



National Farmers' Federation

Submission to the

Australian Government

2030 Strategic Plan Issues Paper

June 2017

NFF Member Organisations



CANEGROWERS



Goat Industry Council of Australia Inc.



Australian Chicken Growers' Council Ltd



The National Farmers' Federation (NFF) is the voice of Australian farmers.

The NFF was established in 1979 as the national peak body representing farmers and more broadly, agriculture across Australia. The NFF's membership comprises all of Australia's major agricultural commodities across the breadth and the length of the supply chain.

Operating under a federated structure, individual farmers join their respective state farm organisation and/or national commodity council. These organisations form the NFF.

The NFF represents Australian agriculture on national and foreign policy issues including workplace relations, trade and natural resource management. Our members complement this work through the delivery of direct 'grass roots' member services as well as state-based policy and commodity-specific interests.

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Executive Summary

Our vision for Australian agriculture and forestry is to become a \$100 billion industry by 2030. The sector is a source of strength in the Australian economy, positioned to capitalise on growing global demand for safe, high quality food and fibre over coming decades.

To achieve our vision, the sector needs regulatory and public policy settings that foster growth and productivity; innovation and ambition. Research, Development and Extension (RD&E) in agriculture are the foundation of the industry's international competitiveness, enabling agribusiness to service rapidly increasing global demand by playing to its strength of possessing domestic comparative advantage (Deloitte, 2014).

Farmers naturally possess the skills needed to innovate, operating in a high-risk environment that requires flexibility and adaptability in order to stay in business. Projected changes to climate, environmental and production systems and the world economy create new and increasing the current risks to agriculture, making innovation crucial for farmers to succeed.

It is crucial to note that innovation in agriculture is more than digital disruption. While digital innovation is predicted to contribute significantly to business metrics, many innovative farming practices include non-technological solutions.

The 15 rural Research and Development Corporations (RDCs), driving significant amounts of agricultural RD&E in Australia, are great at R&D creation. What is missing are clear value-propositions by RDCs for farmers to adopt new technologies and techniques. At present, a lot of RD&E in the respective RDCs and government occurs in silos. Pathways to extension or commercialisation should be included as part of initial research proposals.

Summary of Recommendations

Recommendation 1: Enable farmers and agribusiness owners to own the future of Australian agriculture by removing impediments and encouraging new and innovative business models.

Recommendation 2: Ensure ongoing government commitment to co-funding the RDC model. Long term certainty is required to facilitate investment for commercial outcomes over the longer term.

Recommendation 3: RDCs to closely work together on cross-commodity RD&E to maximise the impact of available RD&E funding and to better cater for mixed-farming enterprises.

Recommendation 4: That the CCRSPI be recognised as the key strategic partnership for prioritising and coordinating climate research for primary industries. Funding to support the priorities identified by CCRSPI will enable the delivery of meaningful research, development and extension to build our resilience to a changing climate and to enable the farm sector to contribute to our national emissions reduction goals.

Recommendation 5: Commit to ongoing funding of the Rural R&D for Profit Programme.

Recommendation 6: Introduction of a universal service obligation that is technology neutral and provides access to both voice and data for all Australians, regardless of where they work and live.

Recommendation 7: The Government must deliver updated telecommunication service guarantees and adequate performance to reflect the needs of consumers and businesses.

Recommendation 8: Government to invest in agricultural knowledge of school students by providing ongoing funding to PIEFA.

Recommendation 9: Development of a national framework for Agricultural Science as part of the STEM education objectives, to ensure consistency and commonality of purpose and outcomes, among the states and territories.

Recommendation 10: RDCs to focus on providing and communicating clear value propositions for their R&D to clearly demonstrate to farmers why adoption is beneficial

Moving Agribusiness to the Innovation Frontier

Agriculture¹ is one of Australia's fastest growing sectors, with farm gate returns forecast to rise by 8.3 per cent in the current financial year to a total of \$63.8 billion (ABARES, 2017). Part of agriculture's success story in Australia is the strong innovation, science and research system underpinning farm decision making, continuously pushing agriculture to become more productive, efficient, competitive and sustainable.

Heavily building on innovation in agricultural systems, NFF has the vision of almost doubling agriculture's value and to become a \$100 billion industry by 2030. The key ingredients identified by NFF to achieve this vision are broadly aligned with the challenges identified in the *2030 Strategic Plan* (ISA, 2017):

- **Market Access**
Two thirds of Australian agricultural goods are exported (ABARES, 2017), and international markets will continue to deliver the majority of value to agriculture.
- **Human Talent**
Australia's farmers are aging alongside the rest of society. To ensure the future of agriculture, it is crucial to invest in people, to cultivate talent in agriculture by fostering a culture of agile learning and thinking, and to bring the next generation along.
- **Flexible Capital Sources**
Investment in agriculture needs to be sourced outside current debt-financed farming systems to enable positive disruption and innovation in the industry.
- **Accelerating Productivity**
Australian agriculture needs to preserve our world leading RDCs as well as cultivating private investment for innovation, providing the tools for renewed productivity.
- **Premium Branding**
As an export oriented industry, Australian agriculture need to position its premium food and fibre to be instantly recognisable overseas as a signal of quality and safety.
- **Digital Connectivity**
Reliable telecommunications in rural and remote areas are key to enabling farmers to partake in the agtech revolution and to utilise digital farming techniques on farm with the bigger goal of leading to productivity gains.

Future challenges for Australian agriculture

Australian agriculture heavily depends on RD&E that improves competitiveness in the global market place. Australian farmers have one of the lowest rates of Government support of OECD countries (at 1.3 per cent of gross farm revenue compared to the OECD average of 17 per cent) (OECD, 2016). These low levels of farm subsidies combined with high farm input costs

¹ The definition of agriculture used in this submission includes not only the cultivation of crops and livestock husbandry but also forestry and fisheries.

including transport expenses (NFF, 2016) make innovation paramount for the growth of Australian agribusinesses.

Moreover, it is predicted that farming in Australia is in for an even bumpier ride over coming decades (Hajkowicz & Eady, 2015). This will include projected changes to climate, environmental and production systems and the world economy creating new and increasing the current risks to agriculture. The increasing interconnectedness of socio-ecological systems resets the risk profile to weather, production systems, agronomic practises and biosecurity. Responses to these new risks require resilience to the manifestation of climate change, environmental change and globalisation shocks.

RD&E also plays a crucial role for Australian farmers in reaching our potential to cater for future food demands. Australian agriculture faces enormous opportunities as the Asian region rapidly grows in population and economic prosperity. The global population is expected to reach 9 billion by 2050 and food demand is expected to increase by 77 per cent over the same period – with much of this demand stemming from Asia. A wealthier, hungrier region presents significant opportunities for Australia as a provider of high value produce, as more informed consumers demand specific provenance, sustainability or health attributes from their food (Hajkowicz & Eady, 2015).

Parameters for successful RD&E

NFF believes that extension of R&D can only occur if innovation addresses a pressing need or issue. A focus on technology or innovation alone without really understanding the critical challenges and opportunities for driving profitability on farm will not result in long lasting or widespread adoption of changed practices. Part of good RD&E is therefore that some innovation is driven by identifying key challenges first rather than finding innovative or technology based solutions that are retrofitted onto farm management processes. This includes acknowledgement by investors that innovative farming practices often include non-technological solutions.

Farmers face many competing priorities for capital investment – investing in the wrong piece of machinery or planting a crop that does not have a buyer can put farmers out of business. For this reason, it is crucial to better detail benefits and costs associated with implementation of technology and to cut through the noise of too much available information about on-farm innovations. History has shown that where the payback exists, growers will invest. The Australian Cotton Industry, for example, had an 80 per cent adoption rate of round bale pickers over a period of just 5 years (Bennett, 2016). Part of the rapid adoption rate was due to these module pickers overcoming significant workplace health and safety as well as efficiency issues.

Farmers' ability to innovate can be restricted by lack of resources, including capital. On farm adoption of innovation can require upfront investment in technology and increase level of risk, particularly when innovations are in the development stage. Times of low profitability or volatility can often restrict innovation, not promote it. To this end, agile financing options must be set up to be the best fit for the real, modern world of agriculture in Australia. At present, the vast majority of farm businesses have been built on a traditional bank debt-financing model, but this is likely to evolve as farm businesses seek to innovate into the future.

Recommendation 1: Enable farmers and agribusiness owners to own the future of Australian agriculture by removing impediments and encouraging new and innovative business models.

RDCs: The motor of innovation in agriculture

Question 2030 Strategic Plan:

How can we increase people and idea exchanges between industry and research? How can we increase the multi-disciplinary engagement and exchanges across industries?
Do we have the right incentives to encourage research translation?

A 2011 report produced by ABARES (Sheng, Gray, Mullen, & Davidson, 2011) provided evidence of the important contribution of public research and development to broadacre total factor productivity in Australia. The report found that over the past 50 years, knowledge and technology accumulated from past public investments in RD&E in Australia and overseas have accounted for almost two thirds of average annual broadacre productivity growth. In its analysis, ABARES calculated that for every \$1 in public investment in research, development and extension produces \$12 in benefits to farmers in the long term. This point is equally valid for other commodities.

There are currently 15 Rural Research and Development Corporations (RDCs), co-funded through mandatory farm production levies and matching government contributions, that administer research and development (R&D) program funds in our agricultural, fishing and forestry industries (DAWR, 2017). Through this unique partnership between industry and government, RDCs are accountable to both public and private stakeholders. Public stakeholders generally strive for social and sustainable outcomes while industry is generally profitability driven. Thus, RDCs focus on improving economic, environmental and social benefits for both rural industries and rural communities, ultimately delivering a stronger national economy and a productively managed natural resource base.

Recommendation 2: Ensure ongoing government commitment to co-funding the RDC model. Long term certainty is required to facilitate investment for commercial outcomes over the longer term.

Another crucial element could be to better engage with private consultants, as these are often trusted advisors and are required to absorb the information disseminated via extension networks. Agricultural extension systems are evolving, and they must adapt to meet the changing needs of farmers hungry for information and constantly striving to improve their business prospects. This includes RDCs better catering for farmers operating mixed farming enterprises across multiple commodities by focusing on cross-commodity RD&E. This cross-commodity RD&E will benefit the broader agricultural sector and, additionally, help RDCs to maximise the impact of the available RD&E funding by avoiding duplication.

Recommendation 3: RDCs to closely work together on cross-commodity RD&E to maximise the impact of available RD&E funding and to better cater for mixed-farming enterprises.

Innovation opportunity: Improved farm productivity and climate resilience

The importance of innovation to unlock the carbon potential in the land and agriculture cannot be understated. Investment is required to develop strategies to drive down emissions intensity of production and to enable our production systems to be resilient to a changing climate.

Governments and the agriculture sector have recognised the importance of collaboration on climate research since 2008 when the first Climate Change Research Strategy for Primary Industries (CCRSPI) was developed (CCRSPI, 2017). CCRSPI supports the National Primary Industries RD&E Framework, a strategic partnership between the Australian, State and Northern Territory governments, RDCs, CSIRO and universities. CCRSPI partners have been co-investing in climate change research, development and extension since that time, and, in 2017, the third iteration of the strategy is due to be released. This strategy highlights the importance of innovation to enable the farm sector to contribute to emissions reduction efforts, manage risks of climate change, and to support adaptation efforts as the climate changes.

The CCRSPI partnership is an ideal focal point for continued discussion and collaboration, to identify priorities and to facilitate co-investment in the research. The agriculture sector has shown its willingness to invest in climate research using industry funds through the RDC model. There are genuine incentives for industry to do this research – both in terms of productivity benefits and the need to build the capability to demonstrate to our markets that we are responsible producers.

However, some emissions reduction R&D has long lead times, requiring sustained investment over time. The very nature of the challenge ahead means that some research will need to be “far-horizon”, making it riskier and less attractive for industry and private investment. Added to this is that the specific agriculture sector adaptation research needs to build on fundamental research about the likely future climates we might face in terms of soil moisture, temperatures or extreme events. The statutory framework and funding agreements in place in the RDC model means that industry investment must be made in a way that delivers demonstrable value to levy payers. This limits the ability for industry to invest significantly in far horizon or blue sky research.

In NFF’s view, Government policy settings should incentivise industry to pursue the research that it is unlikely to fund on its own. A co-investment approach model such as that adopted in the Carbon Farming Futures package (DAWR, 2015) or the Rural R&D for Profit Programme has demonstrated success in the past to leverage industry, research providers and private sector investments. Such an approach:

- recognises that carbon research is often too “risky” to fit inside the demonstrable value parameters of industry levy-funded research; and
- enables industry as a whole to capture the value of the carbon benefit realised from its investment and adoption of carbon efficient practices, which in turn is captured through downward trends in the national inventory.

Further, the Government’s innovation agenda must recognise that a fundamental understanding of future climates will be important to support the adaptation of many sectors in the economy – not least the agriculture sector. This includes Government to continue and expand of national investment in climate science to underpin the national climate mitigation and adaptation challenge.

Recommendation 4: That the CCRSPI be recognised as the key strategic partnership for prioritising and coordinating climate research for primary industries. Funding to support the priorities identified by CCRSPI will enable the delivery of meaningful research, development and extension to build our resilience to a changing climate and to enable the farm sector to contribution to our national emissions reduction goals.

Extension in agriculture: How it works

The rate of rapid change in innovation and technology often means that farmers require specialised technical support to adopt innovation and technology on farm, and integrate it into existing decision making processes. To increase success in extension of R&D, better linkages between research, development and extension deliverers are needed. At present, a lot of RD&E in the respective RDCs and government occurs in silos. Pathways to extension or commercialisation should also be included as part of initial research proposals, not an afterthought.

State and territory governments have historically dominated the funding and delivery of on-farm extension services in Australian agriculture, but this has been changing for a number of decades (Sheng, Gray, Mullen, & Davidson, 2011). On-farm extension is in a state of flux and how it will look and function in the future is uncertain (Hunt, Birch, Coutts, & Vanclay, 2012). The following two case studies outline how extension works in practice.

Case study 1: Automatic milking systems²

Much of the Australian dairy industry is pasture-based and the traditional automatic milking systems are single box ‘robots’ developed for the European market which has small herds that are often housed indoors. Any Australian automatic milking system must rely on voluntary movement of cows to and from the paddocks, and be able to handle large herds. There are currently 38 dairy farms in Australia using automatic milking system technologies, with 149 robots milking 10,500 cows producing in excess of 58 million litres of milk per annum.

When surveyed, farmers with automatic milking systems have identified the following key factors that contributed to their decision to adopt automatic milking systems:

- Fewer people required (which will help address the issues of inability to find labour in regional Australia);
- Sustainability of operation (environmentally and with regard to labour and lifestyle);
- Farm succession;
- Appeal of technology;
- More appealing to return to dairy industry or to remain in industry without having to milk cows;
- Age, need to slow down and reduce physical labour;
- Opportunity to increase milking frequency without increasing labour;

² Case study provided by Australian Dairy Farmers to NFF in May 2017. More information is available upon request – please contact Australian Dairy Farmers at reception@australiandairyfarmers.com.au.

- Capture efficiencies of inputs and scale of operation;
- Perceived advantages in individual cow feeding (based on production level).

Automatic milking systems have been developed for dairy farms to reduce the human labour required for milk harvesting. In Australia, the challenge is to incorporate automatic milking into pasture-based production systems while maintaining production targets. Current research, development and extension through the Future Dairy project, funded in part by Dairy Australia, is examining the constraints to successful implementation of automatic milking systems into the Australian dairy industry.

Case study 2: Extension work in cotton³

Cotton Info is the industry funded organisation that undertakes research extension. It is funded by a joint venture partnership including Cotton Australia, Cotton Research and Development Corporation (CRDC) and Cotton Seed Distributors. Cotton Info has staff across the cotton growing valleys, including technical support staff on key industry issues. The Cotton Info website is a key repository for all industry information and resources

Cotton Info coordinates industry tours that growers can attend to get across industry issues such as the “Maximising on farm irrigation profitability tour”⁴ that took place in Narrabri and Moree in February 2017, taking Southern irrigators North to see irrigation technologies in action. This tour included a visit to the CSIRO research site at Narrabri and farm visits in the Gwydir Valley and Moree.

CRDC funds workshops to collect and collate grower research priorities as well as grower participation in research updates where research themes are examined in detail and ideas on strategic direction for research and research gaps are identified.

NFF would also like to raise the importance of market-driven R&D with a strong consumer focus. It is crucial to capture trends and emerging industries in the RDCs structure and to not just focus on improving farming systems but to also match farming output to consumer demand. Inclusion of the private sector, namely of consultants and agronomists, in RD&E is critical to support farmers to trial and adopt innovation and technology on farm on a one on one basis, which is limited in the RDC investment space. Pathways are not just directly from research to farmer, but also from research to agronomist to farmer, bearing in mind consumers at the end of the innovation chain.

The *Rural Research and Development for Profit Programme*, implemented in 2015 through the *Agricultural Competitiveness White Paper* (DAWR, 2015) is key to fast-track critical productivity tools for farmers across a broad range of agricultural sectors. The program has

³ Case study provided by Cotton Australia Limited to NFF in May 2017. More information is available upon request – please contact Cotton Australia Limited at talktous@cotton.org.au.

⁴ <http://www.cottoninfo.com.au/events/maximising-farm-irrigation-profitability-tour-narrabrimoree>

competitive application process, leading to funding the most effective projects that deliver the best results for farmers. Projects under this program are delivered through the 15 Rural R&D Corporations in partnership with industry, universities and research agencies across Australia. The program is set to run out in 2022 (DAWR, 2017).

Recommendation 5: Commit to ongoing funding of the Rural R&D for Profit Programme.

Telecommunications: Barriers to on-farm R&D adoption

Question 2030 Strategic Plan:

What regulatory reform, and in what sectors, is required to help firms move closer to the innovation frontier and enable greater adaptability?

Connectivity represents the next frontier for agricultural productivity in Australia. The Rural Industries Research and Development Corporation (RIRDC) outlined this in its *Cross-Industry Innovation Scan* (2016): “Digital disruption is said to be behind the next agricultural ‘revolution’, following the mechanical and scientific revolutions of the previous century. Agriculture can be characterised as having a ‘long-fuse’, but a ‘big bang’ when it comes to digital innovation, which could contribute to a 25-30% change in business metrics in the next few years.”

Rural and regional Australians have markedly poorer access to telecommunication services than their urban counterparts. The 2015 Regional Wellbeing Survey from the University of Canberra showed that only 37 per cent of regional Australians felt that they had good access to high speed internet while 48 per cent felt that they had poor access (Schirmer, Yabsley, Mylek, & Peel, 2016).

Access to high speed internet is no longer a nice add-on for life in rural and remote Australia. It has become essential for the economic, personal and social development of rural Australians and for safety at the workplace. The digital divide between urban and rural Australia is a real equity issue, leaving Australians living outside of the capital cities behind. Rural Australians expect reliable, reasonable and consistent connectivity to participate in the 21st century. It is not enough to connect Australians to the NBN – there needs to be ongoing guarantees of basic service and performance standards.

This means the Government must deliver a universal service obligation that is technology neutral and provides access to both voice and data. Regional, rural and remote consumers and businesses need legislative rights to access broadband data and voice services. The service should be set out in a technology neutral manner and updatable to ensure that the service meets consumer, business and productivity needs now and into the future. There should be no degradation in the current voice service that users receive. The delivery of voice services needs to be clearly articulated, with the Copper Continuity Obligation remaining until a suitable alternative arrangement is in place.

Recommendation 6: Introduction of a universal service obligation that is technology neutral and provides access to both voice and data for all Australians, regardless of where they work and live.

Critically, customer service guarantees and reliability measures to underpin the provision of voice and data services and deliver more accountability from providers and nbn. Ensuring safeguards are reformed so they are relevant to the needs of consumers is vital. Connection and repair timeframes, reliability, adequate performance levels and safeguards for vulnerable consumers need to be re-examined and updated. Services should be delivered equitably to all Australians. Any proposed changes to telecommunication services should be conditional on comprehensive performance and service guarantee replacements that apply to the new services. The Minister of Communications and Arts should ensure that there are clear standards, benchmarks, accountability and clarity around wholesale (e.g. nbn) and retail provider responsibilities.

Recommendation 7: The Government must deliver updated telecommunication service guarantees and adequate performance to reflect the needs of consumers and businesses.

A Changing Agricultural Workforce

Agriculture is currently undergoing a renaissance due to the high-tech nature of precision agriculture and agtech in general. This includes the use of drones, biometric devices to monitor livestock, digital maps and sensors and the use of big data in general (AFI, 2017). This increasingly complex environment on farm has translated to the creation of new jobs in agriculture, ranging from agtech start-ups to lawyers.

The public's perception of agricultural science and research is central to increasing participation in science generally, and agricultural science education in particular. A positive public perception of science related disciplines and agricultural innovation would contribute to making science and agriculture an attractive career goal and underpin public enthusiasm for science.

Promoting careers in agricultural industries

Question 2030 Strategic Plan:

How do we ensure our current (and future) workforce has the necessary skills to support firms in their ambition and realise Australia's vision to be a "top tier" innovation nation?

A study commissioned by the Primary Industries Education Foundation Australia (PIEFA) remains one of the most significant investigations into school students' knowledge of agriculture (Hillman & Buckley, 2011). It found the following:

- 40% of Grade 10 students (compared to 17% of Grade 6 students) believe that farming damages the environment;
- 43% did not link science to primary production;
- 55% did not link innovation to primary production.

Studies from the USA and UK indicate the findings are not unique to Australia.

Research indicates that the best economic return comes from early investment (Heckman, 1995). The Australian curriculum has been rewritten, with now 168 content references to food and fibre, across the curriculum. A concerted effort should now be made which continues to provide resource development to support these, and teacher knowledge and confidence is

developed to use the materials. To this end, PIEFA has developed the website Primezone, linking resources by curriculum code to provide accessibility to educators and students. It is crucial to ensure that this website stays up to date.

Recommendation 8: Government to invest in agricultural knowledge of school students by providing ongoing funding to PIEFA.

The agricultural workforce needs to have the skills to conduct research and take up new innovations at a national level, working through partnerships with industry and academia. Robust policy solutions are needed for public universities and colleges to expand their training capacity for agricultural career pathways and to provide more interactive educational experience as an integral part of the degree program. Government also needs to commit to long term investment in programs between schools and universities, to encourage learning about primary industries in the context of the advancement of science.

Recommendation 9: Development of a national framework for Agricultural Science as part of the STEM education objectives, to ensure consistency and commonality of purpose and outcomes, among the states and territories.

A new generation of farmers

Much of innovation in agriculture stems from a new generation of farmers entering the industry. It has been a priority of NFF to ensure succession and to investigate how new farmers can be supported during the tough initial starting phase. At present, farmers at the beginning of their career in agriculture often heavily rely on off-farm income as a means to support their families, taking precious time and energy away from building their own business.

Moreover, while many farms change hands within the family, not all young farmers are fortunate enough to be in such a position, leaving them at a significant financial disadvantage when they seek to purchase their own farm. Private sector solutions will play a crucial role in supporting young farm businesses getting off the ground.

Fostering a culture of agile learning on farm

Question 2030 Strategic Plan:

How do we create and support a culture of agile learning?

Farmers are by nature agile learners. NFF members frequently report that learning on farm is largely informal, through word of mouth within local farm groups that include agronomists. Farmers are generally ready to adopt new technologies and techniques if they understand the value proposition, and this largely occurs by looking over the fence of neighbours who are early adopters and happy to take risks.

A new generation of farmers is also increasingly using social media, joining farming groups on Facebook or Instagram, to share pictures of new equipment they are using or to discuss

better varieties for cropping⁵. This occurs in parallel to field days showcasing the latest equipment across the country. In short, the culture of agile learning is already there – without it, farmers are quickly out of business. What is needed instead is the facilitation of pathways to trusted information beyond the personal social network.

Consequently, the biggest challenges for RDCs is in communicating the value-proposition of innovation to farmers and to better coordinate R&D between different RDCs and private providers, creating synergies for the benefit of all of agriculture. Part of such a communication strategy could be to pull together case studies for farmers outlining where technology has been adopted. Additionally, RDCs must have the capacity to deliver regionally relevant research.

Recommendation 10: RDCs to focus on providing and communicating clear value propositions for their R&D to clearly demonstrate to farmers why adoption is beneficial.

⁵ See, for example, the #agchatoz hashtag on Twitter, used by entrepreneurs in the agribusiness space and farmers alike: <https://twitter.com/search?f=tweets&vertical=default&q=%23agchatoz&src=typd&lang=en>

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