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## Tasmanian Institute of Agriculture (TIA)

### Submission - Agricultural Competitiveness Issues Paper

#### Summary

- TIA is Tasmania's joint State Government/University agricultural research agency. It is the only such fully integrated research partnership in Australia and the closest model to the US "Land Grant" system, albeit without support from the Australian Government.
- TIA welcomes the opportunity to take a fresh look at agricultural competitiveness unencumbered by traditional perspective and approaches.
- This is a much needed opportunity to re-examine agricultural innovation more holistically within the national innovation system.
- The Agricultural Competitiveness White paper should view agriculture as a dynamic and integral part of a much larger innovation system, leading to a much more holistic approach to agricultural policy.
- TIA supports the submission made by the Tasmanian Government and by the Australian Council of Deans of Agriculture (ACDA) and urges the Australian Government to consider:
  - o The introduction of a US-style "Land Grant" system of funding
  - o A revamp of the postgraduate scholarship scheme that currently provides inadequate support for postgraduate scholars (below 'poverty-line' level)
  - o An overhaul of the conditions attached to Government funds given to the RDCs in order to provide incentives for transdisciplinary and transformational research
  - o Initiatives that help changing the public perception of agriculture as a backwards and unexciting endeavour with no career paths, when in fact the opposite is true

#### New goals, new approach

In the foreword to the Agricultural Competitiveness Issues paper, the Minister for Agriculture, the Rt. Hon. Barnaby Joyce asks us to re-examine agricultural policy with a blank slate, enabling us "to take agriculture in this nation forward over the long term". Unlike, for example, some recently developed high tech sectors of the economy, the agricultural sector has been a major part of the formalised post-European economy for over 200 years. Over that time, policies and regulations designed to achieve particular purposes become dated and no longer function as intended. They can accumulate over time and together have unintended and unforeseeable outcomes. As the Minister points out, a blank slate would enable us to rebuild a new policy environment enabling us to pursue preferred future for Australian agriculture.

The issue paper then cogently outlines the scope of current policy issues around which this new policy future for agriculture can be constructed.

The Tasmanian Institute of Agriculture is working on very similar issues with the University of Tasmania and the Tasmanian Government regarding agricultural policy and innovation in Tasmania. A lesson that we would like to inject into the Agricultural Competitiveness White Paper is that new policy approaches to stimulating agricultural innovation and competitiveness are unlikely to result from traditional approaches to agricultural analysis. New approaches to achieve new goals demand new approaches to policy analysis.

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It is a source of immediate concern that the Issues Paper does not recognise this pitfall. It promises new directions without questioning the current collective policy view of the agricultural sector, its position within the economy or approaches for analysing agricultural policy. A white paper with such an audacious goal needs a convincing approach to avoid the result being “just a profound motherhood statement”.

The Minister makes it clear that the motivation for taking a fresh look at agricultural policy is that “Our economy has evolved unrecognisably from the days of our rural pioneers, and so too has Australian agriculture”. Agriculture’s operating environment has changed profoundly in ways that are often lumped together under the term “globalisation”. Globalisation is set of social processes (supported by communications technology) that are increasing economic, political, cultural and environmental interconnections across the globe. For agriculture, these are perhaps felt most strongly as a consolidation and telescoping of global value chains and access to increasingly global knowledge from international research. From globalisation flow many of the multiple resource, institutional and social issues outlined in the Issues Paper.

A new approach to policy analysis is required to set directions for the agriculture sector in a globalised world. This new approach would view agriculture much more holistically within the national innovation system, with a much greater degree of integration with other sectors and vertically along the value chain. An emerging but inadequate version of this new policy narrative views agriculture, food and natural resource management as a single policy agenda. A much more holistic model is required, one that views agriculture as central to rural and regional development via employment and infrastructure, and to economic productivity and urban sustainability through food, fibre and waste.

**Framing agriculture as part of much more interconnected and central policy agendas would lead to a completely different treatment of agriculture in science-policy and the national innovation system. It would also lift the profile of agriculture within civil society and within our research institutions (particularly within our universities) to a level that the sector deserves and that would allow it to flourish.**

## An integrated approach

To support the competitiveness of Australian agriculture, RD&E and agricultural education need to continue to provide the information and knowledge base that underpins agricultural innovation. While Australia's agricultural RD&E system is internationally recognised as an effective model, there are ways that the current system could be markedly improved to support agricultural competitiveness. The key areas of weakness that in the RD&E system and the innovation system more broadly should be explicitly addressed in the White Paper:

The growing need for cross-cutting RD&E outside of a sectoral RDCs, including:

- Soils, soil management and soil carbon
- Value chain innovation
- Biosecurity
- Agricultural and farming systems research
- Water and irrigation management
- Managing climate variability and change
- Sustainable natural resource management

Here we refer to the submission by the ACDA that recommends

- the establishment of a single "Agricultural Research Administration System (ARAS)" compatible with, but more practical than that of the ARC. And
- that the government contribution in matching industry levies should be directed to multi-disciplinary research (50%) and transformational research (50%) which would lead to step change improvements in our innovation systems.

Governance of RD&E can be improved, especially to ensure public value of tax revenue invested in agricultural RD&E is improved, including:

- better integration of natural resource management and agricultural RD&E
- stronger focus on integrated approaches to managing production, market and societal risks at appropriate scales
- better linkages between international development focussed research
- better appreciation of the importance of public extension, research on extension and organisational research to continue to refine agricultural innovation systems, including the establishment of a "land grant" system, similar to the US (see ACDA submission)
- mechanisms to foster collaboration between public and private sector agencies
- provision of relevant, timely and useful information resources to private and public sector stakeholders

## The changing RD&E within Australian agricultural innovation

To contribute to the competitiveness of Australian agriculture broadly, our RD&E and education systems have developed a variety of traits that sometimes appear contradictory. They are espoused in many strategic documents and plans across the sector, and include:

- Be closely engaged with key stakeholders in identifying research priorities and developing and implementing programs/projects to address them;
- Work across value chains from pre- to post-farm gate
- Provide better understanding for management of social, economic and environmental consequences of practices and change
- Provide cutting edge science and technology to address specific challenges and maintain/advance competitiveness
- Provide robust science to support implementation, enforcement and review of regulation and other policy
- Communicate research results to relevant stakeholders
- Understand the extent and threat of current and potential risks and assist with mitigation of these
- Train future and current people in agricultural industries
- Assess the risks of (mis)application of information and technology and define ways to mitigate these
- Advance context appropriate adoption of new practices, technologies and information

These multiple goals reflect a rapidly changing and dynamic environment in which increasingly high levels of capacity and knowledge are demanded on primary producers, and greater integration is required of the research community in order meet those needs. Australian agriculture will continue to change substantially in coming decades and the RD&E system must evolve to meet those demands. Globally, food and agriculture are changing quickly, with new and emerging markets and a scale of market sophistication not previously experienced.

Production risks associated with climate variability, change, disease risk have been the traditional focus of agricultural RD&E. Beyond production risks, the operating environment for agriculture is increasingly structured by market and societal risks, and by consumer knowledge and choice about many aspects of food.

These risks (and opportunities) exhibit particular trends but are largely unpredictable at medium to long time scales, creating an imperative for Australian agriculture to build resilient, nimble and adaptable business models and strong adaptive capacity.

New forms of diversification, collaborative and cooperative approaches, and a stronger focus on development of brand and market share are evolving to manage rapid change. These need to be captured within the innovation system to enable rapid learning and adaptation to change. They create an imperative for agricultural RD&E to do systems research across value chains. Such research is integrative, proactive, inter-disciplinary and engaged closely with its public and private sector

constituencies. At the same time, traditional and new mode of research on genetics, soil management and agronomy must be maintained and integrated with systems approaches. There are currently very few, if any, funding mechanisms available to support this type of research.

The emerging models of agricultural innovation have also blurred boundaries between the public and private sector, and emphasise partnerships and collaboration more than competition.

A focus on enabling individual and on-farm business level decision-making is not enough. We increasingly need to take a systems approach to clarifying the roles and building on capabilities and linkages of public and private sector RD&E. For instance, RDCs currently fund very limited extension associated with R&D projects, yet project outcomes often rely on extension. Learning within and across innovation systems rests on research about effective extension and adoption, especially where there is a complex matrix of public and private sector RD&E activity.

Extension is still considered as largely a private sector (research delivery) domain, rather than a research arena. Research on effective extension allows rigorous evaluation and system wide learning, practice change, adoption and improvement. In particular, the emerging models of public private partnership require good evaluation in themselves to ensure that linkages between public and private sector RD&E are effectively and efficiently developed.

There is a substantial return on investment through the current RDC funding model (Productivity Commission 2011), yet there are also inefficiencies and blind spots created by a system with a sectoral focus. We would argue that the agricultural R&D portfolio has consistent value in limited arenas. It may meet specific needs, but does not efficiently meet many demands for information, knowledge and technology that are consistent across sectors. In particular, the nearly exclusive focus on short-term, on-farm impacts runs the risk of eroding our agricultural research capacity. Ultimately this will lead to a lack of transformational change that is so urgently needed to ensure that Australia's agriculture and food systems remain at the centre of our national prosperity. Our best scientists will inevitably either engage in other sectors or leave for overseas (there is considerable demand for agricultural skills overseas). To avoid such outcomes requires a realignment of the RDC funding model with the incentive structure that drives the priority setting of Australian universities, which are the institutions that already provide over 60% of all the research and all of the graduate and postgraduate training.

### **Towards cross-cutting and collaborative models of RD&E in an innovation system**

The relative lack of integrated RD&E focussed on agricultural innovation systems in Australia means that the whole of RD&E system has very limited ability to support transformational change when and where it is needed. RDCs tend to identify diverse R&D priorities within many levied sectors and have little ability to address cross-sectoral concerns that are consistently important. These include RD&E related to:

- Soils, soil management and soil carbon
- Value chain innovation
- Biosecurity
- Agricultural and farming systems research

- Water and irrigation management
- Managing climate variability and change
- Sustainable natural resource management

Lessons from the development, operation and (in some cases) demise of cross-sectoral RD&E programs such as Land and Water Australia and the Managing Climate Variability Program. These programs should be reviewed to evaluate the potential for effectively and efficiently administering cross-cutting programs.

Such cross cutting programs, potentially with an action research agenda and public-private sector collaboration, present an efficient and realistic means of addressing many of the thorny problems raised by the issues paper. For example, rural decline is often directly linked to farm efficiency – technology enables people to increase labour productivity, reducing regional jobs in agriculture and thereby leading to outmigration. Action research with rural and farming communities can identify and trial diversified options for these communities, empowering and instigating new developments and options. Similarly, drought preparedness, adaptive capacity and resilience require understanding of historical variability and productivity and development of strategies to deal with the manageable vagaries of climate. These challenges are likely to become greater challenges with projected climate change and will require ‘wicked solutions’ that don’t just treat the symptoms, but go to the heart of matter (e.g. people’s expectation of climate risk) through diverse media platforms, curricula and social networks.

Non-traditional arenas of research to support agricultural competitiveness include, for example :

- Rural decline and community development
- Policy analysis to improve efficiency and effectiveness of regulatory and other instruments
- Social-psychology of risk, perceptions and drought preparedness

Another concern that must be addressed in the White paper is the mismatch between RDC goals and funding models and incentives within universities and CSIRO (see earlier comments and the ACDA submission).

Primary incentives for all public sector researchers are towards publication and peer esteem, rather than innovation or the development of information, knowledge or technology to address emerging demands for within agriculture. This results in a lack of mission-oriented scientists who can see personal benefit in creating outcomes for agriculture.

Block grant funding from universities and limitations to commercialisation within them provide disincentives for researchers to participate more than peripherally in innovation.

## Recommendations

- We propose that at least 50% of the Government contribution to RDC funds should be spent on cross-cutting, integrative and transformational research designed to achieve public good outcomes. This activity should be underpinned by an appropriate peer review process at application stage. The process needs to be aligned with the funding incentives that drive university priorities.
- We suggest that the Agricultural Competitiveness White Paper should define approaches to improve the agricultural innovation system as a whole, particularly through:
  - Ensuring agricultural innovation and competitiveness is informed by and can inform other policy levers that effect agricultural competitiveness
  - Addressing structural weaknesses and perverse incentives that reduce the ability of universities and CSIRO to contribute effectively to outcomes for agriculture and natural resource management
  - Promoting the importance of partnerships between public and private RD&E sector, where efficient and effective, to deliver simultaneously on public and private benefits of RD&E. (This should be developed and evaluated through
  - Committing to approaches which improve transparency and accountability of governance of RDCs particularly through identifying appropriate mechanisms to ensure delivery of public good outcomes through RDC funded activity
  - Ensuring efficacy of RDC funded activity through robust extension and information provision that make corporate knowledge and (new and historical) R&D useful to members
- We propose an increased focus on defining how linkages and functions of public and private RD&E can be improved to assist on-farm decision-making and cross value chain management.
- We support recommendation made by ACDA in relation to research and extension funding, undergraduate teaching and postgraduate training (particularly to redress the current disincentive embedded in the scholarship schemes for Australian postgraduate students).
- We urge the Australian Government to consider the introduction of a US-style “Land Grant University model” to strengthen the links between university research and teaching and on-farm extension and adoption. To paraphrase the ACDA submission: *University skills and assets in teaching provide a strong and natural base for the continuing adult education which is integral to “extension”; this forms a fundamental part of an effective “innovation platforms”. In the US system some academics hold joint or partial appointments in extension. Personal relationships are typically established by academics with future industry leaders while they are students and these last for decades, enhancing the knowledge transfer process. Historically, the US Department of Agriculture has provided cash support to US Land Grant Universities on the order of US\$1 billion annually. Normalised for Australia’s smaller population, the US federal cash support alone is equivalent to around AU\$70-75 million annually. A key problem in Australia is that no such funding arrangement exists. Universities are funded primarily for teaching by student numbers, and any research grants are short term for specific projects. Long-term connections between research and industry, on which innovation relies, exist in pockets in spite of this system rather than because of it.*