

RESPONSE TO THE AG, LAND AND EMISSIONS DISCUSSION PAPER

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Introduction

GrainGrowers welcome the opportunity to comment on the Agriculture, Land and Emissions Discussion paper.

Australian farmers play a crucial role at the forefront of achieving positive environmental outcomes for the broader community. An optimal prevalence of on-farm best practice is a critical component of efforts to address climate change. This not only advantages the environment but also enhances the agricultural sector's long-term resilience and productivity.

Innovation must play a crucial role in helping grain growers reduce emissions and sequester carbon by developing, optimising, and introducing innovative technologies, practices, and approaches for the short, medium, and long term.

It is vital that Government and regulatory bodies can implement policies and regulations that incentivise growers and corporations to adopt low-carbon practices and technologies.

When examining the role of Australian grain growers in successfully minimising greenhouse gas (GHG) emissions and enhancing carbon sequestration, three salient determinants emerge: practice improvement, technological advancement, and supportive policies to transition to a more sustainable and low-carbon economy.

On-Farm Barriers and Potential Solutions

On-Farm Barriers

The Awareness Continuum

The awareness of the implications of climate change among Australian growers varies along a spectrum, much like any other group. This variability alone can be identified as a barrier to action. Co-existing along this continuum is the dimension of on-farm response.

This ranges from business as usual, through to manageable adaptation and, finally, transformational resilience. Whilst adaptation is a specific set of actions aimed at adjusting to climate change, resilience is a broader notion that involves not only adapting to changes but also building the capacity to endure, recover, and even thrive in the face of a dynamic and uncertain climate. Both concepts are integral to future proofing Australian cropping.

It is for this reason that initiatives for removing on-farm barriers to action must be designed and pitched correctly. This entails assessing business mindset, appetite for risk, and technical proficiency in tandem

with crop-specific conditions such as climate, soil characteristics, pest and disease pressure, topography, and water quality.

Governments and other institutions that support primary industries have an essential role to play in driving action on-farm. Integral to this is comprehending the ability to adapt, identifying those communities, individuals, or industries that might be susceptible and in need of extra support.

Gaps in Information and Knowledge

Some growers may lack information about the benefits of sustainable practices or may not be aware of the most effective techniques for reducing emissions and sequestering carbon. They may not be conversant in the principles and benefits of generating and using renewable energy.

Carbon and Calculation Confusion

Before growers can consider a GHG plan of action, a thorough understanding of their net GHG emissions is key, and a strategic imperative for their farming enterprise. Establishing a trustworthy carbon baseline is out of most grower's reach due to a general lack of clarity around calculator types, inputs and usage, validation, accuracy, and precision.

Economic Constraints

Implementing sustainable practices often involves upfront costs or changes in equipment and infrastructure. Growers may face financial constraints and find it challenging to invest in technologies that reduce emissions or enhance carbon sequestration.

On-Farm Solutions

Possible Solution	Suggested Programming to Meet Needs
Raising Awareness <i>Effective awareness raising can address uncertainties and build confidence in the feasibility of practice change and improvement.</i>	Provide growers with compelling information about the productivity and profitability benefits and co-benefits of reducing emissions and increasing soil organic carbon. Highlight success stories from peers who have successfully transitioned to new practices.
Collaborative Learning Networks <i>Peer-to-peer learning can be a powerful motivator and help build a sense of community around continuous improvement and sustainable practices.</i>	Facilitate grower to grower learning networks where early adopter growers who have successfully taken on new practices share their experiences with others.
Demonstration Projects <i>Growers are more likely to embrace change when they can see tangible results and understand the practical implications on their own land.</i>	Implement on-farm demonstration projects to highlight the positive outcomes of adopting new practices.
Adoption and Pilots <i>Allows for learning and adjustment based on real-world experiences.</i>	Encourage a phased approach to adoption. Growers can start with small-scale pilots or experimental plots to test the effectiveness of the changes before implementing them across the entire farm.
Technical Assistance in the Region <i>Allows for consideration of grower goals and point on learning curve as well as local growing conditions, farming systems and crop types.</i>	Scale up technical support and guidance to growers. This can include access to agronomists, the strengthening of extension in the Grains Research and Development Corporation (GRDC) Applied Research, Development, and Extension (RDE) team, boost and deploy state Department of Primary Industry (DPI) teams and other experts who can provide advice on best practice and troubleshooting. For example: <ul style="list-style-type: none"> • soil testing and tissue testing to help optimise fertiliser application ; • subsoil manuring (SSM); • controlled traffic farming (CTF).

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Possible Solution	Specifically
Standardisation of Carbon Measurement	<p>Department of Agriculture, Fisheries and Forestry (DAFF) to lead the standardisation of GHG emissions measurement methodology for AU grain growers.</p> <p>This would include:</p> <ul style="list-style-type: none"> • upfront and ongoing method validation; • evaluation of accuracy and precision; • ongoing updates to conversion factors from changes in Intergovernmental Panel on Climate Change (IPCC) Assessment Report (AR); • protection of data privacy.
Endorsement of a Carbon Measurement Tool for Growers	DAFF to facilitate the endorsement of a carbon calculation tool for growers by the Australian Energy Regulator (AER).
Clarification of the Carbon Trading Market for Growers	<p>Providing growers with independent and clear education on the mechanic of the carbon trading market is essential for guiding them to baseline determination and instilling confidence to invest in sequestration activities. This knowledge empowers growers to navigate the complexities of carbon markets, fostering sustainable practices in agriculture.</p>
Grow and Harness NRM Australia	The local NRM network is an excellent and often under supported and underutilised source of truth in carbon farming. Better engagement and deployment of the NRMs can help to simplify a complex area
Financial Incentives	Provide financial incentives or subsidies for the adoption of sustainable practices. These could include grants, tax incentives, or other financial support mechanisms e.g., a RIC adaptation and resilience loan product that makes it economically viable for farmers to invest in innovative approaches. i.e., a true forward thinking preventive loan rather than a rescue or too late loan.
Risk Management Tools	<p>This can provide a safety net and encourage farmers to take calculated risks. Develop and promote risk management tools, such as insurance programs or financial instruments, which help mitigate the potential economic risks associated with adopting new practices.</p> <p>Ensure retention of the Farm Management Deposits (FMD) scheme and consider expanding eligibility to include all farming business entities such as companies and trusts. This could enhance FMD uptake as a risk management tool and, in turn, structurally reduce emissions from arable land during periods of drought.</p>

Transforming the Australian Innovation Landscape

A push to strengthen our innovation culture is necessary to shift to a net-zero scenario while generating economic advantages with minimal environmental impact. Australia has traditionally depended on agricultural innovation to cultivate its landscapes. Given the significant demands of the future, the critical role of agricultural innovation cannot be overstated.

Several innovative solutions are underway, and all are at various stages of maturity:

- design and optimisation of a configured and integrated technological approach to land, soil, fertiliser, and water management using agricultural sensors to gather critical data to inform on-farm decisions.
- development and enhancement of tool for the assessment, monitoring, and mitigation of environmental and economic risks linked to agricultural practice.
- optimisation of nitrification inhibitors as a method for reducing cropping emissions.
- investment in scaling up the domestic manufacture of fertilisers using renewable energy, electrolysis, and carbon capture technologies.
- development of alternative methods to synthesise green urea such as direct electrochemical or plasma-based approaches.
- optimisation and scale up of climate suitable indigenous grains.
- breeding of new climate resilient grain varieties by selection from indigenous species with characteristics suitable for commercial native grain production and food markets.
- the mainstream application of speed breeding technologies to shorten the breeding cycle and speeding up crop research.
- advancement of on farm robotics to accurately fertilise, apply pesticides and herbicides.

If these novel approaches, and more, live up to their potential, they could significantly contribute to Australia's journey toward reducing net emissions and enhancing efficiencies in agriculture.

Decades of dedication to excellence in production, quality, handling, and storage have positioned Australian grain as a successful competitor on the global stage. Looking ahead in the 2020s and beyond, the pivotal factor for success is expected to be the efficient commercialisation of innovative Australian technologies.

Australia's challenges in research commercialisation tend to focus on research sector obstacles, but the business community and the government each have critical roles to play in the development of cutting-edge technologies and ensuring that these innovations are accessible, usable, and relevant to the growers they are intended to benefit.

The Role of Business

While the estimated return on investment to industry from university research and development is \$4.50 for every \$1 invested, Australian businesses exhibit significant deficiencies in metrics measuring collaboration with research institutions. According to CSIRO and the Business Council of Australia's 2021 report 'Unlocking the Innovation Potential of Australian Companies', notable obstacles to the commercialisation of technology include the limited levels of cross-sector collaboration and "cultural challenges, including risk aversion to innovation and business-research incentives misalignment."

Some suggested changes in business approach to counter these factors are:

- 1) **Establishing a long-term strategy and making focused investments:** The most prosperous innovating companies formulate a distinct innovation strategy aligning with their overall business strategy. This involves prioritizing specific areas for targeted innovation investment to secure a competitive advantage.
- 2) **Cultivating culture, risk sharing, and aligning incentives:** Innovation begins with C suite taking the lead, actively championing innovative endeavours. Successful companies openly address the cultural facets of innovation projects, covering aspects such as risk and intellectual property allocation, as well as monitoring project progress throughout the innovation cycle.
- 3) **Skills, talent, and capability enhancement:** Successful development and delivery of an innovation project necessitate these elements. Companies must decide whether to cultivate these internally or engage an external partner for resourcing.

The Role of Government

Science, technology, and innovation harbor the potential to act as potent instruments in improving the GHG emissions profile of Australian agriculture. However, it bears marking that knowledge alone is insufficient to instigate change. Transformative governance and fortifying the science-policy-society interface are imperative elements for driving such transformation.

While the Australian Government cannot directly alter business characteristics, GrainGrowers urge the government to:

- nurture the innovation ecosystem within which very small to very large businesses operate.
- enhance opportunities for business innovation and mitigate perceived risks associated with investing in innovation. For example
 - administer the research and development tax incentive as direct tax credit rather than an indirect and delayed tax offset.
- gain critical mass in industry ecosystems where Australia holds a comparative advantage.
- pursue proactive policies that establish a stronger alignment between the three Departments of Industry, Science and Resources; Agriculture, Fisheries and Forestry; and Climate Change and Energy to ensure that research efforts are focused and mutually reinforcing.
- develop robust policy to back the commercialisation of technologies essential for addressing climate change in agriculture. For example:
 - leverage CSIRO technology and provide licensing at no or low cost to Australia commercialisation entities.
 - seek only to extract commercial profits from outside Australia.

The Role of Collaboration

Facilitating the successful transformation of innovation into tangible benefits hinges on effective commercialisation. Surmounting the obstacles of commercialisation often demands co-operation among innovators, investors, regulators, and established businesses, fostering an environment conducive to introducing innovative ideas to the market.

Collaboration stands as a facilitator in its own regard and a vital approach to realising the positive impacts of both business and government. For example, collaborative efforts support early-stage research, facilitate the translation and commercialisation of emerging science and technology, and boost adoption. Moreover, collaboration serves to distribute risk among innovation partners and enhance collective capabilities.

The Government's Role in Supporting and Enabling Change

Aligned and effective policy setting will create a conducive environment for coordinated, consistent, and impactful actions to address climate change across all sectors. They provide the necessary frameworks, incentives, and regulations to guide agriculture to a sustainable, low-carbon future. Further, the provision of stability and consistency through long term planning and policy frameworks give farmers confidence in the longevity and viability of their investments.

Policy Alignment

Coordinated Action

When policies across different sectors and levels of government are aligned, it facilitates coordinated and synergistic actions. This ensures that efforts to address climate change are not fragmented but work together to achieve common goals.

Incentivising Low-Carbon Practices

Policies that align with climate goals can provide incentives for the adoption of low-carbon technologies and practices. This can include financial incentives, tax credits, or subsidies for renewable energy, energy efficiency, and sustainable agriculture.

Transition to a Green Economy

Policies aligned with the transition to a green economy promote the shift from carbon-intensive industries to sustainable, low-carbon alternatives. This can include support for green jobs, circular economies, and sustainable resource management.

Public Awareness and Education

Policies that promote public awareness and education on climate change contribute to a more informed and engaged citizenry. This, in turn, supports the implementation of sustainable practices at the individual and community levels.

Market Signals

Policies that align with climate goals send signals to the market, influencing investment decisions and encouraging the private sector to invest in clean technologies and sustainable practices.

Policy Setting

Consistency and Predictability

Establishing clear and consistent climate policies provides a stable regulatory environment. This predictability is essential for businesses, investors, and individuals to make long-term decisions and investments in sustainable practices and technologies.

Regulatory Framework

Setting clear regulations and standards for emissions, renewable energy targets, and environmental conservation creates a framework for businesses and industries to operate within sustainable parameters.

International Cooperation

Establishing policies that support international collaboration on climate issues fosters a global response to a global problem. This includes agreements like the Paris Agreement, which sets a framework for countries to work together toward common climate goals.

Adaptation and Resilience

Policies that focus on climate adaptation and building resilience to climate impacts are crucial. This includes infrastructure planning, land-use regulations, and policies addressing water resource management in the face of changing climate conditions.

Monitoring and Reporting

Establishing policies for monitoring and reporting GHG emissions ensures accountability and transparency. This information is essential for tracking progress, adjusting policies, and meeting international commitments.

Conclusion

To harness the potential of Australian grain growers to contribute to carbon sequestration and climate change mitigation, GrainGrowers urge a comprehensive approach that:

- enhances and deploys extension and adoption services that meet growers' needs.
- elevates grower expertise in the complex carbon arena and supplies tools for evaluating risks.
- fosters an environment that nurtures eco-innovation, attracts talent, and positions Australia as a global leader in agricultural technological advancements and creative problem-solving.
- focuses on commercialising technology for local advantage and profit generation offshore.
- capitalises on opportunities to integrate into high-value global supply chains.
- actively aligns policy settings to support reciprocity and achieve a steady state.