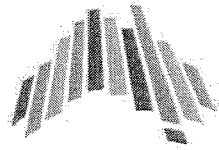


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**National Farmers'**  
FEDERATION

**INQUIRY INTO THE ROLE OF GOVERNMENT IN  
ASSISTING AUSTRALIAN FARMERS TO ADAPT  
TO THE IMPACTS OF CLIMATE CHANGE**

**NFF SUBMISSION**

March 2009

# Table of Contents

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<b>The National Farmers' Federation</b> .....	3
<b>Introduction</b> .....	3
<b>Impacts of climate change on agriculture</b> .....	4
<i>Climatic variability is a major challenge for Australia's farmers</i> .....	4
<i>Farmers have the capacity to adapt</i> .....	4
<i>Adapting to climate change policy</i> .....	5
<b>Research and development needs</b> .....	6
<i>Agricultural R&amp;D declining at the time it needed the most</i> .....	6
<i>Chart 1: Trends in global yields for the major food crops</i> .....	7
<i>Chart 2: Agricultural Research Intensity in Australia (Agricultural R&amp;D as a % of Agricultural GDP)</i> .....	8
<i>Chart 3: The value of productivity growth 1953-2003</i> .....	9
<i>The Climate Change Research Program</i> .....	10
<i>Reducing greenhouse pollution</i> .....	11
<i>Better soil management</i> .....	12
<i>Adapting to a changing climate</i> .....	12
<b>The role of Government</b> .....	13
<i>Facilitate a new model for drought support</i> .....	13
<i>Arrest the decline in agricultural R&amp;D</i> .....	15
<i>National coordination of R&amp;D and extension services</i> .....	15
<i>Development of appropriate climate change policies for agriculture</i> .....	15
<i>Investment in Australia's climatic forecasting capability</i> .....	15
<b>NFF Contact</b> .....	16

# The National Farmers' Federation

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The National Farmers' Federation (NFF) was established in 1979 and is the peak national body representing farmers, and more broadly agriculture across Australia.

The NFF's membership comprises of all Australia's major agricultural commodities. Operating under a federated structure, individual farmers join their respective state farm organisation and/or national commodity council. These organisations collectively form the NFF.

Each of these state farm organisations and commodity council's deal with state-based 'grass roots' issues or commodity specific issues, respectively, while the NFF represents the agreed imperatives of all at the national and international level.

## Introduction

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The NFF welcomes the opportunity to provide comments to the House of Representatives Primary Industries and Resources Committee inquiry into the role of government in assisting Australian farmers to adapt to the impacts of climate change. Climate change, its effect on agricultural productivity and the policy responses to combat its effects are of enormous importance to the NFF and its members. Indeed, these issues are of significant importance to the Australian economy at large.

The NFF believes that provided with the correct tools, Australian agriculture can continue this positive contribution and performance, even in the face of a changing climate. Research and Development (R&D) will be required to play a critical role at a time when resources being committed towards agricultural R&D are dissipating at a concerning rate.

Yet dealing with the challenge of helping farmers to adapt to climate change is not only about R&D, and the role that broader policy settings play will also be a vital element. Drought policy in particular will be critical in ensuring that Australian farmers receive the appropriate signals to invest in technologies that can help them to cope with a changing environment and increased variability. Enhancing the preparedness of farmers to such seasonal events can be done more effectively in partnership with Government.

During this discussion, we must not forget about the challenge that also arises from adapting to climate change policy. Indeed, it is the NFF's belief that the immediate challenge of adapting to climate change mitigation policies may be greater for farmers than adapting to climate change itself. The NFF is keen for proactive engagement between farmers and the Government to ensure that the sector can continue to play a positive role in addressing this challenge while securing a profitable, sustainable future for its participants.

## Impacts of climate change on agriculture

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*Current and prospective adaptations to the impacts of climate change on agriculture and the potential impacts on downstream processing.*

### *Climatic variability is a major challenge for Australia's farmers*

The NFF recognises that changing climate is potentially the biggest issue facing Australian farmers in the future. As a sector so dependent on natural resources, climate change poses a significant challenge.

What is apparent, however, is that there is considerable scope to better position agriculture with regard to national and international markets and managing resources in the context of a changing climate. On these aspects we cannot wait. The bottom line is that a significantly increased research effort is urgently needed to enable primary industries to respond to greenhouse and climate change challenges.

A failure to act will have serious negative implications for Australian agriculture, clearly outlined within the Australian Bureau of Agriculture and Resource Economic's (ABARE's) report titled *Climate Change: Impacts on Australian Agriculture*. This analysis shows that without actions to adapt to a changing climate and to mitigate the effects of greenhouse gases, Australian production of wheat, beef, dairy and sugar could decline by up to 10% by 2030 and 19% by 2050.<sup>1</sup>

The implications for current farm enterprises and possible future industries vary, but in most instances address the need to deal with hotter, drier and more variable conditions. This emphasises that farmers require access to the right tools to effectively manage the risks and capitalise on any opportunities arising from this change.

### *Farmers have the capacity to adapt*

Australian farmers have historically demonstrated a high capacity for adaptation and the ability to achieve excellent outcomes from investment in research and development (R&D). Since the time that Europeans first settled the Australian continent, complete with ideas, plants and animals from the significantly milder European conditions, the success of innovation and adaption within our agricultural sector has been a hallmark of the industry.<sup>2</sup>

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<sup>1</sup> ABARE 2007, *Climate Change: Impacts on Australian Agriculture*

<sup>2</sup> Garnaut R. 2008 *Climate Change and agricultural mutation*, ATSE Crawford fund conference September 2008

In more recent times, a demonstration of Australian farmers responding and adopting new technology has been seen by the drought-ravaged winter crop of 2006-07. While the 9.8 million tonnes of wheat produced was well down on the 26 million tonnes produced the previous season, had we been using 1980's farming techniques, it is estimated that less than 3 million tonnes would have been produced.<sup>3</sup>

Further examples of farmers adapting to changing circumstances include the adoption of crop rotation techniques to manage soil, introducing new crop varieties to suit regional profiles, improved irrigation systems to use markedly less water and diversification of production systems to adjust to seasonal conditions.

Armed with the correct science and technologies, Australian farmers can and will adapt to meet new challenges including a changing climate.

### *Adapting to climate change policy*

It is the NFF's belief that the immediate challenge of adapting to climate change mitigation policies may be greater for farmers than adapting to climate change itself.

The NFF notes the Government's intent for the Carbon Pollution Reduction Scheme (CPRS) to be the primary policy instrument to drive mitigation of carbon emissions from the Australian economy. This is particularly challenging for the Australian agricultural sector for which it has been determined that the CPRS has a range of substantial practical difficulties that prevent it from been an appropriate policy mechanism for the sector, at least in the short to medium term.

Recent economic modelling, prepared by the Australian Farm Institute (AFI) and carried out by the Centre for International Economics, found that the CPRS has the potential to reduce the value of Australian agricultural production by \$2.4 billion per annum by 2020, and \$10.9 billion per annum by 2030 compared to what would otherwise be the case under a business-as-usual scenario.<sup>4</sup>

The study looked at sectors likely to incur some of the biggest impacts of the CPRS; the beef, wool, sheep meat, pork and dairy sectors. These are predicted to experience production declines of 9%, 6.8%, 5.8%, 3.9% and 2.7% respectively by 2020, and 28.2%, 27.5%, 21%, 10.4% and 8.1% by 2030 compared to a business-as-usual scenario without a CPRS.<sup>5</sup> Clearly, findings such as these highlight the enormous challenges that the climate change policy settings may have on the agricultural sector and the potential for these to lead to major enterprise changes in certain regions.

At the same time, it must be recognised that the CPRS is but one of a raft of major policy changes facing the agriculture sector in the near term that should be aligned.

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<sup>3</sup> Grains Council of Australia, 2007 Farm Practices Database.

<sup>4</sup> AFI, 2009. Some impacts on Agriculture of an Australian Emissions Trading Scheme.

<sup>5</sup> AFI, 2009. Some impacts on Agriculture of an Australian Emissions Trading Scheme.

There is a complex inter-relationship between a CPRS and other current policy reforms including drought, water, biodiversity conservation, land use planning, infrastructure, response to the global food crisis and energy supply. State legislatures are also imposing regulation under the climate change banner. Currently, each of these policy initiatives is sending a multitude of often divergent signals to Australian farmers. This must be resolved as a matter of urgency.

## Research and development needs

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*The role of rural research and development in assisting farmers to adapt to the impacts of climate change.*

### *Agricultural R&D declining at the time it needed the most*

R&D is vital in providing farmers with the appropriate signals to build capacity to respond to the challenge of climate change through adapting their farm systems. This same analysis can also inform infrastructure investment decisions and help inform international discussions on reducing greenhouse gas emissions. While industry can and will play a key role in developing this science, it is vital that Government also supports this process.

The NFF recognises that farmers need access to the right tools to effectively manage the risks and capitalise on the opportunities arising from climate change and climate change policy. Failing to dedicate an appropriate level of resourcing to this need will expose the agricultural sectors and indeed the broader community to the potential for significant perverse outcomes from a CPRS implementation. The NFF therefore agrees with the CPRS Green Paper finding that *"Regardless of the policy approach, additional support for research and development into mitigation options for the agricultural sector may be required."*

However, in an environment of increasing concerns over global food supplies and the need for Australian agriculture to continually improve productivity, it is important that the research priorities identified for Climate Change Research Program do not reduce or delay the delivery of research outcomes which are aimed at improving productivity and building resilient, sustainable, well managed agricultural businesses.

With declining terms of trade in agricultural commodities, Australian agriculture has been challenged to maintain a low cost base in order to remain globally competitive. Indeed, Australia's balance of payments is strongly dependent on this being the case. Despite declining terms of trade, Australian farmers have been able to remain internationally competitive and sustain their businesses largely through productivity growth. The productivity growth in Australian agriculture has average 2.8% over the past 20 years, consistently out-performing other sectors.<sup>6</sup> Productivity

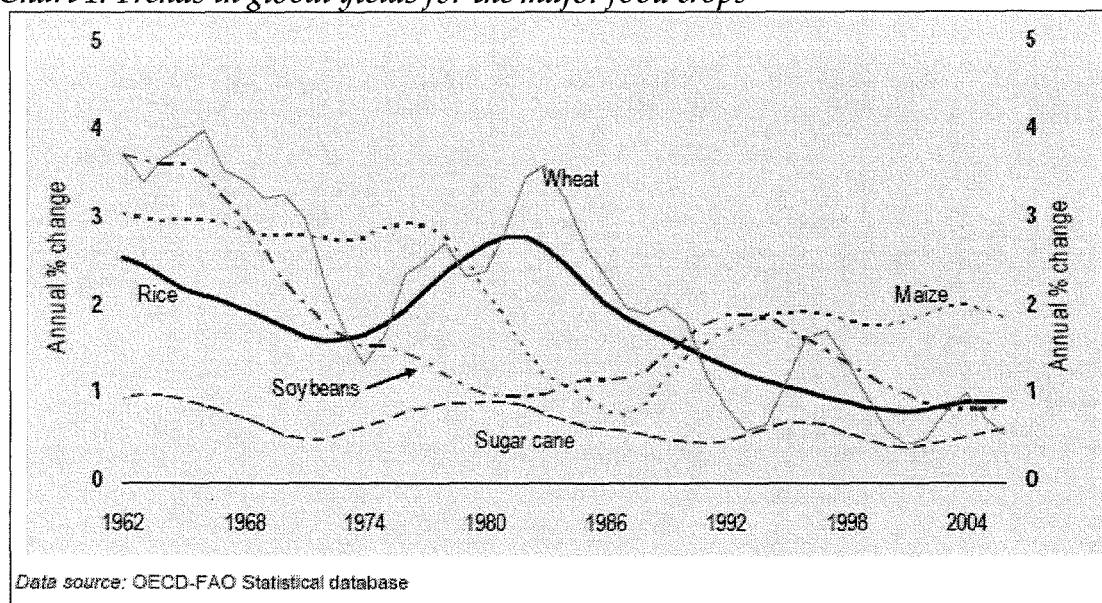
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<sup>6</sup> Australian Farm Institute, March 2005, *Australia's Farm Dependent Economy*

based R&D by the Australian agricultural sector has been vital in attaining this outcome, and may provide opportunities in the future to export such knowledge to other agricultural producing nations.

However, concerning to the NFF is the fact that the impact of the 'green revolution' (which had contributed to more rapid yield increases in the 1960s and 1970s), appears to now be petering out. This is noticeable through yield growth rates which have been declining over time (see Chart 1).<sup>7</sup> Now is clearly not the time to be reducing real investment in productivity R&D if we are serious about halting the declining trend and discovering the next major wave of productivity enhancement.

**Chart 1: Trends in global yields for the major food crops**



(tonnes per hectare) annual percentage changes

Therefore, while the NFF notes that some proportion of the emissions abatement R&D outcomes may be complementary to enhancing on-farm productivity (e.g. building soil carbon stocks, improving animal breeding programs), we believe that climate change funding should not come at the expense of R&D designed to deliver productivity improvements.

In 2007, the Australian Farm Institute published *Productivity Growth in Australian Agriculture: Trends, Sources and Performance*, which revealed that developing countries are outstripping Australian investment in agricultural R&D - serving as a 'wake-up call' for our governments, federal and state, and those industries serious about ensuring the ongoing competitiveness of our \$30 billion a year farm export sector.

<sup>7</sup> RIRDC 2008, *High Food Prices - Causes, implications and solutions* (research undertaken by the Centre for International Economics)

In fact, as Chart 2 below illustrates, Australia's research intensity spending in agriculture has wound down to the level it was in 1970. Specifically, agricultural R&D intensity has plummeted from a peak of 5.1% in 1978 to just 2.9% by 2005, placing the sector under unreasonable pressure in maintaining historical productivity performance, while also risking Australia's global competitive-edge slipping into decline.

While the NFF notes that reduced contributions from State Government's are predominantly responsible for the declining agricultural R&D intensity, the NFF is concerned by the reduced financial commitment to agricultural productivity-based research. Australia has not only failed to keep pace but is falling further and further behind the rest of the world.

The NFF, therefore, strongly urges the Australian Government to address and turnaround the downward trend in agricultural R&D investment. Further, that the Australian Government assume a leading role in working with the State Governments to ensure that the net public contribution to agricultural R&D, in real terms, returns to acceptable levels to ensure ongoing productivity and internationally-competitive levels.

**Chart 2: Agricultural Research Intensity in Australia (Agricultural R&D as a % of Agricultural GDP)**

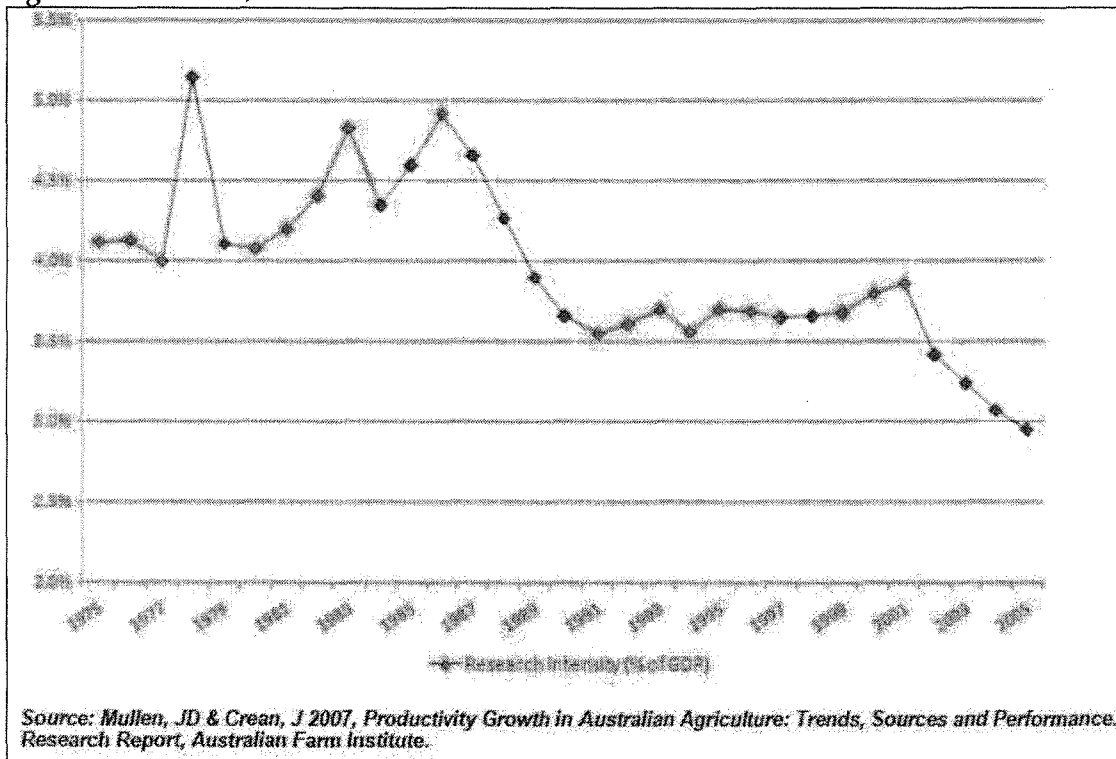
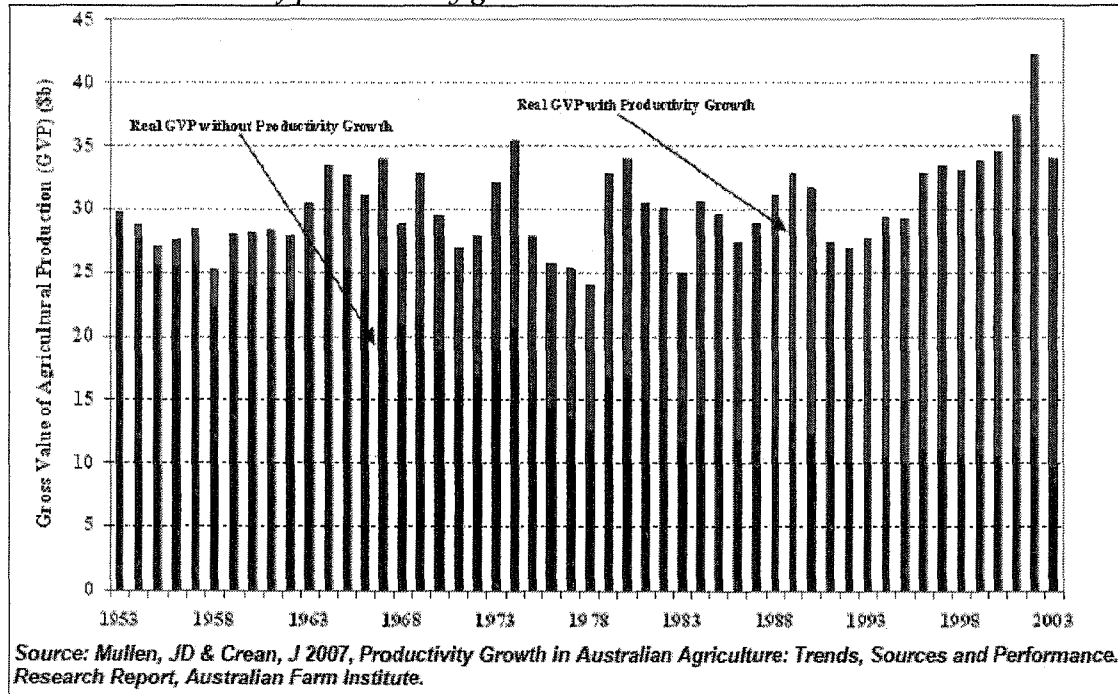


Chart 3 below demonstrates how productivity gains have offset the decline in the real Gross Value of Agricultural Production. In short, it starkly shows why Australia



has remained ahead of the pack and how reliant we are on investment in productivity gains.

**Chart 3: The value of productivity growth 1953-2003**



While there is increased pressure for Rural Research Development Corporations (RRDCs) to focus on new challenges, such as climate change, it is imperative that the funding pool not be spread too thin.

The Government must resist ‘robbing Peter to pay Paul’ by siphoning R&D from vital productivity areas to meet its climate change agenda. Both are essential. Indeed, while some proportion of carbon emissions abatement R&D may be complementary to enhancing on-farm productivity (i.e. building soil carbon stocks, improving animal breeding programs, etc.), climate change funding must not come at the expense of R&D designed to deliver productivity gains.

The NFF applauds the industry-driven nature of RRDCs. Aligning strategic research priorities to the respective commodity ensures that they are flexible, can rapidly adjust to changing circumstances and take a long-term view to the R&D required. The industry-levy has played an important role in facilitating vital research the farm sector could not undertake on its own.

Yet, the prevailing drought has seen levy contributions – and the matching Government funding to RRDCs – diminish at the time they are needed most. With levy funds variable depending on commodity production, there must be scope for additional Government investment in R&D to maintain an appropriate ‘floor’ during low production owing to severe natural events, such as the drought.

Adjusting to climate change, conserving and better using water, improving human capital, and investing in carbon capture all relate to improvements in on-farm productivity and all will, undoubtedly, require specific commodity solutions necessitating industry ownership and engagement.

Funding in these areas must be with the existing rural research agencies of Government. The RRDCs have a long history of demonstrated success in matching funding to outcomes delivering benefits to not just the sector but also the 'public good'.

As the Measuring economic, environmental and social returns from Rural Research and Development Corporations' investment report, released by the RRDCs in December 2008, shows, the return on investment from a sample of projects yields an \$11 average return for every dollar spent. Not only do efficiency gains made through R&D underpin adoption of new technologies and farm practices that make us international leaders, they pay for themselves 11 times over.

Of these positive results, half represent major public spill-over gains - including improved biodiversity, reduced soil erosion, fewer diseases and water-saving efficiencies - benefits that flow through to consumers, supply chain participants and the wider community.

As researching and understanding such issues carries a significant public good, in addition to efficiency and productivity gains, the NFF submits that funding this vital work is best borne by the Australian Government with industry-direction and guidance provided by the respective peak farming bodies and their relationships with RRDCs.

### *The Climate Change Research Program*

While the NFF believes that significantly more R&D funding is required in the climate change space, the NFF has welcomed the Government's \$46.2 million commitment for a new *Climate Change Research Program* as a positive first step in helping Australia's farmers to prepare for climate change by closing gaps in research and development. While it should never be assumed that increased research and development will deliver immediate, guaranteed solutions to the problems surrounding climate change, appropriate, coordinated and targeted research and development may offer vital assistance in ensuring that farmers can effectively meet the climate change challenge. The NFF notes that the following three key research priorities have been identified for the new Climate Change Research Program:

1. Reducing greenhouse emissions
2. Better soil management
3. Adapting to a changing climate

In 2007, Land & Water Australia coordinated a national Climate Change Research Strategy for Primary Industries (CCRSPI) that drew together advice from industry on research and development in the climate change area. The NFF has been supportive of this strategy.

While the NFF agrees with the three broad priorities identified by the *Climate Change Research Program*, it is important that other priorities are also addressed that are not necessarily captured under the prescribed headings yet that have significant implications for agriculture's capacity to engage with a CPRS or alternative climate change policies. For example, research and development for practical farm carbon accounting systems and the infrastructure needed for farmers to participate in a CPRS with acceptable compliance costs is urgently needed.

As part of the process of engagement with the Government, the NFF would like to develop a detailed research program for agriculture building on the CCRSPI work. Some of the themes identified by CCRSPI are outlined below under the Government's initial priority headings.

### *Reducing greenhouse pollution*

*Life Cycle Assessment:* The development of nationally and internationally consistent life cycle assessment reporting for the primary industries under Australian conditions (including easy to use calculators and information tools), to drive awareness in primary producers and Australian consumers and to assist primary producers and processors in accessing premium 'low emission' markets that may develop.

*Global emissions comparison:* A comparative study of the global agricultural production systems should be encouraged. This could help to identify world best practice options for Australian farmers to adopt, while quantifying the variance in emissions profile between Australian agriculture and other global agricultural production systems.

*Emissions reduction:* Direct engagement with primary producers in the development of viable abatement technologies and, if appropriate, emissions and sequestration proxies. Consistent communication to primary producers on best management practices for reducing greenhouse gas emissions, including economic analysis of the costs and benefits (as well as the greenhouse gas emissions and reductions) associated with alternative management strategies. This also includes R&D in areas such as savannah burning, which may have mitigation and productivity potential through modified burning regimes.

*Reducing methane emissions:* The NFF welcomes the announcement by the Minister on 25<sup>th</sup> February of a coordinated suite of research, development and extension projects across the livestock industries to better understand the sources of methane and to

provide improved management and mitigation options, but sees this as the initial step in a longer term research program.

*Reducing nitrous oxide emissions:* A coordinated suite of research, development and extension projects across both the livestock and plant based primary industries to understand sources of nitrous oxide and improved management and mitigation options. This would include review not only of practices that can reduce fertilizer use but also those that can moderate emissions factors for fertiliser used. This would include product, method of application, timing of application nitrogen surplus, and novel practices. Such work should tie in with other programs aimed at reducing off-farm effects of fertiliser use such as *Reef Rescue*. The NFF also welcomes the announcement of investment in research in managing nitrous oxide emissions from agricultural soils and sees this as an essential first step in this RD&E priority.

### *Better soil management*

*Opportunities for sequestration:* A coordinated suite of research, development and extension projects across both the livestock and plant based primary industries to understand the opportunities from soil and farm forestry sequestration, including information on the efficiency of alternative practices and analysis of the economic and ecological benefits from these practices.

Particular attention should be given to the development of national and internationally accepted testing protocols, methods and accounting rules that could enable the inclusion of soil carbon credits in a CPRS without creating liabilities due to naturally occurring soil carbon variations. The recent announcement of Australia's Farming Future Climate Change Research Program funding for a more comprehensive study into soil carbon measurement and management is welcome. It will be critical to provide reliable information to farmers and land managers on realistic sequestration potential in different soils, benefits for soil health and productivity of building soil carbon and also the risks and benefits in managing land for carbon sequestration.

### *Adapting to a changing climate*

*Climate research for the primary industries:* Climate research that builds on the existing CSIRO and BoM effort that is geared specifically at the interests of the primary sector. Specifically, research is needed that examines the impacts of climate change on seasonal climate conditions that are critical to primary production (e.g. heat stress days in livestock, frost incidence). The NFF believes that the Government's *Managing Climate Variability Program* has been a useful program for primary producers in this area and should be extended. In addition, this field of research may also include the development of new crop and pasture varieties and species that can cope with a changing climate.

*Supporting change in primary industries:* Adaptation will not simply flow from more field demonstrations. Change in the primary industries will also flow from social and community responses. Social research to complement policy development on how to support communities through these changes will be critical. Industries will also need research and development to assist primary producers to recognise when and how they should transition from one industry to another whilst retaining profitability and sustainability – as well as for the investigation of new primary industries for the future.

*Management of biodiversity and ecosystem services in a changing climate:* Primary producers manage a significant proportion of Australia's vegetation and their practices have a significant bearing on the services delivered by Australian ecosystems (air, water, rivers and land). Much of Australia's emerging national strategies for the protection of these resources under a changing climate are not engaging or recognising the activities of primary producers. This is a significant gap, and will need to be recognised if Australia is to develop an effective response to this issue.

## The role of Government

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*The role of government in:*

- *augmenting the shift towards farming practices which promote resilience in the farm sector in the face of climate change;*
- *promoting research, extension and training which assists the farm sector to better adapt to climate change.*

### *Facilitate a new model for drought support*

The NFF has called for a visionary new strategy in the way Australia deals with, and manages, drought – especially in light of a changing climate. Despite the worst drought on record, Australian farmers are getting on with the job of smart, efficient and environmentally-sustainable farming. In fact, they are world-leaders in implementing drought-resistant technologies and practices.

Government relief has helped, and is helping, farmers to get through the current prolonged dry and to protect the productive capacity of our agricultural areas and regional Australia. This, of course, must be our first priority. But a changing climate means we – as a nation – must rethink how we plan for, and deal with, drought, today and into the future. Australia needs to better prepare for droughts to lessen their impact. Even when the current drought breaks, others will come again.

Over 1.6 million Australian jobs, 20% of our national exports and the vast majority of the food we consume depend on the ability of our farmers to meet climatic challenges. The NFF asserts it is smarter to invest in more drought-resistant practices today and, over time, reduce the need for drought relief. The NFF has proposed a new cooperative partnership between the Government and farmers,

investing and working together to better drought-proof Australia today to secure all our futures tomorrow. This is a generational shift in thinking – ultimately moving the policy focus from drought relief to drought management and preparedness, while also ensuring that Australian agriculture emerges the other side of this current severe and debilitating drought with its productive capacity intact.

To support this policy direction, in 2007, the NFF proposed Climate Management Grants – based on mutual obligation – to help farmers prepare for, manage and recover from drought, with the intention of alleviating the impact of future severe droughts.

To be effective, these mutual obligation grants must be available to all farmers who pass eligibility criteria, including:

- Having a drought management or a business plan that incorporates drought, Management strategies, and
- Demonstrate implementation of drought mitigation activities over the past five years.

NFF said it is essential that these grants not be restricted to those farmers already in drought (or Exceptional Circumstances [EC]) declared areas. If the full benefits of effective drought preparedness and management measures are to be realised, they must be available to all farmers so they can prepare for, and mitigate against, droughts ‘before’ they are in the midst of one.

It is envisaged the grants could cover a variety of approved activities, including – but not limited to:

- Building stock containment (in accordance with relevant environmental and local laws);
- Trialing new/ different drought-resistant farm systems;
- Increasing or improving fodder storage capacity;
- Soil mapping, including water-holding capacity and plant requirements; and
- Implementing innovative practices and infrastructure to improve drought resilience.

Eligible farmers would have to match the Australian Government’s funding with either cash or in-kind support – effectively a partnership to better drought-proof the sector. This mirrors the desire – both within the broader community and within the farming sector – to, over time; shift the policy paradigm from drought relief towards drought preparedness and management.

NFF is keen to engage with Government about this and other mechanisms that can deliver on this policy direction.

Long-term climatic changes require:

- Ensuring those farmers currently, or until recently, in the grip of this devastating drought are not 'left behind' and that drought relief – including the EC assistance program – will continue to meet the needs of their, and the broader farm sector's, current circumstances.
- Working with farmers in moving towards better drought-proofing Australian agriculture, via mutual obligation Climate Management Grants.
- Phasing-in additional, structural drought preparedness measures as those farmers currently in drought emerge from debilitating drought conditions.
- A new plan for how Australia deals with drought.

### *Arrest the decline in agricultural R&D*

The NFF strongly urges the Australian Government to address and turnaround the downward trend in agricultural R&D investment. Further, that the Australian Government assume a leading role in working with the State Governments to ensure that the net public contribution to agricultural R&D, in real terms, returns to acceptable levels to ensure ongoing productivity and internationally-competitive levels.

### *National coordination of R&D and extension services*

The NFF has been supportive of a nationally coordinated approach to research, development and extension programs, which recognise the needs of specific industries. In addition, we note that the science behind emissions management and adaptation is rapidly changing and emerging. A clear role exists for the synthesis of this information and continual updating of information through an information hub(s) to deliver it in a form that is useful and accessible to primary producers. There are also benefits that can come from facilitating transfer of information across industries and regions through such information hub(s).

### *Development of appropriate climate change policies for agriculture*

In the context of the current global shortage of food stocks, Australian farmers must not be forced into a position whereby the only way that they can meet their liabilities under a CPRS is by reducing production. Government must ensure that the design of a CPRS and other complementary policies do not inhibit a demand responsive future expansion of agricultural production.

### *Investment in Australia's climatic forecasting capability*

While Australian farmers are adaptive by nature, without a range of effective tools at their disposal not even the best farmer can get through a natural disaster or prepare for increased volatility being predicted by the CSIRO and Bureau of Meteorology (BoM).

Therefore, the NFF believes that Australia's Bureau of Meteorology (BoM) needs the following:

- a massive investment in its basic computer and modelling infrastructure,
- an investment in a range of measurement and weather tracking tools,
- an investment in its international collaborative data sharing and climate modelling; and
- local level information and forecasts with an expanding emphasis on drought preparedness.

The United States National Integrated Drought Information System ([www.drought.gov](http://www.drought.gov)) is a model that the Australian BoM should receive funding support to emulate. It provides information right down to local county level on soil moisture, rainfall, run-off, stream flows, and early warning systems and places a priority on preparedness.

## NFF Contact

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Charles McElhone