

Research for Action productivity & food security

Research for Action 2009-2013

Challenges for NSW production systems

NSW has an excellent reputation for producing high quality produce from farming systems. It currently produces sufficient grains, meat and fibre for domestic needs and for a healthy export trade. However, global demand for low cost, safe, nutritious food is increasing, while food and fibre production systems face a complex array of challenges associated with climate, increasing biosecurity risks, increasing costs of production inputs, declining genetic diversity in crops and animals, increasing competition for land and water resources, and changes in international trade barriers. Meeting domestic demand and capturing export opportunities is increasingly becoming a national priority for primary industries.

Issues such as biosecurity and consumer demand for freshness drive the domestic production of many agricultural commodities, even under adverse conditions or at the expense of scarce resources such as water. Nonetheless, NSW is already a net importer of some food products such as seafood and there will be a continued reliance on some imported food products because they cannot be profitably produced domestically. Effective trade relationships are necessary to ensure continued access and self reliance in food production. Agencies such as I&I NSW have a clear role in ensuring domestic and global food security through the development of technologies to improve productivity and to promote the integrity and nutritive value of food through the production chain.

Our production systems must respond to these challenges so that NSW communities remain economically strong and vibrant and capable of contributing to domestic and regional food security. The imperative is to ensure the efficiency of production of those commodities suited to Australia's environment and trade requirements. Production systems need to have the capacity to meet market demand, maintain current market access and secure new opportunities for primary products in the face of increased international competition in less regulated markets.



I&I NSW – PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES IN NSW

The role of I&I NSW's Science and Innovation Division

The key questions that research needs to answer are:

- How can primary industries break through the barriers to increase production and productivity and provide even greater benefits to the state of NSW and regional economies?
- What improvements can be made to production and processing of food to help alleviate domestic and global food security?
- How can primary industries reduce the environmental footprint of food production?
- Can increased agricultural productivity compensate for likely increases to production costs associated with carbon accounting, climate variability and water shortages?

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I&I NSW's Science and Innovation Division has adopted a strategic approach to ensure adequate R&D capacity and capability to respond to these challenges and has developed an appropriate policy framework to assist this process. It is critical that R&D resources are directed at the highest priority issues and that a degree of flexibility is retained to enable responses to new challenges. I&I NSW will also participate in or lead initiatives to influence R&D priorities at a national level.

I&I NSW already delivers a range of R&D activities that deliver improved productivity outcomes for NSW primary industries. These include R&D programs in the development of more efficient production systems (using both conventional and biotechnological approaches), market access and production chain management, disease and pest management and food with enhanced quality and nutrition. Future R&D priorities for investment need to increase the focus on issues that have clear linkages to food security and productivity, and in which I&I NSW has leadership and capability.

There is clear recognition of overlaps between production and food security with other priority research themes in I&I NSW's Science & Innovation Division. The development of adaptive production systems is critical for management responses to climate change and water limitations, and for pest/disease management systems to enhance productivity. In one sense, each of these themes can be viewed as underpinning the continued delivery of improved productivity and food security in primary industries.

The Productivity and Food Security Research Branch will contribute to improving productivity and alleviation of food security through farming systems research, crop genetics research, animal production and genetics research, horticulture research, viticulture research, and aquaculture research.

Working with our partners

In recognition that primary industries are direct beneficiaries of productivity-related research developed and delivered by I&I NSW, these industries contribute to the cost of research through a national levy system administered through industry R&D corporations. Government agencies, such as I&I NSW, co-invest in this research in cases of market failure – where insufficient industry funds are available to meet the R&D requirements to support the development of an infant industry, where there are identifiable public good benefits (such as in biosecurity, environment or for regional communities), spill-over benefits to non-contributing sectors (such as food processing industries), or where externalities (adverse impacts) are avoided by the conduct and delivery of the research outcome.

The share of benefits from the delivery of productivity-related research and thus the share of costs for the research will vary. I&I NSW's business model for R&D recognises this and allocates its research investment accordingly.

I&I NSW will work in alliances and collaborative arrangements with universities, private and public sector organisations to meet its objectives for the community.

I&I NSW has 12 Rural Research and Development Corporations as investment partners. Primary producers also actively participate in our research programs. I&I NSW also currently works within 11 Cooperative Research Centres (CRCs) that are collaborations between researchers and business that build critical mass for research ventures.

A critical component of the I&I NSW research model is the integration of research and extension in a state wide network of advisory and education specialists working alongside research staff. Hence research outcomes can be delivered through cross-discipline teams, ensuring that they meet the needs of community, industry and government.



OUTCOME

Primary industries adopting production systems that ensure an adequate supply of safe and nutritious food

Strategies

1. Develop integrated and multi-disciplinary approaches to achieve cost-effective increases in production
2. Develop improved stockfeeds and feedbase management practices for animal production systems
3. Develop agronomic packages and innovative practices that increase productivity by optimising resource inputs
4. Develop conservation farming technologies and integrated risk management strategies for farming systems that incorporate the impacts of genetic, environmental, and management (GxExM) interactions
5. Develop tools and technologies for crop and livestock industries that contribute to genetic improvement in production efficiency
6. Develop improved hatchery feeding and husbandry technologies for aquaculture species
7. Identify and develop new crops and alternative markets
8. Conduct economic and risk analyses of current and future farming practices to meet production and NRM demands
9. Determine the impact of GxExM interactions on food quality attributes, particularly in relation to climate variability
10. Develop functional foods and food-based nutraceuticals that reduce the risk of lifestyle diseases
11. Support supply chain systems that ensure produce meets quality standards and consumer expectations of safe food
12. Implement delivery of technology to achieve on-farm and industry practice change

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OUTCOME

Primary industries use management practices that protect natural resources and promote adaptation to climate change

Strategies

13. Identify and implement best management practices for plant and animal production systems under climate change and increasing climate variability
14. Develop germplasm and systems for efficient nutrient and water cycling
15. Develop production systems that enhance NRM outcomes
16. Develop new animal and plant germplasm to increase productivity over a wider range of environments
17. Identify and develop better adapted livestock phenotypes and breeding systems that utilise adaptive characteristics of particular breeds, bloodlines and individuals
18. Develop germplasm for resistance breeding for endemic and exotic diseases
19. Control of pests and diseases achieved with reduced levels of inputs
20. Implement delivery of management options to protect natural resources

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