing the mycopesticide under various conditions including different litter use practices and different floor types in meat chicken sheds.”

Mr Rice said, “We’re doing preliminary laboratory trials to see whether the mycopesticide can work together with the insecticides currently approved for use to provide a better overall control effect.”

“With this research we have the chance to not only optimise a new natural control method for lesser mealworm but also increase sustainable practices in chicken meat production.”

“As consumers want more information about the provenance of their food it’s more important than ever to explore natural options for pest control and maintain the consumer confidence that makes chicken the number one consumed meat in Australia,” said Ms Lane.

“Approved insecticides are currently used to control the lesser mealworm pest. However, insecticides potentially leave some residues in the litter and the lesser mealworm builds up resistance to them over time. An additional objective of this latest research project is to test the potential of using the mycopesticide in conjunction with insecticides to reduce overall chemical use and maximise control of lesser mealworm populations.”

Mr Rice said, “The initial results look promising. The mycopesticide appears to reduce lesser mealworm populations under both litter systems; but there’s more research to be done.”

AgriFutures Australia Research Manager Annie Lane said the development of an effective fungal-based control for the lesser mealworm has the potential to significantly benefit the Australian chicken meat industry.

“We hope that the combined results of the field and laboratory work will attract a commercial partner that is interested in producing a mycopesticide that will be effective for use against lesser mealworm and have a low environmental impact.”

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Export Fodder

Highlights and achievements

1. Investment for the delivery of improved oaten hay varieties to the export fodder industry that make production easier and better suited to customer specifications. The five-year project, National Oat Breeding Program (PRJ-012976), with joint funding from the Grains Research and Development Corporation (GRDC), builds on the previous oat breeding work by the South Australian Research and Development Institute (SARDI) in a commercialised National Oat Breeding Program led by InterGrain, an Australian cereal breeding company.

2. In response to a stem nematode outbreak identified in an oaten hay crop, a project Stem nematodes in oats (PRJ-012851) was funded to determine if the nematode had overcome resistance mechanisms in the oat variety used. The project has found that this was not the case but has provided valuable information on the importance of good biosecurity practices and classification of oat variety resistance level.

3. The National oat agronomy project (PRJ-011029) continues to deliver valuable research outputs and extension to the export fodder industry. This includes clear demonstration to WA growers that the newer variety, Koorabup, yields better than others when an early-mid May sowing opportunity arises, while Durack is better suited to late sowing opportunities. Results from NSW indicate that dual-purpose varieties may be more suited to the region. A high incidence of red leather leaf recorded in VIC during monitoring of oat crops conducted in the 2020 growing season indicated that screening for the disease should be prioritised. A study of the effect of plant growth regulators in SA showed that low application rates of Moddus Evo® optimised quality without compromising yield for export fodder crops. The project team works hard to engage producers with research outputs through the use of social media platforms, field walks and, importantly, one-on-one support.

Summary of program

The GVP for the Australian export fodder industry in 2020-21 was $507 million up from $485 million in 2019-20. New investments for the Program have focused on delivering improved oaten hay varieties to growers, determining the animal nutrition benefits of oaten hay to enable exporters to improve consumer awareness, and biosecurity research to assist producers to improve on-farm practices and productivity.

Development of the Program’s new Strategic RD&E Plan is well underway and due for completion by the end of 2021. AgriFutures Australia has worked closely with the Export Fodder Advisory Panel and consulted with industry throughout the development of the Plan to ensure that it aligns with industry needs. Industry engagement was sought through an extensive scenario planning process; the outcomes of which have formed the basis for the RD&E objectives of the new Plan.

In 2020-21 the Export Fodder Advisory Panel welcomed Mick Faulkner to the Advisory Panel. Mick has been involved in the export hay industry for about 30 years and brings a wealth of agronomic and extension experience to the Panel.

Deliverables for 2020-21

Implementation of targeted and high impact RD&E projects to achieve far-reaching benefits to the export fodder industry.

The Program has made significant investments including:

- National Oat Breeding Program (PRJ-012976)
- Stem nematodes in oats (PRJ-012851)
- DNA testing for mycotoxin-producing fungi in fodder (PRJ-012649)
- Oat variety resistance (PRJ-011029) This project is developing tests that will support the export fodder industry to manage the risk of mycotoxin contamination in fodder, which can restrict exports to many countries implementing regulations pertaining to mycotoxin levels.
- Use of oaten hay to support sustainable development of dairy production (PRJ-012649). This project is working with end consumers to determine how Australian export fodder is used in dairy production and determine the nutritional benefits of inclusion of oaten hay in this type of production. This will enable Australian fodder exporters to highlight the value of their product to consumers.

Advisory Panel members:

- Mr Peter Baker (Chair)
- Mr Andrew Hayward
- Mr Zane Banson
- Mr Munro Patchett
- Mr Steve Woods
- Mr Mick Faulkner
- Mr Pat Guerin (December 2019 to June 2021)
- Ms Emma Rodham

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Summary of program:

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## Export Fodder

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PRJ-012226 Restructure of the National Oat Breeding Program</td>
<td>This project provided recommendations on the appropriate mechanism by which the Oat Breeding Program could be commercialised and carry forward the previous work by SARDI in this space. The project also guided the terms and conditions for an Expression of Interest for breeding services for the oaten hay and milling oat breeding program.</td>
<td>Oaten Hay Breeding Program</td>
</tr>
<tr>
<td>PRJ-012613 Improved oat varieties for hay production 2020</td>
<td>This project highlighted the achievements of the National Oat Breeding Program from 1998 to December 2020. Over 22 years, eight dedicated hay varieties were released by the National Oat Breeding Program, along with an additional four varieties initially released as part of the milling grain stream of the Program that have become popular as hay varieties.</td>
<td>Oaten Hay Breeding Program</td>
</tr>
</tbody>
</table>
In the spotlight

Making Hay while the FieldExplorer shines: New cutting edge technology to grow the oaten hay sector

A new application of imaging technology is set to revolutionise the way the oaten hay industry determines yield potential and quality in-crop, producing a wave of potential opportunities and benefits up and down the value chain.

Over the past 10 years, the Asian protein boom has paid dividends to the Australian oaten hay sector. Between 2013 and 2019 China increased imports from 32,000 metric tonnes to 300,000 MT, on the back of a threefold increase in their domestic dairy industry. Japan, Korea and Taiwan are also major trading partners, with Australia currently exporting around $541 million of hay annually (ABARES, 2019).

A major issue for the sector has been capturing timely, accurate and comprehensive data on crop yield and quality parameters, such as sugar, fibre and digestible dry matter content, in order to inform sellers, farmers and plant breeders. Traditionally, measuring yield and quality in oaten hay breeding has been a slow and costly process to implement. Manual hay cuts are taken from a breeding trial, before being oven dried, then processed through two different mills and subjected to laboratory analysis. It’s a laborious exercise that is carried out for early-stage breeding lines at just one trial site in SA, despite the oaten hay sector enjoying a strong presence in regions across WA and VIC.

“Due to limited resources, we’re only able to sample biomass and quality from a small number of oaten hay genotypes each year, and therefore have a very limited understanding of the genetic variation for these traits,” said South Australian Research and Development Institute (SARDI) Principal Scientist for Crop Improvement, Dr Tim Sutton.

“Given that we only take detailed measurements from one trial site a year, it has been difficult to combine high biomass with enhanced hay quality. We’re also missing valuable information about how different environmental conditions and management practices can affect hay yield and quality.”

Dr Sutton has been leading the charge to identify a way around the issue. Now, with funding from AgriFutures Australia, testing of new technology that could offer a solution is well underway.

Developed in partnership with a company from the Netherlands, and brought here by the Australian Plant Phenomics Facility, the FieldExplorer is an in-field detection device that uses sensing technologies to determine key performance indicators of a crop. It uses three types of sensors – an RGB camera gathers information about leaf colour and disease, a LiDAR sensor develops information about biomass and crop height, and two hyperspectral cameras work to track information about crop quality. The device surveys the crop or breeding trial plots at a speed of 1.5 metres per second, developing images and findings in real time in a non-invasive manner.

While these sensors have been deployed as agricultural tools previously, the FieldExplorer combines their use to develop a richer picture.

“The major feature of the FieldExplorer is the speed at which it works – it generates significantly more information than is possible with the current manual methods. With quicker access to information about yield and quality, breeders will be able to make faster, more informed decisions about the breeding process. Growers and processors will also be able to utilise the information to better match hay qualities to the requirements of buyers and markets,” said Dr Sutton.

Extending past market access, developing a better understanding about the performance of oaten hay crops offers benefits to the wider value chain. A more thorough picture of crop performance over different environments will support the outputs from plant breeding and, in turn, crop performance through improved varieties. In addition, the interaction between variety genetics, region-specific environmental factors and different management strategies can be optimised to help farmers to select and grow the best variety for their system.

In 2020, the FieldExplorer surveyed a SARDI oaten hay breeding trial at Gawler in SA, gathering the first of three years’ data in an effort to calibrate the technology. Data generated by the FieldExplorer will be compared with laboratory test results to calibrate the machine and determine spectral signatures for quality traits relevant to the oaten hay sector.

“The financial contribution of AgriFutures Australia has enabled us to access and value-add technology for the oaten hay industry, leveraging a significant investment made by others that the sector wouldn’t otherwise be able to access,” added Dr Sutton.

“It has paved the way for the adoption of current and future technology trends in oaten hay and plant breeding more broadly,” he said.
Ginger

Highlights and achievements

1. AgriFutures Ginger Program has invested in research to address the lack of genetic diversity of ginger varieties used in the Australian ginger industry. This lack of diversity is a considerable risk and exposes the industry to significant threats from pests and diseases. This three-year project, Improving ginger to future proof the industry against major past and diseases (PRJ-012992) is investigating pest and disease resistance in edible and closely related ginger species. It is hoped that the outcomes of this research will facilitate the expansion of the Australian ginger industry.

2. The Ginger Ninja: Automating disease detection in seed ginger stock project (PRJ-011522) has developed a prototype device that uses artificial intelligence software to predict the presence of Fusarium in ginger seed stock. Fusarium causes ginger seed to rot after planting, leading to large losses across the industry. Detection of Fusarium before planting assists growers to ensure they are planting disease-free seed stock, reducing disease transfer and impact, and increasing productivity.

3. Labour is one of the most significant inputs for the ginger industry, and a large component of this is dedicated to controlling weeds in crops, particularly when they are young. The project Site-specific weed control (PRJ-011627) has developed an algorithm, which can detect weeds in ginger crops, alongside a prototype to deliver the preferred weed control method. When used in combination, this can provide automated control of weeds in ginger crops. The commercialisation of this research into an automated weed control system for the ginger industry has potential to reduce input costs for the industry.

Summary of program

The GVP for the Australian ginger industry in 2020-21 was $65 million up from $51 million in 2019-20. The Program has continued investment to deliver against the objectives outlined in the AgriFutures Ginger Strategic RD&E Plan to ensure investments continue to align to industry priorities. After a successful scoping study was completed in 2020, a significant investment has been made through the project Improving ginger to future proof the industry against major past and diseases (PRJ-012992). This project aligns with objective 1 of the Strategic RD&E Plan: “Drive on-farm productivity – improve industry pest and disease management, harness innovative technology and facilitate adoption of clean certified seed”.

The current Strategic RD&E Plan is due for completion in early 2022. AgriFutures Australia is working with the Advisory Panel and industry towards the development of the new Strategic RD&E Plan for 2022-2027. Consultation was conducted to identify trends which are likely to impact the industry over the next 10 years. The Program received great support and input from industry members during this consultation. The Advisory Panel and executives from the Australian Ginger Industry Association (AGIA) will participate in a workshop to identify solutions to the major trends identified and ensure strong industry representation in the scenario planning activities. The outcomes from the scenario planning will be used to develop the objectives and direction for the new Strategic RD&E Plan for the Program. AgriFutures Australia and the Advisory Panel look forward to presenting a new Strategic RD&E Plan in early 2022. The Advisory Panel also farewell Chair, Nicole Christodoulou, and thanked Nicole for her contribution to the Advisory Panel in her time as Chair. A new Chair will be appointed in 2021-22.

Deliverables for 2020-21

To provide RD&E to support a sustainable, growing and prosperous ginger industry supplying product of the highest quality that is strongly sought after by discerning consumers in Australia and around the world.

The Program’s Ginger extension coordination project (PRJ-011740), led by AGIA, continues to deliver value for growers. The project is disseminated through activities such as biosecurity workshops, farm mentoring during key production periods, quarterly newsletters, and one-on-one and virtual support for farmers in the lead-up to completing required audits. The project also supports adoption of improved planting material and the food safety program.

Advisory Panel members:
- Dr Jodie White (Acting Chair, June – July 2021)
- Mr Ethan Graham
- Mr Scott Kirkwood
- Ms Kylie Templeton
- Mr Robert Abbas
- Mr Jeffery Skilton
- Ms Nicole Christodoulou (Chair) (October 2017 – May 2021)

- Mr Jason Keating (February 2015 – December 2020)
- Dr Michael Smith (February 2015 – December 2020)
- Ms Emma Rodham

Rob Abbas has been involved with the Australian ginger industry for over 25 years, with experience ranging from farm agronomy to pest and disease control, to project management and extension services. Rob brings a wealth of industry and technical knowledge to the Advisory Panel. Jeffery Skilton has been in the horticulture industry since he was 13, he has grown a wide range of crops and has focused his attention on ginger. Jeff brings a wide skill set to the Advisory Panel and provides valuable input to ensure research is innovative and applicable on farm.
### Ginger

#### Projects completed in 2020-21

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Project Description</th>
<th>Outcomes in 2020-21</th>
<th>Strategic objectives for 2017-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRJ-011522</td>
<td>Ginger Ninja: Automating disease detection in seed ginger stock</td>
<td>This study produced a prototype artificial intelligence (AI) based Fusarium predictor, which can be used to predict the presence of Fusarium rot in ginger. This will assist growers to ensure they are planting disease-free seed stock, reducing disease transfer and impact, and increasing productivity.</td>
<td>Drive on-farm productivity</td>
</tr>
</tbody>
</table>

Published (pending): Ginger Ninja: Automated Image Analysis for Fusarium Detection
Honey Bee and Pollination

Highlights and achievements

1. Investigating factors that influence chalkbrood outbreaks in Australia (PRJ-010815) aimed to increase industry profitability through the investigation of various factors that influence outbreaks. This research recommends that beekeepers can reduce the incidence of chalkbrood disease in hives by increasing queen mating levels and ensuring high pollen levels in spring within hives.

2. In September 2020 the Honey Bee and Pollination Strategic RD&E Plan 2020-2025 was endorsed by the AgriFutures Board. This Plan will guide the Program’s investment and highlights the importance of technology, capacity building, honey bee nutrition, health benefits of honey, hive health in pollination, and floral resources.

3. Size and Scope of the Australian Honey Bee and Pollination Industry Snapshot (PRJ-012405) provided a “state of play for the industry” and key industry statistics to address a knowledge gap for the industry.

The outcomes of the Bushfire Recovery Plan remain a priority for the Program. The Program is investing in projects to gain a thorough and practical understanding of honey bee nutrition needs, understand public land tenures, consider the impact of hazard-reduction burns on honey bees, and understand alternative floral resources to address outcomes from the plan.

The Program invested in five Industry Development Grants for projects that address a range of research questions. These includes projects to increase understanding of honey bee nutrition, increase understanding of propolis, increase the capacity of beekeepers via online training platforms, develop researcher capacity, and increase the understanding of the impact of tunnels on honey bee pollination.

In 2020-2021 the industry identified the need to develop external hive traps for small hive beetle which are less labour intensive than current options. In late 2020 the Program called for projects that consider the use of pheromones to attract the beetle to external traps. Projects will be considered for investment in 2021-22.

Deliverables for 2020-21

To support RD&E that will secure a productive, sustainable and more profitable Australian beekeeping industry and secure the pollination of Australia’s horticultural and agricultural crops.

Summary of program

The GVP for honey in 2020-21 was $125 million down from $139 million in 2019-20. The Honey Bee and Pollination Program aims to support beekeepers and the sustainability of the industry by improving hive performance, increasing industry capacity, understanding nutrition, developing traceability and benefits of honey, and understanding pollination strategies and floral resources.

The outcomes of the Bushfire Recovery Plan remain a priority for the Program. The Program is investing in projects to gain a thorough and practical understanding of honey bee nutrition needs, understand public land tenures, consider the impact of hazard-reduction burns on honey bees, and understand alternative floral resources to address outcomes from the plan.

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Advisory Panel members:

- Dr Doug Somerville (Chair) (November 2017-April 2021)
- Dr Diana Leemon (Acting Chair)
- Mr Samuel Malfroy

Projects completed in 2020-21

- PRJ-010313 Development of honey bee products from a biodiversity hotspot
  Published: Final report summary: Development of honey bee products from a biodiversity hotspot

- PRJ-012405 Size and scope of the Australian Honey Bee and Pollination industry snapshot
  Published: Size and scope of the Australian honey bee and pollination industry – a snapshot

Outcomes in 2020-21

- PRJ-010313 Development of honey bee products from a biodiversity hotspot
  This project quantified the antibacterial activity and physicochemical parameters of a wide range of WA honeys. This project provided the WA beekeeping industry and individual apiarists with data required to support claims made for their unique monofloral honeys.

- PRJ-012405 Size and scope of the Australian Honey Bee and Pollination industry snapshot
  This research provided a detailed statistical analysis of the Australian honey bee and pollination industry. It sourced and analysed the most accurate data available on the number of beekeepers, hives, enterprise structures, the locations of honey production, the volume of honey production, honey and other hive values, export and import of hive products, and food production supported by honey bee pollination.

Strategic objectives 2017-22

- Improve understanding of the benefits of honey and develop chain traceability
- Increase capacity within research community and future industry leaders
## Honey Bee and Pollination

<table>
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<tr>
<td><strong>PRJ-010815</strong> Investigating factors that influence chalkbrood outbreaks in Australia</td>
<td>This research provided important insights into key factors for industry to further investigate and action to reduce the prevalence and severity of chalkbrood disease. This highlighted two methods of hive management to reduce the impact and severity of chalkbrood disease.</td>
<td>Improve understanding of nutrition best practice and disease interaction</td>
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<tr>
<td>Published: Final report: Investigating factors that influence chalkbrood outbreaks in Australia</td>
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<td>Final report summary: Investigating factors that influence chalkbrood outbreaks in Australia</td>
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<tr>
<td><strong>PRJ-010226</strong> Improving biosecurity resources and better understanding bee health in Australia</td>
<td>This project developed an online biosecurity course and undertook an update to the BeeAware website to include information on the Australian Honey Bee Industry Biosecurity Code of Practice and the National Bee Biosecurity Program. The project described annual surveys taken in 2018 and 2019. It also provided a snapshot of bee health in the Australian honey bee industry, focusing on issues such as pests and diseases, colony loss and pollination services.</td>
<td>Improve understanding of nutrition best practice and disease interaction</td>
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<td>Published: Final report: Improving biosecurity resources and better understanding bee health in Australia</td>
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The future of honey: From a pantry staple to the medicine cabinet

Honey has long been used as a traditional medicine. From Ancient Egyptians and Romans, to the Russian army in World War I, honey has been used to treat wounds and intestinal diseases. However, its place in modern medicine has been limited because of a lack of scientific evidence to support its use.

Research led by the University of Technology Sydney and funded by the AgriFutures Honey Bee & Pollination Program aims to provide the robust, rigorous scientific evidence required by modern medicine to expand honey from a staple in the pantry to a health food. The work seeks to use honey as a prebiotic to promote good digestive health and to help combat the onset and progression of gut-related disease.

There is significant interest from the human health and medical spheres in investigating how consuming probiotic foods can help to change the gut microbiome to promote a “healthy gut”. The gut microbiome is made up of trillions of bacteria, archaea, viruses, protozoa and fungi. Prebiotics are foods that we do not digest by ourselves, instead they reach our gut where they can be used as a food source by billions of beneficial bacteria, helping maintain a healthy microbiome.

Scientific evidence to support honey as a health food

University of Technology Sydney Research Fellow Dr Nural Cokcetin, in collaboration with gastroenterologist and clinical microbiome researchers at the Microbiome Research Centre, St George Hospital in Sydney, is exploring the role of honey as a prebiotic food that can promote digestive health.

“We know that honey has been used as a digestive remedy for centuries, but why is that? Our research seeks to understand the science behind how honey changes the microbial populations, metabolite production, immune response and inflammation in the gut,” Dr Cokcetin said.

“Our diet affects the balance of our gut, and in turn our gut microbiome affects so much of our health, and an unhealthy gut (due to an imbalance of gut microbes) has been linked to gut diseases, colon cancer, irritable bowel syndrome, inflammatory bowel disease, obesity, allergies, asthma, heart conditions, and mental health issues.”

Dr Cokcetin said their research shows just a small amount of honey can affect not only the balance of the types of bacteria living in our gut but also can be beneficial in preventing the onset and progression of gut-related diseases. It appears when the gut bacteria are feeding on honey they are producing compounds responsible for this protective effect.

“We’re finding is that by promoting a healthy gut, we can build a much stronger immune system and increase our resilience to disease. Just 20 grams of honey a day can boost the good populations of bacteria in our gut that help protect against different diseases.”

Honey as a super drug

Dr Cokcetin said that the benefits of honey extend beyond maintaining the balance of gut microbes.

“Our research team have been using an artificial gut system that simulates gut-related diseases and infections to see how honey might work against common infection-causing bacteria, including Salmonella and E. coli,” said Dr Cokcetin.

“One of the most exciting findings for us has been the reduction in numbers of a group of bacteria in the gut called Clostridiods following treatment with honey. These bacteria can cause some really nasty infections, specifically Clostridium difficile, which triggers severe abdomino-associated gastroenteritis. So, we aimed to find out if there was anything in honey that could help protect against these infections.”

Dr Cokcetin said that while the highly publicised manuka honey is popular for its antibacterial activity and topical applications, preliminary studies are showing that honey derived from eucalyptus is more potent as a prebiotic.

“Our project has been specifically looking at Australian eucalypt yellow box and ironbark honey, and while there doesn’t seem to be a particular type of eucalypt honey that shows higher probiotic activity than others, our initial studies showed that compared to manuka and canola honey, the eucalypt honey generally had better prebiotic activity.”

“We have started recruiting healthy volunteers to take part in the study and hope the results will show that honey can be used as an effective preventative measure.”

“Our preliminary research shows that it’s likely many honeys will have some kind of prebiotic activity, but they may be acting in different ways. Some might help to boost numbers of beneficial bacteria in the gut, others could support the reduction in numbers of potentially harmful bacteria in the gut (such as C. difficile) and others may help promote the production of beneficial compounds by our gut microbes.”

A buzz for Australian eucalypt honey

Dr Cokcetin said that while the highly publicised manuka honey is popular for its antibacterial activity and topical applications, preliminary studies are showing that honey derived from eucalyptus is more potent as a prebiotic.

“An exciting development from this research is that existing eucalypt-derived table honeys show probiotic activity, further enhancing their profile and value, and generating a unique marketing opportunity for Australian honeys.”

Dr Cokcetin suggests the best way for consumers to take advantage of the probiotic benefits of honey are to have a few different Australian honeys in the cupboard.

“Choose the honeys that you like the taste of, making sure they are 100% Australian of course, and enjoy a tablespoon a day on your toast, in your tea or on its own to see the effects.”

“Microbiome Research Centre 2021, About Microbiome, accessed 12 May 2021.”
Pasture Seeds

Highlights and achievements

1. A project led by Lucerne Australia to establish the optimum watering schedules for lucerne seed production is enabling lucerne producers to improve seed yields while reducing water usage. Lucerne Australia have provided excellent extension of this research through their annual field day and continual interaction with association members. This project has been received well by the industry and has already provided benefit to the industry. As a result, the Program has extended the project for a further three years so that these benefits can continue to be delivered to industry.

2. A multi-disciplinary team at the University of Western Australia continue to deliver encouraging results for the development of a more environmentally sustainable sub clover harvester. The team have converted a peanut harvester for use as a prototype sub clover harvester that is performing well. The project team continues to refine the harvester and investigate other modifications, to improve outcomes for sub clover growers.

3. Lucerne Seed Wasp (LSW) continues to be a major threat to the lucerne seed industry. To address this challenge, the Program has continued to invest in research. To date, tests for LSW (Bruchophagus noduli), and parasitoids (Ialomacromerus perplexus and Pheronialis sequester) have been developed, and are being used routinely to assess research samples. This will help to determine the distribution of LSW and effective management practices for producers. The project team is working closely with Lucerne Australia to ensure the outcomes of the project are delivered to producers as quickly as possible.

Summary of program

The GVP for the Australian pasture seeds industry in 2020-21 was $44 million down from $45 million in 2019-20.

In 2020-21 the Pasture Seeds Advisory Panel farewelled Dr Mary-Jane Rogers after she completed the maximum two, three-year terms on the Advisory Panel. The Advisory Panel welcomed two new members, Dr Meredith Mitchell and Guy Cunningham, Dr Mitchell is a senior research scientist in pasture agronomy and has worked for Agriculture Victoria for the last 30 years. Dr Mitchell brings a wealth of pasture and research knowledge to the Advisory Panel.

Guy Cunningham runs a lucerne and winter cropping enterprise on his farm in Keith, SA. Through his experience as a grower and working with Lucerne Australia, he brings a wealth of industry experience and networks to the Advisory Panel.

The completion of a project to assess the size and scope of the temperate pasture seeds industry in Australia has helped the Program gain a greater depth of knowledge of the industry. This included a detailed understanding of the contribution of each pasture seed species to the levy, production locations and end users of Australian-produced pasture seeds.

Deliverables for 2020-21

To enhance productivity and sustainability of the pasture seeds industry through researching pests and diseases, improving variety knowledge and selection for the industry, and developing new technology to address ongoing production concerns within the industry.

The industry recognised the importance of capacity building to the pasture seeds industry. The Program funded a capacity building project, led by Lucerne Australia, which took the form of a two-day workshop. Through this project the Lucerne Australia Executive built on their capacity to improve their governance and delivery for the association. The impact of this course has been received well by the industry and has already provided benefit to the industry. As a result, the Program has extended the project for a further three years so that these benefits can continue to be delivered to industry.

The industry recognised the importance of capacity building to the pasture seeds industry. The Program funded a capacity building project, led by Lucerne Australia, which took the form of a two-day workshop. Through this project the Lucerne Australia Executive built on their capacity to improve their governance and delivery for the association. The impact of this course was demonstrated at the very successful Lucerne Australia Variety Trial Field Day in March 2021. The second component of the project focused on the need to improve grower capacity in succession planning, communicating effectively as a farm team and building resilience to manage stress. Excellent feedback was received from participants, showing the value of such investments.

Advisory Panel members:

- Ms Lisa Anderson (Chair)
- Mr Joe Cook
- Mr Brian Field
- Mr David Brown
- Mr Guy Cunningham
- Dr Meredith Mitchell
- Dr Mary-Jane Rogers (December 2014 – December 2020)
- Ms Emma Rodham

Projects completed in 2020-21

PRJ-009750
Molecular markers for cultivar ID and seed certification in pasture legumes
Publication pending

Outcomes in 2020-21

This project developed a protocol for rapid cultivar identification in red and white clovers at the seed stage to provide more confidence to farmers, seed producers and seed companies around quality assurance and certification of seed. The project was not able to establish a protocol for lucerne seed and recommends further research in this area.

PRJ-012122
Lucerne Australia Executive and member capacity building program
Delivered as an in-person workshop

Strategic objectives for 2017-22

Production and processing efficiency

Building industry capability and capacity

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<thead>
<tr>
<th>Total program expenses</th>
<th>2018-19</th>
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<tr>
<td></td>
<td>$487,922</td>
<td>$386,907</td>
<td>$491,572</td>
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</table>
Seed production success: 2020 Lucerne Variety Trial demonstrates yield improvement with less water

Funded by the AgriFutures Pasture Seeds Program, Lucerne Australia’s Lucerne Variety Trial year two results demonstrated an average 26% increase in clean seed yield across 29 commercial and pre-release lucerne varieties under reduced irrigation schedules.

Challenging good plant management for harvest success

The trial based in Keith SA, funded by the AgriFutures Pasture Seeds Program, shows moisture stressing of lucerne plants increases seed yields by up to 62% when irrigation is delayed. The 2020 trial managed by the Lucerne Australia trial committee follows on from 2019 protocols established to compare standard irrigation schedules with delayed watering.

Under high-stress conditions clean lucerne seed yields improved by 14% through to 53% across 29 varieties. The industry benchmark varieties, Aurora and Siriver produced an increase of 16% and 36% in seed yield respectively under high-stress watering management for pests, fertiliser, and depth of the root system. It has been good to have a long-term trial site to examine results over time, said Mr Allen.

The trial, established in June 2018, set out 29 lucerne varieties into three management plots experiencing either a standard irrigation practice, moderate or high-moisture-stress schedule.

“Standard irrigation practice mirrors industry management for lucerne, including four waterings over summer before signs of water stress were exhibited in the plant,” said Lucerne Australia deputy chair and Coober Pedy grower, Scott Hutchings.

He added: “The moderately stressed and highly stressed plots were limited to only three waterings, delayed on the third time depending on the plant’s moisture stress symptoms of leaf wilt or leaf drop.”

“While all trial plots had the same management for pests, fertiliser, forage management and harvest over the two years,” as trial coordinator, Mr. Hutchings noted “having more trial data and results will help provide confidence to growers in allowing lucerne plants to stress that little bit longer, knowing it will still improve seed yields plus save irrigation costs.”

Economic analysis from the trial shows moisture stressing of lucerne by reducing water costs and increasing seed yield.

Adapting findings for lucerne seed producers

“Every season’s different. To be able to follow up the last two years of trial work with a cool wet summer if La Nina eventuates will provide a good comparison for the trial results dataset,” said Mr Allen.

Long-term trial site hits strategic targets

Mr Allen leased the trial site to Lucerne Australia for the three-year project, which has now been extended by the AgriFutures Pasture Seeds Program for an additional two years (five years in total) providing a longer-term research site to examine the limits of moisture stress in mature stands of lucerne. The extension will also facilitate the development of resources and tools, such as a Ute Guide, to help growers and advisors adopt modified water management strategies to optimise seed production.

“Being a perennial plant, it takes a number of years to establish with performance responding to the size and depth of the root system. It has been good to have a long-term trial site to examine results over time,” said Mr Allen.

“The continuance of the Lucerne Variety Trial for five years supports growers to adjust their irrigation management with confidence, improving seed yield and gross margins,” said Mr. Hutchings.
Rice

Highlights and achievements

1. In late 2020 AgriFutures Australia completed an Economic impact assessment of investment in the AgriFutures Rice Program from 2016-20 (PRJ-012729). During the period AgriFutures Australia and its partners invested $42.8 million (present value) in RD&E. The results of the analysis show a strong return on investment, with a forecast present value of $160 million and a benefit-cost ratio of 4.8 to 1 on a 30-year investment horizon. The clusters of analyses projects show a positive return on almost all the investments by AgriFutures Australia. The largest benefits were observed in crop yield productivity and water use efficiency. Investment in the 12 capacity building projects during the period also had a significant number of important economic and social impacts.

2. The Program engaged BrightIdeas, an open innovation platform, to seek technologies to address water use efficiency in the rice industry to provide options to drive transformational change in the rice industry. The platform attracted 56 applications over a four-week period, with eight applications from abroad (U.K., Philippines, Republic of Korea, Israel). Several themes emerged among the ideas submitted during the challenge, such as genetic or breeding options, remote sensing and precision agriculture, and irrigation technologies. These insights were considered in the development of an open call for research projects and in key strategic planning activities.

3. The Rice Advisory Panel and key industry stakeholders participated in a scenario planning workshop to assist in developing the new Rice Program RD&E Plan. AgriFutures Australia, along with the Rice Advisory Panel and key industry stakeholders, is working towards a new Rice Program RD&E Strategic Plan that focuses on driving transformational change in the rice industry. The purpose of pursuing transformational change is to reposition rice to ensure the crop is a competitive and profitable choice for growers. To assist the development of the new Rice Program RD&E Plan, the Advisory Panel and key stakeholders participated in a scenario planning process. Scenario planning is a strategic planning method to make flexible long-term plans based on assumptions on what the future of the industry will be and helps to determine how the AgriFutures Rice Program can invest in RD&E to support the possible future scenarios. The outcomes of the scenario planning were used to generate the new AgriFutures Rice Program RD&E Plan which will be published in late 2021.

Summary of program

The GVP for rice in 2020-21 was $91 million down from $103 million in 2019-20. Due to increased water allocations, rice production rose significantly compared with the two previous seasons. The major production challenge during the period was caused by temperature variability during the growing season, and yield losses caused by cold temperatures during the growing season.

The Australian rice industry is at a juncture in the most competitive environment it has ever experienced, predominately due to water availability, competitive crops, and external sources of rice. Highly variable production, and the associated decrease in levy income, has resulted in a decline in the number of active investments made by the AgriFutures Rice Program over the last two years. To assist in managing the impact of variable production on the AgriFutures Rice Program, the industry opted to increase the RD&E levy from $2.94/tonne to $5.94/tonne. The levy increase, combined with the repayment of unmatched RD&E expenditure, places the industry in a unique position to boost investment to safeguard the future of the industry. A proportion of the additional funds will be dedicated to enhancing the Rice Breeding Program for improved variety development and release.

The AgriFutures Rice Program is entering a period of significant change and is partnering with the Roeggrowers’ Association (RGA), SunRice and other key industry players to drive transformational change in the industry. The ambitious water use efficiency target of 1.5 tonnes of rice produced per megalitre of water is a critical focus for the RD&E Program and was central to an open call for investment by the AgriFutures Rice Program. At the conclusion of the open call, AgriFutures Australia expects to invest in a number of new projects, with a staunch focus on the water use efficiency target.

The rice breeding program Australian Rice Partnership (PRJ-009950) is the principle means of investment for genetic gain and improvements for the industry to increase rice grower productivity. Driving efficiencies to achieve future economic success in rice breeding will require increased frequency of major new variety release, and a high adoption rate with a large pay-off for growers. To continue to achieve this, new methods, or the implementation of new technology into the breeding program, will be key to obtaining large step-changes in rice yields. AgriFutures Australia continues to work with the NSW DPI, SunRice and RGA to optimise the breeding program.

Deliverable for 2020-21

The Program aims to improve the productivity and sustainability of the Australian rice industry through ongoing improvement in water use efficiency to deliver gains in on-farm productivity as well contributing to environmental and social sustainability in rice growing areas.

The AgriFutures Rice Program contributes to the Rural R&D for Profit project, Smarter Irrigation for Profit (Phase 2). It is an outstanding example of collaboration with multiple partners; bringing together research organisations, farming groups, advisors and technologists from the cotton, rice, sugar, grains and dairy industries to develop practical, cost-effective irrigation strategies and technologies to improve water productivity on-farm.

Involvement in this project works towards the strategic objective outlined in the Rice Program Five Year RD&E Plan of “Cross-sectoral research required to achieve the Dry Rice 1.5 M/L water use efficiency target by 2030.”

During the 2020-21 period, the AgriFutures Rice Program took another step towards managing cold tolerance in rice. A key project funded by AgriFutures Australia, Traits of importance for aerobic DryRice varieties for the Riverina region (PRJ-011067), identified DNA markers for cold tolerance. Once validated, these markers can be incorporated into the Rice Breeding Program to fast track the progress towards developing cold-tolerant rice varieties.

Advisory Panel members:

- Mr Drew Brathwaite (Chair)
- Mr Antony Vagg (Deputy Chair)
- Dr Vito Butardo
- Mr Brian Dunn
- Mr Russell Ford
- Ms Laura Keylock
- Dr Laurie Lewin
- Dr Ben Ovenden
- Ms Michele Great (Feb 2018 to Feb 2021)
- Ms Lucinda Staley-McGrohon

<table>
<thead>
<tr>
<th>Total program expenses</th>
<th>2018-19</th>
<th>2019-20</th>
<th>2020-21</th>
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<td>$2,424,869</td>
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</table>
Rice

Projects completed in 2020-21

PRJ-012729
Economic impact assessments for Kangaroo, Export Fodder & Rice Programs
Published: Impact assessment of investment in the AgriFutures Rice Program

During the 2016-20 period, AgriFutures Australia and its partners invested $42.8 million (present value) in RD&E. The results of the analysis showed a strong return on investment, with a forecast net present value of $160 million and a benefit-cost ratio of 4.7 to 1 on a 30-year investment horizon.

The largest benefits were observed in clusters of projects focusing on crop yield productivity and water use efficiency. Investment in 12 capacity building projects during the period also provides a significant number of important economic and social impacts that are likely to exceed the $1.48 million prevent value of investment.

PRJ-012850
Rice scoping study
Published: A summary of potential investment opportunities to drive a transformational increase in the water productivity of Australian rice

This project investigated the investment options to drive transformational change in the productivity of the Australian rice industry, with a specific focus on plant breeding and emerging technologies. While no single investment was identified that will provide a transformational increase in water productivity of rice in the temperate production regions of Australia, opportunities to optimise RD&E activities in the Rice Program were identified.

Evaluation

Projects completed in 2020-21

PRJ-010758
Post graduate ‘top-up’ scholarship - J Opena
Published: Impacts of pasture legume phase on the seed bank of barnyard grass in drill sown rice

The project aimed to determine the impact of pasture legume residues on the emergence and growth of barnyard grass; to determine the influence of pasture legumes on the seed bank dynamics of barnyard grass; and to determine environmental effects on the germination, emergence and early growth of barnyard grass. The work found that including pasture legumes in crop rotations could assist in the management of barnyard grass, particularly when combined with other integrated weed management strategies.

Cross-sectorial research required to achieve the Dry Rice 1.5 t/ML water use efficiency target by 2030

Extended, sustainability and human capital

Strategic objectives for 2017-22

Outcomes in 2020-21

Section 2
Rice genetics the key to water-efficient production

With the support of the AgriFutures Rice Program Australian rice researchers are on the cusp of implementing molecular markers to make it easier to select plant varieties with the ideal traits for producing rice with less water – known as an aerobic rice production system where water availability is high but non-ponded. This “transformative” research is also shaping up to deliver yield gains in the paddock and water savings for growers.

Cold tolerance is crucial in an aerobic rice production system because, unlike the traditional practice of flooding rice fields which submerges the plant panicle and helps to protect it, in an aerobic system this would be exposed to cold temperatures.

The key to developing a cold-tolerant, aerobic-adapted rice variety includes identifying the genotype (a set of the plant’s genetic material or DNA) that not only survive, but thrive in these conditions, and incorporating these traits into Australian rice breeding programs.

More than meets the eye

To identify the genes that affect the outcome of specific traits for cold tolerance, Dr Mitchell and her team monitored plants in controlled temperature glasshouses which mimicked likely conditions in the Riverina.

Aerofutures Australia Senior Manager (Levied Industries) Lucinda Staley-McCrohon said this project is one example of how the rice industry is working together to develop solutions to benefit the entire supply chain.

“Since 2013, we have been working with the Australian Rice Partnership (funded by the AgriFutures Rice Program, SunRice and NSW Department of Primary Industries) to identify cold tolerance and traits for successful aerobic rice production systems.”

“The 2021 season was particularly challenging for many growers. A variety with cold resistance, that’s marketable and uses less water – and copes with high temperatures too – would tick all the boxes for a grower,” said Mr Crossley.

Aerobic rice production systems – fast facts

• Aerobic rice allows practices of conservation agriculture as used in upland crops such as mulching and minimum tillage.
• There’s always oxygen in the soil compared to a permanent water system where it’s anaerobic.
• Aerobic rice production offers a completely different environment for the roots and plants than an anaerobic system.
• Rice must still be watered in an aerobic system, but early and controlled trials demonstrated significant water savings without yield penalties.

For the grower, they can grow these varieties using less water and with confidence knowing they are unlikely to experience yield penalties as a result of cold weather events.”

Field findings

Very early findings from small and controlled evaluations of the cold-tolerant, aerobic-adapted rice variety at The University of Queensland Gatton campus indicated it was possible to achieve yields of up to 1.5 tonnes/megalitre of water.

Dr Mitchell said these experiments were irrigated either via an overhead or drip system and used a total of 7 megalitres per hectare.

Ms Staley-McCrohon reinforced what’s described as a “glasshouse screening” ultimately fast-tracking the development of breeding lines and varieties.

Aerobic rice production system – the basics

• Sometimes deceitfully referred to as ‘Dry Rice’ production.
• A production system where rice is grown in well-drained, non-puddled, and non-saturated soils.
• Establishment is dry direct seeding.
Tea Tree Oil

Highlights and achievements

1. Tea tree breeding is a key strategy for the AgriFutures Tea Tree Oil Program to deliver increases in oil yield quality and to manage pest control, and ultimately increase the supply of Australia tea tree oil. Tea Tree Breeding (PRJ-011309) explores the potential of a two-tiered breeding strategy, where an intensively managed elite population (that is plants that have been identified as having the desired genetic traits to achieve the Program’s objectives) is used to accelerate genetic gains relative to a larger main population.

2. The second phase of the Breeding program has now commenced and a Steering Committee has been established. This Committee is responsible for drafting of the breeding strategy and annual operational plans.

3. A new project, Enhanced Extension for the Australian Tea Tree Industry (PRJ-013114), seeks to address a gap in extension and communication activities for tea tree growers and their advisors which is restricting the uptake and benefits of industry research and development outcomes. The project is designed to accelerate the adoption of improved production techniques and develop an enduring extension service platform. Working with AgriFutures Australia and the Australian Tea Tree Industry Association (ATTIA), the project will develop and facilitate extension materials and activities for tea tree growers and their advisors which is restricting the uptake and benefits of industry research and development outcomes.

4. Over the past 25 years, the Australian tea tree oil industry has grown from a cottage industry to a thriving established industry. To support continued growth AgriFutures Australia engaged Strategic Project Partners (SPP) to conduct a review of global demand for Australian tea tree oil. The project, Understanding the Demand for Australian Tea Tree Oil (PRJ-013072), sought to address the challenge of pursuing global growth opportunities for Australian tea tree oil. The research found:

   - Various global trends are driving growth for Australian tea tree oil.
   - From these findings SPP has recommended six key initiatives to retain and drive further growth of Australian tea tree oil.

Summary of program

The GVP for tea tree oil in 2020-21 was $46 million up from $41 million in 2019-20. AgriFutures Australia investment in the tea tree breeding program over the past 25 years has resulted in the near doubling of plantation yield. This investment has also delivered efficiencies in harvesting, distillation and storage, and marketable oil benefits. The AgriFutures Tea Tree Oil Program is in the third year of its RD&E Plan 2018–2022, which provides strategic direction. The Plan has the broad aim of continuing to increase the demand for high-quality Australian tea tree oil through increased market access, which will require an increase in supply. The RD&E outcomes of the Plan that drive and manage supply and demand will lead to growth in profitability of the industry.

Deliverables for 2020–21

To improve the productivity and sustainability of the Australian tea tree oil industry through research, development and extension that reduces barriers in the market and improve production systems with the development and adoption of new varieties and improved agronomic practices.

Advisory Panel members:

- Mr Michael Flanagan (Chair)
- Ms Dee-Ann Prather
- Mr Phillip Butlin
- Mr Digby Growns
- Mr Gavin Ash
- Ms Gae Plunkett (March 2019 - April 2021)

Total program expenses

- $425,808 2018-19
- $543,081 2019-20
- $703,711 2020-21
## Tea Tree Oil

### Projects completed in 2020-21

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Title</th>
<th>Outcome in 2020-21</th>
<th>Strategic objectives for 2017-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRJ-011789</td>
<td>Scoping study of sustainable weed management in tea tree oil plantations</td>
<td>Many of the activities conducted in this project to improve weed management in TTO in a sustainable way strongly suggest the need for a TTO Industry Development Officer (IDO). The IDO could be responsible for driving progress towards more diverse herbicide options, and contributing to ongoing TTO producer education. It is the observation of the authors that other agricultural industries (for example, vegetables) have benefited greatly from the presence of industry- and/or government-funded IDOs. This relates to other aspects of production such as fertiliser management and pest and disease management and general industry development coordination.</td>
<td>Improving supply</td>
</tr>
<tr>
<td>PRJ-012748</td>
<td>Sustainable Invertebrate pest and disease management in tea tree oil plantations</td>
<td>Pest management is a significant problem and production expense for tea tree growers in Australia. This report presents outcomes of a scoping study conducted to provide an evidence-based foundation for larger projects that aim to address the most important pest and disease threats to tea tree oil production, and their subsequent management requirements.</td>
<td>Improving supply</td>
</tr>
<tr>
<td>PRJ-013072</td>
<td>Understanding the current and future demand for Australian tea tree oil</td>
<td>As part of the AgriFutures Tea Tree Oil Program, AgriFutures Australia wanted to better understand current and future demand for Australian Tea Tree Oil and identify opportunities to sustainably increase its demand. Of particular interest are opportunities to grow demand across different sectors including cosmetics, home care and pharmaceuticals.</td>
<td>Increasing demand</td>
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</tbody>
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### Outcomes in 2020-21

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Going global with Sustainable Development Goals

When a former banker and management consultant decides the best way to de-risk and build her business is to demonstrate the best sustainability credentials possible, you know going green is good for the planet and the pocket.

Most of the plastic ever produced still exists in some form. Some is recycled but the majority accumulates in landfills or ends up in our oceans. Dee-Ann and Phil Prather were so horrified when they made that discovery that they literally decided to "threaten" his business.

At the time, Down Under Enterprises’ native Australian oils were being packed in high-density polyethylene (HDPE) plastic flasks, which could only be "downcycled" into lesser-grade plastics. If she switched to aluminium, it could be melted down, retain its high purity and remain in use. It would also be a lot more expensive but despite that, Dee-Ann and Phil made the switch.

"The sole reason we did that was the sustainability aspect," said Ms Prather.

The couple were already selling their oils at a premium price, with 99% of their product going overseas and 90% to North America. The cost of the new packaging had to be added to that.

We were concerned about the negative ramifications of increasing the price. But we rolled out good communications explaining the reasons behind the move and didn’t lose anyone.”

Taking risks to save the planet

It’s not the first time Down Under Enterprises has taken these environmental leaps of faith.

"When we set up our tea tree farm, Buhilibiarm, we spent more money than if we hadn’t been so focused on doing the right thing environmentally,” said Ms Prather.

"But it’s who we are and we have faith our customers appreciate that as we’ve kept so many of them for 15-plus years.

"They know who we are in terms of ethics, morals and what we’re trying to achieve. We are what it says on the label, traceable, sustainable botanicals."

"I don’t know if it leads to better profitability but I am confident it leads to long-term relationships and that gives us a very solid business foundation and a de-risking of our business going forward.”

The couple are pleased to see the likes of Agri Futures Australia encouraging other rural businesses to also spruik their strong sustainability credentials on the international stage.

"It’s the way the whole world is moving. If we don’t follow along and instead do dirty farming and throw waste into waterways that will catch up on us. Sustainability hasn’t yet risen to the point where it’s become a severe impediment to doing business but it’s getting there.”

The couple say Europe is the big driver for change when it comes to sustainability.

"Europe’s push for free trade agreements and its focus on carbon credits will see Australian businesses who want to do business globally becoming more focused on sustainability measures,” said Mr Prather.

Big corporates demanding Sustainable Development Goals

The importance Dee-Ann Prather places on the United Nations’ Sustainable Development Goals (SDGs) is particularly pointed, as, although a sixth-generation farmer, she began her career working in investment banking and management consulting.

She returned to her roots after her parents revealed they were having a tough time selling their tea tree oil.

That was 20 years ago and the couple loved the business so much that in 2016, they bought their own farm in Australia’s Northern Rivers region in 2016, they bought their own farm in Australia’s Northern Rivers region. It’s now the most advanced of its kind in the country growing tea tree and various Australian natives that produce essential oils.

By the time they made the land purchase, the couple had already become aware of the increased interest in sustainability practices, farming methods and carbon footprints by multinationals, who also expected documentation to prove those credentials.

However, it wasn’t until the subject of SDGs became a major point of discussion at the Sustainable Cosmetics Summit in New York in 2019 that Ms Prather realised SDGs could provide a framework to showcase what they were doing and the importance of an accredited rating, like Eco Vadis.

"[Eco Vadis] made sense to us because we were already doing a lot of sustainable practices within our business so why not bundle it up and receive an international accreditation for the work we are already doing."

The summit also confirmed that it could be very good for business. Cosmetics giant, Estee Lauder, for instance, recently achieved net zero emissions. This now means suppliers who can show they are carbon neutral or carbon negative receive preference when it comes to being part of their supply chain.

Relevant goals

"When Phil and I bought our own farm we were already very cognisant of what was important to customers. It was the core of what we wanted to do anyway but it was comforting to know that it was also what was being demanded and that we could measure, monitor and report in a way that was needed.”

The couple began investigating the best way of providing proof of their results. The SDGs include 17 goals, not all of which are relevant for Australia which already has strong legislation around workplace health and safety, for instance.

However, they identified 11 goals that were relevant and important to them as a company and employed independent corporate sustainability rating company Eco Vadis to audit their achievements.

"Eco Vadis look at your sustainability footprint – soil, water, land use, electricity, legal aspects, employee protections … It’s a lot of paperwork making sure you have the right procedures and policies, but we know our customers are looking for that third-party certification and now we can provide them with it,” said Ms Prather.

In 2021 Down Under Enterprises received the prestigious Eco Vadis Platinum Sustainability ranking, which puts them in the top one per cent of more than 70,000 companies worldwide. “People really do take notice of this rating and many businesses in Europe, which are very focused on corporate social responsibility issues, won’t do business without it.”

Why Australia is well placed to capitalise on SDGs

Phil Prather points out that Australia, generally, is well placed naturally to offer sustainability to international companies as demonstrated by Eco Vadis member company scores for Australia compared to the rest of the world. An Agri Futures Australia report on the United Nations Sustainable Development Goals also demonstrates why rural businesses need to get on board. Many rural industries felt frustrated that they were barred from Fair Trade certification because we were already so good at preventing the evils of commercialisation such as child or slave labour.

SDGs, however, are a much more attainable way of opening international trade doors. But not only are they good for business, they’re good for the planet.

“We’ve got to work together to improve this planet and the SDGs give us the framework to move in the right direction,” he said.

Highlights of Down Under’s completed sustainability projects include:

• 100% renewable energy in offices and on farms
• New eucalyptus tree habitat established as koala corridor on farms
• Rainwater harvesting and irrigation recycling on farms
• Development of organic compost as fertiliser on farm
• Development of organic compost as fertiliser on farm
• No animal testing of products
• 100% of product packaging recyclable or reusable
• Gender equality – more than 50% of staff are female
• SDI14001: 2015 Environmental Management System Certification to demonstrate commitment to environmental awareness and consciousness.
Thoroughbred Horses

Outcomes in 2020-21

During 2020-21 the AgriFutures Thoroughbred Horses Program saw the finalisation of research and the publication of research outcomes that address foal health, stallion fertility, heart conditions and limb loading in racehorses, and causes of abortions. The Program focused on delivering research outcomes for industry with a commitment to industry adoption. A mid-term review of the Interim Thoroughbred Horses RD&E Five Year Plan (2017-2022) was conducted to ensure the investment activities continued to be aligned with industry priorities. The mid-term review highlighted that a greater focus on welfare is required and this has been incorporated into the Program’s revised Strategic RD&E Plan. Demonstrating the Program’s commitment to building the capacity and capability of industry participants, the Program sponsored a 2021 AgriFutures Horizon Scholar. This builds on the Program and AgriFutures Australia’s investments in programs such as Thoroughbred Breeders Association’s FastTrack. The Program is thrilled to provide this opportunity to an exemplary student within the industry. The Program published a fact sheet focused on improving awareness of contagious zoonotic disease. The project, Coxiella burnetii infection in association with equine abortion (PRJ-011750) compared tissue foetus sampling methods to develop a tissue sampling protocol, and developed a rapid and accurate point-of-care DNA-based tests for C. psittaci.

The development of a computational limb load model on thoroughbred stallion fertility.

Projects completed in 2020-21

PRJ-011159
Non-invasive ventilatory support for foals
Publication: Final report summary: Non-invasive ventilatory (NIV) support of foals
Outcomes in 2020-21

The project demonstrated improved lung aeration and increased lung volumes following NIV in foals. The research provided recommendations for industry adoption techniques to implement NIV in foals and optimise respiratory care.

PRJ-011237
Computational modelling of limb loads from galloping horses on different tracks
Publication: Final report summary: Computational modelling of limb loads from galloping horses on different tracks
Outcomes in 2020-21

A key outcome for this project was the development of a computer model that will allow assessment of the impact of track surfaces on limb loads. This research will lead to greater understanding of the impact of different track surfaces and track surface management on the welfare of racehorses.

PRJ-011268
Understanding, reducing the effects of heat stress on TB stallion fertility
Publication: Final report summary: Understanding and reducing the effects of heat stress on thoroughbred stallion fertility
Outcomes in 2020-21

In this project, the research team investigated the relationships between ambient conditions (temperature and humidity), sperm assessment parameters, sperm DNA damage and stallion fertility. The project identified various management changes that can be adopted by industry to address the impact of higher ambient temperatures on stallion fertility.

PRJ-012858
Mid-term review of interim Thoroughbred Horses Strategic RD&E Plan 2017-2022
Outcomes in 2020-21

The mid-term review considered the performance of the Strategic RD&E Plan to date and the alignment of the Program’s investments guided by the Plan. The report delivered 14 recommendations that were adopted and incorporated into the Revised Strategic RD&E Plan to ensure it aligns with the needs of industry.

PRJ-013100
Edits to Thoroughbred Horses Program Interim Five Year Plan Final Plan: AgriFutures Thoroughbred Horses Program Strategic RD&E Plan (2017-2022)
Outcomes in 2020-21

This project applied the findings and outcomes of the mid-term review to amend the Interim Thoroughbred Horses Five Year RD&E Plan (2017-2022).

Strategic objectives for 2017-22

Improve breeding outcomes and foal health and development.

Reduce injury and breakdown of horses in work and training.

Improve breeding outcomes and foal health and development.

Industry planning, economic benefit studies and market research.

Industry planning, economic benefit studies and market research.

Highlights and achievements

1. Non-invasive ventilatory support for foals (PRJ-011159) delivered enhanced foal health outcomes through the demonstration of non-invasive ventilation (NIV) for support of hospitalised foals. NIV provides respiratory support without the need for a breathing tube. This project demonstrated that NIV improves gas exchange and decreases the amount of work required by the foals to breathe.

2. New diagnostic tools to diagnose Chlamydia psittaci in equine abortions are delivering improved breeding outcomes. This serious disease is an emerging bacterial cause of reproductive loss in horses and is a highly contagious zoonotic disease. The project, Coxiella burnetii infection in association with equine abortion (PRJ-011750) compared tissue foetus sampling methods to develop a tissue sampling protocol, and developed a rapid and accurate point-of-care DNA-based tests for C. psittaci.

3. The development of a computational limb load model on different track surfaces as part of the project. Computational modelling of limb loads from galloping horses on different tracks (PRJ-011237) has increased industry understanding of impacts on racehorses. This research demonstrated that the galloping horse responds to the properties of track surfaces, and that synthetic tracks generate lower limb loads than sand tracks. This model will be used to investigate track surface design and maintenance without the need to study live horses on real tracks.

Summary of program

The GVP for thoroughbred horses in 2020-21 was $429 million down from $452 million in 2019-20.

During 2020-21 the AgriFutures Thoroughbred Horses Program saw the finalisation of research and the publication of research outcomes that address foal health, stallion fertility, heart conditions and limb loading in racehorses, and causes of abortions. The Program focused on delivering research outcomes for industry with a commitment to industry adoption. A mid-term review of the Interim Thoroughbred Horses RD&E Five Year Plan (2017-2022) was conducted to ensure the investment activities continued to be aligned with industry priorities. The mid-term review highlighted that a greater focus on welfare is required and this has been incorporated into the Program’s revised Strategic RD&E Plan. Demonstrating the Program’s commitment to building the capacity and capability of industry participants, the Program sponsored a 2021 AgriFutures Horizon Scholar. This builds on the Program and AgriFutures Australia’s investments in programs such as Thoroughbred Breeders Association’s FastTrack. The Program is thrilled to provide this opportunity to an exemplary student within the industry. The Program published a fact sheet focused on improving awareness of contagious zoonotic disease. The project, Coxiella burnetii infection in association with equine abortion (PRJ-011750) compared tissue foetus sampling methods to develop a tissue sampling protocol, and developed a rapid and accurate point-of-care DNA-based tests for C. psittaci.

The development of a computational limb load model on different track surfaces as part of the project. Computational modelling of limb loads from galloping horses on different tracks (PRJ-011237) has increased industry understanding of impacts on racehorses. This research demonstrated that the galloping horse responds to the properties of track surfaces, and that synthetic tracks generate lower limb loads than sand tracks. This model will be used to investigate track surface design and maintenance without the need to study live horses on real tracks.

Outcomes in 2020-21

The project demonstrated improved lung aeration and increased lung volumes following NIV in foals. The research provided recommendations for industry adoption techniques to implement NIV in foals and optimise respiratory care.

A key outcome for this project was the development of a computer model that will allow assessment of the impact of track surfaces on limb loads. This research will lead to greater understanding of the impact of different track surfaces and track surface management on the welfare of racehorses.

In this project, the research team investigated the relationships between ambient conditions (temperature and humidity), sperm assessment parameters, sperm DNA damage and stallion fertility. The project identified various management changes that can be adopted by industry to address the impact of higher ambient temperatures on stallion fertility.

The mid-term review considered the performance of the Strategic RD&E Plan to date and the alignment of the Program’s investments guided by the Plan. The report delivered 14 recommendations that were adopted and incorporated into the Revised Strategic RD&E Plan to ensure it aligns with the needs of industry.

This project applied the findings and outcomes of the mid-term review to amend the Interim Thoroughbred Horses Five Year RD&E Plan (2017-2022).

Strategic objectives for 2017-22

Improve breeding outcomes and foal health and development.

Reduce injury and breakdown of horses in work and training.

Improve breeding outcomes and foal health and development.

Industry planning, economic benefit studies and market research.

Industry planning, economic benefit studies and market research.

Advisory Panel members:

- Professor Nigel Perkins (Chair)
- Dr Catherine Chicken (Deputy Chair)
- Mr Derek Field
- Mr Michael Grieve
- Mr Mike Becker
- Dr Craig Suann
- Ms Jacqueline Stewart
- Ms Annelies McGaw

Projects completed in 2020-21

PRJ-011159
Non-invasive ventilatory support for foals
Publication: Final report summary: Non-invasive ventilatory (NIV) support of foals
Outcomes in 2020-21

The project demonstrated improved lung aeration and increased lung volumes following NIV in foals. The research provided recommendations for industry adoption techniques to implement NIV in foals and optimise respiratory care.

PRJ-011237
Computational modelling of limb loads from galloping horses on different tracks
Publication: Final report summary: Computational modelling of limb loads from galloping horses on different tracks
Outcomes in 2020-21

A key outcome for this project was the development of a computer model that will allow assessment of the impact of track surfaces on limb loads. This research will lead to greater understanding of the impact of different track surfaces and track surface management on the welfare of racehorses.

PRJ-011268
Understanding, reducing the effects of heat stress on TB stallion fertility
Publication: Final report summary: Understanding and reducing the effects of heat stress on thoroughbred stallion fertility
Outcomes in 2020-21

In this project, the research team investigated the relationships between ambient conditions (temperature and humidity), sperm assessment parameters, sperm DNA damage and stallion fertility. The project identified various management changes that can be adopted by industry to address the impact of higher ambient temperatures on stallion fertility.

PRJ-012858
Mid-term review of interim Thoroughbred Horses Strategic RD&E Plan 2017-2022
Outcomes in 2020-21

The mid-term review considered the performance of the Strategic RD&E Plan to date and the alignment of the Program’s investments guided by the Plan. The report delivered 14 recommendations that were adopted and incorporated into the Revised Strategic RD&E Plan to ensure it aligns with the needs of industry.

PRJ-013100
Edits to Thoroughbred Horses Program Interim Five Year Plan Final Plan: AgriFutures Thoroughbred Horses Program Strategic RD&E Plan (2017-2022)
Outcomes in 2020-21

This project applied the findings and outcomes of the mid-term review to amend the Interim Thoroughbred Horses Five Year RD&E Plan (2017-2022).
Could emu oil help treat a chronic inflammatory disease?

New pre-clinical research suggests emu oil may have medicinal benefits as a supplementary therapy for ulcerative colitis. A traditional medicine used by Australia’s Aboriginal people for thousands of years may help treat the clinical symptoms of ulcerative colitis, an inflammatory bowel disease, estimated to affect more than 33,000 people in Australia alone.

New research by University of Adelaide PhD graduate Lauren Chartier shows that emu oil, given orally to a mouse model of ulcerative colitis, could reduce gut inflammation, disease symptoms, and the development of cancer, which is a devastating complication of the disease. Emus – previously discarded by farmers as a by-product – has, over recent years, been investigated for its medicinal properties. The new pre-clinical study, supported by the AgriFutures Rataite Program, has given the green light for a clinical trial that will test emu oil as a potential supplementary treatment for ulcerative colitis patients.

"Ulcerative colitis is usually diagnosed in children or adolescents, and unfortunately there is no cure," said Dr Chartier. "Our pre-clinical evidence suggests that emu oil, taken orally as a supplement, may help reduce some of the clinical symptoms and potentially improve the quality of life for patients."

New use for traditional medicines

Ulcerative colitis is a chronic, inflammatory bowel disease that affects the inner lining of the large intestine. For those affected, the condition can be debilitating, with symptoms including diarrhoea, abdominal pain, and in more severe cases fever and weight loss. The condition can also lead to serious life-threatening complications, including colorectal cancer.

"New approaches to managing ulcerative colitis are urgently needed. Individuals affected by the condition are on lifelong treatments, such as immunosuppressants and steroids, which have varying degrees of effectiveness and significant side effects," said Dr Chartier.

Meanwhile, emu oil, extracted from the fat tissue of the native Australian emu, has long been used medicinally by Australia’s Aboriginal people for its anti-inflammatory effects for thousands of years – albeit applied to the skin to help heal wounds and reduce pain. Dr Chartier’s research team, led by Dr Suzanne Meshtoub and Professor Gordon Howarth, was the first in the world to investigate emu oil for its anti-inflammatory properties in the gut.

"My group previously demonstrated emu oils beneficial effects in mouse models for a number of gastrointestinal conditions, including chemotherapy-induced mucositis," said Dr Chartier. "I wanted to take this research to the next stage during my PhD and investigate whether emu oil could be potentially beneficial for the chronic inflammatory disease, ulcerative colitis and prevent cancer development."

In a mouse model of ulcerative colitis, Dr Chartier found that orally administered emu oil partially prevented some of the common symptoms, including bodyweight loss and diarrhoea, and improved other clinical indicators of disease, including colorectal inflammation and behaviour. Crucially, mice that received emu oil presented with fewer small colorectal tumours than untreated mice.

"We saw that the efficacy of emu oil could even be slightly improved by administering it in combination with plant extracts. This included grape seed extract, which has previously been shown to have anti-inflammatory and anti-carcinogen properties, and Kampo, a traditional medicine used in Japan," added Dr Chartier.

A path to improved colitis therapy

Dr Chartier’s encouraging pre-clinical data has provided the evidence required to start trialling emu oil in ulcerative colitis patients. Dr Chartier’s supervisor Dr Masthoff and her research group have received approval and funding for a clinical trial that will test the potential benefits of emu oil in children and adolescents with ulcerative colitis, who are most at risk of long-term complications.

"Emo oil is not going to cure cancer, but it can improve the patient’s quality of life and reduce side effects of other medications, that would be a huge benefit," said Dr Chartier.

Further to the clinical trial, Dr Chartier is interested in exactly what makes emu oil so effective at reducing inflammation. "The profile of lipids found in emu oil is for the most part not unusual and the oil contains a high percentage of omega-9 fatty acids," she said. "However, there is a fraction which makes up just two per cent of the emu oil, which we know is high in antioxidants and flavones, but which we have not yet been able to analyse," she adds. "I suspect this portion of emu oil may hold unique components, which could give us insight into what is really driving the emu oil efficacy."

If the active components could be pinpointed, isolated and given to patients in a concentrated form, emu oil’s beneficial effects could potentially be enhanced, she adds.

"Emus used to be farmed mainly for their meat and feathers; their fat tissue was considered a by-product and discarded," said Dr Chartier. "Today, emus are now more likely to be farmed for their oil than anything else – and that demand is only likely to grow."
Buffalo

Highlights and achievements
1. Prioritising RD&E for the future. A new AgriFutures Buffalo Program Strategic RD&E Plan 2021-2025 (PRJ-012908) has been developed following industry consultation. The focus for the Program will be:
   • Reduced mortality in the live export chain.
   • Development of free-range field processing equipment that provides improved safety for animal and operators in the harvesting process.
   • Measurement of feed conversion efficiency.
   • Ration formulation for feeding of milking buffalo.
   • Market insight study for improved buffalo products.

Summary of program
The GVP for buffalo in 2020-21 was $7.8 million up from $7.4 million in 2019-20.

The focus of the Program during the reporting period was the development of the new Strategic RD&E Plan. More than 70 individuals representing stakeholders in the Australian buffalo industry were included in the consultation period for the development of the Plan.

Deliverables for 2020-21
Engaging industry stakeholders in the development of the Strategic RD&E Plan to guide the research Program over the next five years.

Projects completed in 2020-21
PRJ-012908
Development of a five-year strategic plan for the AgriFutures Buffalo Program
Published: AgriFutures Buffalo Program Strategic RD&E Plan (2021-2025)

Outcomes in 2020-21
Through industry consultation with key stakeholders an RD&E strategy was produced that focuses on animal welfare and safety within the industry as well ensuring a better understanding of nutritional requirements to improve production.

Strategic objectives for 2017-22
Enhance industry success through targeted industry-specific RD&E strategies

Deer

Highlights and achievements
There were no active investments during the 2020-21 period.

Summary of program
The GVP for deer in 2020-21 was $1.7 million down from $2.3 million in 2019-20.

In 2020-21 the Program has focused on developing AgriFutures Australia's connection with industry to understand and establish RD&E priorities for an investment program with levy funding.

Deliverables for 2020-21
There were no active investments during the 2020-21 period.
Goat Fibre

Highlights and achievements

1. Prioritising RD&E for the future. Following industry consultation a new Strategic RD&E Plan has been developed for the AgriFutures Goat Fibre Program. The emphasis for the Program going forward will be to grow the size, production, reputation and value of the industry. There is also a focus on supporting industry participants and new entrants to the industry through extension.

Summary of program

The GVP for goat fibre in 2020-21 was $1.4 million down from $1.5 million in 2019-20.

Over the reporting period, consultation with the industries (mohair and cashmere) and AgriFutures Australia has highlighted that better extension of the research that has been previously conducted will be fundamental for the future of the industry. The Strategic Plan identified the establishment of an effective extension strategy as a key priority within the RD&E Strategic Plan.

Projects completed in 2020-21

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Project Description</th>
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<tr>
<td>PRJ-013268</td>
<td>Development of an Strategic RD&amp;E Plan for the AgriFutures Goat Fibre Program</td>
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Outcomes in 2020-21

<table>
<thead>
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<th>Project ID</th>
<th>Project Description</th>
</tr>
</thead>
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<tr>
<td>PRJ-013268</td>
<td>Industry consultation with key producers and stakeholders from the cashmere and mohair industries contributed to the development of a Strategic RD&amp;E Plan. This Plan places greater emphasis on extension of previously funded research that is still relevant for the industries.</td>
</tr>
</tbody>
</table>

Strategic objectives for 2017-22

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRJ-013268</td>
<td>Collaborative industry producing consistent and quality goat fibre (industry engagement and extension).</td>
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</table>

Kangaroo

Highlights and achievements

1. Development and release of the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (PRJ-010775). The new Code replaced the 2008 edition, and was developed by a working group including representatives from government authorities, the kangaroo industry and animal welfare organisations, and endorsed by the Natural Resource Management Ministerial Council.

The new Code sets achievable standards of humane conduct as the minimum standard for the harvest of the eligible species, kangaroos and wallabies. The development of the standards drew on and applied the best available scientific knowledge on animal welfare.

A significant focus has been placed on communication, education and training for the new Code. A range of materials (audio and visual) for harvesters have been developed to improve knowledge of the new code.

Summary of program

The GVP for kangaroo in 2020-21 was $25 million down from $31 million in 2019-20.

The AgriFutures Kangaroo Program focuses on animal welfare, sustainability, nutritional value, trade barriers and food safety and product value.

The delivery of the new National Code for the commercial harvest of kangaroo and wallabies was a significant achievement for the industry and Program.

The Code has considered the best available scientific evidence to establish requirements that represent minimum standards that must be met to achieve an acceptable level of animal welfare during commercial harvesting.

Deliverables for 2020-21

To provide RD&E to support a sustainable industry with particular focus on enhancing the social licence to operate and consumer appeal.
Projects completed in 2020-21

PRJ-010775 Kangaroo commercial code review
Published: National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes

Outcomes in 2020-21

The revised National Code incorporates new research into the humane treatment of kangaroos and wallabies, and recognises the latest community expectations regarding animal welfare.

Strategic objectives for 2017-22

Animal welfare sustainability

Highlights and achievements

There were no active investments during the 2020-2021 period.

Summary of program

The GVP for ratite in 2020-21 was $0.3 million static from 2019-20.
The Program is currently not receiving any levy funds to maintain an investment program.

Deliverables for 2020-21

There were no active investments during the 2020-2021 period.

Annual Report 2020-21
Export fodder customers and growers to benefit from new breeding program

Hay exporters and growers are optimistic new investment in the National Oat Breeding Program will deliver varieties to make their produce easier to manage in the paddock and more desirable on the global market.

Key points:

- $11.5 million has been invested in an Australian oat breeding program.
- The AgriFutures Export Fodder Program and the Grains Research and Development Corporation (GRDC) are contributing a joint $5.4 million to this investment.
- InterGrain, an Australian cereal breeding company, will lead this research and contribute $5.4 million. An additional $750,000 will be contributed by the Western Australian Agriculture Authority.
- This investment supports the Western Australian Government’s $10.1 million election commitment towards a Processed Oats Industry Growth Partnership.
- Future oat breeding work will build on more than 20 years of research by the South Australian Research and Development Institute (SARDI).

Production gains anticipated from new program

Hay producer Corbin Schuster wants new oat varieties that deliver higher-protein hay, thinner stems, and lodging resistance.

The hay grower from Freeling in SA stressed it was also important to accommodate the needs of the industry’s customers when developing varieties.

“Heopfully, like with any new injection of funds for breeding, it means the possibility of new varieties being developed faster to meet the needs of customers overseas quickly.”

“In some respects, we are seen as the end customer by the breeders, but as a farmer we are really the intermediary between the actual end customer, a feedlot or dairy overseas. As farmers we need to find out exactly what those overseas customers want,” said Mr Schuster.

Export hay production accounts for a third of Corbin’s farm business and more than half of his income.

He’s benefited from variety developments in other crops and is optimistic about what this new era and investment in oats could deliver to his farm’s bottomline.

“We’ve changed our main wheat variety a number of times over the last decade, the same with barley,” he said.

“But with oats, we’ve grown the same variety for 15 years. It’s still a fantastic variety but we see the advances in wheat and barley varieties and wonder what other hay growers are missing out on.”

Progression for the evolving industry

National Purchasing Manager for hay exporter JT Johnson & Sons, Rob Dickman said a change to Australia’s oat breeding was a natural progression for the evolving industry.

He said InterGrain could assist hay exporters to develop new markets by releasing improved varieties as fast as possible.

“There’s opportunities to create varieties that suit other markets and potential markets which have different requirements than existing export hay customers,” said Mr Dickman.

“Then the next step would be bringing out those new varieties quicker, that could be a game-changer.”

Building on the foundations of 20 years of oat breeding

Commercialising the oat breeding program was the right move to build on the work completed by SARDI, according to Victorian hay grower, Tim Rethus. The Horsham farmer would like to see the development of different oat varieties suitable for various soil types and seasonal conditions throughout Australia’s diverse hay-growing regions and believed InterGrain was well placed to deliver this.

“With its background, InterGrain has an awful lot of experience they can add to the hay industry,” said Mr Rethus.

“Plus, they have good coverage, being based in Western Australia they have that state covered and they also have an office in Horsham which gives them good representation in the East Coast regions.”

InterGrain has 40 research sites spread across the country and more than 200,000 field plots annually.

Last year, AgriFutures Australia, the GRDC and SARDI sought tenders for the investment and commercialisation of the National Oat Breeding Program.

InterGrain was selected to lead the program and will invest $5.4 million into oat breeding during the next five years as the program transitions to a full commercial model by 2025.

This $5.4 million investment has been matched jointly by AgriFutures Australia’s Export Fodder Program and GRDC with an additional $750,000 coming from the Western Australian Agriculture Authority.

AgriFutures Australia Managing Director, John Harvey said the industry was looking forward to working with the GRDC and InterGrain to build on SARDI’s work.

“Firstly, I would like to acknowledge SARDI’s research in oat breeding for more than 25 years, and particularly for its leadership of the national program since 2003,” said Mr Harvey.

“Under SARDI’s leadership, the program has grown and continued to deliver high-quality hay and milling oat varieties for growers.”

Up to 99 per cent of the hay exported from SA during 2019-20 came from a variety developed by SARDI. In WA, SARDI varieties made up 97 per cent of exported hay in the same year and in VIC they contributed to 41 per cent of hay exports.

InterGrain flagged widening the oat gene pool in the longer term, but in the short term one priority would be to reduce the variety development time through speed breeding and the use of summer nurseries.

Increasing the population sizes and selection intensity of oats was another short-term goal, while in the medium term the plant breeding organisation would develop and apply genomic selection methods to oats and high-throughput phenotyping of hay yield and quality.

The next step would be introducing new technologies to enable low-cost genomic oat breeding.

“InterGrain has developed a genomics platform with high SNP call rates and imputation for its barley and wheat program and will look to create similar genomics tools to create a game-changing asset for oat breeding,” said Ms Walmsey.

“We are committed to continuing to work with industry to ensure national breeding targets are prioritised, on-farm productivity is increased, and market share, domestically and globally, continues to grow.”

Fast facts

- Australian oat production during the 10 years to 2018-19 averaged 1.28 million tonnes a year.
- The highest yielding national oat crop was 2.26 million tonnes in 2016-17, the lowest was 888,000 tonnes in 2016-17.
- The National Oat Breeding Program was established in 2003 as a single-co-ordinated regional program to develop milling, feed grain and hay varieties for southern Australia, led by SARDI and in partnership with AgFutures Australia and the GRDC.
Highlights and achievements

1. The first capacity building opportunity for the AgriFutures Emerging Industries Program was conducted, with 20 spots in the Australian Institute of Company Directors (AICD) Company Directors Course offered to those working within emerging industries. This overwhelming response demonstrated the eagerness of stakeholders to take up new capacity building opportunities and further opportunities are being planned.

2. AgriFutures Australia was a major sponsor of the 2021 Northern Australia Food Futures Conference. The conference is integral to driving expansion in northern Australian agriculture and positioning it on the national agenda. This conference brought together investors, politicians, industry, and community stakeholders from around Australia and the world to explore agricultural opportunities. The 2021 conference was the largest Northern Australia Food Futures Conference to date, with over 500 delegates, and provided a platform for the AgriFutures Emerging Industries Program to promote high-potential emerging industries in northern Australia and identify new potential emerging industries.

3. A priority RD&E recommendation generated from the Catalysing a $10m Australian Insect Industry report was “pet and livestock feed trials to assess performance, health, and nutrition”. To align with the report and continue the forward trajectory in the insect industry, an investment was made with Western Sydney University in PRJ-012514 Nutritional quality of edible insects and development of pet food. Different animal feed types produced from insects can deliver nutritionally complete pet food products using edible insects as the primary protein source. The project is scheduled to finish in 2021-22.

Summary of program

In 2020-21 the AgriFutures Emerging Industries Program utilised the three-phase maturity model, developed in 2019-20, to guide RD&E investment.

Under the new three-phase maturity model, the AgriFutures Emerging Industries Program invested in the following industries in 2020-21:

1. Building early-stage clusters (GVP less than $2 million)
   - Dates
   - Finger lime
   - Guayule
   - Insects
   - Jujube
   - Kakadu plum
   - Moringa
   - Native grains
   - Perennial wheat
   - Pine nuts
   - Pongamia
   - Quinoa
   - Sesame
   - Sunn hemp
   - Teff
   - Wattle seed

2. Growing industry capability (GVP between $2 million and $10 million)
   - Amaranth
   - Cassava
   - Cocoa
   - Dragon fruit
   - Exotic vegetables
   - Hazelnuts
   - Hemp
   - Jackfruit
   - Lavender
   - Marron
   - Murray cod
   - Native bees
   - Native oils
   - Pomegranate
   - Seaweed
   - Tropical fruits

3. Expanding towards established and/or levied industries (GVP greater than $10 million)
   - Coffee

Procurement in 2020-21 fostered co-investment with research organisations and industry partners as a mechanism to encourage “buy-in” and confirm industry confidence.

Deliverables for 2020-21

Invested in 14 projects for industries with a gross value production (GVP) less than $2 million per annum.

- Invested in 14 projects for industries with a GVP between $2 million and $10 million per annum.
- Invested in one project for industries with a GVP greater than $10 million per annum.
- Development of RD&E Plans for 15 industries.
- Delivered The next wave of emerging industry opportunities 2020 report that identified opportunities for the development of new and emerging agricultural industries in Australia.
- Supported at least seven industry events to build industry networks and foster collaboration. Events included:
  - Sesame Industry RD&E Planning Workshop
  - Coffee Industry RD&E Planning Workshops
  - Northern Australia Food Futures Conference
  - Exotic Tropical Fruit Symposium
  - Pongamia Industry Research Workshop
  - Perennial Artisan Grains Workshop
- Delivered two capacity building webinars targeted at those industries that do not have an established industry association, with an aim to equip participants with the knowledge, skills, and resources to begin the process of forming an industry association. Both webinars had significant interest with 44 attendees.

- Sponsored 20 Emerging Industries stakeholders to undertake the AICD Company Directors Course.

- The following publications were released:
  - Eliminate factors inhibiting redclaw farming from reaching its full potential (final report)
  - Australian Seaweed Industry Blueprint – A Blueprint for Growth (final report)
  - The next wave of emerging industry opportunities 2020 (final report)
  - The next wave of emerging industry opportunities 2020 – Stage I (resource)
  - The next wave of emerging industry opportunities 2020 – Stage II (resource)
  - Determining the pregnancy status of feral camels (fact sheet and final report)
  - Developing an RD&E plan for the Australian pine nut industry (project summary)
  - Commencing implementation of a genetic evaluation system for livestock working dogs (final report)
  - Quinoa as a new crop in Australia – Stage 2 (executive summary)
  - Catalysing a $10m Australian Insect Industry (final report)
  - Proceedings of the 2nd Australian Industrial Hemp Conference 2020

Total program expenses

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In the spotlight

Catalysing a $10 million Australian insect industry

The Australian insect industry is tipped to reach a $10 million per annum target over the next five years. The development of an industry-led research, development and extension (RD&E) plan encourages collaboration and knowledge sharing as key steps to achieving this goal.

The roadmap outlines three key recommendations to reach the $10 million goal: share ideas and knowledge for the benefit of industry partners, develop practical guidelines as the building blocks for a strong industry, and leverage these to invest in foundational research.

The development of the RD&E plan means the industry is well placed for future investment and long-term growth. Being industry-led ensures industry challenges and opportunities are being addressed, the changes that are needed to achieve scale are prioritised, and people understand how they can grow all areas of the industry. There are currently only 14 active insect farming businesses operating across Australia, with 10 of these producing insects for animal feed and four producing insects for human consumption.

While small in size, the industry has huge potential to scale through collaboration and knowledge sharing. With a growing market for alternative sustainable, protein-based feed sources, there are extensive commercialisation opportunities ready to be harnessed.

Quick wins have been identified in the RD&E plan, however acceptance of insects as food is an ongoing challenge. There is concern about the size of the domestic market for insect-based foods, and Western diets are not accustomed to eating insects. Consumer acceptance and social license barriers to enter other markets will be fundamental to the future success of the industry.

“For the industry to grow we need to see greater value at the farm gate for producers as well as increasing demand for insect products to justify the industry scaling,” said BuggyBix Founder and CEO Shaun Eislers.

The lack of scale and the lack of clarity around the nutritional value represent key barriers for insects to scale into the feed industries. The AgriFutures Emerging Industries Program invests in new projects to support industry growth. The research project Nutritional quality of edible insects and development of pet foods aims to conduct foundational research that is required for edible insects to develop into a large-scale profitable industry.

The project is exploring the effect of different feed types on the nutritional composition of insects, the incorporation of insects into feed formulations (pet foods), and the development of nutritionally complete pet food products using edible insects as the primary protein source.

Western Sydney University lead researcher Professor Vijay Jayasena said, “While currently a small industry in Australia, there are huge commercialisation opportunities for edible insects. We have made great progress with our research and the results to date are very promising. We have completed sample analysis, produced a new pet food product, and initial testing indicates dogs love it!”

“Our research shows consumers can buy with confidence, knowing they are purchasing nutritionally complete pet food products for their dogs.”

This research will help to upscale the Australian edible insect industry, growing market share domestically and globally. Professor Jayasena said there were a number of enquiries from overseas about the research and people wanting to buy the product.

The challenge is, for growth to occur, R&D is needed to better understand and address the challenges, thus strengthening the industry and attracting further investment. But without scale, potential investors often see the insects as high risk.

“Collaboration along the entire value chain is critical to ensure benefits to the whole industry,” said Founder and CEO of Goterra, and Chair of the Insect Protein Association of Australia, Olympia Yarger.

“We need to grow together rather than individuals as separate companies. We need to collaborate to build shared experience and knowledge, thus building capability to grow and scale.”
Emerging industries

Projects completed in 2020-21

**PRJ-009388**
Eliminate factors inhibiting redclaw farming from reaching its full potential
Published: Eliminate factors inhibiting redclaw farming from reaching its full potential

This project examined methods to overcome the barriers to development and expansion of the redclaw freshwater crayfish industry in Coastal QLD and Northern NSW. The project investigated disinfection strategies for egg harvest and identified bacterial pathogens responsible for early mortalities. It examined feeding, environment, and habitat modifications to improve viability of larval stages and early growth of craylings. The project identified two new viruses associated with adult mortalities following handling stresses. The outcomes from this project will assist the industry to move from a wild harvest to an intensive aquaculture production industry.

**PRJ-012324**
National Seaweed Industry Research, Development and Extension Blueprint
Published: Australian Seaweed Industry Blueprint – A Blueprint for Growth

This project has identified and prioritised critical RD&E gaps and opportunities for the Australian seaweed industry. The final deliverable publication: Australian Seaweed Industry Blueprint – A Blueprint for Growth provides the Australian seaweed industry a valuable resource to help drive growth and investment into the industry from funding bodies and private investment.

**PRJ-012733**
The next wave of Emerging Industry Opportunities – 2020
Published: The next wave of emerging industry opportunities 2020

This project identified and analysed Australian rural industries with the greatest potential for success and provided a resource for analysis of existing agricultural products and industries. Producers, investors, and funding bodies, like AgriFutures Australia, can utilise this scan to ensure investments of time and money are placed in the industries with the highest growth potential.

**PRJ-011891**
Determining pregnancy status in camels
Published fact sheet and final report: Determining the pregnancy status of feral camels

A major outcome of the research was the development of Australia’s first public quinoa variety, ‘Kruso White’, along with an agronomic growing package, which is due for release in late 2021. The development of Kruso White will help fill the gap between locally produced and imported quinoa, providing farmers with the opportunity to grow quinoa and increase production.

Advisory Panel members:

- Mr Brian Ruddle (Chair)
- Ms Susan Wilson (Deputy Chair)
- Mr John Lever
- Ms Ann Ross
- Dr Matthew Hall (appointed August 2020)
- Ms Lucinda Hogan (appointed August 2020)
- Ms Laura Skipworth
- Mr Tom McCue (resigned April 2021)
- Mr Ian Smith (resigned June 2021)
- Dr Angeline Achariya (resigned February 2021)
- Mr William Tiang (resigned February 2021)

Outcomes for 2020-21

Supporting the early-stage establishment of high-potential rural industries.

Strategic objectives for 2020-21

1. PRJ-009388
   - This project examined methods to overcome the barriers to development and expansion of the redclaw freshwater crayfish industry in Coastal QLD and Northern NSW.
   - The project investigated disinfection strategies for egg harvest and identified bacterial pathogens responsible for early mortalities.
   - It examined feeding, environment, and habitat modifications to improve viability of larval stages and early growth of craylings. The project identified two new viruses associated with adult mortalities following handling stresses.
   - The outcomes from this project will assist the industry to move from a wild harvest to an intensive aquaculture production industry.

2. PRJ-012324
   - This project has identified and prioritised critical RD&E gaps and opportunities for the Australian seaweed industry.
   - The final deliverable publication: Australian Seaweed Industry Blueprint – A Blueprint for Growth provides the Australian seaweed industry a valuable resource to help drive growth and investment into the industry from funding bodies and private investment.

3. PRJ-012733
   - This project identified and analysed Australian rural industries with the greatest potential for success and provided a resource for analysis of existing agricultural products and industries.
   - Producers, investors, and funding bodies, like AgriFutures Australia, can utilise this scan to ensure investments of time and money are placed in the industries with the highest growth potential.

4. PRJ-011891
   - A major outcome of the research was the development of Australia’s first public quinoa variety, ‘Kruso White’, along with an agronomic growing package, which is due for release in late 2021.
   - The development of Kruso White will help fill the gap between locally produced and imported quinoa, providing farmers with the opportunity to grow quinoa and increase production.
Building a sustainable future for the Australian coffee industry

The Australian coffee growers’ industry generates a unique product from a small footprint. Established as a commercial entity over the last 30 years, the industry has successfully created a distinct niche, delivering high-quality product to small domestic, tourist and specialist export markets.

AgriFutures Australia has identified that the Australian coffee industry has strong growth potential and has invested in several coffee research projects in recent years to increase the production capacity and value of the industry.

Coffee production in Australia is developing, with around 50 commercial growers producing coffee from a total of 300-350 hectares.

Zentveld’s Australian Coffee owner and President of the Australian Subtropical Coffee Association Rebecca Zentveld said, “There is room for more! Australia needs more growers and we want them to grow well and grow quality. That is good for all of us, to showcase to the world the high standard of coffee we can grow here.”

Potential industry growth is huge (currently servicing less than one per cent of demand), and the integration of sustainability practices across the supply chain is tipped to be a game changer for the local industry, allowing Australian coffee growers to compete against imported coffee. It will also provide the industry with a competitive advantage.

The success of fair-trade coffee has demonstrated the appeal of socially sustainable imported coffee. But while sustainability at the grower level is strong, it is not integrated across the industry. Up to 90 per cent of a food-producing organisation’s environmental impacts occur either upstream or downstream in its supply chain, so creating a sustainable Australian coffee industry requires a sustainable supply chain.

The project Building a sustainable future for the Australian coffee growers’ industry collected information from Australian growers and members of the supply chain regarding their current practices, needs and aspirations. The information was benchmarked against international best practice and used to develop a plan for the implementation of a coordinated and cooperative sustainable whole-of-coffee-growing supply chain.

Principal researcher Professor Stuart Orr from the Deakin University Business School, said, “Integrating sustainability practices across the industry and its supply chain will transform the industry from individual sustainable farm operations to a fully sustainable value chain from the supply of raw materials through to the cup.”

With over 99 per cent of the coffee consumed in Australia being roasted from imported beans, and major Australian cities now boasting some of the most sophisticated coffee cultures globally, there are significant market opportunities for Australian-grown beans.

Increasing the size of the Australian coffee industry depends on attracting new investors who are directly involved in the industry and providing relevant information to continue to define the value of Australian-origin coffee as a global niche product.

This requires access to new cultivars that will decrease the cost of production, will improve productivity through less pruning, are not susceptible to the major coffee diseases and sustain or increase quality and the unique attributes of Australian-grown coffee.

The Australian coffee industry is based on the K7 coffee cultivar. This cultivar was developed in the 1970s and has vigorous growth in Australia’s subtropical climate. The trees are too tall for mechanical harvesting, meaning growers must prune trees heavily resulting in large production losses (i.e. crop loss every one in three years). A new semi-dwarf variety that requires less pruning, but with the same or better quality in the cup, is urgently needed.

Potential as suitable replacements for the K7 cultivar. The research team is currently negotiating with the WCR and breeders to commercialise these varieties.

Understanding the cupping terroir and the role it plays in coffee production is key to increasing demand and investment in the industry.

Through the project Assessing the performance of international coffee cultivars in Australia, AgriFutures Australia has partnered with Southern Cross University (SCU) and the Australian Subtropical Coffee Association (ATSCA) to secure access to new cultivars recently established in a World Coffee Research (WCR) trial in NSW.

SCU and principal researcher Associate Professor Tobias Kretzchmar said, “This provides a unique opportunity for Australian coffee growers with potential replacements for the existing K7 cultivar being identified”.

“The variety trials will provide details about the genetics and how the varieties perform under local environmental conditions, allowing evaluation of the varieties for their suitability to the Australian coffee growers’ industry.”

“We have assessed 25 WCR international varieties with a number of varieties showing potential as suitable replacements for the K7 cultivar. The research team is currently negotiating with the WCR and breeders to commercialise these varieties.”

The landscape, soil and microclimate produce the elements of quality, but Ms Zentveld said, “The grower needs to nurture that through looking after the coffee from seed to tree and soil care, through to harvest and processing the raw green bean coffee.”

All stages affect quality and growers must maximise the potential and offer a high-quality coffee that rewards efforts and competes against cheaper produced and imported beans.

“Poor coffee just will not and would not be worthwhile,” said Ms Zentveld.

“Coffee is more than just drinking something out of a cup. It is much more complicated than people think (the journey of coffee to their cup) but for us, it is about putting a smile on people’s faces when they drink our coffee.”
Operations

Investments
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- Financial snapshot 150-153
- Evaluation 154-159
- Communicating R&D results 161

People and Governance
- AgriFutures Australia Board 162-171
- AgriFutures Australia staff 172-173
- Governance and accountability 174-185
In 2020-21, AgriFutures Australia invested in 177 new projects, of which 146 were research projects. The average AgriFutures Australia investment per research project continues a steady upward trend. In 2020-21, 65 of the 146 research projects were procured through an open call for proposals.

When deciding on which research programs to invest in, AgriFutures Australia evaluates, among other things, the likely level of industry adoption of the research outputs, together with the expected economic, environmental, and social effects of the project outputs.

The main elements of the RD&E investment framework for 2020-21 were:
- Continued engagement with our levied industries through an online Levied Industries Forum
- Encouraging industry uptake of innovation in more of our industries through targeted extension programs
- An annual review of performance against the RD&E Plan
- External evaluation of Rice, Ginger, Export Fodder and Kangaroo Investment Programs over the period of their respective RD&E strategies
- Establishing industry-specific strategic directions for the coming year
- Preparing Annual Operational Plan (AOP) proposals with input from AgriFutures Australia’s R&D advisory panels through an annual review of progress against their RD&E strategic plans
- Setting funding allocations for 2020-21
- Aligning program strategies within portfolios against RD&E strategic plans, and allocating pre-determined budgets
- Implementing programs through a combination of open call and commissioned projects
- Developing communication strategies for all levied industry programs.

A balanced R&D portfolio
AgriFutures Australia invests its RD&E funds through new, developing, maturing and established industry programs, along with several national and cross-sectoral programs and initiatives.

Expenditure is allocated using a range of measures that ensure a balanced, financially responsible approach to its investment of both industry and core funds.

Our investments integrate the triple bottom line objectives of economic, environmental and social responsibility. The majority of investment is aligned with short-to-medium-term adaptive research outcomes and investment returns, with the remainder contributing to long-term strategic research objectives.

Our industry advisory panels provide advice as to the appropriate balance of investment between industry-specific RD&E priorities and cross-sectoral investment, including:
- Government research priorities
- Program objectives
- Project length
- Levels of risk, return and leverage.

Industry advisory panels assist in identifying and advising on specific RD&E priorities to implement the RD&E plans. Financial investment is determined by industry contribution, Australian Government where appropriate, and our own evaluation of the RD&E needs against investment priorities.

Where AgriFutures Australia is the appropriate lead agency, we manage and develop collaborative investment programs with partners. Areas that are well suited to collaborations include climate change, natural resource management, health, safety and welfare, capacity building and leadership.

Cost Allocation Policy
AgriFutures Australia has a Cost Allocation Policy for allocating direct and indirect costs across its programs. Direct research and development program costs are allocated at program level and corporate costs are allocated through a program management fee. This fee is based on a three-year rolling average of expenditure including the current year forecast and the previous two years’ actual expenditure. This is then weighted and capped at a pre-determined proportion of research expenditure to ensure the variance in effort between small and large programs is captured as accurately as possible.
## Financial snapshot

### Financial and operational summary ($M)

#### Revenue

<table>
<thead>
<tr>
<th></th>
<th>2020-21</th>
<th>2019-20</th>
<th>2018-19</th>
<th>2017-18</th>
<th>2016-17</th>
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</thead>
<tbody>
<tr>
<td>Commonwealth appropriation</td>
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<td>10.2</td>
<td>11.5</td>
<td>9.3</td>
<td>9.2</td>
</tr>
<tr>
<td>Industry levies</td>
<td>3.8</td>
<td>3.5</td>
<td>5.3</td>
<td>5.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Commonwealth matching</td>
<td>20.8</td>
<td>20.7</td>
<td>5.3</td>
<td>4.7</td>
<td>4</td>
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<tr>
<td>Revenue from contracts with customers</td>
<td>10.4</td>
<td>11.0</td>
<td>10.4</td>
<td>7.1</td>
<td>4.7</td>
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<tr>
<td>Interest</td>
<td>0.2</td>
<td>0.5</td>
<td>0.8</td>
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<td>0.6</td>
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<tr>
<td>Other income</td>
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<td>1.0</td>
<td>1.4</td>
<td>1.6</td>
<td>1.5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>45.6</strong></td>
<td><strong>46.9</strong></td>
<td><strong>34.5</strong></td>
<td><strong>29.1</strong></td>
<td><strong>23.2</strong></td>
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#### Expenditure

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<tr>
<th></th>
<th>2020-21</th>
<th>2019-20</th>
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<th>2017-18</th>
<th>2016-17</th>
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<tr>
<td>Research programs</td>
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<td>31.6</td>
<td>26.0</td>
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<td>22.9</td>
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<tr>
<td>Communications</td>
<td>0.9</td>
<td>0.4</td>
<td>0.8</td>
<td>0.5</td>
<td>0.5</td>
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<tr>
<td>Corporate</td>
<td>7.8</td>
<td>5.7</td>
<td>4.4</td>
<td>3.0</td>
<td>3.1</td>
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<td><strong>Total</strong></td>
<td><strong>42.0</strong></td>
<td><strong>37.7</strong></td>
<td><strong>31.0</strong></td>
<td><strong>28.2</strong></td>
<td><strong>26.5</strong></td>
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</table>

### Revenue as %

<table>
<thead>
<tr>
<th></th>
<th>2020-21</th>
<th>2019-20</th>
<th>2018-19</th>
<th>2017-18</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commonwealth appropriation</td>
<td>21%</td>
<td>22%</td>
<td>34%</td>
<td>32%</td>
<td>40%</td>
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<tr>
<td>Industry levies</td>
<td>8%</td>
<td>7%</td>
<td>15%</td>
<td>20%</td>
<td>14%</td>
</tr>
<tr>
<td>Commonwealth matching</td>
<td>46%</td>
<td>44%</td>
<td>15%</td>
<td>16%</td>
<td>17%</td>
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<tr>
<td>Revenue from contracts with customers</td>
<td>23%</td>
<td>24%</td>
<td>30%</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>Interest</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Other income</td>
<td>2%</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
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</table>

### Expenditure as %

<table>
<thead>
<tr>
<th></th>
<th>2020-21</th>
<th>2019-20</th>
<th>2018-19</th>
<th>2017-18</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research programs</td>
<td>79%</td>
<td>84%</td>
<td>84%</td>
<td>87%</td>
<td>86%</td>
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<tr>
<td>Communications</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Corporate</td>
<td>19%</td>
<td>15%</td>
<td>14%</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
### Arena 1 – People and Leadership

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount (2020-21)</th>
</tr>
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<tbody>
<tr>
<td>AgriFutures Horizon Scholarships</td>
<td>208</td>
</tr>
<tr>
<td>Investing in People</td>
<td>390</td>
</tr>
<tr>
<td>AgriFutures Rural Women’s Award</td>
<td>122</td>
</tr>
<tr>
<td>Levied Industries Capacity Building</td>
<td>389</td>
</tr>
<tr>
<td>AgriFutures Summit</td>
<td>-</td>
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</table>

**Total Arena 1 – People and Leadership**

**1,109**

### Arena 2 – National Challenges and Opportunities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount (2020-21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgriFood Innovation</td>
<td>357</td>
</tr>
<tr>
<td>AgVet Chemical</td>
<td>363</td>
</tr>
<tr>
<td>Australian Biomass for Bioenergy (ABBA)</td>
<td>184</td>
</tr>
<tr>
<td>Climate Change Research Strategy</td>
<td>110</td>
</tr>
<tr>
<td>Evaluation - Five-year Strategic Plans</td>
<td>90</td>
</tr>
<tr>
<td>evoke&lt;sup&gt;AG&lt;/sup&gt; Network</td>
<td>281</td>
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<tr>
<td>Extension Hub</td>
<td>245</td>
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<tr>
<td>grow&lt;sup&gt;AG&lt;/sup&gt;</td>
<td>434</td>
</tr>
<tr>
<td>Honeybee Genetic Improvement</td>
<td>1,657</td>
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<tr>
<td>Joint-RDC Community Trust Program</td>
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<tr>
<td>Managing Climate Variability</td>
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<tr>
<td>National Rural Issues</td>
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<tr>
<td>New biological solutions for sustainable management of weed impacts to agricultural profitability</td>
<td>2</td>
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<tr>
<td>Promoting the Importance of Bee’s in Agriculture</td>
<td>822</td>
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<tr>
<td>Rural Safety and Health Alliance</td>
<td>333</td>
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<tr>
<td>Secure Pollination for more productive agriculture: Guidelines for effective pollinator management and stakeholder adoption</td>
<td>565</td>
</tr>
<tr>
<td>Taking the Q (query) out of Q Fever: developing a better understanding of the drivers of Q fever spread in farmed ruminants</td>
<td>-</td>
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<tr>
<td>Underpinning agricultural productivity and biosecurity by weed biological control</td>
<td>4,688</td>
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<tr>
<td>Transformative Industry Action</td>
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**Total Arena 2 – National Challenges and Opportunities**

**15,290**

### Arena 3 – Growing Profitability

<table>
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<th>Activity</th>
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<tbody>
<tr>
<td>All Levied &amp; Industries</td>
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</tr>
<tr>
<td>Buffalo</td>
<td>42</td>
</tr>
<tr>
<td>Chicken Meat</td>
<td>3,606</td>
</tr>
<tr>
<td>Deer</td>
<td>(5)</td>
</tr>
<tr>
<td>Export Fodder</td>
<td>2,041</td>
</tr>
<tr>
<td>Ginger</td>
<td>358</td>
</tr>
<tr>
<td>Goat Fibre</td>
<td>30</td>
</tr>
<tr>
<td>Honeybee &amp; Pollination</td>
<td>303</td>
</tr>
<tr>
<td>Kangaroo</td>
<td>21</td>
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<tr>
<td>Pasture Seeds</td>
<td>492</td>
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<tr>
<td>Poultry Hub</td>
<td>1,246</td>
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<tr>
<td>Ratite</td>
<td>2</td>
</tr>
<tr>
<td>Rice</td>
<td>2,415</td>
</tr>
<tr>
<td>Tea Tree Oil</td>
<td>704</td>
</tr>
<tr>
<td>Thoroughbred Horses</td>
<td>1,430</td>
</tr>
</tbody>
</table>

**Total Arena 3 – Growing Profitability**

**12,780**

### Arena 4 – Emerging Industries

**Total Arena 4 – Emerging Industries**

**3,917**

### Corporate

<table>
<thead>
<tr>
<th>Activity</th>
<th>Amount (2020-21)</th>
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<tbody>
<tr>
<td>Board</td>
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<td>Communications</td>
<td>857</td>
</tr>
<tr>
<td>Corporate</td>
<td>1,274</td>
</tr>
<tr>
<td>Information &amp; Communications Technology</td>
<td>1,149</td>
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<tr>
<td>Salaries</td>
<td>2,977</td>
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<tr>
<td>Third Party Employees</td>
<td>2,356</td>
</tr>
<tr>
<td>Strategic Contingency</td>
<td>246</td>
</tr>
</tbody>
</table>

**Total Corporate**

**8,951**

**Total expenses**

**42,047**
**Economic evaluation**

**Rice**

In March 2021, an economic evaluation was carried out on the Rice Program Five-Year RD&E Plan 2016–22 by Poimena Analysis, in accordance with the Council of Rural Research and Development Corporations’ (CRRDC) guidelines. Project impacts were categorised in a triple-bottom-line context, in terms of delivery of economic, environmental and social benefits. Some of the most significant project impacts were quantitatively valued as part of the assessment.

### Methods

The impact assessment used cost–benefit analysis (CBA) as its primary tool, incorporating both subjective and objective approaches. This approach is consistent with the previous economic evaluation of the Rice Program, carried out by Agrtrans Research in 2016.

Given the large number of projects funded under this program (51), four clusters (covering 30 projects*), were developed for assessment purposes: Crop yield productivity; Water use efficiency; Rice quality and premium-priced markets; and Capacity building. For each project in each cluster, the methodology for these impact assessments involved identifying and briefly describing project objectives, activities and outputs, and potential and actual outcomes and impacts. The principal economic, environmental, and social impacts were then summarised.

Project information was assembled from original project proposals, final reports, and any progress reports or other relevant publications and materials. Assistance was provided by AgriFutures Australia personnel, industry personnel, project principal investigators and others. The nature and extent of impacts realised and/or anticipated was indemnified and some, but not all, were valued in monetary terms. These impacts are deemed to represent some of the main benefits, but not all, delivered by a project.

Benefit–cost analyses on the four clusters of investments generated investment criteria for each project investment in the following way: the present value of costs (PVC) were used to estimate investment criteria of net present value (NPV) and benefit–cost ratio (BCR) at a discount rate of 5%. The PVB and PVC are the sums of the discounted streams of benefits and costs. The internal rate of return (IRR) was estimated from the annual net cash flows. The modified internal rate of return (MIRR) for each investment was estimated where impacts were valued in monetary terms. The MIRR is a modified IRR estimated so any positive cash inflows from an investment are reinvested at the rate of the cost of capital (the reinvestment rate). For these analyses, the reinvestment rate was set at 5%, as required by the CRRDC guidelines.

### Results/key findings

All costs and benefits were expressed in 2019–20 dollar terms, using the Implicit Price Deflator for Gross Domestic Product. The base analysis used the best estimates of each variable, notwithstanding a high level of uncertainty for many of the estimates. All analyses ran for a period of 30 years after 2021–22 (the end of the RD&E period).

Costs for each project included the cash contributions of the Program (including both AgriFutures and industry investment), as well as any other resources contributed by third parties (e.g., researchers, both as cash and in-kind). Analyses were undertaken for total impacts, which included future expected impacts. Conservative assumptions were used to avoid overstating future expected positive impacts or benefits. Sensitivity analyses were conducted on 24 factors across three of the project clusters: nine for Crop yield productivity; seven for Water use efficiency; and eight for Rice quality and premium-priced markets.

A stochastic assessment was also made for each cluster and the aggregate results to demonstrate the range of possible results and the probabilities.

### Table 1

**Investment results for the Rice Program by project cluster (discount rate 5%, 30 years from 2021–22)**

<table>
<thead>
<tr>
<th>Project Code</th>
<th>PVB ($m)</th>
<th>PVC ($m)</th>
<th>NPV ($m)</th>
<th>BCR</th>
<th>IRR (%)</th>
<th>MIRR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop yield productivity</td>
<td>153.8</td>
<td>24.1</td>
<td>129.7</td>
<td>6.4</td>
<td>20.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Water use efficiency</td>
<td>40.2</td>
<td>8.0</td>
<td>32.2</td>
<td>5.0</td>
<td>21.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Rice quality and premium-priced markets</td>
<td>12.1</td>
<td>7.2</td>
<td>4.9</td>
<td>1.7</td>
<td>7.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Capacity building</td>
<td>0.0</td>
<td>1.5</td>
<td>-1.5</td>
<td>0.0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aggregate of the four project clusters</td>
<td>206.1</td>
<td>40.8</td>
<td>165.3</td>
<td>5.1</td>
<td>18</td>
<td>9.7</td>
</tr>
<tr>
<td>Aggregate costs of the Rice Program (all projects) benefits from clusters 1–3</td>
<td>206.1</td>
<td>42.8</td>
<td>163.3</td>
<td>4.8</td>
<td>18</td>
<td>9.7</td>
</tr>
</tbody>
</table>

*Of the 51 projects covered under the current Rice Program Five-Year RD&E Plan, 21 projects were assessed as unsuitable for evaluation.

For more information on these projects and the reasons for their exclusion read the full Impact assessment of investment in the AgriFutures Rice Program report.

During the 2016–20 period, AgriFutures Australia and its partners invested $42.8 million (present value terms). The economic measure of surplus returns for the whole AgriFutures Rice Program above a 5% real risk-free rate is a forecast NPV of $1.48 million, and a BCR of 1.67 on a 30-year investment horizon. This generates an MIRR of 9.7% after 30 years. (Table 1).

The modules of assessed projects show a positive return on almost all the Program investments. The largest benefits were observed in Crop yield productivity and Water use efficiency clusters, with BCR of 5.4 and 5.0 respectively. The Rice quality and premium-priced markets cluster also showed a modest, but positive, return, with a BCR of 1.67.

The investment in the 12 projects included in the Capacity building cluster provides a significant number of important economic and social impacts. The nature of these benefits is difficult to quantify. However, the benefits assessed suggest this cluster of work has a gross national investment likely to exceed the $1.48 million NPV of the cost of the investments by AgriFutures Australia and its partners.
These results are sensitive to particular assumptions, and as outlined above, sensitivity analyses were undertaken for several assumptions with the greatest degree of uncertainty, or for those seen to be key drivers of the investment criteria.

The contrasting distributions of economic returns across the project clusters are evident in Figure 1. The Crop yield productivity cluster represents both the largest investment for the Program and also the highest likely return. The range of uncertainties and variables in both the Crop yield productivity and the Water use efficiency clusters indicate a wide range of potential outcomes. For these clusters there is a 50% probability of a BCR outcome ranging from 3-6.6, with a significant proportion of future outcomes above a BCR of 6.5 for the Crop yield productivity cluster (i.e. 47%). In contrast, for the minimum, maximum and most likely outcome for each variable in the Rice quality and premium-priced markets cluster, there are no outcome with a BCR above 6.5 (Figure 1).

Conclusions

Based on the economic evaluation, using a range of scenarios and inputs, there is a high likelihood the investment by AgriFutures Australia and its partners of $42.8 million (NPV) will provide a strong return on investment.

The positive results for the type of impacts identified and valued indicate the Program is delivering value for the resources invested. This economic analysis meets the Rice Program’s responsibility to the AgriFutures Australia Board, its levy payers and the Australian Government. Importantly, it will also inform the development of the next Rice Program Strategic RD&E Plan.
Economic evaluation

Kangaroo

In October 2020, an economic evaluation was carried out on the Kangaroo Program Five-Year RD&E Plan 2013–2018 by Poimenon Analysis, in accordance with the Council of Rural Research and Development Corporations’ guidelines. Qualitative summaries of all program investments within the 2013–2018 timeframe were compiled, which included the identification of project outputs, outcomes and impacts. Project impacts were categorised in a triple-bottom-line context, in terms of delivery of economic, environmental and social benefits. Some of the most significant project impacts were quantitatively valued as part of the assessment.

Methods

The impact assessment used cost-benefit analysis (CBA) as its primary tool, incorporating both qualitative and quantitative approaches. Initially, four R&D project investments were defined, however, only two projects, relating to the renewal of the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (the Code, or the National Commercial Code of Practice) were deemed to have impacts where benefits could be estimated or forecast. These two projects were analysed as the Code Renewal Cluster. They accounted for about 85% of total investment and represented 100% of the economic benefits across the entire Kangaroo Program (four projects).

Project information was assembled from original project proposals, final reports, and any progress reports or other relevant publications and materials. Assistance was provided by AgriFutures Australia personnel, industry personnel, project principal investigators and others. The nature and extent of impacts realised and/or anticipated was used to determine projects with significant impact. An economic evaluation of the significant impacts against not only the individual project costs, but also the costs of all projects in the Program was conducted. The present value of benefits (PVB) and the present value of costs (PVC) were used to estimate investment criteria of net present value (NPV) and benefit-cost ratio (BCR) at a discount rate of 5%.

The internal rate of return (IRR) was estimated from the annual net cash flows. The modified internal rate of return (MIRR) was estimated using a re-investment of the total market is assumed to have a reliance on the Code.

The results are sensitive to particular assumptions. Sensitivity analyses were conducted across five different scenarios and inputs, there is a high likelihood the Code Renewal Cluster will provide a moderate to high return on investment.

Conclusions

Based on the economic evaluation, using a range of scenarios and inputs, there is a high likelihood the investment in renewing the National Commercial Code of Practice will provide a moderate to high return on investment.

The positive results in terms of the type of impacts identified and valued indicate the Program is delivering value for the resources invested. Based on these overall findings, AgriFutures Australia is confident the Kangaroo Program RD&E investments are worthwhile.

Table 1

<table>
<thead>
<tr>
<th>Project code</th>
<th>PVC ($m)</th>
<th>PVC ($m)</th>
<th>NPV ($m)</th>
<th>BCR</th>
<th>IRR (%)</th>
<th>MIRR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Renewal Cluster:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRJ-010771 and PRJ-010775</td>
<td>1.17</td>
<td>0.38</td>
<td>0.79</td>
<td>3.09</td>
<td>28.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Kangaroo Program (all four projects):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRJ-010771, PRJ-010775, PRJ-010303 and PRJ-010305</td>
<td>1.17</td>
<td>0.45</td>
<td>0.72</td>
<td>2.58</td>
<td>21.7</td>
<td>7.7</td>
</tr>
</tbody>
</table>
Performance against the Australian Government’s research priorities

Science and Research Priorities
Expenditure for 2020-21

<table>
<thead>
<tr>
<th>Arena</th>
<th>Arena 1 ($’000)</th>
<th>Arena 2 ($’000)</th>
<th>Arena 3 ($’000)</th>
<th>Arena 4 ($’000)</th>
<th>Total ($’000)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Food</td>
<td>-</td>
<td>11,845</td>
<td>10,239</td>
<td>3,402</td>
<td>25,486</td>
<td>90.17%</td>
</tr>
<tr>
<td>2. Soil and water</td>
<td>-</td>
<td>31</td>
<td>395</td>
<td>-</td>
<td>426</td>
<td>1.51%</td>
</tr>
<tr>
<td>6. Resources</td>
<td>-</td>
<td>235</td>
<td>-</td>
<td>-</td>
<td>235</td>
<td>0.83%</td>
</tr>
<tr>
<td>7. Advanced manufacturing</td>
<td>-</td>
<td>-</td>
<td>660</td>
<td>-</td>
<td>660</td>
<td>2.34%</td>
</tr>
<tr>
<td>8. Environmental change</td>
<td>10</td>
<td>490</td>
<td>-</td>
<td>5</td>
<td>505</td>
<td>1.79%</td>
</tr>
<tr>
<td>9. Health</td>
<td>-</td>
<td>331</td>
<td>-</td>
<td>-</td>
<td>331</td>
<td>1.17%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>602</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>618</td>
<td>2.19%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>612</strong></td>
<td><strong>12,948</strong></td>
<td><strong>11,294</strong></td>
<td><strong>3,407</strong></td>
<td><strong>28,261</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Rural Research and Development Priorities
Expenditure for 2020-21

<table>
<thead>
<tr>
<th>Arena</th>
<th>Arena 1 ($’000)</th>
<th>Arena 2 ($’000)</th>
<th>Arena 3 ($’000)</th>
<th>Arena 4 ($’000)</th>
<th>Total ($’000)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advanced Technology</td>
<td>-</td>
<td>4,759</td>
<td>1,384</td>
<td>-</td>
<td>6,143</td>
<td>21.74%</td>
</tr>
<tr>
<td>2. Biosecurity</td>
<td>-</td>
<td>4,797</td>
<td>45</td>
<td>-</td>
<td>4,842</td>
<td>17.13%</td>
</tr>
<tr>
<td>3. Soil, water and managing natural resources</td>
<td>-</td>
<td>463</td>
<td>1,193</td>
<td>-</td>
<td>1,656</td>
<td>5.86%</td>
</tr>
<tr>
<td>4. Adoption of R&amp;D</td>
<td>10</td>
<td>2,913</td>
<td>8,672</td>
<td>3,267</td>
<td>14,862</td>
<td>52.59%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>602</td>
<td>16</td>
<td>-</td>
<td>140</td>
<td>758</td>
<td>2.68%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>612</strong></td>
<td><strong>12,948</strong></td>
<td><strong>11,294</strong></td>
<td><strong>3,407</strong></td>
<td><strong>28,261</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

Communicating R&D results

AgriFutures Australia publishes final reports and/or project summaries to promote and make publicly available the results and outcomes of the research projects it funds. During 2020-21, 126 final submissions or project summaries were delivered. This is more than double the number produced for the same period last year.

In 2020-21, AgriFutures Australia collected the fifth year of data about the additional communication outputs produced by research projects. In 2020-21, AgriFutures Australia collected information about its researchers from a new project management system called K2®, replacing the previously used Clarity system.

In 2020-21, researchers told us they gave 32 presentations (at field days, workshops and conferences), delivered 23 scientific journal articles and 12 industry newsletter articles.

Figure 9
In 2020-21 the AgriFutures Australia K2 system revealed the following research outputs:

- **Research projects:** 146 projects completed
- **Number of final (approved) submissions:** 126 final (approved submissions)

*This data has been collected from the AgriFutures Australia K2 system.*
People and Governance

AgriFutures Australia Board

Mrs Kay Hull AO (Chair)
Mrs Kay Hull is a Riverina personality, award-winning businesswoman, much-lauded community leader and former Federal Member of Parliament, representing the Riverina for 12 years.
She has led, contributed to and been influential in a broad range of sectors in the community – from motor vehicle trades and services to local council, tourism, education, health, cancer support, and alcohol and drugs initiatives. Mrs Hull is Chair of the Australian National Advisory Council on Alcohol and Drugs, is a Director on the board of John McEwan House Pty Ltd, and is currently President of the National Party of Australia.

Having grown up in regional Australia, Mrs Hull has a passion for food and fibre production, and during her time in parliament ensured the agricultural sector had a strong voice, particularly in relation to water access for irrigation.
Today she continues her staunch support of regional Australia’s agricultural sector as Chair of the AgriFutures Australia Board.

Taking on the role in 2016, Mrs Hull believes AgriFutures Australia is uniquely positioned to lead the way for Australian agriculture and deliver benefits to the entire nation by investing in people, forging new frontiers of learning, fostering an environment that prizes collaboration, entrepreneurship and real commercial outcomes, and investing in new and emerging industries to ensure the productive and competitive future of Australia’s rural industries.
Mrs Hull was named an Officer of the Order of Australia for her unswerving service to rural and regional communities through health, skills development, and agricultural organisations in June 2021.

Mr Ian Henderson (Deputy Chair)
Mr Ian Henderson is the founder, CEO and principal vinegar maker at Australian Vinegar and has a desire to help new and emerging industries evolve into self-sustaining, productive and profitable industries.

With degrees in mathematics and physics, in addition to winegrowing, Mr Henderson has had a varied career. Initially specialising in IT management, data security, data matching and fraud detection in the public service, he made the move to wine production and focused on domestic and export sales, which led to an opportunity to become a vinegar maker.

A career highlight was receiving a prestigious Winston Churchill Fellowship in 2006 to study vinegar making in Europe. This allowed him to understand the possibilities in emerging industries, and how regulation and industry unity is essential to success.

Mr Henderson is also an Audit Committee member for Granite Belt Water Inc.

Mr Henderson is excited about the future for AgriFutures Australia and wants to unite the various rural industries to build a community that shares research outcomes, inspires one another and adds value to each other through collective investment in R&D.

BSc Mathematics, Physics (Griffith), Assoc. Degree Winegrowing (CSU), GAICD, Professional Member Australian Institute of Food Science and Technology.

Appointed on 01/10/17 until 30/09/20

Mr John Harvey (Managing Director)
Mr John Harvey joined AgriFutures Australia in May 2016 as Managing Director. He accepted the challenge to set a new, more commercial direction for AgriFutures Australia and aims to make it a change agent for transforming existing industries with new technologies and seeding new, high-value industries that ensure Australian agriculture continues to grow.

Prior to this appointment, Mr Harvey held various positions at the Grains Research and Development Corporation (GRDC) spanning 18 years, including five years as Managing Director.

A graduate member of the Australian Institute of Company Directors, Mr Harvey was a Director of Australian Crop Accreditation System Limited and a Director of the Value Added Wheat Cooperative Research Centre.

He has served on the boards of Pulse Breeding Australia, Barley Breeding Australia and the National Soybean Breeding Program. He was also a member of the Australian Winter Cereals Pre-Breeding Alliance and the CRC for Plant Based Management of Dryland Salinity.

BSc (Rural) Hons (UNE), GAICD.

Appointed on 03/05/16 until 02/05/21

Reappointed on 03/05/21 until 02/05/26

Dr Kathryn Andrews
Dr Kathryn Andrews has a diverse professional background which spans natural resource management (NRM), stakeholder engagement and research into policy and practice.

Her experience in rural industries is personal and professional. When she was young, Dr Andrews’ father developed the first export-standard buffalo abattoir in the Northern Territory. Her family was also involved in tea tree production.

Dr Andrews has held a variety of roles across Australia, many focusing on NRM. She is currently the Executive Officer for NRM Regions Australia, a consultant and a visiting lecturer at the ANU Fenner School for Environment and Society, a fellow at the College of Indigenous Futures, Arts and Society, at Charles Darwin University, and a member of the Future Drought Fund Consultative Committee.

Prior to this, she worked to establish the Lake Eyre Basin Coordinating Group (Australia’s only community-designed and managed cross-border NRM organisation) and became its first CEO. She was also Chair of Territory Natural Resource Management while based in Darwin and has participated in national committees including the Australian Landcare Council and CSIRO Sustainable Agriculture Flagship Advisory Committee.

BSc Hons (ANU), PhD (ANU).

Appointed on 01/10/17 until 30/09/20
Mr Richard Clark

Mr Richard Clark is an information and communications technology (ICT) leader who has spent his career building bridges between industry, research, and application. He has had a diverse career in Australia and abroad, working with high-profile ICT companies including Nokia/Alcatel-Lucent, NICTA, Ericsson, and Philips, in senior manufacturing, strategy, R&D, business development, CTO and CMO roles.

Mr Clark has had extensive experience across the Australian science, technology, and innovation sector, contributing to ICT public policy, R&D investment incentives, ICT startups and university syllabus.

He has a strong belief that strategy is only as good as its implementation and that ICT is an enabler across all industries.

Bachelor of Production Engineering (Swinburne University); Centenary Medal for contributions to ICT R&D policy; Member of the Australian Institute of Company Directors.

Appointed on 01/10/17 until 30/09/20

Dr Anthony Hamilton

Dr Anthony Hamilton is a farmer from Forbes, NSW, and was previously a Non-Executive Director of a diversified cropping and livestock business. A farmer all his life, Dr Hamilton has a passionate interest in all things rural and sees the importance of holistic farms and the pursuit of opportunities for new rural industries.

Dr Hamilton has been involved in AgriFutures Australia for several years, having started with the New Plant Products Committee off the back of his experience growing new crops such as jojoba and azuki beans. Dr Hamilton is also a member of the GRDC Northern Panel. He also gained his PhD researching the agronomy and physiology of azuki and kintoki beans.

BSc in Agriculture Hons; PhD (USyd).

Appointed on 11/10/14 until 30/09/17
Reappointed on 01/10/17 until 30/09/20

Dr William Ryan

Dr William Ryan has worked professionally in agriculture and agribusiness throughout his long career and has a very wide experience base in both research and commercial agribusiness.

Following a 21-year career in research predominately in animal production, Dr Ryan transferred into corporate agribusiness. His roles included Executive Manager with the Heytesbury Group, Director of Vasse Felix, and CEO of the Kondinin Group. As CEO of the Kondinin Group he was responsible for the financial restructuring of the group and was responsible for all aspects of financial and performance reporting for the organisation. He was also responsible for restructuring all the internal controls of the business.

Dr Ryan currently provides independent agribusiness consulting services to a range of clients. He is currently Chair of the Agricultural Produce Commission of Western Australia, a director of Mt Burdett Foundation Ltd and Chair of the Guildford Grammar School Foundation.

He joined the AgriFutures Australia Board because it has a unique role in research and development across Australian agriculture and he has a strong belief in the role of innovative research and development in the growth of a vibrant and diverse agricultural sector.

BSc in Agriculture (UWA); PhD (UWA) GAICD.

Appointed on 11/10/14 until 30/09/17
Reappointed on 01/10/17 until 30/09/20
Reappointed 01/10/20 until 30/09/23

Professor Andrew Harris

Professor Andrew Harris is a Professor of Chemical and Biomolecular Engineering at The University of Sydney, and the Australian Director of Laing O’Rourke’s future engineering and innovation consultancy, the Engineering Excellence Group.

Laing O’Rourke is Australia’s largest private engineering and construction business, with local turnover of ~$3 billion per annum. Throughout his career, he has worked at the interface between industry and academia. An expert in disruptive innovation, Professor Harris holds deep expertise of digital technology, the Internet of Things, advanced materials, robotics, automation, artificial intelligence, big data, the future of work, biomimetics, smart cities and disruptive technology incubation and acceleration applied to traditional infrastructure, engineering, energy, resources, and manufacturing sectors.

Professor Harris was recognised as one of Australia’s 50 most innovative engineers by peak body Engineers Australia in 2016. He is a Chartered Engineer and Fellow of the Institution of Chemical Engineers (IChemE), Institution of Civil Engineers (ICE) and Engineers Australia (IEAust).

PhD, BEng, BSc, CEng, FIChemE, CPEng, FIEAust, FICE, NER, RPEQ, MAICD.

Appointed on 01/10/20 until 30/09/23
Mrs Diana Gibbs  
(Chair – Audit Committee – 03/12/2020 – 30/06/2021)

Mrs Diana Gibbs is a resource economist with an established career who has worked throughout Australia, and also in the Middle East and Africa, for a wide range of corporate and public sector clients. She holds degrees in resource economics and environmental economics, and a Graduate Diploma from the Australian Institute of Company Directors. In addition to her role as Principal of Diana Gibbs & Partners (strategic planning and economic development consultants), Mrs Gibbs has held part-time positions with various government agencies involved in regional economic and community development. She has been a Member (Director) of the Murray Darling Basin Authority, a Director of the NSW Rural Assistance Authority, and Chair of the Regional Development Australia – Riverina committee, as well as Chair of the Industry Advisory Panel for Temora. She was a member of the team led by Percy Allan to conduct an independent inquiry into the financial sustainability of NSW local government, and of the Wilkinson Inquiry into the recruitment and retention of medical practitioners in regional Australia. Her experience as a Director of the NSW RAA (with a $2 billion portfolio of loans to be administered) has provided Mrs Gibbs with a strong background in the need for careful review of financial reports. Acting as a Director for the MDBA also provided sound experience in performance monitoring. Her business experience as a Director of two farming entities has provided a close understanding of the importance of risk oversight and management. All Board roles undertaken by Mrs Gibbs have demonstrated the need for strong systems of internal control. She is currently a Director of LLS Riverina, and of the Australian Forest Products Association, and serves as Economic Adviser to the SW Slopes Forest Industry Hub. Mrs Gibbs have also had a long tenure on the Board of the Australian Rural Leadership Program, as Economic Adviser to the SW Slopes Forest Industry Hub. She is a current member of the National Recovery and Resilience Agency. Mrs Robinson has previously worked in the Queensland Department of Agriculture in both extension and policy roles and is a former Director of Beef CRC Limited. She has formal qualifications in agricultural science, rural extension and strategic foresight, and in 2019 completed a Certificate in New Ventures Leadership from the Massachusetts Institute of Technology. Mrs Robinson is a graduate of the Australian Institute of Company Directors, and she has graduate and postgraduate qualifications in science and agriculture. Her 25-plus year career includes research and business management at some of Australia’s largest agribusinesses along with working in regional NSW as CEO of a not-for-profit farming systems group – Temora-based FarmLink Research. Ms Cassidy has basic training in accounts and her experience includes financial, performance and risk oversight and Board reporting. She has held several Board roles of significance to the sector including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He volunteers in several industry roles including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He is passionate about rural industries and creating a stronger, more vibrant rural Australia and brings to this role a deep and practical understanding of the levied industries. BAppSc, MAgribus, GAICD. Appointed on 01/10/20 until 30/09/23

Mrs Emma Robinson

Mrs Emma Robinson is an enthusiastic advocate for family farming and is interested in exploring how technology, farmer collaboration and consumers can come together to reshape supply chains. A beef producer from North Queensland, Mrs Robinson founded The Beef Collaboration Project, to future proof family farming through producer collaboration. Mrs Robinson was named the Queensland 2016 RRDC Rural Woman of the Year, and in 2015 undertook a Winston Churchill Trust Fellowship to research farmer cooperatives and beef supply chain innovations in the UK, US, and Canada. She is a current member of the Audit and Risk Committee of the National Recovery and Resilience Agency. Mrs Robinson has previously worked in the Queensland Department of Agriculture in both extension and policy roles and is a former Director of Beef CRC Limited. She has formal qualifications in agricultural science, rural extension and strategic foresight, and in 2019 completed a Certificate in New Ventures Leadership from the Massachusetts Institute of Technology. Mrs Robinson is a graduate of the Australian Institute of Company Directors, and she has graduate and postgraduate qualifications in science and agriculture. Her 25-plus year career includes research and business management at some of Australia’s largest agribusinesses along with working in regional NSW as CEO of a not-for-profit farming systems group – Temora-based FarmLink Research. Ms Cassidy has basic training in accounts and her experience includes financial, performance and risk oversight and Board reporting. She has held several Board roles of significance to the sector including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He volunteers in several industry roles including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He is passionate about rural industries and creating a stronger, more vibrant rural Australia and brings to this role a deep and practical understanding of the levied industries. BAppSc, MAgribus, GAICD. Appointed on 01/10/20 until 30/09/23

Mr Danny Le Feuvre

Mr Danny Le Feuvre is the founding and current managing director of Australian Bee Services (ABS), an apicultural company based in South Australia. He holds a BAppSc from The University of Melbourne, MAgribus from The University of Adelaide and is a graduate of the Australian Institute of Company Directors. Mr Le Feuvre has been involved in primary industries his whole career, with a background in agricultural science, RD&E and agribusiness consultancy. Most recently he created the apicultural business ABS. He volunteers in several industry roles including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He is passionate about rural industries and creating a stronger, more vibrant rural Australia and brings to this role a deep and practical understanding of the levied industries. BAppSc, MAgribus, GAICD. Appointed on 01/10/20 until 30/09/23

Ms Cindy Cassidy

Ms Cindy Cassidy is a Graduate of the Australian Institute of Company Directors, and she has graduate and postgraduate qualifications in science and agriculture. Her 25-plus year career includes research and business management at some of Australia’s largest agribusinesses along with working in regional NSW as CEO of a not-for-profit farming systems group – Temora-based FarmLink Research. Ms Cassidy has basic training in accounts and her experience includes financial, performance and risk oversight and Board reporting. She has held several Board roles of significance to the sector including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He volunteers in several industry roles including as Chair of the Apianes Alliance SA, Executive on the South Australian Apiaries Association, SA state representative to AHBIC, Vice-Chair of the AgriFutures Honeybee and Pollination Advisory Panel (retired), and member of the Hort Innovation Expert Advisory Panel. He is passionate about rural industries and creating a stronger, more vibrant rural Australia and brings to this role a deep and practical understanding of the levied industries. BAppSc, MAgribus, GAICD. Appointed on 01/10/20 until 30/09/23
Mr John Harvey
Mrs Emma Robinson
Ms Cindy Cassidy
Mr Danny Le Feuvre

Dr William Ryan
Mrs Kay Hull AO
Mrs Diana Gibbs
Professor Andrew Harris

2020-21
AgriFutures Australia staff

AgriFutures Australia is a government agency, with 19 staff as at 30 June 2021 and an annual operating expenditure of $42 million.

AgriFutures Australia endeavours to create opportunities so that it attracts and retains skilled and experienced staff.

AgriFutures Australia staff are employed under Section 87 of the PIRD Act 1989. AgriFutures Australia’s Enterprise Agreement 2018-21 sets out the terms and conditions of employment. Executive staff (including the Managing Director) are employed on individual contracts.

AgriFutures Australia is committed to a credible, equitable and aligned performance management system. AgriFutures Australia’s performance management system includes a formal process and an ongoing informal process that encourages staff to plan, review and recognise performance. Performance agreements are agreed annually between staff and their supervisors and include a comprehensive training and development component.

Performance reviews are formally conducted every six months, with an annual performance assessment in June.

AgriFutures Australia utilises a number of third-party employees in order to best resource our industries, and optimise service, performance, value, and output for our stakeholders.

Indigenous employment at AgriFutures Australia

For the period 1 July 2020 to June 2021, AgriFutures Australia did not employ any Indigenous staff.

Staff wellbeing and mental health

AgriFutures Australia operates an annual staff survey to measure staff sentiment and culture. During COVID-19 AgriFutures Australia also introduced a staff wellness survey, and increased management contact specifically to monitor staff mental wellbeing.

Staff wellbeing is now an inclusion in weekly staff one-on-one meetings with direct managers in order to monitor and manage risk in this area.
Governance and accountability

Governance

The AgriFutures Australia Board is committed to governance systems that enhance performance and compliance. Each Annual Report includes a description of how strategic directions, policies and processes have been applied during the year. During the year, the Board reviewed policies and processes concerning all major areas of Board operations, including Director and Board performance, risk management, conflicts of interest, Board subcommittees, and the Managing Director’s performance. AgriFutures Australia’s management policies and procedures will continue to be refined and updated as standard practice within the organisation.

The Board provides strong leadership, championing policies and systems that require AgriFutures Australia’s staff to have qualifications, skills and experience enhanced with formal and on-the-job training each year. The Audit Committee was established to support the Board with management of the financial processes, governance and risk management and legislative compliance facets of the business. Appropriate advisory panels with relevant skills to AgriFutures Australia research programs are established to ensure that projects are properly guided, and that industry and government funds are spent wisely.

Board charter

The AgriFutures Australia Board Governance Manual sets out the function, duties and responsibilities of the Board in order to facilitate Board and management accountability for AgriFutures Australia’s performance and strategic direction.

The Board is committed to fulfilling its duties, abiding by all relevant laws and regulations, and providing employees with a safe and rewarding working environment. The Board considers the broader community, external and internal stakeholders, and industry partners in its deliberations.

Board composition

As at 30 June 2021, AgriFutures Australia’s Board comprised of eight Directors: a Chairperson, an Executive Director (titled Managing Director) and six other nominated Directors. One of the nominated Directors is the Deputy Chair.

Board appointments

The Minister for Agriculture appoints Directors other than the Managing Director.

The Chair is appointed by the Minister and is not a nominated Director.

Six of the Directors are nominated by a selection committee established by the Minister in consultation with the National Farmers’ Federation and nominated Directors of the Australian Chicken Meat Federation.

The Minister appoints a nominated Director as the Deputy Chair.

The Board appoints the Managing Director and may appoint an Acting Managing Director.

Board terms

Directors are appointed by the Minister and hold office for a specified term not exceeding three years.

The Managing Director is appointed by the Board for a specified term. An Acting Managing Director may be appointed for a specified term.

Board expertise

The Directors are selected from a wide cross-section of the rural business community and offer expertise in production, processing, marketing, R&D administration, business management, social sciences, technology transfer, environmental and ecological matters.

The Board Code of Conduct is provided to all Directors as part of the induction process and provides guidance on their responsibilities, including how to act ethically, honestly, and with due care and diligence. Ethical standards at AgriFutures Australia are upheld with its values in mind: Connected, Positive, Real, Future-thinking, Innovative, Quality, Approachable, Networked, Confident, Commercially savvy, Professional.

Directors’ reports

Accountability to industry

For the purposes of reporting on operations in 2020-21, AgriFutures Australia had two organisations prescribed by Section 7 of the Primary Industries Research and Development Act 1989 (PIRD Act). This requires AgriFutures Australia to report annually on its activities each financial period. This accountability runs parallel to AgriFutures Australia’s Annual Report to the Minister and the Parliament. Separately, it is relevant to note that the deer, honey bee and rice industries are nominated as representative bodies for the Primary Industry (Excise) Levies Act 1999.

Formal reporting occurred as follows:

- National Farmers’ Federation
- Australian Chicken Meat Federation

AgriFutures Australia reported to these prescribed bodies during industry meetings being held for their own purposes. AgriFutures Australia made no payments towards the costs of these meetings.

Board committees

During 2020-21, the Board operated one committee, the Audit Committee. The record of meetings is taken by the Executive Services Coordinator or General Manager, Corporate.

The Audit Committee from 1 July 2020 to 30 June 2021 comprised:

Chair: Dr William Ryan (01/07/2020 – 30/06/2020)

Members: Mr Richard Clark, Mr Ian Henderson

Chair: Mrs Diana Gibbs (03/12/2020 – 30/06/2021)

Members: Dr William Ryan, Mrs Emma Robinson, Ms Cindy Cassidy

Audit Committee charter

The objective of the Audit Committee is to provide independent assurance and assistance, and to make appropriate recommendations to the Board on AgriFutures Australia’s risk, control and compliance framework and its external accountability.

The Managing Director and the General Manager, Corporate have a standing invitation to attend these meetings but are not members of the Committee.

During 2020-21, the Audit Committee had oversight of the completion of the statutory financial statements and annual compliance statement, reviewed the Fraud Control and Risk Management plans, reviewed the Accountability Authority Instructions, the Conflict of Interest Policy, and the Audit Committee Charter, directed the internal audit function, and monitored the development and implementation of new business systems and policies.

Date of Audit Committee Meetings 2020-21

- Teleconference: 14 September 2020
- Out-of-session teleconference: 25 September 2020
- Teleconference: 28 January 2021
- Out-of-session teleconference: 18 February 2021
- Teleconference: 29 April 2021
- Out-of-session teleconference: 29 June 2021
**Board meetings**

During 2020-21, the Board held six meetings:

- Teleconference: 15 and 16 September 2020
- Out-of-session teleconference: 29 September 2020
- Wagga Wagga NSW: 2 and 3 December 2020
- Wagga Wagga NSW: 10 and 11 March 2021
- Out-of-session teleconference: 28 April 2021
- Wagga Wagga NSW: 10 and 11 June 2021

**Performance review**

The Board is committed to continuous improvement and undertakes an evaluation of its performance in accordance with the Board Governance Manual.

The last evaluation process was completed in June 2019.

The performance review for the Managing Director is conducted annually by the Board in accordance with the Executive Services Agreement.

**Audit meetings**

The remuneration for the 2020-21 financial year is as follows:

- Chairperson: $60,980
- Director: $36,590
- Chairperson: $60,980

- Executive Services Agreement.

Conducted annually by the Board in accordance with the Board Governance Manual.

The performance review for the Managing Director is conducted annually by the Board in accordance with the Executive Services Agreement.

**Board/Audit Committee remuneration**

The performance review for the Managing Director is conducted annually by the Board in accordance with the Executive Services Agreement.

**Inductions and continuing education of Directors**

During the year, Directors participated in various industry conferences and workshops to further their knowledge of stakeholder issues and emerging sector issues. Management also develops an annual program of briefings for Directors that are usually held in tandem with a Board meeting.

Individual Directors may also participate in professional development programs with the Australian Institute of Company Directors and other entities as required.

**Independent professional advice**

Board members may seek independent professional advice at AgriFutures Australia’s expense as considered necessary to discharge their duties and responsibilities. Directors must obtain the approval of the Chair (which may not be unreasonably withheld) and the advice received made available to all Board members as appropriate.

**Potential conflict of interest**

The Board manages the potential for conflict of interest for Directors and senior management through an annual declaration and by a standing agenda item at each Board meeting. This requires Directors who may have a conflict of interest in any matter to discuss it at that meeting. Where a material potential conflict is identified, the Director leaves the meeting during discussion of the matter. Potential conflicts are recorded in the Board minutes and are available for consideration by AgriFutures Australia’s auditors.

Members of the Audit Committee also provide an annual written declaration to the Board stating they do not have any conflicts of interest that would preclude them from being members of the Committee.

**Related entity transactions**

The decision-making process for AgriFutures Australia’s financial transactions, including related entity transactions, is guided by AgriFutures Australia’s Accountable Authority Instructions and Financial Policy and Procedures. The Board and the Managing Director have powers conferred on them by the PRD Act.

The Board has determined that the Managing Director shall, in accordance with the Accountable Authority Instructions and pursuant to Section 76(2) of the PRD Act, conduct the affairs of AgriFutures Australia, subject to the following Managing Director limitations where Board approval is required:

- Approval of the Strategic R&D Plan, Annual Operational Plan and Budget, and Capital Budget
- Approval of all notifications to the Minister as required under sections 15 and 16 of the Public Governance, Performance and Accountability Act 2013 (PGPA Act)
- Purchases of capital items in excess of the total budget limit
- Write-off of non-recoverable debts above $50,000 for any given financial year
- Agreements that commit AgriFutures Australia to arrangements with other organisations/peoples in the nature of joint ventures, partnerships, being an essential participant in a CRC, shareholdings in corporations or joining in the formation of a company
- Any contract where the total AgriFutures Australia commitment exceeds $650,000 other than a variation to a Board-approved contract where the variation is less than 20 per cent of the approved commitment and the variation does not materially affect expected contract outcome
- The commitment of AgriFutures Australia through contractual obligation for the commercial use of, or exploitation of, its intellectual property
- Material changes in accounting policy within the control of AgriFutures Australia and consistent with the Finance Minister’s orders
- Approval of the Conflict of Interest Policy
- Media releases that comment or provide an opinion on AgriFutures Australia as an organisation
- Any other limitations notified in writing to the Managing Director by the Board.

All AgriFutures Australia staff are bound by its Financial Policy and Procedures and related Accountable Authority Instructions.

The Accountable Authority Instructions detail powers delegated to AgriFutures Australia staff under sections 90 and 91 of the PRD Act 1989. The instrument limits financial authority as follows:

- The financial liability into which AgriFutures Australia is entering must be consistent with strategic, operational, and capital plans
- The limits designated by approved budgets for which delegates are responsible (for example, program/cost centre budget, etc.)

AgriFutures Australia’s Conflict of Interest Policy applies to all staff.

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### Table 9

<table>
<thead>
<tr>
<th>AgriFutures Australia Board Director attendance for 2020–21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Board meetings</strong></td>
</tr>
<tr>
<td>Meetings attended</td>
</tr>
<tr>
<td>K. Andrews</td>
</tr>
<tr>
<td>A. Hamilton</td>
</tr>
<tr>
<td>R. Clark</td>
</tr>
<tr>
<td>I. Henderson</td>
</tr>
<tr>
<td>J. Harvey</td>
</tr>
<tr>
<td>K. Hull AO</td>
</tr>
<tr>
<td>W. Ryan</td>
</tr>
<tr>
<td>D. Gibbs</td>
</tr>
<tr>
<td>E. Robinson</td>
</tr>
<tr>
<td>C. Cassidy</td>
</tr>
<tr>
<td>A. Harris</td>
</tr>
<tr>
<td>D. Le Feuvre</td>
</tr>
</tbody>
</table>
Agreements to conduct research for the organisation
AgriFutures Australia uses a standard contract for R&D projects (research agreement), which sets out the terms on which AgriFutures Australia will engage successful applicants to carry out the project. The research agreement has been developed to reflect AgriFutures Australia’s statutory and other responsibilities in funding projects. AgriFutures Australia will generally not negotiate substantive amendments to any clauses of the agreement unless:
• It is satisfied that exceptional circumstances exist that require amendment to the standard form
• The applicant completes a statement of non-compliance for each of those clauses.

Consultancy services and selection of suppliers
The consultancies used by AgriFutures Australia during 2020–21, the nature of their work, and the cost of their services are listed in Table 10.

Table 10
<table>
<thead>
<tr>
<th>Name of consultancy</th>
<th>Nature of consultancy</th>
<th>Cost of services ($)</th>
<th>Initiated in 2020–21 or ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banki Hadduck Fiore</td>
<td>Legal services</td>
<td>$27,860.21</td>
<td>Ongoing</td>
</tr>
<tr>
<td>HWL Ebsworth Lawyers</td>
<td>Legal services</td>
<td>$93,410.73</td>
<td>Ongoing</td>
</tr>
<tr>
<td>King &amp; Wood Malaisse</td>
<td>Legal services</td>
<td>$123,765.62</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Terri Janke &amp; Company</td>
<td>Legal services</td>
<td>$5,050.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>AgTies Research</td>
<td>Project work</td>
<td>$71,400.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Betzner Consulting Pty Ltd</td>
<td>Project work</td>
<td>$68,800.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Computers New Pty Ltd</td>
<td>Project work</td>
<td>$4,280.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Ernst &amp; Young</td>
<td>Project work</td>
<td>$78,761.21</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Foodshot Global Inc</td>
<td>Project work</td>
<td>$50,000.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Impact Innovation Group Pty Ltd</td>
<td>Project work</td>
<td>$11,818.75</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Matthew O’Callaghan</td>
<td>Project work</td>
<td>$625.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Open2Innovate Pty Ltd</td>
<td>Project work</td>
<td>$56,120.13</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Resolve Corporate Affairs Consulting</td>
<td>Project work</td>
<td>$12,000.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>RSM Australia Pty Ltd</td>
<td>Project work</td>
<td>$6,000.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Rural Analytics Pty Ltd</td>
<td>Project work</td>
<td>$13,600.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Schuster Consulting Group Pty Ltd</td>
<td>Project work</td>
<td>$1,650.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>SiteU Solutions Pty Ltd</td>
<td>Project work</td>
<td>$16,050.00</td>
<td>Initiated in 2020–21</td>
</tr>
<tr>
<td>Clus Consulting Partners Pty Ltd</td>
<td>Project work</td>
<td>$72,560.00</td>
<td>Ongoing</td>
</tr>
<tr>
<td>The Strategic Directions Group Pty Ltd</td>
<td>Project work</td>
<td>$233,856.00</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>

Purchasing procedures
AgriFutures Australia procures goods and services ranging from low-value petty cash items to high-value goods and services that may involve complex tendering and contracting processes. Therefore, purchasing procedures will vary according to the nature and value of the procurement. AgriFutures Australia expects its staff to adopt a simple, straightforward approach to the purchase of low-value goods and services and use more complex methods to manage the risks involved in major purchases.

The following principles are applied for all transactions:
• Expenditure is to be appropriate for the purpose
• Purchases should represent value for money
• Procurement processes should be conducted in an efficient, effective, and ethical manner
• Procurement should be conducted in accordance with the procedures outlined in AgriFutures Australia’s Procurement Procedure

Indemnities and insurances for Directors and officers
Since February 1999, AgriFutures Australia has been a member of Comcover, the Australian Government’s self-managed fund for insurance cover. The insurance covers Directors and officers against various liabilities they may incur in their capacity as officers of AgriFutures Australia. The Comcover insurance contract prohibits disclosure of the nature and limit of the liabilities covered and the amount of AgriFutures Australia’s membership premium. No insurance claims were made during 2020–21. During August 2010 and December 2020, the Board executed an Access and Indemnity Deed. The Deed enables new Directors as they are appointed and designated senior officers to be indemnified from liabilities they may incur as Directors and officers of AgriFutures Australia, as permitted by the PGRA Act.

Risk management
The AgriFutures Australia Risk Management Policy and Framework 2020–21 (supersedes the AgriFutures Australia Risk Management Plan 2017–20) AgriFutures Australia’s Risk Management Policy and Framework is assessed annually by the Audit Committee and Board to ensure all risk are reviewed where there have been changes in internal or external operating environments and to consider any emerging risks. The control framework comprises a risk assessment methodology to identify risks to the organisation with relevant mitigant strategies. Management also reports to each Board and Audit Committee meeting on the status and progress of the management of any key risks.

In 2019–20, AgriFutures Australia conducted a series of risk workshops with a specialist risk management consultant to identify and review major strategic and operational risks to the organisation. These identified risks have since been further refined by the AgriFutures Australia Executive and Board. The review of these risks is a constantly ongoing process to ensure risk identification management and mitigation remains current and relevant to AgriFutures Australia and its stakeholders.

The Audit Committee oversees preparation and implementation of AgriFutures Australia’s risk management initiatives.

Fraud control
AgriFutures Australia’s Fraud Control Plan is approved by the Audit Committee and Board.

The Managing Director is satisfied that:
• A fraud risk assessment and fraud control plan have been prepared in compliance with the Commonwealth’s Fraud Control Guidelines as set out in AgriFutures Australia’s Fraud Control Plan 2020–22
• Appropriate fraud prevention, detection, investigation and reporting procedures and processes are in place as specified in AgriFutures Australia’s Fraud Control Plan 2020–22
• There was no incidence of attempted fraud reported in 2020–21.

Accordingly, the Board is satisfied that AgriFutures Australia’s fraud control policies, procedures and initiatives are in accordance with the Commonwealth’s Fraud Control Guidelines.

The Audit Committee oversees preparation and implementation of AgriFutures Australia’s Fraud Control Policy.
Ministerial reporting

The Australian Government is a key stakeholder. It provides the legislative framework under which AgriFutures Australia operates, a core appropriation through the Department of Agriculture and matching Commonwealth funds to those AgriFutures Australia industries with a statutory levy.

In addition to the specific linkages of Board appointments and corporate documentation such as the Corporate Plan, the Annual Operational Plan and this Annual Report, AgriFutures Australia also writes to the responsible Minister outlining the key outcomes of Board meetings.

Ministerial directions

Under Section 143 of the PIRD Act, the Minister may give written directions to AgriFutures Australia as to the performance of its functions and the exercise of its powers. No such directions were given in 2020-21.

Under Section 22 of the PGPA Act, the Minister may give written directions to AgriFutures Australia regarding complying with the general policies of the Government. No such directions were given in 2020-21.

Judicial decisions

No judicial decisions were recorded for 2020-21.

Significant events

evoke

On 24 June 2021, AgriFutures Australia announced two evoke events for 2022.

evoke is the Asia Pacific region’s premier agrifood tech event. 2019 and 2020 saw the event held at the Royal Exhibition Building, Melbourne.

While COVID-19 implications saw the postponement of the 2021 event, as a responsive and agile organisation, AgriFutures Australia launched the evoke Network. The evoke Network consists of a digital platform, startup programs and international webinars, aimed at maintaining engagement in agrifood innovation and connection to our stakeholders.

2022 will see two physical events in both NSW and WA, with AgriFutures Australia taking a forward-thinking approach to hosting this event, given the ongoing uncertainty with pandemic-driven border closures.

Rural Women’s Award

2020 saw the postponement of the AgriFutures Rural Women’s Award Gala at Parliament House, Canberra. The state winners were awarded in August 2021. 2021 saw significant changes to the RNA program, including stricter criteria for entry, and an increase in the bursary for the national winner, increasing to $20,000.

There was also the introduction of the AgriFutures Rural Women’s Acceleration Grant which aims to provide Australian women with learning and development opportunities, upskilling them so they can bring their ideas, cause, or vision to life. Seven $7,000 Acceleration Grants for learning and development will be awarded each year.

Leved Industries Forum

On 27 April 2021, AgriFutures Australia hosted the Leved Industries Virtual Forum, a great success in the COVID-19 era of increasing agility in communication with stakeholders. This was the second virtual event, following on from the success of the 2020 event.

Accountability

Compliance with general policies of government

AgriFutures Australia is not required to comply with the Commonwealth Procurement Rules 2014. However, the AgriFutures Australia Procurement Policy aligns with the Commonwealth Procurement Guidelines where practicable.

Compliance with legislative requirements

Public Governance, Performance and Accountability Act 2013

AgriFutures Australia has no instance of non-compliance with the Public Governance, Performance and Accountability Act 2013 for the period 2020-21.

Work Health and Safety Act 2011

Part 14, Schedule 2, Part 4 Other Persons

Table 11 summaries the requirements under the Work Health and Safety Act 2011 and AgriFutures Australia’s related actions.

The Environment Protection and Biodiversity Conservation Act 1999

AgriFutures Australia is required to report against two criteria. The first is how AgriFutures Australia’s activities accord with and contribute to ecologically sustainable development (see Table 12). The second is to report on AgriFutures Australia’s environmental performance, and measures being taken to mitigate the impact activities have on the natural environment.

Health and safety outcomes

Health and safety outcomes remain comparable to previous years.

Statistics of any accidents or dangerous occurrences during the year arising out of conduct or undertakings by AgriFutures Australia that required the giving of notice

Nil

Details of any investigations conducted during the year that relate to undertakings carried on by the employer, including details of all notices given to the employee

Nil
The effect of AgriFutures Australia’s actions on the environment

Table 12

<table>
<thead>
<tr>
<th>Program</th>
<th>Environmental issue</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>Develop rice varieties with enhanced adaptation, e.g. improved cold tolerance, salinity tolerance, drought tolerance and water productivity, to cope with an evolving production environment.</td>
<td>Further advancement towards the development of cold-tolerant rice varieties has continued and new research into heat tolerance for adaption to northern Australia opens opportunity to grow rice a variety of climatic zones. Improved temperature tolerance, remote crop sensing and precision farming will lead to greater potential for reducing irrigated water use, managing seasonal variation and reducing crop inputs.</td>
</tr>
<tr>
<td></td>
<td>Weed management and aerobic rice projects.</td>
<td>The rice agronomy project aims to increasing grain yield and quality while maximising water productivity and nitrogen use efficiency. The weed management project supports ongoing integrated weed management programs for rice farming systems and provides advice to growers and agronomists on effective weed control options. The aerobic rice project aims to identify traits that are linked to cold tolerance, which can then be incorporated into the rice breeding program. Overcoming cold tolerance is a key factor in moving the rice industry towards aerobic production.</td>
</tr>
<tr>
<td>Chicken Meat</td>
<td>Water security</td>
<td>A review of current water use practices, licencing, policy and feasibility of alternative water sources. Pathways were identified to improve water allocation security, water use efficiency, water availability and closed-loop water use through the industry into the future. Research into how some management practices may impact odour emissions on-farm and how they can be mitigated. Benchmarking data for fan operation and odour to improve data availability for industry growth.</td>
</tr>
<tr>
<td></td>
<td>Litter and environment – best practice and data to support production and growth</td>
<td></td>
</tr>
<tr>
<td>Pasture Seeds</td>
<td>Soil erosion and compaction experienced during subterranean clover harvesting (using current harvesting techniques).</td>
<td>This research continues to develop new and novel methods of subterranean clover harvesting. There is a particular focus on addressing the impacts around soil erosion associated with the current method of vacuum harvesting machinery and soil compaction as a result of paddock preparation prior to harvesting. This research will result in machinery modifications that will reduce soil erosion and soil compaction as a result of harvesting.</td>
</tr>
</tbody>
</table>
Measures being taken to minimise the impact of actions by AgriFutures Australia on the environment

AgriFutures Australia continued initiatives to minimise the impact of its actions on the environment by:
- Continued electronic distribution of Board and Audit Committee papers
- Continued electronic distribution of Advisory Panel meeting papers
- Availability of electronic versions of a majority of internal policies, forms and administrative documents
- Encouraging teleconferencing whenever possible
- Developing a risk assessment framework for project proposals to reduce the risk of funding projects on plants and animals that may become invasive.

AgriFutures Australia continued to promote the use of print-on-demand services for its publications by:
- Electronically distributing corporate documents to clients and stakeholders
- Encouraging the use of electronic files in place of hardcopy items, e.g. the Annual Operational Plan and other corporate documents
- Encouraging distribution of electronic research reports for stakeholders rather than printing hard copies.

Mechanisms for reviewing and increasing the effectiveness of above measures

AgriFutures Australia closely monitored its paper usage and postage costs during the year to quantify the effectiveness of these measures
- More generally, AgriFutures Australia has a regular program of evaluating the impact of its R&D investments using a triple bottom line approach, assessing economic, environmental and social impacts
- The AgriFutures Australia project application process specifically requires an applicant to address the environmental implications of their project in addition to the economic and social impacts.

Freedom of Information

The broad objective of the Freedom of Information Act 1982 (FOI Act) is to give the Australian community access to information held by the Australian Government.

Reforms to the FOI Act, which came into effect on 1 May 2011, are aimed at promoting a pro-disclosure culture across government and building a stronger foundation for greater openness and transparency in government operations. AgriFutures Australia is committed to a proactive approach to publishing information that it holds for the benefit of the rural and rural research communities and the broader Australian public.

This information is accessible through AgriFutures Australia’s website at agrifutures.com.au.

AgriFutures Australia operates under the direction of a Board of Directors. Its headquarters are in Wagga Wagga, NSW and contact details are:

AgriFutures Australia
Building 007
Tooma Way
Charles Sturt University
Wagga Wagga NSW 2650

Postal address:
c/o Charles Sturt University
Locked Bag 588
Wagga Wagga NSW 2678

How to make a request for access to documents under the FOI Act

Requests made under the FOI Act must:
- Be in writing
- State that the request is an application for the purposes of the FOI Act
- Provide such information concerning the document that will allow AgriFutures Australia to identify it
- Provide detail of how notices provided by AgriFutures Australia in relation to the FOI request can be sent to the applicant.

AgriFutures Australia documents

AgriFutures Australia publishes or holds corporate documents such as the Annual Report, Corporate Plan and Annual Operational Plan. These are free while stocks are available.

They are also available for free download from AgriFutures Australia’s website at agrifutures.com.au.

AgriFutures Australia’s extensive research library is available for viewing, free download or purchasing from its print-on-demand portal at agrifutures.com.au/publications/resources/publications/

Purchases can also be made by phoning 1300 634 313 for the cost of a local call.

Accessing information

Formal requests for information under the FOI Act must be made in writing to: The FOI Coordinator AgriFutures Australia at the appropriate postal address.

In many cases, an application under the FOI Act may not be required as information or documents may be readily available. An up-to-date listing of projects funded by AgriFutures Australia is detailed on the AgriFutures Australia website. Funding information on individual projects is available on request.

Processing of FOI requests

Upon receipt of a FOI request, AgriFutures Australia will provide an acknowledgement of receipt within 14 days. In accordance with the FOI Act, a decision must be notified to the FOI applicant within 30 days of receipt. However, as some documents may be subject to a third-party consultation process, the FOI Act provides agencies with the right to extend the applicable timeframe by an additional 30 days. If consultation is required, applicants will be informed accordingly.

Fees and charges

FOI requests made to AgriFutures Australia on or after 1 November 2010 no longer require an application fee to be paid. However, the FOI Act provides that charges may be imposed for processing requests (except where applicants are seeking documents containing their own personal information). Should the FOI request incur any charges, applicants will be provided with an estimate of the applicable charges. Requests will not proceed until applicants provide a response to the estimate. AgriFutures Australia may decide to remit, reduce, or not impose processing charges under certain circumstances.

Review rights

Following receipt of the decision on access, applicants are entitled to seek an internal review of the decision by writing to the FOI Coordinator within 30 days of being notified of the decision.

Alternatively, applicants may write to the Office of the Australian Information Commissioner (OAIC) seeking a review of AgriFutures Australia’s decision. This can be done as a result of either the initial decision or the internal review decision.

Subsequent review options after internal review and OAIC review are also available. The complete process for seeking a review on access is provided in the decision letter sent to applicants at the completion of the request.

Further information

The FOI Coordinator can be contacted to discuss any prospective request to the organisation. Since 1 May 2011, agencies have been required to provide public access to documents released in accordance with the FOI Act.

Documents released under the FOI Act can be obtained by accessing AgriFutures Australia’s FOI Disclosure Log at agrifutures.com.au.

AgriFutures Australia’s FOI information can be found by accessing agrifutures.com.au.

Information Publication Scheme

Agencies subject to the FOI Act are required to publish information to the public as part of the Information Publication Scheme.
Financials

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditor’s report and Director’s statement</td>
<td>188-190</td>
</tr>
<tr>
<td>Statement of Comprehensive Income</td>
<td>192-193</td>
</tr>
<tr>
<td>Statement of Financial Position</td>
<td>194-195</td>
</tr>
<tr>
<td>Statement of Changes in Equity</td>
<td>196-197</td>
</tr>
<tr>
<td>Cash Flow Statement</td>
<td>198-199</td>
</tr>
</tbody>
</table>
INDEPENDENT AUDITOR’S REPORT

To the Minister for Agriculture and Northern Australia

Opinion

In my opinion, the financial statements of the Rural Industries Research and Development Corporation (the Entity) for the year ended 30 June 2021:

(a) comply with Australian Accounting Standards – Reduced Disclosure Requirements and the Public Governance, Performance and Accountability (Financial Reporting) Rule 2015; and

(b) present fairly the financial position of the Entity as at 30 June 2021 and its financial performance and cash flows for the year then ended.

The financial statements of the Entity, which I have audited, comprise the following as at 30 June 2021 and for the year then ended:

• Statement by Directors, Chief Executive and Chief Financial Officer;
• Statement of Comprehensive Income;
• Statement of Financial Position;
• Statement of Changes in Equity;
• Cash Flow Statement; and
• Notes to the financial statements, comprising a summary of significant accounting policies and other explanatory information.

Basis for opinion

I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the Auditor’s Responsibilities for the Audit of the Financial Statements section of my report. I am independent of the Entity in accordance with the relevant ethical requirements for financial statement audits conducted by the Auditor-General and his delegates. These include the relevant independence requirements of the Accounting Professional and Ethical Standards Board’s APES 110 Code of Ethics for Professional Accountants (including Independence Standards) (the Code) to the extent that they are not in conflict with the Auditor-General Act 1997. I have also fulfilled my other responsibilities in accordance with the Code. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Accountable Authority’s responsibility for the financial statements

As the Accountable Authority of the Entity, the Directors are responsible under the Public Governance, Performance and Accountability Act 2013 (the Act) for the preparation and fair presentation of annual financial statements that comply with Australian Accounting Standards – Reduced Disclosure Requirements and the rules made under the Act. The Directors are also responsible for such internal control as the Directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Directors are responsible for assessing the ability of the Entity to continue as a going concern, taking into account whether the Entity’s operations will cease as a result of an administrative restructure or for any other reason. The Directors are also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the assessment indicates that it is not appropriate.

Auditor’s responsibilities for the audit of the financial statements

My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian National Audit Office Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with the Australian National Audit Office Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

• identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
• obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity’s internal control;
• evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Accountable Authority;
• conclude on the appropriateness of the Accountable Authority’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity’s ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor’s report. However, future events or conditions may cause the Entity to cease to continue as a going concern; and
• evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with the Accountable Authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Australian National Audit Office

Colin Bienke
Audit Principal
Delegate of the Auditor-General
Canberra
17 September 2021
STRIKE BY DIRECTORS, CHIEF EXECUTIVE AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2021 comply with subsection 42(2) of the Public Governance, Performance and Accountability Act 2013 (PGPA Act), and are based on properly maintained financial records per subsection 42(2) of the PGPA Act.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Rural Industries Research and Development Corporation trading as AgriFutures Australia (agriFutures) will be able to pay its debts as and when they fall due.

This statement is made in accordance with a resolution of the directors.

Professor Andrew Harris  
Acting Chairperson

John Harvey  
Managing Director

Louise Heslop  
Chief Financial Officer

15 September 2021
STATEMENT OF COMPREHENSIVE INCOME
for the period ended 30 June 2021

Notes

2021 $'000  2020 $'000  Original budget $'000

NET COST OF SERVICES
Expenses

- Employee benefits
  1.1A  3,830  3,209  3,600
- Research projects
  1.1B  28,261  25,529  33,538
- Suppliers
  1.1C  9,616  8,737  10,127
- Depreciation and amortisation
  2.2A  308  202  355
- Finance costs
  23  15  1
- Write-down and impairment of assets
  9  14  -

Total expenses  42,047  37,706  47,621

Own-source revenue

- Industry levies
  1.2A  3,846  3,522  -
- Revenue from contracts with customers
  1.2B  10,493  11,079  10,086
- Interest
  248  448  875
- Royalties
  1.2C  567  880  313
- Other revenue
  352  119  2,290

Total own-source revenue  15,506  16,048  13,564

Net cost of services  26,541  21,658  34,057

Revenue from Government  1.2D  30,198  30,933  32,712

Surplus/(deficit)  3,657  9,275  (1,345)

Total comprehensive income/(loss)  3,657  9,275  (1,345)

The above statement should be read in conjunction with the accompanying notes.

Budget Variance Commentary

The original budget is the 2020-21 Portfolio Budget Statements (PBS). The surplus of $3.7m is $5m over the expected budget deficit of $1.3m. The positive budget variance is due to overall revenue being $0.6m under budget and expenses being $5.6m under budget. Total revenue consists of own-source revenue which was $1.9m over budget and Revenue from Government which was $2.5m under budget. Total expenses were $5.6m under budget due to:

1. Research expenditure was $5.3m below budget, with the main variances being in the following programs:
   a) Transformative Industry Action $2.7m. This was a new program of work in 2020-21 with a budget of $6m. The time taken to complete due diligence on proposed investments, including business case development and to conduct public procurement for the proposed investments resulted in delays in contracting which resulted in the deferral of expenditure into 2021-22.
   b) Rice program was $0.8m less than budget as additional funds were received from a partner organisation which resulted in expenditure being deferred into 2021-22.
   c) National Rural Issues $0.7m. COVID-19 had an impact on supplier availability, which resulted in unscheduled delays in program delivery
2. Suppliers expense was $0.5m less than budget due to a reduction in expenditure in the evokeAG, Rural Women’s Award and Summit programs with events in these programs cancelled due to COVID-19.
3. Employee benefits was over budget by $0.2m or 6% as additional resources were engaged as a result of the new programs planned in 2020-21.

The additional $1.9m in own-source revenue is comprised of:

1. Industry levies were reclassified from Revenue from Government in the PBS budget resulting in an increase of $3.8m.
2. Other revenue was $1.9m under budget as $2.2m in projected sponsorship income was not received due to the cancellation of evokeAG in February 2021.

The reduction in Revenue from Government of $2.5m is comprised of:

1. Industry levies were reclassified from Revenue from Government in the PBS budget resulting in a decrease of $3.8m.
2. Commonwealth matching income was $0.8m over budget as the estimated GVP values were less than the actual GVP which were advised in June 2021.
3. Industry levies was $0.5m over budget as production volumes on which the levies are based were higher than expected in 2020-21.
### STATEMENT OF FINANCIAL POSITION

as at 30 June 2021

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSETS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>2.1A</td>
<td>4,351</td>
<td>4,806</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>2.1B</td>
<td>7,796</td>
<td>8,587</td>
</tr>
<tr>
<td>Investments</td>
<td>2.1C</td>
<td>51,400</td>
<td>46,930</td>
</tr>
<tr>
<td><strong>Total financial assets</strong></td>
<td></td>
<td>63,547</td>
<td>60,323</td>
</tr>
<tr>
<td><strong>Non-financial assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>2.2A</td>
<td>1,056</td>
<td>874</td>
</tr>
<tr>
<td>Computer software</td>
<td>-</td>
<td>21</td>
<td>541</td>
</tr>
<tr>
<td>Prepayments</td>
<td>574</td>
<td>232</td>
<td>228</td>
</tr>
<tr>
<td><strong>Total non-financial assets</strong></td>
<td></td>
<td>1,630</td>
<td>1,127</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
<td>65,177</td>
<td>61,450</td>
</tr>
<tr>
<td><strong>EQUITY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asset revaluation reserve</strong></td>
<td></td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td><strong>Contracted research reserve</strong></td>
<td></td>
<td>24,788</td>
<td>-</td>
</tr>
<tr>
<td><strong>Retained surplus</strong></td>
<td></td>
<td>32,677</td>
<td>53,812</td>
</tr>
<tr>
<td><strong>Total equity</strong></td>
<td></td>
<td>57,469</td>
<td>53,812</td>
</tr>
</tbody>
</table>

The above statement should be read in conjunction with the accompanying notes.

**Budget Variance Commentary**

Total equity of $57.5m was greater than the expected amount of $52.5m due to the positive budget variance of $5m in 2020-21.

Total assets were $9.4m over budget due to:

1. An increase in trade and other receivables of $4.7m due to the timing of Commonwealth Matching receipts. The amount of eligible expenditure in the June 2021 quarter was higher than anticipated in the PBS budget, which means the Commonwealth Matching on this expenditure will not be received until the 2021-22 financial year.
2. An increase in investments of $4.3m due to the additional equity being invested in term deposits.

Total liabilities were $4.4m over budget due to:

1. Other payables being $2.9m over budget due to the impact of AASB 15 Revenue from Contracts with Customers on the amount of income received in advance.
2. An increase in project research accruals of $0.7m with all planned work activities not realised.
### Statement of Changes in Equity

for the period ended 30 June 2021

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retained Earnings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance carried forward from previous period</td>
<td>53,812</td>
<td>47,896</td>
<td>53,812</td>
</tr>
<tr>
<td>Adjustment on initial application of AASB 15</td>
<td>-</td>
<td>(3,372)</td>
<td>-</td>
</tr>
<tr>
<td>Adjustment on initial application of AASB 16</td>
<td>-</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Transfer to contracted research reserve</td>
<td>(24,788)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transfer to asset revaluation reserve</td>
<td>(4)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Adjusted opening balance</td>
<td>29,020</td>
<td>44,537</td>
<td>53,812</td>
</tr>
<tr>
<td><strong>Comprehensive Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer to/(from) contracted research reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Surplus/(deficit) for the period</td>
<td>3,657</td>
<td>9,275</td>
<td>(1,345)</td>
</tr>
<tr>
<td>Total comprehensive income</td>
<td>3,657</td>
<td>9,275</td>
<td>(1,345)</td>
</tr>
<tr>
<td>Closing balance as at 30 June 2021</td>
<td>32,677</td>
<td>53,812</td>
<td>52,467</td>
</tr>
</tbody>
</table>

**Asset Revaluation Reserve**

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance carried forward from previous period</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Adjustment on prior period rounding</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Adjusted opening balance</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Comprehensive Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other comprehensive income</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total comprehensive income</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Closing balance as at 30 June 2021</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Contracted Research Reserve**

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance carried forward from previous period</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transfer from retained earnings</td>
<td>24,788</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Closing balance as at 30 June 2021</td>
<td>24,788</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Total Equity

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Opening balance</strong></td>
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</tr>
<tr>
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<td></td>
<td></td>
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<td>(1,345)</td>
</tr>
<tr>
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<td>9,275</td>
<td>(1,345)</td>
</tr>
<tr>
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<td>57,469</td>
<td>53,812</td>
<td>52,467</td>
</tr>
</tbody>
</table>

The above statement should be read in conjunction with the accompanying notes.

### Budget Variance Commentary

Total equity of $57.5m was greater than the expected amount of $52.5m due to the positive budget variance of $5m in 2020-21.

The contracted research reserve is $24.7m above budget as the decision to implement the new reserve was made after the PBS was published.
## CASH FLOW STATEMENT

for the period ended 30 June 2021

<table>
<thead>
<tr>
<th>Notes</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
<th>Original budget $'000</th>
</tr>
</thead>
</table>
### OPERATING ACTIVITIES

**Cash received**
- Receipts from Government: 30,941 47,682 37,505
- Industry levies: 3,897 3,522 -
- External contributions: 12,977 11,918 -
- GST received: 2,215 3,284 (1)
- Interest: 268 419 900
- Other: 915 999 9,828
**Total cash received**: 51,213 67,824 48,232

**Cash used**
- Research projects: 30,162 27,599 34,097
- Employees: 3,713 3,081 3,526
- Suppliers: 10,997 8,668 10,239
- Interest paid on lease liabilities: 23 15 1
- GST Paid: 2,016 1,246 -
**Total cash used**: 46,911 40,609 47,863

**Net cash from (used by) operating activities**: 4,302 27,215 369

### INVESTING ACTIVITIES

**Cash used**
- Purchase of property, plant and equipment: 110 88 750
- Investments: 4,470 26,930 192
**Total cash used**: 4,580 27,018 942

**Net cash from (used by) investing activities**: (4,580) (27,018) (942)

### FINANCING ACTIVITIES

**Cash used**
- Principal payments on leased liabilities: 177 109 120
**Total cash used**: 177 109 120

**Net cash from (used by) financing activities**: (177) (109) (120)

**Net increase/(decrease) in cash and cash equivalents**: (455) 88 (693)

**Cash and cash equivalents at the beginning of the reporting period**: 4,806 4,718 4,806

**Cash and cash equivalents at the end of the reporting period**: 2,14 4,361 4,113

The above statement should be read in conjunction with the accompanying notes.

---

**Budget Variance Commentary**

**Operating Activities**

Net cash from operating activities received of $4.3m was $3.9m over budget due to the positive budget variance of $5m as reported in the Statement of Comprehensive Income and variances described in the Statement of Financial Position.

**Investing Activities**

Net cash used by investing activities of $4.6m was $3.6m over budget due to additional investments in term deposits of $4.3m and a reduction in expenditure on property, plant and equipment related to a new cloud based software system which was expensed rather than capitalised.
Objective of Rural Industries Research and Development Corporation

The Rural Industries Research and Development Corporation, trading as AgriFutures Australia, is an Australian Government controlled Corporation defined as a corporate commonwealth entity in the Public Governance, Performance and Accountability Act 2013. The objective of the Corporation is to contribute to the productivity and sustainability of Australia through rural innovation by working with industry and government. In doing this we generate the knowledge to help rural industries and communities to capture opportunity and manage change. Growing the productivity and sustainability of rural industries through innovation is a key driver of the prosperity and resilience of rural Australia.

The Corporation is structured to meet a single outcome:

- Increased knowledge that fosters sustainable, productive and profitable new and existing rural industries and furthers understanding of national rural issues through research and development in government-industry partnership.

The continued existence of the Corporation in its present form and with its present programs is dependent on Government policy and on continuing funding by Parliament for the Corporation’s administration and programs.

The Basis of Preparation

The financial statements are general purpose financial statements and are required by section 42 of the Public Governance, Performance and Accountability Act 2013.

The financial statements have been prepared in accordance with:

- a) Public Governance, Performance and Accountability (Financial Reporting) Rule 2015 (FRR); and
- b) Australian Accounting Standards and Interpretations - Reduced Disclosure Requirements issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention, except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless otherwise specified.

New Accounting Standards

No accounting standard has been adopted earlier than the application date as stated in the standard.

The new standards, revised standards, interpretations and amending standards that were issued prior to the sign-off date and are applicable to the current reporting period did not have a material effect on the Corporation’s financial statements.

<table>
<thead>
<tr>
<th>Standard / Interpretation</th>
<th>Nature of change in accounting policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASB 1059 Service Concession Arrangements: Grantors</td>
<td>AASB 1059 became effective from 1 July 2020. The new standard addresses the accounting for a service concession arrangement by a grantor that is a public sector entity by prescribing the accounting for the arrangement from a grantor’s perspective. The introduction of this standard had no impact on accounting policies or the financial statements for the Corporation.</td>
</tr>
</tbody>
</table>

Taxation

The Corporation is exempt from all forms of taxation except fringe benefits tax (FBT) and the goods and services tax (GST).

Contracted Research Reserve

A contracted research reserve has been established to allocate funding for research project milestone payments due in subsequent financial years.

Events After the Reporting Period

The Corporation has been impacted by the COVID-19 pandemic with key events held by the Corporation either cancelled or deferred. There have also been considerable impacts on project delivery due to the effects of COVID-19 on research organisations. The pandemic is not expected to impact on the Corporation’s ability to operate as a going concern due to the Corporation’s diverse income streams and cash reserves.
1. Financial performance

1.1 Expenses

<table>
<thead>
<tr>
<th>1.1A: EMPLOYEE BENEFITS</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages and salaries</td>
<td>3,269</td>
<td>2,673</td>
</tr>
<tr>
<td>Superannuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defined contribution plans</td>
<td>339</td>
<td>256</td>
</tr>
<tr>
<td>Defined benefit plans</td>
<td>75</td>
<td>68</td>
</tr>
<tr>
<td>Leave and other entitlements</td>
<td>140</td>
<td>196</td>
</tr>
<tr>
<td>Separation and redundancies</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Other employee benefits</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total employee benefits</strong></td>
<td>3,830</td>
<td>3,209</td>
</tr>
</tbody>
</table>

1.1B: RESEARCH PROJECTS

<table>
<thead>
<tr>
<th>Public sector</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Government entities (related entities)</td>
<td>1,913</td>
<td>2,915</td>
</tr>
<tr>
<td>State and Territory Governments</td>
<td>7,650</td>
<td>7,087</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private sector</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-profit organisations</td>
<td>905</td>
<td>421</td>
</tr>
<tr>
<td>Tertiary institutions</td>
<td>9,321</td>
<td>7,151</td>
</tr>
<tr>
<td>Commercial entities</td>
<td>8,472</td>
<td>7,955</td>
</tr>
<tr>
<td><strong>Total research projects</strong></td>
<td>28,261</td>
<td>25,529</td>
</tr>
</tbody>
</table>

1.2 OWN-SOURCE REVENUE

<table>
<thead>
<tr>
<th>1.2A: INDUSTRY LEVIES</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry levies</td>
<td>3,841</td>
<td>3,517</td>
</tr>
<tr>
<td>Industry levy penalties</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total industry levies</strong></td>
<td>3,846</td>
<td>3,522</td>
</tr>
</tbody>
</table>

ACCOUNTING POLICY

The Corporation has elected not to recognise right-of-use assets and lease liabilities for short-term leases of assets that have a lease term of 12 months or less and leases of low-value assets (less than $10,000). The entity recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term.
ACCOUNTING POLICY

The following is a description of principal activities from which the Corporation generates its revenue from Contracts with Customers:

- Research programs:
  - Australian Government Grants are grants to programs managed by the Corporation; and
  - Industry contributions are voluntary contributions to programs.
- Sponsorships and ticket sales for events managed by the Corporation.

### 1.2B: REVENUE FROM CONTRACTS WITH CUSTOMERS

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry contributions</td>
<td>4,924</td>
<td>4,698</td>
</tr>
<tr>
<td>Grants Australian Government</td>
<td>5,441</td>
<td>4,541</td>
</tr>
<tr>
<td>Sponsorships</td>
<td>65</td>
<td>993</td>
</tr>
<tr>
<td>Ticket sales</td>
<td>-</td>
<td>778</td>
</tr>
<tr>
<td>Other</td>
<td>63</td>
<td>69</td>
</tr>
<tr>
<td><strong>Total revenue from contracts with customers</strong></td>
<td><strong>10,493</strong></td>
<td><strong>11,079</strong></td>
</tr>
</tbody>
</table>

#### Disaggregation of revenue from contracts with customers

**Major product / service line:**
- Conferences: 65, 1,771
- Research services: 10,364, 9,238
- Other services: 64, 69

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total revenue</strong></td>
<td>10,493</td>
<td>11,079</td>
</tr>
</tbody>
</table>

**Type of customer**

**Public sector**
- Australian Government entities (related entities): 6,343, 6,059
- State and Territory Governments: 1,246, 1,071
- Local Governments: 36, 76

**Private sector**
- Non-profit organisations: 167, 96
- Tertiary institutions: 215, 348
- Commercial entities: 2,483, 3,429
- Other: 3

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total revenue</strong></td>
<td>10,493</td>
<td>11,079</td>
</tr>
</tbody>
</table>

#### Timing of transfer of goods and services

- Over time: 8,033, 6,799
- Point in time: 2,460, 4,280

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total revenue</strong></td>
<td>10,493</td>
<td>11,079</td>
</tr>
</tbody>
</table>

### 1.2C: ROYALTIES

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research project royalties</td>
<td>567</td>
<td>880</td>
</tr>
<tr>
<td><strong>Total royalties</strong></td>
<td>567</td>
<td>880</td>
</tr>
</tbody>
</table>

#### ACCOUNTING POLICY

The Corporation has determined that all revenue from contracts with customers are recognised as income of not-for-profit entities in accordance with AASB 1058, except for those that are enforceable and with sufficiently specific performance obligations and are accounted for as revenue from contracts with customers in accordance with AASB 15.

Revenue is accounted for under AASB 15 when the underlying contract contains identifiable and measurable performance obligations. Revenue is recognised over time as the Corporation satisfies each of the performance obligations in the contract. The transaction price is the total amount of consideration to which the Corporation expects to be entitled in exchange for transferring promised goods or services to a customer. Revenue is recognised using the input method of milestone payments paid to research organisations to allocate the transaction price to performance obligations.

Revenue is accounted for under AASB 1058 when the underlying contract does not contain identifiable performance obligations, or that are not enforceable. They are recognised when the Corporation has an unconditional right to receive cash which usually coincides with receipt of cash.

Consideration received in advance of recognising the associated revenue from the customer is recorded as a contract liability (income received in advance) (Note 2.3B).

Receivables for goods and services, which have 30-day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at end of the reporting period. Allowances are made when collectability of the debt is no longer probable.

The Corporation receives a portion of the total royalties paid under commercialisation agreements. The Corporation voluntarily changed the accounting policy for royalties in 2019-20 with royalties recognised under AASB 1058 on an accrual basis when the royalty is entitled to be received by the Corporation.
ACCOUNTING POLICY

Funding received or receivable from non-corporate Commonwealth entities (appropriated to the non-corporate Commonwealth entity as a corporate Commonwealth entity payment item for payment to this entity) is recognised as Revenue from Government by the Corporation unless the funding is in the nature of an equity injection or a loan.

Under Section 30(1)(b) of the Primary Industries Research and Development Act 1989 (PIRD Act), the Australian Government provides matching payments, within certain parameters, equal to one half of the amount expended by each program. Matching payments are recognised as Revenue from Government when the necessary expense is recognised.

---

1.2D: REVENUE FROM GOVERNMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amounts from portfolio department</td>
<td>9,358</td>
<td>10,220</td>
</tr>
<tr>
<td>PIRD Act 1989 contribution</td>
<td>20,840</td>
<td>20,713</td>
</tr>
<tr>
<td>Total revenue from Government</td>
<td>30,198</td>
<td>30,933</td>
</tr>
</tbody>
</table>

---

ACCOUNTING POLICY

Trade receivables, loans and other receivables that are held for the purpose of collecting the contractual cash flows where the cash flows are solely payments of principal and interest, that are not provided at below-market interest rates, are subsequently measured at amortised cost using the effective interest method adjusted for any loss allowance.

---

2.1 Financial assets

2.1A: CASH AND CASH EQUIVALENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash at bank</td>
<td>4,351</td>
<td>4,806</td>
</tr>
<tr>
<td>Total cash and cash equivalents</td>
<td>4,351</td>
<td>4,806</td>
</tr>
</tbody>
</table>

ACCOUNTING POLICY

Cash is recognised at its nominal amount.

2.1B: TRADE AND OTHER RECEIVABLES

<table>
<thead>
<tr>
<th>Description</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods and services receivables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods and services</td>
<td>1,209</td>
<td>1,726</td>
</tr>
<tr>
<td>Other</td>
<td>404</td>
<td>419</td>
</tr>
<tr>
<td>Total goods and services receivables</td>
<td>1,613</td>
<td>2,145</td>
</tr>
</tbody>
</table>

Commonwealth contributions

<table>
<thead>
<tr>
<th>Description</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Agriculture, Water and the Environment</td>
<td>5,400</td>
<td>6,143</td>
</tr>
<tr>
<td>Total receivables for Commonwealth contributions</td>
<td>5,400</td>
<td>6,143</td>
</tr>
</tbody>
</table>

Other receivables

<table>
<thead>
<tr>
<th>Description</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>GST receivable</td>
<td>771</td>
<td>249</td>
</tr>
<tr>
<td>Interest</td>
<td>15</td>
<td>55</td>
</tr>
<tr>
<td>Total other receivables</td>
<td>786</td>
<td>304</td>
</tr>
</tbody>
</table>

Total trade and other receivables (gross) | 7,799 | 8,582 |

Less impairment loss allowance | (3)   | (6)   |

Total trade and other receivables (net) | 7,796 | 8,587 |

Credit terms for goods and services were within 30 days (2020: 30 days).
### 2.2A: RECONCILIATION OF THE OPENING AND CLOSING BALANCES OF PROPERTY, PLANT AND EQUIPMENT

<table>
<thead>
<tr>
<th></th>
<th>Office equipment $’000</th>
<th>Furniture &amp; fittings $’000</th>
<th>Computer equipment $’000</th>
<th>Leasehold improvements $’000</th>
<th>Computer software1 $’000</th>
<th>Right of use assets $’000</th>
<th>Total $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As at 1 July 2020</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross book value</td>
<td>33</td>
<td>21</td>
<td>221</td>
<td>62</td>
<td>404</td>
<td>844</td>
<td>1,585</td>
</tr>
<tr>
<td>Accumulated depreciation, amortisation and impairment</td>
<td>(20)</td>
<td>(7)</td>
<td>(126)</td>
<td>(38)</td>
<td>(362)</td>
<td>(116)</td>
<td>(690)</td>
</tr>
<tr>
<td><strong>Total as at 1 July 2020</strong></td>
<td>13</td>
<td>14</td>
<td>95</td>
<td>24</td>
<td>21</td>
<td>728</td>
<td>895</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Right-of-use assets</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>7</td>
<td>(2)</td>
</tr>
<tr>
<td>Depreciation on right-of-use assets</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disposals</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>(8)</td>
</tr>
<tr>
<td><strong>Total as at 30 June 2021</strong></td>
<td>17</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross book value2</td>
<td>44</td>
<td>21</td>
</tr>
<tr>
<td>Accumulated depreciation, amortisation and impairment2</td>
<td>27</td>
<td>(9)</td>
</tr>
<tr>
<td><strong>Total as at 30 June 2021</strong></td>
<td>17</td>
<td>12</td>
</tr>
</tbody>
</table>

### ACCOUNTING POLICY

#### The Corporation retains sufficient funds in cash to meet immediate working capital requirements. Amounts over this requirement are invested in term deposits usually on three month terms. Interest revenue is recognised on an accrual basis.

#### 2.2 Non-financial assets

**ACCOUNTING POLICY**

The Corporation retains sufficient funds in cash to meet immediate working capital requirements. Amounts over this requirement are invested in term deposits usually on three month terms. Interest revenue is recognised on an accrual basis.

#### 2.2A: RECONCILIATION OF THE OPENING AND CLOSING BALANCES OF PROPERTY, PLANT AND EQUIPMENT

<table>
<thead>
<tr>
<th></th>
<th>Office equipment $’000</th>
<th>Furniture &amp; fittings $’000</th>
<th>Computer equipment $’000</th>
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<th>Computer software1 $’000</th>
<th>Right of use assets $’000</th>
<th>Total $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>As at 1 July 2020</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross book value</td>
<td>33</td>
<td>21</td>
<td>221</td>
<td>62</td>
<td>404</td>
<td>844</td>
<td>1,585</td>
</tr>
<tr>
<td>Accumulated depreciation, amortisation and impairment</td>
<td>(20)</td>
<td>(7)</td>
<td>(126)</td>
<td>(38)</td>
<td>(362)</td>
<td>(116)</td>
<td>(690)</td>
</tr>
<tr>
<td><strong>Total as at 1 July 2020</strong></td>
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<td>14</td>
<td>95</td>
<td>24</td>
<td>21</td>
<td>728</td>
<td>895</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase</td>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>Right-of-use assets</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depreciation and amortisation</td>
<td>7</td>
<td>(2)</td>
</tr>
<tr>
<td>Depreciation on right-of-use assets</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disposals</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>(8)</td>
</tr>
<tr>
<td><strong>Total as at 30 June 2021</strong></td>
<td>17</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2021 $’000</th>
<th>2020 $’000</th>
</tr>
</thead>
<tbody>
<tr>
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<td>21</td>
</tr>
<tr>
<td>Accumulated depreciation, amortisation and impairment2</td>
<td>27</td>
<td>(9)</td>
</tr>
<tr>
<td><strong>Total as at 30 June 2021</strong></td>
<td>17</td>
<td>12</td>
</tr>
</tbody>
</table>

1. The carrying amount of computer software comprises of purchased software only.

2. The gross book value and accumulated depreciation, amortisation and impairment totals are updated to reflect the derecognition of assets that are no longer in use that have no carrying value as at 30 June 2021.

---

**ACCOUNTING POLICY**

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost or for nominal consideration are initially recognised as assets and income at their fair value at the date of acquisition unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor’s accounts immediately prior to the restructuring.

**Asset Recognition Threshold**

Purchases of property, plant and equipment are recognised initially at cost in the statement of financial position, except for purchases costing less than $100, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located. This is particularly relevant to ‘make good’ provisions in the property leases taken up by the Corporation where there exists an obligation to restore the property to original condition. These costs are included in the value of the Corporation’s buildings with a corresponding provision for the ‘make good’ recognised.

**Revaluations**

Following initial recognition at cost, property, plant and equipment (excluding ROU assets) is carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets’ fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reversed a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit except to the extent that they reversed a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

**Lease Right of Use (ROU) Assets**

Leased ROU assets are capitalised at the commencement date of the lease and comprise of the initial lease liability amount, initial direct costs incurred when entering into the lease less any lease incentives received. These assets are accounted for by Commonwealth lessees as separate asset classes to corresponding assets owned outright, but included in the same column as where the corresponding underlying assets would be presented if they were owned.

On initial adoption of AASB 16 the Corporation has adjusted the ROU assets at the date of initial application by the amount of any provision for onerous leases recognised immediately before the date of initial application. Following initial application, an impairment review is undertaken for any right of use lease asset that shows indicators of impairment and an impairment loss is recognised against any right of use lease asset that is impaired. Lease ROU assets continue to be measured at cost after initial recognition in Commonwealth agency, GGS and Whole of Government financial statements.
Depreciation
Depreciable plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Corporation using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>2020-2021</th>
<th>2019-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Equipment</td>
<td>5 years</td>
<td>5 years</td>
</tr>
<tr>
<td>Furniture &amp; Fittings</td>
<td>10 years</td>
<td>10 years</td>
</tr>
<tr>
<td>Computer Equipment</td>
<td>3 years</td>
<td>3 years</td>
</tr>
<tr>
<td>Leasehold Improvements</td>
<td>Lease term</td>
<td>Lease term</td>
</tr>
<tr>
<td>Buildings</td>
<td>Lease term</td>
<td>Lease term</td>
</tr>
</tbody>
</table>

The depreciation rates for ROU assets are based on the commencement date to the earlier of the end of the useful life of the ROU asset or to the end of the lease term.

Impairment
All assets were assessed for impairment at 30 June 2021. Where indications of impairment exist, the asset’s recoverable amount is estimated and an impairment adjustment made if the asset’s recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset’s ability to generate future cash flows, and the asset would be replaced if the Corporation were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

Derecognition
An item of plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal.

2.3 Payables

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
</tbody>
</table>

2.3A: RESEARCH PROJECTS

Public sector
- Australian Government entities (related entities) 20 358
- State and Territory Governments 732 71

Private sector
- Non-profit organisations 84 110
- Tertiary institutions 417 626
- Commercial entities 572 515

Total research projects 1,825 1,680

All research projects are expected to be settled in no more than 12 months.

Research project creditors are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. They relate to payments approved on achievement of agreed milestones, but which were unpaid at the end of the period. Settlement is usually made within 60 days.

2.3B: OTHER PAYABLES

<table>
<thead>
<tr>
<th>Category</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and wages</td>
<td>58</td>
<td>45</td>
</tr>
<tr>
<td>Superannuation</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Paid parental leave</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Income received in advance</td>
<td>3,389</td>
<td>4,122</td>
</tr>
</tbody>
</table>

Total other payables 3,456 4,173

2.4: Interest Bearing Liabilities

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$'000</td>
<td>$'000</td>
</tr>
</tbody>
</table>

2.4A: LEASES

<table>
<thead>
<tr>
<th>Category</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease liabilities</td>
<td>909</td>
<td>734</td>
</tr>
</tbody>
</table>

Total leases 909 734

Total cash outflow for leases for the year ended 30 June 2021 was $181,637 (2020: $123,989).

Maturity analysis – contractual undiscounted cash flows

Within 1 year 182 124
Between 1 to 5 years 727 498
More than 5 years 45 156

Total leases 954 778
The Corporation in its capacity as lessee leased premises at Charles Sturt University (CSU) (Building 007, CSU), Boorooma Street, Wagga Wagga, NSW for a five year lease term commencing on 19 September 2016, with an option to renew for a further five years. The Corporation will be exercising this option. Ministerial approval for the lease has been obtained.

The above lease disclosures should be read in conjunction with the accompanying note 2.2A.

**ACCOUNTING POLICY**

For all new contracts entered into, the Corporation considers whether the contract is, or contains a lease. A lease is defined as ‘a contract, or part of a contract, that conveys the right to use an asset (the underlying asset) for a period of time in exchange for consideration’.

Once it has been determined that a contract is, or contains a lease, the lease liability is initially measured at the present value of the lease payments unpaid at the commencement date, discounted using the interest rate implicit in the lease, if that rate is readily determinable, or the department’s incremental borrowing rate.

Subsequent to initial measurement, the liability will be reduced for payments made and increased for interest. It is remeasured to reflect any reassessment or modification to the lease. When the lease liability is remeasured, the corresponding adjustment is reflected in the right-of-use asset or profit and loss depending on the nature of the reassessment or modification.

2.5 Other Provisions

<table>
<thead>
<tr>
<th>Provision for third party employer entitlements</th>
<th>Provision for restoration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$100</td>
<td>$100</td>
<td>$200</td>
</tr>
</tbody>
</table>

**2.5A: OTHER PROVISIONS**

As at 1 July 2020

<table>
<thead>
<tr>
<th>Amounts provided for</th>
<th>$'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>12</td>
</tr>
<tr>
<td>56</td>
<td>11</td>
</tr>
<tr>
<td>124</td>
<td>135</td>
</tr>
</tbody>
</table>

**ACCOUNTING POLICY**

Liabilities for short-term employee benefits and termination benefits expected within twelve months of the end of reporting period are measured at their nominal amounts.

Other long-term employee benefits are measured as net total if the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any), out of which the obligations are to be settled directly.

**Leave**

The liability for employee benefits includes provision for annual leave and long service leave.

The leave liabilities are calculated on the basis of employees’ remuneration at the estimated salary rates that will be applied at the time the leave is taken, including the entity’s employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the shorthand method as per the FRR and Commonwealth Entity Financial Statements Guide. The estimate of the present value of the liability takes into account attribution rates and pay increases through promotion and inflation.

**Superannuation**

Employees of the Corporation are members of the Public Sector Superannuation Scheme (PSS), or the PSS accumulation plan (PSSap), or other superannuation funds held outside the Australian Government.

The PSS is a defined benefit scheme for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported in the Department of Finance’s administered schedules and notes.

The Corporation makes employer contributions to employee’s defined benefit superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Government. The Corporation accounts for the contributions as if they were contributions to defined contribution plans.

The liability for superannuation recognised as at 30 June represents outstanding contributions.

**Accounting Judgements and Estimates**

The liability for long service leave has been estimated using present value techniques in accordance with the shorthand method as per FRR 24. This takes into account expected salary growth, attrition and future discounting using Commonwealth bond rates.
3.2 Key Management Personnel Remuneration

Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of the Corporation, directly or indirectly, including any director (whether executive or otherwise) of the Corporation. The Corporation has determined the key management personnel to be the Managing Director, seven current Directors, four ceased Directors and four General Managers. Key management personnel remuneration is reported in the table below:

<table>
<thead>
<tr>
<th>Description</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term employee benefits</td>
<td>1,443</td>
<td>1,362</td>
</tr>
<tr>
<td>Post-employment benefits</td>
<td>123</td>
<td>118</td>
</tr>
<tr>
<td>Other long-term employee benefits</td>
<td>29</td>
<td>130</td>
</tr>
<tr>
<td><strong>Total key management personnel remuneration expenses</strong></td>
<td><strong>1,595</strong></td>
<td><strong>1,610</strong></td>
</tr>
</tbody>
</table>

The total number of key management personnel that are included in the above table are 16 individuals (2020:11 individuals).

The above key management personnel remuneration excludes the remuneration and other benefits of the Portfolio Minister. The Portfolio Minister’s remuneration and other benefits are set by the Remuneration Tribunal and are not paid by the Corporation.

3.3 Related party disclosures

Related party relationships:

The Corporation is an Australian Government controlled entity. Related parties to this entity are Directors and Executive and other Australian Government entities.

Transactions with related parties:

Given the breadth of Government activities, related parties may transact with the government sector in the same capacity as ordinary citizens. Such transactions include the payment or refund of taxes, receipt of a Medicare rebate or higher education loans. These transactions have not been separately disclosed in this note.

The directors and key management personnel of the Corporation during the year were:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Mrs K Hull AM</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Dr W Ryan</td>
</tr>
<tr>
<td>Deputy Chair (ceased 30 September 2020)</td>
<td>Dr K Andrews</td>
</tr>
<tr>
<td>(ceased 30 September 2020)</td>
<td>Mr R Clark</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Ms D Gibbs</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Mr D Le Feuvre</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Ms C Cassidy</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Ms E Robinson</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Ms L Heaslip</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Ms B Allitt</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Mr M Beer</td>
</tr>
<tr>
<td>(commenced 1 October 2020)</td>
<td>Mr J Smith</td>
</tr>
</tbody>
</table>

There were no transactions with related parties during the financial year which require disclosure in this note.

4. Managing uncertainties

4.1 Contingent liabilities and assets

Quantifiable contingencies

As at 30 June 2021, the Corporation has no quantifiable contingencies (2020: nil).

Unquantifiable contingencies

As at 30 June 2021, the Corporation has no unquantifiable contingencies (2020: nil).

ACCOUNTING POLICY

Contingent liabilities and contingent assets are not recognised in the statement of financial position but are reported in the notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

4.2 Financial instruments

4.2A: CATEGORIES OF FINANCIAL INSTRUMENTS

Financial assets at amortised cost

<table>
<thead>
<tr>
<th>Description</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and cash equivalents</td>
<td>4,351</td>
<td>4,806</td>
</tr>
<tr>
<td>Trade receivables</td>
<td>7,025</td>
<td>8,338</td>
</tr>
<tr>
<td>Term deposits</td>
<td>51,400</td>
<td>46,930</td>
</tr>
<tr>
<td><strong>Total financial assets at amortised cost</strong></td>
<td><strong>62,776</strong></td>
<td><strong>60,074</strong></td>
</tr>
</tbody>
</table>

Financial liabilities measured at amortised cost

<table>
<thead>
<tr>
<th>Description</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppliers</td>
<td>654</td>
<td>415</td>
</tr>
<tr>
<td>Research projects</td>
<td>1,825</td>
<td>1,680</td>
</tr>
<tr>
<td><strong>Total financial liabilities measured at amortised cost</strong></td>
<td><strong>2,479</strong></td>
<td><strong>2,995</strong></td>
</tr>
</tbody>
</table>

4.2B: NET GAINS OR LOSSES ON FINANCIAL ASSETS

Financial assets at amortised cost

<table>
<thead>
<tr>
<th>Description</th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest revenue</td>
<td>248</td>
<td>448</td>
</tr>
<tr>
<td>Impairment</td>
<td>(3)</td>
<td>(5)</td>
</tr>
<tr>
<td><strong>Net gain from financial assets at amortised cost</strong></td>
<td><strong>245</strong></td>
<td><strong>443</strong></td>
</tr>
</tbody>
</table>

4.2C: NET GAINS OR LOSSES ON FINANCIAL LIABILITIES

There is no gains or losses on financial liabilities for the period ending 30 June 2021 (2020: nil).
ACCOUNTING POLICY

Financial assets
The Corporation classifies its financial assets in the following categories:

a) Financial assets at fair value through profit or loss;
b) Financial assets at fair value through other comprehensive income; and
c) Financial assets measured at amortised cost.

The classification depends on both the Corporation’s business model for managing the financial assets and contractual cash flow characteristics at the time of initial recognition. Financial assets are recognised when the entity becomes a party to the contract and, as a consequence, has a legal right to receive or a legal obligation to pay cash and derecognised when the contractual rights to the cash flows from the financial asset expire or are transferred upon trade date.

Financial Assets at Amortised Cost
Financial assets included in this category need to meet two criteria:

1. The financial asset is held in order to collect the contractual cash flows; and
2. The cash flows are solely payments of principal and interest (SPPI) on the principal outstanding amount.

Amortised cost is determined using the effective interest method.

Effective Interest Method
Income is recognised on an effective interest rate basis for financial assets that are recognised at amortised cost.

Financial Assets at Fair Value Through Other Comprehensive Income (FVOCI)
Financial assets measured at fair value through other comprehensive income are held with the objective of collecting both contractual cash flows and selling the financial assets and the cash flows meet the SPPI test.

Any gains or losses as a result of fair value measurement or the recognition of an impairment loss allowance is recognised in other comprehensive income.

Financial assets at fair value through profit or loss (FVTPL)
Financial assets are classified as financial assets at fair value through profit or loss where the financial assets either don’t meet the criteria of financial assets held at amortised cost or at FVOCI (i.e. mandatorily held at FVTPL) or may be designated.

Financial assets at FVTPL are stated at fair value, with any resultant gain or loss recognised in profit or loss. The net gain or loss recognised in profit or loss incorporates any interest earned on the financial asset.

ACCOUNTING POLICY

Impairment of Financial Assets
Financial assets are assessed for impairment at the end of each reporting period based on Expected Credit Losses, using the general approach which measures the loss allowance based on an amount equal to lifetime expected credit losses where risk has significantly increased, or an amount equal to 12-month expected credit losses if risk has not increased.

The simplified approach for trade, contract and lease receivables is used. This approach always measures the loss allowance as the amount equal to the lifetime expected credit losses.

A write-off constitutes a derecognition event where the write-off directly reduces the gross carrying amount of the financial asset.

Financial liabilities
Financial liabilities are classified as either financial liabilities ‘at fair value through profit or loss’ or other financial liabilities. Financial liabilities are recognised and derecognised upon ‘trade date’.

Financial Liabilities at Fair Value Through Profit or Loss
Financial liabilities at fair value through profit or loss are initially measured at fair value. Subsequent fair value adjustments are recognised in profit or loss. The net gain or loss recognised in profit or loss incorporates any interest paid on the financial liability.

Financial Liabilities at Amortised Cost
Financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective interest basis.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received.
4.3: Fair Value Measurement

Fair value measurements at the end of the reporting period

<table>
<thead>
<tr>
<th></th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>4,351</td>
<td>4,806</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>7,025</td>
<td>8,338</td>
</tr>
<tr>
<td>Held-to-maturity investments</td>
<td>51,400</td>
<td>46,930</td>
</tr>
<tr>
<td><strong>Non-financial assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>163</td>
<td>146</td>
</tr>
<tr>
<td><strong>Financial liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers</td>
<td>654</td>
<td>415</td>
</tr>
<tr>
<td>Research projects</td>
<td>1,825</td>
<td>1,680</td>
</tr>
</tbody>
</table>

4.3A: FAIR VALUE MEASUREMENT

**ACCOUNTING POLICY**

All property, plant and equipment are measured at fair value in the Statement of Financial Position. When estimating fair value, market prices were used where available. Where market prices were not available, depreciated replacement cost was used (ie level 3).

Level 3 measurements use inputs to estimate fair value where there are no observable market prices for the assets being valued.

Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the asset's fair values at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

5. Other Information

5.1 Current/Non-Current Distinction for Assets and Liabilities

<table>
<thead>
<tr>
<th></th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets expected to be recovered in:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No more than 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>4,351</td>
<td>4,806</td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>7,796</td>
<td>8,556</td>
</tr>
<tr>
<td>Investments</td>
<td>51,400</td>
<td>46,930</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Computer software</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prepayments</td>
<td>574</td>
<td>232</td>
</tr>
<tr>
<td><strong>Total no more than 12 months</strong></td>
<td>64,121</td>
<td>60,524</td>
</tr>
<tr>
<td>More than 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade and other receivables</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Investments</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Property, plant and equipment</td>
<td>1,056</td>
<td>874</td>
</tr>
<tr>
<td>Computer software</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>Prepayments</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total more than 12 months</strong></td>
<td>1,056</td>
<td>926</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>65,177</td>
<td>61,450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2021 $'000</th>
<th>2020 $'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liabilities expected to be settled in:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No more than 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers</td>
<td>654</td>
<td>415</td>
</tr>
<tr>
<td>Research projects</td>
<td>1,825</td>
<td>1,680</td>
</tr>
<tr>
<td>Other payables</td>
<td>3,456</td>
<td>4,173</td>
</tr>
<tr>
<td>Leases</td>
<td>182</td>
<td>111</td>
</tr>
<tr>
<td>Employee provisions</td>
<td>307</td>
<td>443</td>
</tr>
<tr>
<td>Other provisions</td>
<td>84</td>
<td>44</td>
</tr>
<tr>
<td><strong>Total no more than 12 months</strong></td>
<td>6,508</td>
<td>6,986</td>
</tr>
<tr>
<td>More than 12 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Research projects</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other payables</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Leases</td>
<td>727</td>
<td>623</td>
</tr>
<tr>
<td>Employee provisions</td>
<td>422</td>
<td>113</td>
</tr>
<tr>
<td>Other provisions</td>
<td>51</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total more than 12 months</strong></td>
<td>1,200</td>
<td>772</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>7,708</td>
<td>7,658</td>
</tr>
</tbody>
</table>
## Executive remuneration reporting

<table>
<thead>
<tr>
<th>Name</th>
<th>Position title</th>
<th>Base salary*</th>
<th>Bonuses</th>
<th>Other benefits and allowances</th>
<th>Superannuation contributions</th>
<th>Long service leave</th>
<th>Long-term benefits</th>
<th>Termination benefits</th>
<th>Total remuneration</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Harvey</td>
<td>Managing Director</td>
<td>370,814</td>
<td>-</td>
<td>-</td>
<td>21,814</td>
<td>8,604</td>
<td>-</td>
<td>-</td>
<td>401,232</td>
</tr>
<tr>
<td>Michael Bear</td>
<td>General Manager, Business Development</td>
<td>213,729</td>
<td>-</td>
<td>-</td>
<td>19,232</td>
<td>5,014</td>
<td>-</td>
<td>-</td>
<td>237,975</td>
</tr>
<tr>
<td>Louise Haaslip</td>
<td>General Manager, Corporate</td>
<td>195,979</td>
<td>-</td>
<td>-</td>
<td>19,705</td>
<td>5,014</td>
<td>-</td>
<td>-</td>
<td>220,698</td>
</tr>
<tr>
<td>Belinda Allitt</td>
<td>General Manager, Communications &amp; Capacity Building</td>
<td>209,349</td>
<td>-</td>
<td>-</td>
<td>19,917</td>
<td>5,253</td>
<td>-</td>
<td>-</td>
<td>234,519</td>
</tr>
<tr>
<td>John Smith</td>
<td>General Manager, Research</td>
<td>190,962</td>
<td>-</td>
<td>-</td>
<td>17,483</td>
<td>4,656</td>
<td>-</td>
<td>-</td>
<td>213,101</td>
</tr>
<tr>
<td>Kathryn Andrews</td>
<td>Director - Resigned 30 September 2020</td>
<td>9,288</td>
<td>-</td>
<td>-</td>
<td>882</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10,170</td>
</tr>
<tr>
<td>Cindy Cassidy</td>
<td>Director &amp; Audit Committee Member - Appointed 1 October 2020</td>
<td>479</td>
<td>-</td>
<td>-</td>
<td>48</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>527</td>
</tr>
<tr>
<td>Richard Clark</td>
<td>Director &amp; Audit Committee Member - Resigned 30 September 2020</td>
<td>10,542</td>
<td>-</td>
<td>-</td>
<td>1,001</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11,543</td>
</tr>
<tr>
<td>Diana Gibbs</td>
<td>Director &amp; Audit Committee Chair - Appointed 1 October 2020</td>
<td>33,142</td>
<td>-</td>
<td>-</td>
<td>3,153</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>36,295</td>
</tr>
<tr>
<td>Tony Hamilton</td>
<td>Director - Resigned 30 September 2020</td>
<td>9,288</td>
<td>-</td>
<td>-</td>
<td>882</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10,170</td>
</tr>
<tr>
<td>Andrew Harris</td>
<td>Director - Appointed 1 October 2020</td>
<td>27,443</td>
<td>-</td>
<td>-</td>
<td>2,611</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30,054</td>
</tr>
<tr>
<td>Ian Henderson</td>
<td>Director &amp; Audit Committee Member - Resigned 30 September 2020</td>
<td>10,542</td>
<td>-</td>
<td>-</td>
<td>1,001</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11,543</td>
</tr>
<tr>
<td>Kay Hull</td>
<td>Chair</td>
<td>61,215</td>
<td>-</td>
<td>-</td>
<td>5,621</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>66,836</td>
</tr>
<tr>
<td>Daniel La Feuvre</td>
<td>Director - Appointed 1 October 2020</td>
<td>27,443</td>
<td>-</td>
<td>-</td>
<td>2,611</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>30,054</td>
</tr>
<tr>
<td>Emma Robinson</td>
<td>Director &amp; Audit Committee Member - Appointed 1 October 2020</td>
<td>30,293</td>
<td>-</td>
<td>-</td>
<td>2,882</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>33,175</td>
</tr>
<tr>
<td>William Ryan</td>
<td>Director &amp; Audit Committee Member</td>
<td>42,089</td>
<td>-</td>
<td>-</td>
<td>4,002</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>46,091</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1,442,597</strong></td>
<td>-</td>
<td><strong>123,045</strong></td>
<td><strong>28,541</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td><strong>1,594,183</strong></td>
</tr>
</tbody>
</table>

This disclosure has been prepared on an accruals basis.

Remuneration for the Chair and Directors is in accordance with the Remuneration Tribunal (Remuneration and Allowances for Holders of Part-time Public Office) Determination 2020.

The Managing Director and General Managers are employed through Executive Services Agreements. There are no other Senior Executives or Other Highly Paid Staff.

In 2020-21, the Managing Director received a one-off payment of $15,633 to correct underpayments that occurred from 2016-17 to 2018-19.

Director Cindy Cassidy only commenced receipt of remuneration from 28 June 2021, due to contractual obligations with another agency.

In April 2020, the Australian Public Service Commission (APSC) implemented a twelve month freeze on executive remuneration in response to COVID-19. Although this did not apply to AgriFutures, the Managing Director and General Managers elected to freeze their remuneration in support of the initiative implemented by the APSC.

* Base salary includes annual leave accrued but not taken.
## Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix 1</td>
<td>Annual Performance Statement</td>
<td>224</td>
</tr>
<tr>
<td>Appendix 2</td>
<td>Environmental Performance (including WH&amp;S accountability)</td>
<td>224</td>
</tr>
<tr>
<td>Appendix 3</td>
<td>RD&amp;E Portfolio (Statutory levy and sub-accounts)</td>
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<tr>
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</table>

### Section 05

Appendices
Appendix 1: Annual Performance Statement

The Annual Performance Statements fulfil Section 39(1) (a) of the Public Governance, Performance and Accountability Act 2013 (PGPA Act) for the 2020-21 financial year and accurately present the entity’s performance in accordance with Section 39(2) of the PGPA Act.

Our vision is to grow the long-term prosperity of Australian rural industries

The development of this Strategic R&D Plan 2017-2022 involved an extensive stakeholder consultation process during 2016-17 that considered:

- Analysis and insights on research achievements and impacts
- Current and past performance of the organisation
- How the current and likely future rural industry operating environment might influence research and development investment
- Research priorities and preferences
- Organisational structure, approaches and systems.

In developing this revised Strategic R&D Plan 2017-2022, AgriFutures Australia engaged in additional consultation, including:

- A series of seven face-to-face Regional Innovation Conversations around Australia targeting emerging leaders
- Face-to-face meetings with our two declared Representative Organisations – National Farmers' Federation and the Australian Chicken Meat Federation
- Face-to-face meetings with a number of our other key stakeholders.

Appendix 2: Environmental Performance Statement (including WH&S accountability)

Result against performance criterion

The Public Governance, Performance and Accountability (PGPA) Rule 2014 and Department of Finance Direction require entities to report against all measures listed in the Strategic R&D Plan 2017-2022 and the Portfolio Budget Statements.

AgriFutures Australia delivered a suite of outcomes that have fostered sustainable and productive new and existing rural industries, and provided understanding of national rural issues.

Other outcomes are summarised in the highlights and achievements of this Annual Report.

Appendix 3: RD&E Portfolio (Statutory levy and industry sub-accounts)

Buffalo

<table>
<thead>
<tr>
<th></th>
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<th>2019-20</th>
</tr>
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<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
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<td>122</td>
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<td>Other income</td>
<td>2,279</td>
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<td>Total revenue</td>
<td>90,340</td>
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<td>Research projects</td>
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<td>305,870</td>
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### Chicken Meat

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<td><strong>Total revenue</strong></td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Expenses</strong></td>
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<tr>
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<tr>
<th></th>
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<th>2019-20 $</th>
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<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>97,173</td>
<td>(714,802)</td>
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</table>

Retained surplus at beginning of reporting period 1,278,072 1,992,874

Retained surplus at end of reporting period 1,375,245 1,278,072

---

### Deer

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<tr>
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<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
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<tr>
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<td>(2,494)</td>
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</tr>
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<td>Statutory industry levies</td>
<td>(26,314)</td>
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</tr>
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<td>Industry levy penalties</td>
<td>(298)</td>
<td>3</td>
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<tr>
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<tbody>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program management fees</td>
<td>(4,988)</td>
<td>2,957</td>
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<tr>
<td>Other expenses</td>
<td>163</td>
<td>2,020</td>
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<td><strong>Total expenses</strong></td>
<td>(4,825)</td>
<td>4,977</td>
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<table>
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</thead>
<tbody>
<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(2,713)</td>
<td>24,729</td>
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</table>

Retained surplus at beginning of reporting period 3,196,298 3,171,569

Retained surplus at end of reporting period 3,193,585 3,196,298

---

1 Each of the AgriFutures Australia’s levied industries RD&E programs (Arena 3) incur a program management fee for the management of the RD&E for the respective Program. The management fee is calculated prior to the commencement of the financial year, in accordance with the AgriFutures Australia’s Cost Allocation Policy, and is based on an average of three years of average expenditure (two years historical and one year budget). After the conclusion of the financial year, the fee is reviewed by recalculating on three years of actual expenditure. If the review reveals that the management fee was overestimated initially, then the difference is reimbursed to the Program.

The refund has resulted in a negative amount of Commonwealth contributions as contributions were claimed previously on the program management fee.

2 In 2020-21, AgriFutures repaid the Department of Agriculture, Water and the Environment in 2020-21 for levies and penalties incorrectly collected in previous financial years on wild shot deer.
### Export Fodder

<table>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Revenues from Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth contributions</td>
<td>1,019,625</td>
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<td>2,085,818</td>
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<td>16,345</td>
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<td>Retained surplus at end of reporting period</td>
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<td>3,213,608</td>
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### Ginger

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<td><strong>Revenue</strong></td>
<td></td>
<td></td>
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<td><strong>Total revenue</strong></td>
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<td>513,570</td>
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### Goat Fibre

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<tr>
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<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues from Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth contributions</td>
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<td>570,380</td>
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<td><strong>Retained surplus at end of reporting period</strong></td>
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<td>574,129</td>
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### Honey Bee and Pollination

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<td><strong>Revenue</strong></td>
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<td></td>
</tr>
<tr>
<td>Revenues from Government</td>
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<td></td>
</tr>
<tr>
<td>Commonwealth contributions</td>
<td>128,468</td>
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<td>310,794</td>
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<td><strong>Total expenses</strong></td>
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<td><strong>Surplus/(deficit)</strong></td>
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<td>Retained surplus at beginning of reporting period</td>
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<td>1,087,059</td>
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<tr>
<td><strong>Retained surplus at end of reporting period</strong></td>
<td>1,312,655</td>
<td>1,104,243</td>
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### Kangaroo

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</tr>
<tr>
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<td>9,930</td>
<td>7,520</td>
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<td>29,829</td>
<td>41,987</td>
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<td>Other income</td>
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<td>8,255</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td>44,311</td>
<td>57,916</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research projects</td>
<td>-</td>
<td>-</td>
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<tr>
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<td>9,192</td>
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<td>Other expenses</td>
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<tr>
<td><strong>Total expenses</strong></td>
<td>21,018</td>
<td>17,797</td>
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<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>23,293</td>
<td>40,119</td>
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</tbody>
</table>

Retained surplus at beginning of reporting period: 642,573  
Retained surplus at end of reporting period: 665,866

### Pasture Seeds

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<tr>
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<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
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<td></td>
</tr>
<tr>
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<td>242,124</td>
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<tr>
<td>Statutory industry levies</td>
<td>114,224</td>
<td>150,588</td>
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<td>Industry levy penalties</td>
<td>309</td>
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<tr>
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<td>66,951</td>
<td>149,725</td>
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<td><strong>Total revenue</strong></td>
<td>423,608</td>
<td>491,461</td>
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<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
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<tr>
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<td>321,694</td>
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<td>Advisory panel expenses</td>
<td>10,980</td>
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<tr>
<td>Program management fees</td>
<td>36,233</td>
<td>29,432</td>
</tr>
<tr>
<td>Other expenses</td>
<td>16,601</td>
<td>7,819</td>
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<td><strong>Total expenses</strong></td>
<td>491,572</td>
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<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(67,964)</td>
<td>104,554</td>
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</table>

Retained surplus at beginning of reporting period: 1,290,073  
Retained surplus at end of reporting period: 1,222,109

Retained surplus at beginning of reporting period: 1,290,073  
Retained surplus at end of reporting period: 1,222,109
### Ratite

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<tr>
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<th>2019–20</th>
</tr>
</thead>
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<tr>
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<td></td>
</tr>
<tr>
<td>Commonwealth contributions</td>
<td>1,000</td>
<td>4,000</td>
</tr>
<tr>
<td>Other income</td>
<td>95</td>
<td>212</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td>1,095</td>
<td>4,212</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research projects</td>
<td>2,000</td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td>2,000</td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(905)</td>
<td>(3,788)</td>
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</tbody>
</table>

| Retained surplus at beginning of reporting period | 14,531 | 18,319 |
| Retained surplus at end of reporting period      | 13,626 | 14,531 |

---

### Rice

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<th></th>
<th>2020–21</th>
<th>2019–20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth contributions</td>
<td>1,198,078</td>
<td>1,662,438</td>
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<tr>
<td>Statutory industry levies</td>
<td>156,521</td>
<td>174,617</td>
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<tr>
<td>Industry levy penalties</td>
<td>5</td>
<td>10</td>
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<tr>
<td>External contributions</td>
<td>350,000</td>
<td>350,750</td>
</tr>
<tr>
<td>Other income</td>
<td>88,498</td>
<td>139,857</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td>1,793,102</td>
<td>2,327,672</td>
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<tr>
<td><strong>Expenses</strong></td>
<td></td>
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</tr>
<tr>
<td>Research projects</td>
<td>2,027,293</td>
<td>3,161,150</td>
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<tr>
<td>Advisory panel expenses</td>
<td>30,921</td>
<td>29,570</td>
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<tr>
<td>Program management fees</td>
<td>123,886</td>
<td>143,705</td>
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<tr>
<td>Other expenses</td>
<td>242,769</td>
<td>29,808</td>
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<tr>
<td><strong>Total expenses</strong></td>
<td>2,424,869</td>
<td>3,364,233</td>
</tr>
<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(831,767)</td>
<td>(1,036,561)</td>
</tr>
</tbody>
</table>

| Retained surplus at beginning of reporting period | 13,625,003 | 14,661,564 |
| Retained surplus at end of reporting period      | 12,993,236 | 13,625,003 |
### Tea Tree Oil

<table>
<thead>
<tr>
<th></th>
<th>2020-21 $</th>
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<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues from Government</td>
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</tr>
<tr>
<td>Commonwealth contributions</td>
<td>342,315</td>
<td>265,157</td>
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<tr>
<td>Statutory industry levies</td>
<td>236,347</td>
<td>168,224</td>
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<td>Industry levy penalties</td>
<td>1,028</td>
<td>235</td>
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<tr>
<td>Other income</td>
<td>113,343</td>
<td>4,102</td>
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<tr>
<td><strong>Total revenue</strong></td>
<td>693,033</td>
<td>437,718</td>
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<td><strong>Expenses</strong></td>
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<tr>
<td>Research projects</td>
<td>646,895</td>
<td>462,063</td>
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<tr>
<td>Advisory panel expenses</td>
<td>23,917</td>
<td>26,548</td>
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<tr>
<td>Program management fees</td>
<td>25,022</td>
<td>23,415</td>
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<td>Other expenses</td>
<td>7,877</td>
<td>31,056</td>
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<td><strong>Total expenses</strong></td>
<td>703,711</td>
<td>543,082</td>
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<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(10,678)</td>
<td>(105,364)</td>
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Retained surplus at beginning of reporting period 158,258 263,622
Retained surplus at end of reporting period 147,580 158,258

### Thoroughbred Horses

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<tr>
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<th>2020-21 $</th>
<th>2019-20 $</th>
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<tr>
<td><strong>Revenue</strong></td>
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<td></td>
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<tr>
<td>Revenues from Government</td>
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<tr>
<td>Commonwealth contributions</td>
<td>715,895</td>
<td>489,625</td>
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<td>Statutory industry levies</td>
<td>402,850</td>
<td>389,200</td>
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<td>External contributions</td>
<td>219,575</td>
<td>205,313</td>
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<td>Other income</td>
<td>4,389</td>
<td>12,046</td>
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<td><strong>Total revenue</strong></td>
<td>1,342,709</td>
<td>1,096,184</td>
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<tr>
<td><strong>Expenses</strong></td>
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<td>1,283,908</td>
<td>884,124</td>
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<td>Advisory panel expenses</td>
<td>36,110</td>
<td>34,938</td>
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<td>Program management fees</td>
<td>97,248</td>
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<td>Other expenses</td>
<td>23,179</td>
<td>21,887</td>
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<td><strong>Total expenses</strong></td>
<td>1,440,445</td>
<td>981,826</td>
</tr>
<tr>
<td><strong>Surplus/(deficit)</strong></td>
<td>(97,736)</td>
<td>114,358</td>
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</table>

Retained surplus at beginning of reporting period 848,985 734,627
Retained surplus at end of reporting period 761,249 848,985
Appendix 4: Glossary

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<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ABARES</td>
<td>Australian Bureau of Agricultural and Resource Economics and Sciences</td>
</tr>
<tr>
<td>ABBA</td>
<td>Australian Biomass for Bioenergy</td>
</tr>
<tr>
<td>ACFM</td>
<td>Australian Chicken Meat Association</td>
</tr>
<tr>
<td>AECL</td>
<td>Australian Egg Corporation Limited</td>
</tr>
<tr>
<td>AFIA</td>
<td>Australian Fodder Industry Association</td>
</tr>
<tr>
<td>AOP</td>
<td>Annual Operational Plan</td>
</tr>
<tr>
<td>APIL</td>
<td>Australian Pork Limited</td>
</tr>
<tr>
<td>APVMA</td>
<td>Australian Pesticides and Veterinary Medicines Authority</td>
</tr>
<tr>
<td>AWI</td>
<td>Australian Wool Innovation</td>
</tr>
<tr>
<td>B/C</td>
<td>benefit-cost</td>
</tr>
<tr>
<td>CCRSPI</td>
<td>Climate Change Research Strategy for Primary Industries</td>
</tr>
<tr>
<td>CRC</td>
<td>Cooperative Research Centre</td>
</tr>
<tr>
<td>CRDC</td>
<td>Cotton Research and Development Corporation</td>
</tr>
<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
</tr>
<tr>
<td>DA</td>
<td>Dairy Australia</td>
</tr>
<tr>
<td>DAWR</td>
<td>Department of Agriculture and Water Resources</td>
</tr>
<tr>
<td>DEDJTR</td>
<td>Department of Economic Development, Jobs, Transport and Resources</td>
</tr>
<tr>
<td>DPI</td>
<td>Department of Primary Industries</td>
</tr>
<tr>
<td>FSANZ</td>
<td>Food Standards Australia New Zealand</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically sustainable development</td>
</tr>
<tr>
<td>FOI Act</td>
<td>Freedom of Information Act 1982</td>
</tr>
<tr>
<td>FRR</td>
<td>Public Governance, Performance and Accountability (Financial Reporting) Rule</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic information system</td>
</tr>
<tr>
<td>GRDC</td>
<td>Grains Research and Development Corporation</td>
</tr>
<tr>
<td>GST</td>
<td>Goods and services tax</td>
</tr>
<tr>
<td>GVP</td>
<td>Gross value of production</td>
</tr>
<tr>
<td>IRR</td>
<td>Internal rate of return</td>
</tr>
<tr>
<td>MOV</td>
<td>Managing climate variability</td>
</tr>
<tr>
<td>MIR</td>
<td>Modified internal rate of return</td>
</tr>
<tr>
<td>MLA</td>
<td>Meat &amp; Livestock Australia</td>
</tr>
<tr>
<td>MDU</td>
<td>Memorandum of understanding</td>
</tr>
<tr>
<td>NFF</td>
<td>National Farmers’ Federation</td>
</tr>
<tr>
<td>NPMV</td>
<td>Net present value</td>
</tr>
<tr>
<td>NRM</td>
<td>Natural resource management</td>
</tr>
<tr>
<td>OAC</td>
<td>Office of the Australian Information Commissioner</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
<tr>
<td>PGPAs</td>
<td>Public Governance, Performance and Accountability Act 2013</td>
</tr>
<tr>
<td>PRD Act</td>
<td>Primary Industries Research and Development Act 1989</td>
</tr>
<tr>
<td>PSR</td>
<td>Pythium soft rot</td>
</tr>
<tr>
<td>PVB</td>
<td>Present value of benefits</td>
</tr>
<tr>
<td>PVC</td>
<td>Present value of costs</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>R&amp;D&amp;E</td>
<td>Research, development and extension</td>
</tr>
<tr>
<td>R&amp;D for Profit</td>
<td>Research and development corporation</td>
</tr>
<tr>
<td>R&amp;Co</td>
<td>Ricegrowers’ Association</td>
</tr>
<tr>
<td>RDA</td>
<td>Rural Industries Research and Development Corporation</td>
</tr>
<tr>
<td>RWA</td>
<td>Rural Women’s Award</td>
</tr>
</tbody>
</table>

Appendix 5: AgriFutures Australia R&D Advisory Panels

Panels and Chairs for the period 1 July, 2020 to 30 June, 2021.

**Chicken Meat**
- Ms Katherine Baidling (Chair)
- Ms Susan Klein (Deputy Chair)
- Dr Anthony Keyburn
- Dr Sheridan Alfrevich
- Mr Jason Fry
- Dr Timothy Wilson
- Dr Greg Underwood
- Professor Eugeni Roura
- Mr Guy Hobbwhite (Former Chair)
- Ms Georgina Townsend (July 2017 – March 2021)
- Ms Rachele Osmond (April 2021 – current)
- Ms Anne Lane (October 2020 – current)

**Export Frooder**
- Mr Peter Baker (Chair)
- Mr Andrew Hayward
- Mr Zane Bansom
- Mr Munro Patchett
- Mr Steve Woods
- Mr Mick Faulkner
- Mr Pat Guerin (December 2019 – June 2021)
- Ms Emma Rodham

**Ginger**
- Dr Jodie White (Acting Chair, June – July 2021)
- Mr Ethan Graham
- Mr Scott Kirkwood
- Ms Kylie Templeton
- Mr Robert Abbas
- Mr Jeffery Skilton
- Ms Nicole Christodoulou (Chair) (October 2017 – May 2021)
- Mr Jason Keating (February 2015 – December 2020)
- Dr Michael Smith (February 2015 – December 2020)
- Ms Emma Rodham

**Honey Bee and Pollination**
- Dr Doug Somerville (Chair) (November 2017 – April 2021)
- Dr Diana Leemon (Acting Chair)
- Mr Samuel Malfroy
- Dr Rob Manning
- Mr Steve Fuller
- Mr Neil Bingley
- Mr Jonathan Monson
- Ms Annelies McGaw

**Rice**
- Dr Drew Braithwaite (Chair)
- Mr Antony Vagg (Deputy Chair)
- Dr Vito butardo
- Mr Brian Dunm
- Mr Russell Ford
- Ms Laura Kaylock
- Dr Laurie Lewin
- Dr Ben Overend
- Ms Michele Groat (February 2018 – February 2021)
- Ms Lucinda Staley-McCrohon

**Tea Tree Oil**
- Mr Michael Flanagan (Chair)
- Ms Dee-Ann Prather
- Mr Phillip Butlin
- Mr Digby Growns
- Mr Gavin Ash
- Ms Gae Plunkett (March 2019 – April 2021)

**Thoroughbred Horses**
- Professor Nigel Perkins (Chair)
- Dr Catherine Chicken (Deputy Chair)
- Mr Derek Field
- Mr Michael Grieve
- Mr Mike Becker
- Dr Craig Suann
- Ms Jacqueline Steward
- Ms Annelies McGaw
Appendix 6:
Annual reporting requirements
(Legislative requirements)

AgriFutures Australia’s Annual Report complies with the requirements of the Australian Government’s legislation, which are set out below. The Acts are the:

- Primary Industries Research and Development Act 1989
- Public Governance, Performance and Accountability Act 2013

The Primary Industries Research and Development (PIRD) Act 1989

Section 3: Objects

The objects of this Act are to:

a) Make provision for the funding and administration of research and development relating to primary industries with a view to:
   i. increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries
   ii. Achieving the sustainable use and sustainable management of natural resources
   iii. Making more effective use of the resources and skills of the community in general and the scientific community in particular
   iv. Supporting the development of scientific and technical capacity
   v. Developing the adaptive capacity of primary producers
   vi. Improving accountability for expenditure on research and development activities in relation to primary industries.
b) Make provision for the funding and administration of marketing relating to products of primary industries.

c) Make provision for the funding and administration of marketing relating to products of primary industries.

Section 7: Representative organisations

1. The Minister may, by notice published in the Gazette, declare one or more specified organisations to be representative organisations in relation to an R&D Corporation or an R&D Council.
2. A declaration may be made in respect of an R&D Corporation or an R&D Council at any time after the making of regulations under Section 8 establishing AgriFutures Australia or Council, even if the regulations concerned are not in force at that time.
3. The Minister must, in relation to each R&D Corporation and each R&D Council, declare at least one organisation to be a representative organisation.
4. A declaration must be published on the Department’s website as soon as practicable after it is made.

Section 9: Establishment of AgriFutures Australia

1. AgriFutures Australia is established.
2. The regulations may specify the primary industries or class of primary industries in respect of which AgriFutures Australia is established.

Section 11: Functions

The functions of a R&D Corporation are:

a) To investigate and evaluate the requirements for research and development in relation to the primary industry or class of primary industries in respect of which AgriFutures Australia is established.

b) To prepare an Annual Operation Plan under Section 25 for each financial year.

c) To coordinate or fund the carrying out of R&D activities that are consistent with the Annual Operational Plan prepared by AgriFutures Australia and in force at the time.

i. has, during the period, contributed to the attainment of the object of this Act as set out in Section 3.

v. In respect of the grain industry or such other primary industry or class of primary industries as is prescribed in the regulations, particulars of sources and expenditure of funds, including:

i. Commodity, cross commodity and regional classifications

ii. Funds derived from transfer of assets, debts, liabilities and obligations under Section 144.

Section 20: Evaluation

a) The Directors must include in each report on an R&D Corporation prepared under Section 46 of the PGPA Act:

i. The R&D activities that it coordinated or funded, wholly or partly, during the period

ii. If a levy attached to AgriFutures Australia has a marketing component during the period – the marketing activities that it coordinated or funded, wholly or partly, during the period.

iii. The amount that it spent during the period in relation to each of those activities.

b) Any assessment of the extent to which its operations during the period have:

i. Achieved its objectives as stated in its R&D plan.

ii. Implemented the Annual Operation Plan applicable to the period.

iii. The amount of all grants or other contributions the Corporation or an R&D Council received, during the period, from the Commonwealth.

Section 28: Annual Report

1. The Directors must include in each report on an R&D Corporation prepared under Section 46 of the PGPA Act:

a) Particulars of:

i. The R&D activities that it coordinated or funded, wholly or partly, during the period

ii. Any activities relating to the formation of a company

iii. Significant acquisitions and dispositions of real property by it during the period.

b) The entering into of agreements under Sections 13 and 14 during the period and its activities during the period in relation to agreements entered into under that section during or prior to the period.

c) The entering into of agreements under Sections 13 and 14 during the period and its activities during the period in relation to agreements entered into under that section during or prior to the period.

d) The activities of any companies in which AgriFutures Australia has an interest.

The Public Governance, Performance and Accountability Act 2013

The PGPA Act is the main legislation that specifies content and standards for presentation of statutory authorities’ Annual Reports for parliamentary scrutiny.

Section 46 of the PGPA Act requires AgriFutures Australia Directors to prepare an Annual Report each financial year and to give it to the responsible Minister by 15 October.

d) To:

i. Monitor.

ii. Evaluate.

iii. Report to the Parliament, the Minister and its representative organisations on: R&D activities that are coordinated or funded, wholly or partly, by AgriFutures Australia.

e) To disseminate and commercialise, and facilitate the dissemination, adoption and commercialisation of the results of research and development in relation to the primary industry or class of primary industries in respect of which AgriFutures Australia was established; and if a levy attached to AgriFutures Australia has a marketing component – to carry out marketing activities for the benefit of the primary industry or class of primary industries in respect of which the AgriFutures Australia was established.

f) Such other functions as are conferred on AgriFutures Australia by this Act or any other Act.

Section 28: Annual Report

1. The Directors must include in each report on an R&D Corporation prepared under Section 46 of the PGPA Act:

a) Particulars of:

i. The R&D activities that it coordinated or funded, wholly or partly, during the period

ii. Any activities relating to the formation of a company

iii. Significant acquisitions and dispositions of real property by it during the period.

The Public Governance, Performance and Accountability Act 2013

The PGPA Act is the main legislation that specifies content and standards for presentation of statutory authorities’ Annual Reports for parliamentary scrutiny.

Section 46 of the PGPA Act requires AgriFutures Australia Directors to prepare an Annual Report each financial year and to give it to the responsible Minister by 15 October.
Index of Annual Report requirements

<table>
<thead>
<tr>
<th>Reference</th>
<th>Contractual/Legislation details</th>
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<th>No</th>
<th>N/A</th>
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<tbody>
<tr>
<td>PRD</td>
<td>Contributions to the implementation of relevant sector and cross-sectoral strategies under the RDE Framework</td>
<td></td>
<td></td>
<td></td>
<td>44-45, 148-149, 247, 258</td>
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<td>PRD</td>
<td>The rational for the mix of projects included in the Balanced Portfolio</td>
<td></td>
<td></td>
<td></td>
<td>150-151</td>
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<tr>
<td>PRD</td>
<td>Report on research activities</td>
<td>44-45, 71-74, 114</td>
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<td>PRD</td>
<td>Identification of income including separate identification of R&amp;D Payments, Commonwealth Matching Payments, other forms of income and Marketing Payments and Voluntary Contributions</td>
<td>150-151</td>
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<td>PRD</td>
<td>Full cost of R&amp;D and Marketing programs allocated in accordance with the Cost Allocation Policy</td>
<td>148-153</td>
<td></td>
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<tr>
<td>PRD</td>
<td>Progress in implementing R&amp;D Plan including progress against KPIs and the achievement of key deliverables and associated outcomes</td>
<td>9-9, 20-31, 224</td>
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<tr>
<td>PRD</td>
<td>For each program bring the KPIs in the R&amp;D plan and AOP together and demonstrate how the deliverables funded advanced the outcomes</td>
<td>14-17, 30-31</td>
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<td>PRD</td>
<td>Assessment of the effectiveness and effectiveness of investments</td>
<td>9-9, 148-149</td>
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<tr>
<td>PRD</td>
<td>Progress in implementing the Guidelines</td>
<td>148-149, 180, 161</td>
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<td>PRD</td>
<td>Consultation with the R&amp;I on plans and activities</td>
<td>92-93, 244</td>
<td></td>
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<td>PRD</td>
<td>Other relevant matters notified to RDC by the Commonwealth</td>
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**Primary Industries Research and Development Act 1989**

<table>
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<th>Reference</th>
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<th>Yes</th>
<th>No</th>
<th>N/A</th>
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<tr>
<td>s29A(a)</td>
<td>Report the particulars of the R&amp;D activities that RDC co-ordinated or funded, wholly or partly, during the period</td>
<td>34-160</td>
<td></td>
<td></td>
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<tr>
<td>s29A(b)</td>
<td>Report the particulars of the marketing activities that RDC co-ordinated or funded, wholly or partly, during the period</td>
<td>148-153</td>
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<tr>
<td>s29A(c)</td>
<td>Report the particulars of the impact of R&amp;D and marketing activities on industry</td>
<td>148-154, 159</td>
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<tr>
<td>s29A(d)</td>
<td>Include particulars of revisions of the R&amp;D Plan that have been approved by the Minister</td>
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<td>s29A(e)</td>
<td>Any agreements entered into under s13 and 14 of the PRD Act and the activities in relation to the agreements entered into during a period</td>
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<td>s29A(f)</td>
<td>Activities in relation to applying for patents for inventions, commercially exploiting patented inventions and granting licenses under patented inventions</td>
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<td>s29A(g)</td>
<td>Activities of any companies in which the Corporation has an interest</td>
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<td>s29A(h)</td>
<td>Activities relating to the formation of a company</td>
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<tr>
<td>s29A(i)</td>
<td>Significant acquisitions and dispositions of real property (land and buildings)</td>
<td></td>
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<td>s29B</td>
<td>Include an assessment of the extent to which RDCs operations during the period have achieved its objectives as stated in its R&amp;D plan and implemented the AOP</td>
<td></td>
<td></td>
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<tr>
<td>s29C</td>
<td>An assessment of the extent to which RDC has contributed to the attainment of the objectives of the PRD Act</td>
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<td></td>
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<td>s29D</td>
<td>Particulars of the costs and expenditure of funds, including commodity cross-commodity and regional classifications, and funds derived from transfer under s14</td>
<td>6, 174-177, 238</td>
<td></td>
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<tr>
<td>s29D(1)</td>
<td>Subject to agreement between the Presiding Member of the Selection Committee and the RDC Chair include current annual report as a discrete part of RDC's annual report</td>
<td>247-248</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S 143(2)</td>
<td>Particulars of any directions given by the Minister in a financial year must be included in the annual report</td>
<td>180</td>
<td></td>
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</tbody>
</table>

**Public Governance, Performance and Accountability Act 2013**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Contractual/Legislation details</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>s30(1b)</td>
<td>Include a copy of the annual performance statements</td>
<td>191-226</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>s30(2)</td>
<td>Include a copy of the annual financial statements and the Auditor General's report</td>
<td>188-223</td>
<td></td>
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<tr>
<td>s46(2)</td>
<td>The annual report must comply with any requirements prescribed by the rules</td>
<td>174-181</td>
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<table>
<thead>
<tr>
<th>Reference</th>
<th>Contractual/Legislation details</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>s176A</td>
<td>Report must be approved and signed by accountable authority and include details of how and when approval was given and states that accountable authority is responsible for the preparation and contents of the Annual Report (as required in section 46 of the PGPA Act and in accordance with the Finance Minister's Orders)</td>
<td>* 6, 188-189</td>
<td></td>
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<tr>
<td>s176B</td>
<td>Report must comply with the guidelines for presenting documents to Parliament.</td>
<td>* All</td>
<td></td>
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<tr>
<td>s176C</td>
<td>Report must be constructed having regard to the interests of the Parliament and other users. Information included in the report must be relevant, reliable, concise, understandable and balanced</td>
<td>* All</td>
<td></td>
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<tr>
<td>s176E(a) &amp; (b)</td>
<td>Report must specify the enabling legislation and include a summary of its objects and functions and the purpose of the entity (from R&amp;D Plan)</td>
<td>6, 240-241</td>
<td></td>
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<tr>
<td>s176E(c)</td>
<td>Report must specify the name of the responsible Minister(s)</td>
<td>9</td>
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<tr>
<td>s176E(d) &amp; (e)</td>
<td>Report must provide details of:- Directions issued under legislation by the responsible Minister, or other Minister - General policy orders (GPO) that apply to the RDC under s22 (PGPA Act)</td>
<td></td>
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<tr>
<td>s176E(f)</td>
<td>Report must provide particular of any non-compliance of a direction or GPO</td>
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<tr>
<td>s176E(g)</td>
<td>Include a copy of relevant years annual performance statement (PGPA Act s39(1b) and section 196 of PGPA Rules 2014)</td>
<td>244</td>
<td></td>
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<tr>
<td>s176E(h) &amp; (i)</td>
<td>Include a statement of any significant issue and remedy action taken, reported to the responsible Minister under s 190(1)(c) of the PGPA Act that relates to non compliance with the finance law in relation to the RDC</td>
<td></td>
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<tr>
<td>s176E(j)</td>
<td>Must must information about the directors including names, qualifications, experience, attendance of board meetings, and whether the director is an executive or non-executive director</td>
<td>162-176</td>
<td></td>
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<tr>
<td>s176E(k) &amp; (l) (and s17BE(s))</td>
<td>Include a statement of the organisational structure, including subsidiaries and location of major activities and facilities and information on the main corporate governance practices. (*Or an explanation on any missing information and how this affects the annual report)</td>
<td>172-173</td>
<td></td>
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<tr>
<td>s176E(m)</td>
<td>Must include information about the remuneration in accordance with the PGPA Act, 2013 (section 17B)</td>
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<tr>
<td>s176E(n) &amp; (o)</td>
<td>Disclose the decision-making process undertaken by the board for related entity transactions</td>
<td>177</td>
<td></td>
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<tr>
<td>s176E(p)</td>
<td>Include particulars of any report on the entity</td>
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<tr>
<td>s176E(q)</td>
<td>Include particulars of judicial decisions and, decisions of administrative tribunals</td>
<td></td>
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<tr>
<td>s176E(r)</td>
<td>Unable to obtain information from a subsidiary</td>
<td>221</td>
<td></td>
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<tr>
<td>s176E(s)</td>
<td>Must must include details of any indemnity given to the accountable authority, any member of accountable authority or officer against a liability, including premiums paid, or aged to be paid, for insurance against the authority, member or officer's liability for legal costs</td>
<td>221</td>
<td></td>
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<tr>
<td>s176E(t)</td>
<td>Must include information about the executive remuneration in accordance with Subdivision 17C</td>
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<tr>
<td>s176E(u)</td>
<td>Must include an index identifying where the requirements of s176E are to be found</td>
<td>221</td>
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<tr>
<td>s176E(v)</td>
<td>Must include a table each of key management personnel, senior executives and other highly paid staff of the entity with the following information: name; position title; base salary; bonuses; other benefits and allowances; superannuation contributions (made by the entity); long service leave; other long term benefits; termination benefits; total remuneration, which must be the sum of the amounts included for the purposes of paragraph (d)</td>
<td>342-343</td>
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<tr>
<td>s176C</td>
<td>Must include the policies and practices of the entity regarding the remuneration of key management personnel, senior executives and other highly paid staff, setting out the governance arrangements under which they operate and the basis on which the remuneration has been determined.</td>
<td>221</td>
<td></td>
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<tr>
<td>s176D</td>
<td>Must calculate executive remuneration amounts on an accrual basis for reporting, unless found to be exempt.</td>
<td>221</td>
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</table>
Appendix 7: Service Charter

Enabling legislation and the Board

AgriFutures Australia’s enabling legislation is the Primary Industries Research and Development Act 1989 (the PIRD Act 1989). The AgriFutures Australia Board is accountable to the Parliament of Australia through the Minister for Agriculture, it:

- Sets strategic direction and establishes policies for AgriFutures Australia
- Oversees operational and functional performance against budget and other key performance indicators on behalf of stakeholders.

Core business

To facilitate a more profitable, dynamic and sustainable rural sector by maximising the knowledge outcomes from our R&D investments for Australian industries and government in:

- New and emerging industries
- Established rural industries
- National rural issues

Core principles in AgriFutures Australia’s approach to its mandate are:

- Collaboration – AgriFutures Australia consults widely with its industry and government stakeholders to determine investment strategies and priorities and seeks strong collaborative arrangements with other funding partners and research providers where this can enhance outcomes
- Facilitation – AgriFutures Australia facilitates more effective use of community and scientific expertise in the creation of new knowledge and its adoption
- Innovation – AgriFutures Australia invests in innovative solutions to the problems and constraints facing its key stakeholders.

Primary clients

- For AgriFutures Australia-related industries, all participants in the marketing chain (producers, processors, distributors and consumers)
- On AgriFutures Australia’s strategic cross-sectoral program, the National Farmers’ Federation on behalf of all rural industries.

Industry consultations

Communications channels between AgriFutures Australia and rural industries meet two essential functions: accountability and bringing industry influence to bear on the research agenda. At the peak industry level, AgriFutures Australia is accountable to the:

- National Farmers’ Federation
- Australian Chicken Meat Federation

AgriFutures Australia is committed to working with industry to deliver research and development outcomes. We work in partnership with Advisory Panels to decide on research priorities and to make RD&E investment decisions.

Reporting to stakeholders

There are four key accountability documents for stakeholders:

- A five-year Corporate Plan that sets out strategies, directions and performance indicators for AgriFutures Australia
- Three and five-year RD&E Plans for each industry program within new and emerging industries, established rural industries and national rural issues
- An Annual Operational Plan that sets out yearly objectives to give effect to the five-year Corporate Plan, five-year industry plans, the annual budget and annual research priorities
- The Annual Report, which sets out achievements against objectives, budgets and administration costs.

Stakeholders

- The Australian Government on behalf of rural industries and taxpayers
- Industry funders
- The Australian community.

Appendix 8: Presiding Member Rural Industries Research and Development Corporation Selection Committee

5th July 2021

The Hon. David Littleproud MP
Minister for Agriculture, Drought and Emergency Management
PO Box 6022
House of Representatives
Parliament House
CANBERRA ACT 2600

Dear Minister

Rural Industries Research and Development Corporation Selection Committee Report for activities 2020–21 financial year.

This report summarises the activities of the Rural Industries Research and Development Corporation (RRDCC) Selection Committee for the 2020–21 financial year, pursuant to section 141 of the Primary Industries Research and Development Act 1988 (PIRD Act), in relation to the nomination of directors for appointment to the Rural Industries Research and Development Corporation (trading as AgriFutures Australia).

Establishment of the selection committee

The RIRDC Selection Committee was established under the PIRD Act for the purpose of nominating six persons for appointment as directors of AgriFutures Australia.

I was appointed by you as the RIRDC Selection Committee Presiding Member on 30 March 2020, for a period ending 31 December 2022. From my nominations, following consultation with the RIRDC’s representative organisations—Australian Chicken Meat Federation and National Farmers’ Federation—you appointed the other Selection Committee members on 26 May 2020 as follows:

- Mr Geoffrey Annison
- Dr Alexander Bali
- Ms Christine Hawkins AM
- Ms Robbie Sefton.

Huntsman Recruiting, an independent specialist recruitment firm, assisted in the recruitment process but did not play a part in the selection of the director nominees.

Further to the selection process outlined in the 2019–2020 Annual report the Selection Committee shortlisted 22 candidates for interview including four current Directors.

In developing the shortlist, the Selection Committee considered the core selection criteria contained in section 131 of the PIRD Act, along with other criteria agreed to be important including:

- Genuinely passionate about the RIRDC purpose
- Willing to actively engage with levy payers and other stakeholders
- Excited and optimistic about the future of RIRDC (AgriFutures Australia)
- Adventurous and willing to take calculated risks
- Willing and able to commit the time required to fulfil the role
- Ethical and always act with integrity

Other considerations included gender, geographical and age diversity. In addition, the following skill sets were considered essential across the nominations.

131 of the PIRD Act, along with other criteria agreed to be important including;

- Genuinely passionate about the RIRDC purpose
- Willing to actively engage with levy payers and other stakeholders
- Excited and optimistic about the future of RIRDC (AgriFutures Australia)
- Adventurous and willing to take calculated risks
- Willing and able to commit the time required to fulfil the role
- Ethical and always act with integrity

Other considerations included gender, geographical and age diversity. In addition, the following skill sets were considered essential across the nominations.
Rural industries/agriculture

Good understanding of Australian rural industries, the issues that are important to levy payers and how these shape RD&E priorities, including industry uptake of innovation, and support of rural industries to adapt to changing environments.

Science/agrifood innovation

Good understanding and knowledge of existing and emerging science and technologies that have the potential to reduce production costs, increase yields, increase product differentiation and reduce industries’ environmental footprint. Good understanding of how new technologies and practices are adopted and/or commercialised.

Finance/audit

Good understanding of Australian business and/or financial accounting standards and practice. Good understanding of Australian Government probity, audit and financial reporting requirements, able to understand balance sheets must be capable of forming a quality Finance and Audit Committee.

Governance/risk

Good understanding of government and corporate governance frameworks. Good understanding of RIRDC (trading as AgriFutures Australia) legislative operating environment and legal obligations. Ability to identify and evaluate the principal risks faced by AgriFutures Australia and oversee the implementation of appropriate systems to avoid or mitigate these risks.

Interviews were conducted over the last week of June 2020 and the first week of July 2020, using Zoom. Secretariat services were provided by Huntsman Recruiting. Referee checks were conducted for all nominees.

On the 13th of July I provided the Selection Committee report to you with six nominations and two alternate nominations considered suitable for appointment.

In addition to assessing applicants at interview on their skills relevant to the identified criteria the selection committee considered the balance of experience and potential ability to work together as a team.

On the 1st of October 2020 you advised of your appointment of:

Dr William Ryan
Professor Andrew Harris
Ms Cindy Cassidy
Ms Diana Gibbs
Ms Emma Robinson
Mr Danny Le Feuvre

Following the announcement of the RIRDC Agrifutures Directors I have stood down the Selection Committee.

Expense incurred by the selection committee in the 2020–21 financial year are as follows.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Presiding Member remuneration</td>
<td>$13,200.00 inc GST</td>
</tr>
<tr>
<td>Three Selection Committee members remuneration</td>
<td>$5,877.40 inc GST</td>
</tr>
<tr>
<td>Advertising</td>
<td>$18,749.96 inc GST</td>
</tr>
<tr>
<td>Secretariat services</td>
<td>$26,400.00 inc GST</td>
</tr>
<tr>
<td>One member</td>
<td>$1,881.00 no GST</td>
</tr>
</tbody>
</table>

At AgriFutures Australia, we understand that the key to developing real and lasting solutions for our rural industries is to take a shared approach to shared challenges. That is why we collaborate with a range of industry and government stakeholders to develop and implement RD&E initiatives with benefits across the agricultural sector.

The AgriFutures Australia Strategic R&D Plan 2017–2022 reflects our strong commitment to collaboration, specifically focusing on cross-sector and cross-region approaches to research.

We believe that adopting a collective approach to RD&E not only results in greater resources for individual projects, but also helps to achieve a shared commitment to nationally significant challenges such as biosecurity, climate change, natural resource management and capacity building.

National cross-sectoral RD&E strategies

AgriFutures Australia plays a lead role in one of the national cross-sectoral RD&E strategies. The Community Trust Program* is a partnership involving 10 Rural Research and Development Corporations, the National Farmers’ Federation and the NSW Department of Primary Industries.

This timely capacity building initiative is designed to drive impactful, cohesive and consistent responses to the cross-sector community trust challenge. The Program’s lead researcher is Chief Executive Officer and Co-founder of Voconiq (a CSIRO spinout company), Dr Kieren Moffat.

*The Program is a jointly funded initiative of AgriFutures Australia, Australian Eggs, Australian Pork Limited (APL), Cotton Research and Development Corporation (CRDC), Dairy Australia, Horticulture Innovation Australia (Hort), Fisheries Research and Development Corporation (FRDC), Sugar Research Australia (SRD), Grains Research and Development Corporation (GRDC), LiveCorp, Meat and Livestock Australia (MLA).
### Examples of AgriFutures Australia collaborations across industries and the sector

<table>
<thead>
<tr>
<th>What</th>
<th>Who</th>
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<tbody>
<tr>
<td>National Oat Breeding Program</td>
<td>AgriFutures Australia, GRDC, InterGrain, Western Australian Agriculture Authority (WAAA), Western Australian Government, the South Australian Research and Development Institute (SARDI).</td>
<td>AgriFutures Australia and the GRDC together have invested $5.4 million in a $11.5 million National Breeding Program to provide new varieties for hay and milling oat production. The new Program will leverage technology such as genomics to respond to the changing needs of Australian growers and exporters. AgriFutures and the GRDC’s investment has been matched by the successful tenderer, InterGrain, an Australian cereal breeding company, with an additional $750,000 from the Western Australian Government’s $10.1 million election commitment as part of the Processed Oats Industry Growth Partnership. This research builds on more than 20 years of research by SARDI.</td>
</tr>
<tr>
<td>Honey bee genetic improvement program (Plan Bee)</td>
<td>AgriFutures Australia, NSW Department of Primary Industries (DPI), University of Sydney, Better Bees WA, Wheen Bee Foundation, Diarm, Monsoon’s Honey &amp; Pollination, Costa Group, South Pacific Seeds Pty Ltd, Australian Government.</td>
<td>The project will develop a national genetic improvement program to transform the performance of honey bees in Australia using innovative breeding technologies. The project will focus on selecting traits of importance to beekeeping, horticulture and broadacre industries dependent on honey bee pollination. A national database will be built to hold the honey bee genetic trait data that is collected. The project will also undertake an economic evaluation of breeding programs and develop and implement standardised selection methods that beekeepers can use to assess honey production, pollination and health traits.</td>
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<tr>
<td>Underpinning agricultural productivity and biosecurity by weed biological control</td>
<td>AgriFutures Australia, CSIRO, NSW DPI, QDPI, VDJPR, GRDC, Bundaberg Regional Council, Gympie Regional Council, HQ Plantation P/L, Hinchinbrook Shire Council, NSW Environmental Trust, NSW Weed Biocontrol Taskforce, SEQ Water, Australian Government.</td>
<td>This project will undertake foundational and applied research to contribute to integrated management of important weeds that affect Australian agriculture and water resources. The project will focus on 11 major weeds and complete risk assessments of promising biocontrol agents identified, undertake large-scale releases of approved agents and understand interactions between control methods, as well as progressing biocontrol research into new weed targets towards delivery.</td>
</tr>
<tr>
<td>Australian Participation in the European Union Product Environmental Footprint Technical Advisory Board. (OF-005541) PRJ-012437</td>
<td>AWI, AgriFutures Australia, Cotton RDC, GRDC, MLA, SRA.</td>
<td>Consider the implications for EU trade-exposed Australian industries from an environmental impact perspective.</td>
</tr>
<tr>
<td>Food Agility CRC PRJ-010765</td>
<td>Agribusiness, technology companies, researchers, government. AgriFutures Australia, Food &amp; Fibre Gippsland, AFI, AWRI, Costa Group, CSBP, FIAL, IAG, KPMG, Mulgowie Farming Co., MLA.</td>
<td>Improve the competitiveness, productivity and sustainability of Australian industries. Foster high-quality research to solve industry-identified problems through industry-led and outcome-focused collaborative partnerships. Encourage and facilitate small and medium enterprise participation in collaborative research.</td>
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<td>Improving plant pest management through cross industry deployment of smart sensors, diagnostics and forecasting.</td>
<td>Horticulture Innovation, AgriFutures Australia, Cotton RDC, GRDC, SRA, Wine Australia, FWPA, Nursery &amp; Garden Industry Association, CSIRO, SARDI, WAAA, DJTR, NZIPFR, Rothamsted Research, Burkard Scientific, PHA, Australian Government.</td>
<td>The development of a mobile, cross-industry plant pest surveillance network to monitor the presence of pests that threaten major agricultural sectors across Australia.</td>
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<tr>
<td>Forewarned is forearmed: equipping farmers and agricultural value chains to proactively manage the impacts of extreme climate events.</td>
<td>MLA, AgriFutures Australia, GRDC, Cotton RDC, SRA, AGWA, Dairy Australia, APL, BOM, University of Melbourne, QDAF, SARGI, USQ, Monash University, DEDJTR, Suncorp, Australian Government.</td>
<td>Australian farmers and agribusiness operate in one of the most variable climates of any country in the world, with extreme events and climate variability the largest drivers of fluctuations in annual agricultural income and production. This project will deliver direct value to farmers through improving the seasonal forecast of extreme climate events, including low and high rainfall, heat, cold and frost. It will equip farmers with the information and tools to be forewarned and change their management practices so they are proactively prepared. The project outputs will decrease the impacts of extreme climate events on farm and industry profit.</td>
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<tr>
<td>High-throughput technology for defining antimicrobial resistance status of pork and chicken.</td>
<td>APL, AgriFutures Australia, Murdoch University, University of Adelaide, Tecan Australia, Thermo Fisher Scientific, NSW DPI, Illumina, Australian Government.</td>
<td>Provide the Australian pig and chicken meat producers with a competitive advantage in the international market by developing a world’s best practice for objective description of the occurrence of antimicrobial resistance at the herd/flock level.</td>
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<tr>
<td>Closing the Loop: Black Soldier Fly technology to convert agricultural waste into high-quality fertiliser and soil improvers.</td>
<td>Australian Pork Ltd, AgriFutures Australia, Australian Eggs, AMPC, Dairy Australia, QDAF, FRDC, Future Green Solutions, University of Western Australia, Australian Government.</td>
<td>This project will investigate the development of Black Soldier Fly Farming (BSF) castings and larvae into high-quality, low-cost, slow-release, granulated fertiliser products, that are safe to handle, transport and apply. It will assist with overcoming existing adoption barriers by involving policy makers and farmers during field trials and assisting early adopters through extension activities. Adoption of BSF technology and its products has the potential to increase productivity and profitability via reduced input costs and generation of alternative revenue streams to a wide range of agricultural enterprises.</td>
</tr>
<tr>
<td>Smarter Irrigation for Profit Phase 2</td>
<td>Cotton RDC, AgriFutures Australia, SRA, Dairy Australia, GRDC, Deakin University, University of Melbourne, USQ, University of Tasmania, University of Sydney, DJPR, Gwydir Valley Irrigators, NSW DPI.</td>
<td>Increase the water productivity of over 4000 irrigated cropping and pasture agricultural enterprises by 10-20%.</td>
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<tr>
<td>Boosting diagnostic capacity for plant production industries. PRJ-012847 Rural RnD4Profit 18-04-003</td>
<td>GRDC, Hort, SRA, Cotton RDC, Wine Australia, PFPA, AvR, SARDI, QDAF, Australian Government. In-kind: AgriFutures Australia</td>
<td>Develop and implement improved national diagnostics for key biosecurity threats by developing diagnostics that facilitate early and accurate diagnosis and rapid response to threats that impact on production and access to domestic and international markets.</td>
</tr>
<tr>
<td>Climate Research Strategy for Primary Industries</td>
<td>A joint initiative of rural RDCs, state and territory governments, Australian Government, DAWR and CSIRO - 19 in total.</td>
<td>To promote a strategic and collaborative approach to climate change RD&amp;E for primary industries.</td>
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<tr>
<td>Rural Safety and Health Alliance</td>
<td>AgriFutures Australia, Australian Eggs, Australian Pork Limited, Australian Wool Innovation, Cotton Research and Development Corporation, Dairy Australia, Fisheries Research and Development Corporation, Grains Research and Development Corporation and Meat and Livestock Australia.</td>
<td>Healthy, safe and productive working lives in the primary industries through investment in RD&amp;E to drive sustainable improvements to work health and safety outcomes.</td>
</tr>
<tr>
<td>AgriFutures Horizon Scholarship</td>
<td>AgriFutures Australia, Dairy Australia, AgriFutures Chicken Meat, Grains Research Development Corporation, Cotton Research and Development Corporation, AgriFutures Rice, Australian Wool Innovation, Hort Innovation, Australian Eggs, Meat and Livestock Australia, McCaughey Memorial Institute and Westpac.</td>
<td>To support the next generation of agriculture leaders who will take up the challenge of farming for the future. In partnership with industry sponsors, the goal of the scholarship is to enhance the future supply of graduates available for employment in the rural sector.</td>
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<td>AgriFutures Rural Women's Award</td>
<td>AgriFutures Australia, Westpac Agribusiness, ABC Rural, Nine Entertainment Co., RM Williams Outback Magazine, Australia Community Media and state/territory governments.</td>
<td>To identify and support the capabilities of emerging rural women leaders to increase their participation and contribution to Australia’s primary industries and rural communities.</td>
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<tr>
<td>AgVet Collaborative Forum</td>
<td>AgriFutures Australia, GRDC, DA, HIA, CRDC, AWI, SRA, WA, Forest and Wood Products Australia, CropLife Australia and Animal Medicines Australia.</td>
<td>To identify solutions to key industry challenges in relation to accessing agvet technologies, and highlight areas of business opportunity for agvet chemical registrants by providing a priority list of industry needs and a process to identify potential partnerships and co-investment opportunities with industry.</td>
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<td>Poultry Hub Australia</td>
<td>AgriFutures Australia, Australian Eggs and University of New England.</td>
<td>The Poultry Hub Australia was established at the conclusion of the Poultry CRC in mid-2017. The key objective of PHA is to provide leadership in coordinating collaborative projects essential to the Australian poultry industry’s long-term sustainability and deliver practical solutions in a nimble and timely manner.</td>
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<tr>
<td>Securing Pollination for More Productive Agriculture: Guidelines for Effective Pollinator Management and Stakeholder Adoption</td>
<td>AgriFutures Australia, HIA, University of Adelaide, University of Sydney, University of New England, Australian National University, PIRSA, SA Department Environment, Water and Natural Resources, O’Connor NRM, Native Vegetation Council, Trees for Life and Apple and Pear Ltd, Lucerne Australia, SA Apiarist Association, Northern and York NRM Board, Costa Group, Australian Melon Association, Australian Mango Industry Association, Terrestrial Ecosystems Research Network, Greening Australia, Almond Board of Australia, Adelaide and Mount Lofty Ranges Natural Resources Management Board, Apple and Pear Growers Association (SA), Raspberries and Blackberries Australia, Eco-informatics.</td>
<td>This project will increase the profitability and security of pollinator-dependent crops by improving the health, diversity and abundance of pollinators on farms. It will do so by managing and improving natural resources, in particular critical food resources to support managed and wild crop pollinators, and in doing so will manage and mitigate the biosecurity risk posed by the Varroa mite.</td>
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<td>to Agricultural Profitability</td>
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<td>Rural RnD4Profit 15-02-005</td>
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<td>Taking the ‘Q’ (Query) out of Q Fever</td>
<td>Meredith Dairy, University of Melbourne, University of Queensland, University of Sydney, Australian Rickettsial Research Laboratory, University of Adelaide, Charles Sturt University and Goatvetoz.</td>
<td>This project will improve the understanding of Q Fever reservoirs, amplification and transmission pathways to help direct biosecurity resources more efficiently. In turn, this will reduce the burden of an extremely debilitating disease in rural communities.</td>
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<td>Rural RnD4Profit 15-02-008</td>
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<td>Australian Pastures Genebank</td>
<td>AgriFutures Australia, GRDC, AWI, MLA, DA, and state Departments of Agriculture.</td>
<td>To acquire, document, conserve, maintain and distribute plant genetic resources of pasture and forage species of actual or potential value to Australian agriculture.</td>
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