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Portfolio Committee No. 5 – Industry and Transport
Inquiry into the sustainability of the dairy industry in New South Wales

The Hon. RICK COLLESS: Is that set at the farm gate or at the retail level?

Professor LEAN: I think that is set at the farmgate level. I will take that on notice because I want to check it.

Response:

The Fonterra Farmgate Milk Price Manual - Part A: Overview – effective August 2017 produced by Fonterra was used to provide this response. Fonterra control approximately 90% of the milk market in New Zealand.

The 'Manual' provides evidence that Market milk value is implicit in the Farmgate milk price received by farmers. It does not appear that the whole milk price is set by regulation, rather from within the Farmgate milk price negotiated between farmers and Fonterra. It appears that the near 'single desk' monopoly of Fonterra, which is acknowledged in the Manual, acts to counterbalance the supermarket power in New Zealand.

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Supplementary questions for Professor Ian Lean, Managing Director, Scibus

1. In relation to your evidence below, what would be the most efficient way to rebuild New South Wales dairy industry's research and development capabilities?

The CHAIR: That is an interesting concept. Rather than rebuild the research capabilities within an academic institution like the University of Sydney, what would you say to using what is an extension facility within a government department, which is what that is, as your basis for rebuilding or carrying the research forward without necessarily having to start again?
Professor LEAN: There is a bit of a hub really at Camden EMAI, ourselves and the University of Sydney—so you have got a group there that could be used to rejuvenate it. The particular housing of people is probably irrelevant and where you base them is largely irrelevant. It is really about the value of having a university engaged and there is another facility that I think would be useful. There are several other facilities in the State that could be useful. One is the University of Technology Sydney [UTS]—that has some very useful technologies going on there—the University of New England and the other is Charles Sturt at Wagga Wagga. All of those could potentially play a role but it is critical that you have somewhere you can house PhD students. That is the reason for probably allowing one of the universities to be the lead because they can pull in the students and that retains those infrastructures.
The CHAIR: That sounds to me like the kernel of a question on notice to you. We might ask you for your opinion on what is the fastest and quickest way to coalesce what needs to be done. We will ask the secretariat to formulate a question and send it to you.

Response

What would be the most efficient way to rebuild NSW dairy industry's R&D capabilities?

1. Develop a long-term Plan to 'bullet-proof' the NSW dairy industry against failure risks
2. Develop a co-investment model to leverage Government, industry and University investments
3. Establish a NSW D&R centre with 4-5 pillars of activity focussed on NSW needs (see attached document 'A transformational RD etc' for the basis of such a means to rebuild).

A transformational R&D program to provide sustainable and innovative approaches to safeguard against future risks for NSW dairy farms and improve industry viability

Ian Lean[1], Sergio García[2], Jim Rothwell[3], Bruce Christie[4] and Michael Perich[5]

Executive Summary

NSW is better placed than any other State in Australia to efficiently expand and meet local and international demand for milk products. This proposal will provide the unmet need for NSW directed research, development and extension. It foreshadows a 5-year plan of development.

Outcomes

- Future food security and wealth for NSW: At present there is a 200M L deficit in milk production for NSW and Qld. This can be produced efficiently and locally by providing pertinent research, development and extension.
- Securing and developing regional NSW.
- Unlock the true potential of NSW's systems and feedbase diversity as key competitive advantages to produce animal products.
- Develop milk products to be exported from the Western Sydney Agribusiness precinct.
- Use the research hub based on the Elizabeth Macarthur Agricultural Institute, University of Sydney and Scibus to provide the platform for development with a co-investment model (example in Appendix 1).
- Early and mid-stage researchers trained to fill missing positions for local, national and international employment.
- A long term and viable research aggregation, based on collaboration and close awareness of the needs of NSW Dairy producers.

There are 4 essential activity areas proposed

- Reducing risks of production failure by improving productivity
- Improving biosecurity and health for animals and people by enhanced and innovative detection methods (Figure 1).
- Improving animal well-being and public perceptions of this.
- Managing environmental risks, in part, though addressing unique opportunities for improved production efficiency using highly productive tropical pastures (kikuyu and maize) which perform under higher temperatures and reduced rainfall unlike the southern cool temperate ryegrass/clover systems.

[1] Director Scibus and Cows-R-Us; Adjunct Professor, The University of Sydney
[2] Director Dairy Research Foundation, The University of Sydney
[3] Director Elizabeth Macarthur Agricultural Institute, NSW Department of Primary Industries
[4] Deputy Director General Biosecurity and Food Safety, NSW Department of Primary Industries
[5] Director Leppington Pastoral Co and Australian Fresh Milk Holdings Pty Limited; President Dairy Research Foundation, The University of Sydney

Proposal outline

We seek to develop a long-term, multidisciplinary, transformational RD&E program that will focus on NSW dairy systems and reduce risks of failure of production, welfare, biosecurity, and to reduce environmental impacts of dairying. The program is designed towards securing a future for the NSW dairy industry, by increasing farm profit and to benefit the people of NSW. It builds on the opportunities to provide locally sourced milk and to potentially utilize the new airport developments in Western Sydney to access export markets.

A collaborative, co-investment model between the University sector, the NSW Government and the private sector (farmers, organisations, private companies) will be sought.

The realised vision of success contains the following attributes

- An increase in young and mid-stage researchers (6 to 10) capable of generating funds and research programs into the future from public and private sector funders.
- Key positions to be filled include ruminant nutrition, reproduction, bio-informatics and patho-physiology (many of these are diminished resources nationally)
- **Key outcomes:** Enhanced production efficiency, animal well-being, improved early disease detection for animals and man, integrated food safety and quality strategies; grow and secure key R&D capabilities for NSW.
- **Enhanced local and international links.**

What does the NSW industry need to grow sustainably?

To grow long-term, the NSW dairy systems will need to be profitable and sustainable. This requires to be efficiently intensified to produce more from less; and flexible to adapt to future production environments.

Farm systems will have to become “bullet-proof” to the major risks of failure that can seriously damage the individual farms and the industry as a whole. The key risks, identified in previous discussions (NSW DPI Biosecurity, Scibus, Dairy Connect, and The University of Sydney’s Dairy Research Foundation), are:

1. Production efficiency risk
2. Animal welfare risk
3. Biosecurity risk and product excellence
4. Environmental risk

Production efficiency risk: This area is essential to ensuring supply of milk in a profitable, ethical and sustainable framework. All entities initially involved in the proposal are extremely capable in this context. For example, previous research by FutureDairy conducted at EMAI, University farms and in the Hunter Valley, demonstrated the potential to increase total farm productivity by 3x in NSW through a combination of more efficient crops and pastures.

However, the complexity involved in such intensification of pasture-based systems needs to be addressed through innovative and better use of technologies and automation. Thus, reducing system complexity through innovative application of technology and automation is a central

need (and a key opportunity) for NSW farms. Critically, such systems differ in focus to those promoted in the Southern regions of Australia (however, these more intensive systems are widely applicable in those regions).

Animal welfare risk: Changing production conditions provide new challenges for farmers in NSW and beyond. These changing conditions can place animals at greater risk of harm – needs to increase stocking rates on farms to utilize more productive crops, differences in climate and disease risks to other parts of Australia, dictate that approaches to manage animal well-being must differ to other areas. Organisations such as BioSecurity NSW, DPI, Scibus and the University of Sydney DRF have all developed powerful programs in this area. However, the challenge of addressing these changes is increased by greater public interest in agricultural methods. There is a substantive need to develop fully transparent and objective ways, reachable by the consumers and the general public, of addressing animal well-being and demonstrating what animal welfare really means for the consumer.

Developing and implementing innovative systems that will allow all this requires trans-formational research to monitor, with sufficient time to intervene, a large number of individual animals and farm systems across the State. Developing and implementing these systems is a key pillar of this program.

Biosecurity risk can be reduced by predicting disease and production quality risks. At scale, this requires the integration and optimization of currently captured data (on farm, advisory sector, veterinarians, processors, climate, among others) with advanced sensor-derived data, such as in line (e.g. milk quality and composition; hormones; enzymes); in cow (e.g. rumen probes, other biosensing tools) and; on cow (e.g. activity and rumination ear tags or collars), to proactively predict, in real time to enable rapid intervention and risk of failure. Integrating these attributes into a high security milk product strategy allows the potential to rebuild export markets based on value-added, not commodity, pricing. This innovative and transformational, multidisciplinary plan will constitute the central pillar of the whole program.

Environmental risk can be reduced by controlled intensification. Controlled or smart intensification (in both confined and pasture-based systems) is key to solve key production and health (and welfare) issues in non-Mediterranean areas and optimise C4 grasses forage systems, in a dynamically changing environment. Innovative and forward-looking research is needed to better optimise the increasingly scarce key resources, namely land, water, nutrients and other inputs (e.g. electricity) through the use of advanced technology and sensor-derived information.

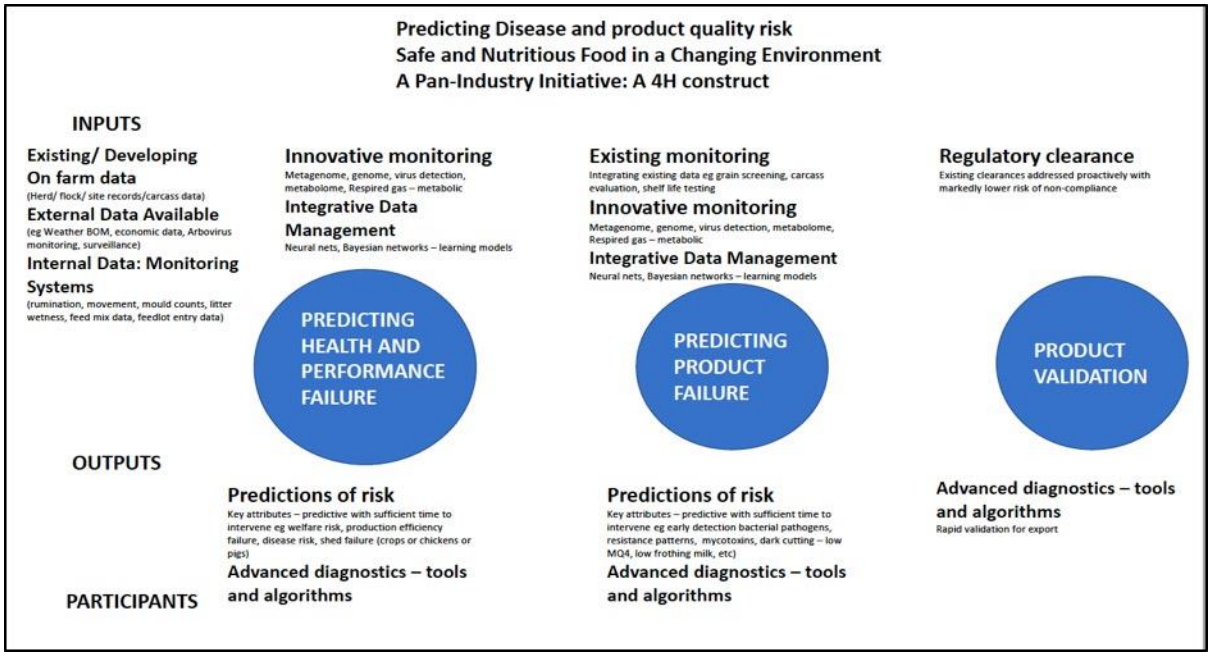


Figure 1: Predicting disease and production risk through innovative, dynamic, advanced, and multi-source, monitoring.

Funding needs

We envisage an R&D program comprised of 4 sub-programs (production efficiency, welfare, biosecurity, and, environmental risks). Each subprogram comprised by 1-2 scientists and 3-4 PhD students.

A target contribution of $2M/year for 5 years from government is envisaged to establish the program of work. Such funds would be used to gain matching support from other organisations. Funding would be expected to grow and roll over more extended periods of time to ensure the long-term survival of dairy RD&E in NSW. We foreshadow that there would be a need in 4 years to review success and, dependent on performance, possibly commit to new funding for a further period of perhaps 5 years. The funding mix would not necessarily include the NSW government.

The funds will be used to support new research positions in the four key Modules above-mentioned; provide initial PhD scholarships (2-4 per Module); provide initial start-up grants and operating funds for each of the research areas; and to leverage external funds [e.g. CRC, CRCp, RRD4P, ARC, Industry funds (Dairy Australia), etc.].

The Dairy Research Foundation could contribute in principle $0.1M/year for 5 years to leverage the sought-after investment from Government and industry. In addition, The University of Sydney could contribute with key infrastructure and human resources as well as the potential to leverage research funds. Potential additional sources of funds are: DPI NSW; Industry organisations (Dairy Australia, Dairy NSW); Dairy processors (Lion, Bega Cheese, Parmalat, Norco, Murray Goulbourn/Saputo) and private research companies (animal production and health companies).

A collaborative, co-investment model is sought in which each contribution attracts a multiplying factor of at least 3x.

Additional Background

NSW needs fresh milk

Eight million people live in NSW and about 60% of them in the Sydney basin. The need for whole fresh milk alone is close to 1 billion L per year, just below the amount of milk the State produces currently.

A sustainable and growing dairy industry is key to not only supply the fresh, high quality, locally produced, low-risk milk that the increasingly demanding consumers require, but also sustain rural communities.

Dairy farms are complex and intensive operations with a multiplying factor of ~24 people/farm (ADIC 2016) employed directly or in associated jobs; and with a demonstrated high level of capital investment and ripple-type effects onto the community, if the conditions for growth and investment are provided.

The NSW dairy industry needs to grow sustainably to keep up with current and future demand for milk and to better exploit opportunities in the export market. This has been clearly identified by previous collaborative efforts (Strategic Action Plan[1], developed by the Collaborative Industry Action Group of NSW and launched by the Hon Minister Blair in 2016).

Current industry situation

In spite of the above, the NSW dairy industry is in a critical situation. Years of unfavourable milk price:cost of production relationship; coupled with complex internal and external market environments, adverse climatic conditions (droughts/floods), and a lack of a visionary, NSW-focused, long-term RD&E plan; have taken a massive toll on the competitiveness of the individual farms and the industry as a whole. More details on key factors that have contributed to this situation are given in Professor Ian Lean's recent submission to the NSW Upper House Committee's *Inquiry into the Sustainability of the Dairy Industry in NSW* (I. Lean, Scibus, November 2018).

Who benefits?

The NSW dairy farmers and the NSW dairy industry are primary beneficiaries. NSW dairy farmers are very resilient people who have survived almost 2 decades (since de-regulation in 2000) of unfavorable price/input costs relationships without a specific long-term RD&E program focused on their systems and needs with existing research and extension directed at cool temperate, southern systems. There is an urgent and present need to reverse this situation.

The rural communities benefit directly and indirectly. Due to the intensive nature of the production systems, dairy farms have a proven and very big chain-effect impact on rural communities.

The Government benefits by leveraging funds against industry and other sectors' (including University) funds and by the positive perceptions created from the support to NSW farmers and

[1] https://sydney.edu.au/vetscience/foundations/drf/

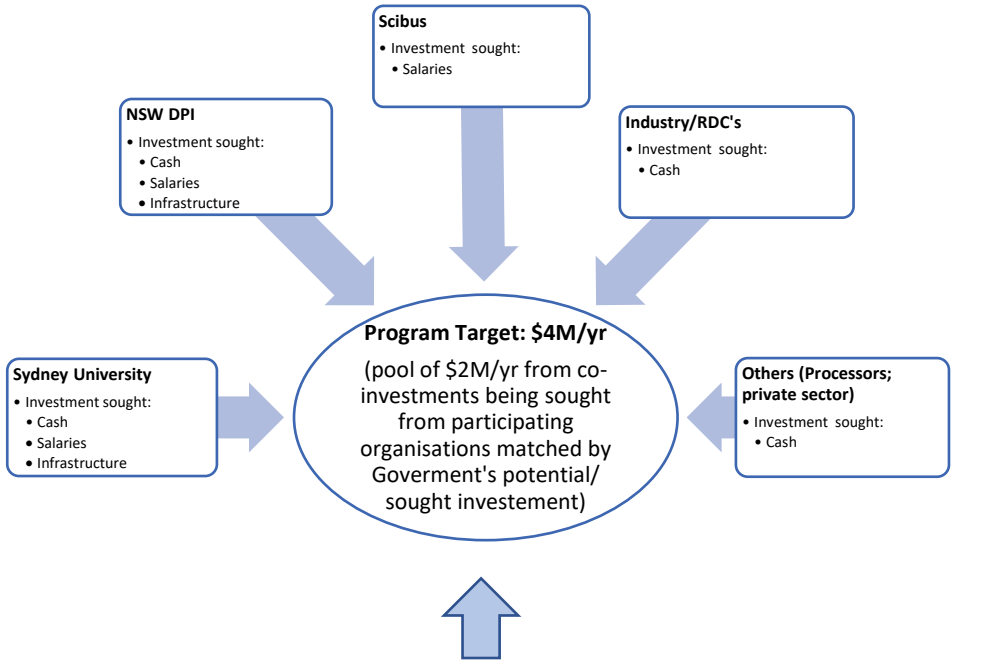
its people. This strategy does not subsidize milk price or the cost of production. This is the model used by other States (Vic, Tas, Qld) to multiply Government's investment by 2x or 3x. **Currently, NSW milk producers subsidize other States because of the failure to obtain funding in the competitive space.**

And overall, the people of NSW benefit from securing the fresh and reliable availability of an essential food: healthy milk, with certified guaranteed that it was produced from healthy cows, in healthy production systems on a healthy environment (4H concept).

Initial participants and resources

Organisation	**Field of expertise**	**Key infrastructure/ resources/facilities**
EMAI (NSW DPI)	Advanced diagnostic services; Research capability and expertise in biosecurity and food quality	Top level laboratories; Primary agriculture land. Irrigated land (recycled water)
Leppington Pastoral Co and Moxey's farms	Intensification; intensified systems of production; high level agricultural management	Dairy farms with over 2000 cows near Camden and 6000 cows near Goologong, in confined Total Mixed Ration systems
Scibus	Research expertise; advanced animal nutrition and modelling; farm systems	Direct access to over 50 dairy farms in different regions in NSW
Sydney University and the Dairy Research Foundation	Research expertise; feedbase and feeding systems; advance dairy systems; technologies and automation in dairying	350-cow Robotic Rotary; Primary agriculture land (irrigated). Access to interdisciplinary areas (School, Faculties, SIA)
Dairy Connect	Corporate industry knowledge -policy	

Appendix 1: Co-Investment model: Type of funding model envisaged



NSW Government matching funds (indicative amount sought):
$2M/year x 5 years = $10M