

President's address 2013

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Security of food supply, sustainability of food production and safety in food processing – the three Ss of food – have featured in the news globally over the last twelve months. New Zealand has not been immune, and was the focus mid-year. The repercussions are still being felt. A successful pathway to the future will include improved understanding of agriculture and science – which means education at all levels is required. The role of the New Zealand Grassland Association continues to be information exchange and hence education – fuelled by science and tempered by experience.

Food security

Security of food supply is reflected in food prices. Over the twelve months to June 2013, the food price index has increased 0.6%, the consumer price index 0.7%, but the average salary increased by 1.7% (Statistics New Zealand 2013a). This means that the cost of living, including food, as a proportion of income decreased. The popular belief, however, is that food is expensive, and that an increasing number of families are experiencing food insecurity. On-going news items about child poverty overlook the fact that “poverty” in New Zealand is defined (The Children’s Social Health Monitor 2012) as less than 60% of the national median income rather than any concept of being able to afford the necessities of life. The fact that New Zealand residents took 2% more overseas trips in July 2013 than in July 2011 (and 15% more than in July 2012 – though this might have reflected winter school holidays starting later this year) supports the suggestion that New Zealanders have increased discretionary income.

A further factor to consider in food insecurity is what people choose to put in their supermarket baskets. The top 10 items (identified in 2009 – but still quoted):

1. Coca-Cola 1.5 l
2. Wattie's spaghetti 420 g
3. Coca-Cola 2.25 l
4. QB Nature's Fresh white toast 700 g
5. Wattie's baked beans 420 g
6. Dole bobby bananas (850 g)
7. Tip Top super soft white toast 700 g
8. Sprite lemonade 1.5 l
9. QB Molenberg original toast 700 g
10. Coke Zero 1.5 l

Also of interest is that the “typical” basic weekly

basket (Statistics New Zealand data collection) includes pineapples, avocados, exotic breads, dried apricots, frozen berries and chicken nuggets. Recent reports from supermarkets (e.g., Hartman Strategy 2013; Woolworths 2013) indicate that trends observed in New Zealand reflect those in other developed countries. Hartman Strategy (2013) reports that basic ingredients are now “pasta sauce”; cooking dinner from scratch occurs only 32% of the time, and “scratch” includes pasta sauce. Research from the US published in 2013 (from data collected in 2012) indicates the average American spends only 32 minutes a day preparing and clearing up after food, in contrast to 75 minutes a day eating and drinking (New Zealanders spend 85 minutes), and 170 minutes a day watching television (New Zealanders spend 128 minutes).

Cooking shows designed to recreate interest in food appear to affect consumption (indicated by increases in obesity) rather than preparation. The problem with the current focus in cooking shows is that they are about perfection in look and taste; normal people are becoming discouraged. New Zealanders throw away approximately 2 kg of food per person a week on average and are in the top category for wastage with North America. This has been suggested to reflect a lack of understanding about food provenance and costs of production (Institution of Mechanical Engineers 2013).

Sustainable production

The costs of food production continue to rise. Farm expenses increased (twice as rapidly as the Consumer Price Index) – directly through power and fuel as well as labour, also through fertiliser which has since reduced in price, and both directly and indirectly through compliance costs – National Animal Identification and Tracing (NAIT) scheme, effluent management and time spent on paperwork, for instance.

Ministry for Primary Industries Farm Monitor Reports (Ministry for Primary Industries 2012) predicted that the last season would give little in the way of surplus for farm reinvestment – and the drought removed it (DairyNZ calculates that on average the drought cost \$100 000 per dairy farm). 2014 is already being predicted by farm consultants (e.g., AgFirst Waikato) as the big year for compliance, particularly to do with water and effluent management.

Of the five points of sustainability (Smyth &

Dumanski 1993), it is the third that tends to feature in the minds of urban society:

1. Maintain and enhance productivity
2. Decrease risks to production
3. Protect the potential of natural resources and prevent degradation of soil and water quality
4. Be economically viable
5. Be socially acceptable

However, for the farmer, point 4 is vital, and the cost of compliance is increasing debt.

At the same time, the farmer-owned co-operatives are struggling. Fonterra dominated the news in August, but wasn't the only company involved in international difficulties.

The agribusiness papers that are part of this conference involved three comparative case studies of three companies – nine companies in all. All three case study papers were updated between submission and going to press because of significant changes in, for example, ownership structure and strategy; these changes are on-going and indicate the challenges of trying to do what the government is urging – increasing exports (Macdonald & Rowarth 2013. Rowarth *et al.* 2013; Scott *et al.* 2013; Wilson & Rowarth, 2013).

New Zealand's investment in South East Asia alone has grown steadily from \$0.7 billion at December 2007 to \$2.2 billion at 31st December 2012 (Statistics New Zealand 2013b). Meanwhile ASEAN investment in New Zealand was \$2.4 billion at 31st December 2007 and \$3.5 billion at 31st December 2012.

ASEAN investment in New Zealand includes Bright Dairy's 51% ownership of Synlait, Olam's 25% ownership of Open Country Dairy, and Vinamilk's 19% ownership of Miraka.

Key drivers of this increasing interest in New Zealand dairy among Asian players have been identified by Forsyth Barr as security of supply of high quality milk in an increasingly competitive international market and guaranteed DIRA (Dairy Industry Restructuring Act) raw milk.

All of the New Zealand investments overseas reflect money that could have been retained and invested in New Zealand, in research and development and in infrastructure and food processing plants, thereby preventing some of the new entrants into the market creating direct supply chains to their home countries.

Farmers are already the biggest investors of research in New Zealand through taxes, rates, levies, retentions and their own investigations. The question must be asked whether their investment overseas is well spent or whether investing in New Zealand, and on farm, would have been more effective, particularly given increasing concerns about sustainability.

In July this year the Ministry for the Environment (MfE) released data on "river conditions" showing that

over the past decade at 90% of the sites tested, most of the MfE's key indicators were either stable or improving. However, headlines such as "Latest water quality trends 'red letter day' for farming" were balanced by "water quality to worsen says Fish & Game" and "Waikato river in serious decline". The latter failed to point out that although an increase in nitrate had been recorded in the last decade, the peak (measured in 2009) was 27 times below the potable limit for nitrate-N.

Education

The general problem in understanding of sustainability reporting seems to be an ongoing lack of science and relativity.

Participation in science subjects at school and university has decreased in developed countries as the curriculum has broadened and the proportion of students staying on at school and entering university has increased. New Zealand has had fewer than 100 graduates (of approximately 22 000) a year in agricultural science for the past decade, and only between 2000 and 2500 in the "natural sciences". Global shortfalls in STEM graduates (Science, Technology, Engineering and Mathematics) mean an increase in salaries, which in turn are decreasing the likelihood of students staying on at university for postgraduate study. This is unfortunate given the increasing challenges in sustainable food production – grassland research needs great people enjoying great careers in order to contribute to global sustainability (Rowarth 2013). Factors behind the decrease in STEM students include (Westgate 2007) (1) shortage of specialised STEM teachers, (2) poor image of science and scientists, (3) perception of science as a hard subject and (4) lack of knowledge about STEM careers. All of these factors are true, but schoolchildren still take the sciences if they want to be doctors or veterinarians (Hipkins *et al.* 2006).

The challenge, then, is to make STEM careers as attractive as the medical professions by showing the students that the rewards are high.

After graduation from a bachelors degree, applied science graduates are being offered approximately \$48 000, plus SUV, computer and mobile telephone. In contrast, staying on for honours/masters and then Doctoral studies extends the time on no real income. Five years later and the applied science graduate could be completing a PhD with a post-doctorate salary of \$65 000, whereas the classmate who joined the industry could be on a salary package approaching \$100 000.

Overall, the opportunity cost of doing a science degree, and then putting in the postgraduate study that leads to a science career, is a huge barrier and loss of earning power that the young are now calculating. Government intervention to acknowledge the cost, plus

a formal programme of in-work supported PhDs on salary (ensuring opportunity costs are offset) made, is required to make a difference.

Safety in processing

The flurry of interest in food contamination over the last few months has raised concern about food safety, agro-terrorism and communication ability. Although most of the issues reflected an increase in testing ability and awareness rather than danger, agro-terrorism could be more prevalent in future. Professor David Dausey, Chair of the Public Health Department at Pennsylvania-based Mercyhurst Institute of Public Health, has warned that increasing global supply chain complexity, including different countries and multi-stages of processing, means greater risk of unintended or intentional product contamination. He points out that food recalls have increased dramatically over recent years, averaging six a day in America alone during the first quarter of the year.

The average direct cost of a recall is US\$10 million. A recall adds costs to food companies, but so does testing. The question of what is sensible in terms of precaution is being asked overtly. Professor John Brooks, AUT, has explained that when contaminants occur in a product at very low level and very infrequently, testing is ineffective in assuring safety, and the cost is prohibitive. Understanding the likelihood and impact combination will be of increasing importance in the future, and the role of science communicators is vital. Professor Sir Peter Gluckmann, Prime Minister's Chief Science Advisor posted this comment to his website a few days in advance of Fonterra's Whey Protein recall: "better science communication could go some way to resolving such confused debates. Public perceptions of risk, trust in authorities, and the general discomfort with uncertainty need to be addressed with openness, integrity and professionalism." He believes that there should be science advisors in all big organisations, ready to explain and educate.

Pathway to the future

The New Zealand Grassland Association is part of the education network in New Zealand. It exists to share knowledge and best practice for agriculture, and embraces the five points of sustainability (Smyth & Dumanski 1993).

Tom Fraser, the Ray Brougham Trophy/award recipient for 2012, covered 40 years of NZGA in his talk – the time he had been in government-funded research. Although he tried to put all university lecturers out of work by suggesting that students wouldn't need to do Agronomy 101 if they read the NZGA proceedings, his point was the wealth of information presented

over the years and lodged in the proceedings and on the website. There is also considerable information for policy analysts.

This year the range of papers covers farmlet, field, pot, decision support models and business, pests, persistence and people. Most are aimed at making a difference to the bottom line of the farm business. The effect of implementation will be known only with measurement, but monitoring and reporting are part of being able to justify action and farming systems. The alternative could be inappropriate regulation being imposed, with implications for economic viability on farm and unintended restrictions on New Zealand's economic development. Increased investment in scientific research, both facilities and people, is required to ensure that critical research can be performed and then brought to conferences for discussion.

The final message is the same as last year (Rowarth 2012):

The evidence is clear. Times will continue to be interesting and we must move away from time consuming wrangles, establish an Agri-Food Board and concentrate together on what New Zealand does best: fresh, minimally processed, high quality food produced in scientifically-founded sustainable fashion in the knowledge that New Zealand farmers are superb managers of intensive production systems, allowing considerable national income to be gained not only from exporting food, but also from tourism based on the managed farmland as well as native landscapes.

... with an important addition:

Achieving this requires pastoral agriculture to be fuelled by science and tempered by experience. It requires the grassland community, with all the different backgrounds, knowledge and perspectives of the members, to be working as one towards the future. The New Zealand Grassland Association is the foundation.

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