



View from the Lammerlaws

Pat Garden

As this Newsletter goes to press, we are only days away from our annual conference in Waitangi, Northland. We have had an excellent response to registrations and the Executive is keenly anticipating the event. For those of you unable to attend, you will be receiving the Proceedings covering all the papers presented and we will feature some of the highlights in our next newsletter to you all – but of course, it will be a poor substitute compared to attending in person!

Jacqueline has prepared two articles in our Science spot, this time on "Footprinting" and "Food Security" - both topics shaping up to be increase-

ingly important in the context of global trade and in consumer expectations.

They might seem remote to those of us focussed on taking lamb's tails off (still to happen here on the Lammerlaws) or planning the feed supply to the cows, but they are the sorts of issues which will contribute to the perception and value of our products in the future.

Our Grassland Conferences provides a great platform for discussing and debating a huge range of issues affecting the pastoral industry – from the practical on-farm topic to the future of food on a global stage. It's a great place to learn from others!

AGM Notice

The Annual General Meeting of the New Zealand Grassland Association will be held on Wednesday, 4th November at 5.30pm at the Copthorne Bay of Islands, Waitangi.

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Lawn at Waitangi by Caitlin Casey-Stevens

(previously printed in National Business Review 16th October 2009)

Footprinting is gathering momentum.

It has taken over from where food miles, the attempt to rate food according to distance travelled from paddock to plate, petered out. It is part of the ongoing and ever more complex drive towards sustainability and informed consumer decisions.

In contrast to the food mile approach, it gives New Zealand huge potential to show leadership in sustainable food production. We can produce food using less carbon than most other countries, even when transport is considered. Now water is coming in to the equation. Again, we have potential to lead the world.

Carbon footprinting is an attempt to calculate how much carbon is released during the cradle to grave lifetime of a product. It is a response to concerns about the increase in carbon dioxide in the atmosphere. By making informed decisions based on carbon use, consumers can help reduce the rate of increase. Of equal importance, food producers can make informed decisions about production systems – using those which reduce carbon use where possible, giving a market edge as well as making a step towards environmental sustainability.

Every item and process that uses energy produces carbon dioxide. Some also produce other greenhouse gases such as methane (cows and sheep, for instance, as they produce milk and meat) and nitrous oxides (animals, for instance, through excreta). The effect of these gases is included in carbon calculations through 'carbon dioxide equivalents' (which include the radiative forcing and atmospheric longevity of the gasses). Methane is approximately 19-23 times as effective as carbon dioxide and nitrous oxides are approximately 320 times as effective.

The consumer is now faced not only with ingredient lists, heart ticks, low-salt and gluten-free labels, but also the carbon equivalent statement. Unfortunately for the consumer, different companies are using different ways of making the calcu-

"The consumer is now faced not only with ingredient lists, heart ticks, low-salt and gluten-free labels....."

lations. Professor Gareth Edwards-Jones, Bangor University and an AGMARDT fellow, explains.

"When a company comes out with a statement about a particular product, it sets the benchmark for all other similar products. Nobody is going to print a higher figure – so different ways have to be found of making a credible calculation."

Products within a company can be compared directly, however. Coca Cola has calculated that a can of cola costs 170g carbon dioxide equivalents. Diet or Zero cans cost only 150 g, saving calories and carbon - but the same liquid in a bottle costs 360g.

The consumer can choose.

Professor Edwards-Jones believes that carbon footprinting will reward good farmers because they achieve good yields per unit of carbon-costly input. A kilogram of nitrogen, for instance, costs 7.03 kg carbon dioxide equivalents. Achieving a high yield per kilogram of input reduces the effective carbon cost of that input. Use of clover-based pastures in New Zealand reduces the requirement for fertiliser nitrogen and so reduces carbon costs. Professor Edwards-Jones has calculated that pre-farm gate a kilogram of Welsh lamb costs 13.45 kg carbon in comparison with New Zealand lamb at 9.71. Add transport and the Welsh lamb costs 14.14 in comparison with 11.56 kg from New Zealand.

Dr Stewart Ledgard, a senior scientist at AgResearch, has made similar calculations for milk products with similar results – nitrogen, concentrate feed, and fuel all have carbon costs and are used at higher rates in Europe than in New Zealand. Tesco, the large UK supermarket chain, aims to label all 70,000 of its products with carbon use figures so that their customers can lead the charge towards a revolution in green consumption.

New Zealand farmers have the edge.

Add water into the footprinting and the decisions for the consumer and possibilities for the farmer become even greater.

(Cont. pg 3)



71 YEARS OF INVOLVEMENT IN NEW ZEALAND GRASSLAND FARMING

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(Continued from page 2)

Last year The Economist asserted that 'the world is facing not so much a food crisis as a water crisis... farming tends to offer the best potential for thrift'.

Enter the concept of virtual water and water footprinting.

Virtual water is the volume of water used to make a product, and includes the amount of water that is required to dilute the polluted water that arises during production to an acceptable quality standard.

Global average figures for the virtual water content of milk, coffee and wine are 200, 140 and 120 litres per cup or glass. Break this down to country, and a tonne of apples or kiwifruit requires five times as much water to produce in Australia than New Zealand.

Marks & Spencer, another UK supermarket chain, is already using water in decisions about where to source food for its stores as well as where to grow crops in the future. Similarly, Wal-Mart, a United States retail chain, has recently introduced plans requiring suppliers to report not only current water use, but also their plans for reduction in future.

Shrinking the water footprint of a product can be achieved through reducing the virtual water content of that product. Shrinking it at a national level can improve environmental flows, keeping rivers running and preserving native and exotic

species.

Also of interest is that global trade between water-rich and water-poor countries could save water globally by considering which products are water intensive or water efficient in different countries.

Dr Brent Clothier, Plant and Food Research and lead scientist in water footprinting, says that "Increasing stress on global water resources means that decisions about water management and agricultural production are increasingly moral and ethical choices, as well as economic ones".

In the developed world there is a drive for primary production systems to move towards systems and processes that minimise the use of resources. New Zealand is already working to show that products are produced efficiently with minimum use of carbon and water, as well as minimising loss of nitrogen, phosphorus and other nutrients. Reducing the inputs per unit of food products will increase the eco-efficiency of New Zealand's food production systems.

Overall, the goal for New Zealand is to find out where we are, do better in the future, and perhaps show others how to do likewise.

Jacqueline Rowarth is Professor of Pastoral Agriculture, Massey University.

Agenda for the Annual General Meeting of the New Zealand Grassland Association Incorporated

1. Welcome by the President, Mr Pat Garden
2. Apologies
3. Minutes of the previous AGM, Blenheim 15 October, 2008
4. Matters Arising
5. Annual Report – Pat Garden
6. Audit Committee report – Ants Roberts
7. Financial Statements for 2008/2009
8. Election of Officers
9. NZ Grassland Trust Report – Mr Bryan Guy
10. Conference 2010 – Derrick Moot
11. Conference 2011 - Gisborne
12. Conference 2012
13. General Business

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How about this one for outside the square?

In June, Marcelle and I were travelling up a remote valley in the Swiss Alps when we passed this group of black cows being driven to their grazing by two local farmers. I was keen to have a talk with them to see what sort of a farming system they operated, so we stopped the car and introduced ourselves. The farmer told us about his cows – the breed is an obscure one - Herens after the name of the valley, Val d'Herens. Their milk is used for cheese, a mature cow weighs between 700 – 800kg, they are quiet and they produce excellent beef. But then he



stopped and barely containing his obvious pride, he asked Marcelle how much did she think this particular cow was worth. Marcelle, a bit hesitant because she didn't want to embarrass him by quoting too high a price said "Five thousand Swiss Francs?"

"No", he replied happily "Thirty thousand!" (A cool NZ\$44,000). He explained that the breed of cows was particularly hierarchical and when the cows were being taken up the mountains to their summer grazing they battled each other to sort out which of them was to be the dominant cow. Over time this developed into a regional contest with farmers pitting their best and bossiest beast against all comers. Thousands turn out to watch the contests with the winning cow receiving great acclaim, the owner great prestige and is then able to sell her progeny for a fortune. Seems this particular cow was the "Queen of the Alps".

That night we went out to a local restaurant. On the menu were two separate sections for beef dishes – one for the local Herens breed, the other for beef from elsewhere in Switzerland. The local beef was about \$10 a steak more expensive. When we asked the owner of the restaurant to explain, she said that the breeders, the butchers and the restaurants had negotiated a contract. The farmers had to guarantee that the meat was from a cow which had not had more than two calves, that she had only been fed on hay during the winter and that she had spent at least 100 days of the summer grazing high up in the Alps over 1000m. The butchers had to guarantee that the meat was hung for three weeks and the restaurateurs had to market the meat at a premium to their patrons. The Federal Govt also threw in an extra \$1.50/kilo to the farmer. On top of that, the steak was delicious and could be cut with a fork.

So the friendly farmer we chatted with, was on a pretty good wicket – his cow won the fighting contest enabling him to market his herd's progeny at fancy pedigree prices, he and his neighbours had leveraged a real premium for their beef and as well, he manufactured his own cheese and retailed it in the winter to the skiers as a Swiss fondue. 18 cows was a pretty tidy business – now if I could just get Silver Fern Farms to cut me a deal like that -----

Pat



**71 YEARS OF INVOLVEMENT IN NEW ZEALAND GRASSLAND
FARMING**

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Making Kiwi agriculture more productive

Jacqueline Rowarth

(previously printed in National Business Review 10th July 2009)

Can the world's agricultural sector meet the global demand for food? Can existing agriculture become more productive while also becoming more environmentally sustainable?

Between 1900 and 2000, global population increased from 1.7 to 6.1 billion people – a 259% increase. Land area in agricultural production increased by 39%, people per harvested area increased from 1.5 to 4.0 - but per capita energy harvest almost doubled: more people on the earth were being fed to a better standard of nutrition due to productivity gains in agriculture. In 2008 15% of the global population was estimated to be undernourished; in the 1950s 23% of the approximately 3 billion people were estimated to be undernourished.

More gains are required. Recent analysis by the FAO suggests that food availability in developing countries will need to increase almost 60% by 2030, and double by 2050 – equivalent to a 42% and 70% growth in global food production, respectively. But growth in agricultural research is slowing. Food security, concerns about which were stimulated last year by soaring food prices, is high on the global political agenda. In July the OECD-FAO Agricultural Outlook 2009-2018 focused on the critical factors of land availability, productivity gains, water usage and climate change.

The report concluded that there is a positive outlook for agricultural commodities, but pointed out that food security is not only about solving the urgency in the short term but also about addressing the longer term issues of poverty alleviation and economic growth. "Greater investment in agriculture" is part of the solution. Research and technological innovation is required to overcome current constraints to production, and cope with the perturbations in production associated with climate change.

In developed countries, which have traditionally supplied research that is then adapted for other countries, growth in public agricultural research expenditure slowed to 0.52 % between 1991 and 2000, from 2.43% in the previous decade. Re-

searchers at Iowa State University have estimated that peak impact of R&D activity does not occur for a decade. This means that the effect of a slow down now will not be felt until 2019, and total factor productivity growth will be lower than it is now.

New Zealand is not one of the countries that can easily adapt the research of others because of the unique soils-climate-isolation combination. Agricultural research is vital, and served by various Crown Research Institutes as well as universities, but public research investment as a proportion of agricultural GDP is only approximately 1.3 %. Contrast that with Australia's investment of over 3%. Furthermore, Andy West, CEO of AgResearch, estimates that in the past 25 years there has been a 70% decrease in real terms in government support for agricultural research.

Although total factor productivity growth in agriculture has been outstanding since the removal of farm subsidies in 1985, and has been higher than the national average since 1996, there is no reason to think that such growth will continue. In fact, according to Treasury researchers, it has actually been decreasing since 2004. In 1992, a mere 12 years before the decline in Total Factor Productivity was observed, the science and extension system in New Zealand was reorganised: science funding became contestable and the extension service was privatised. These changes must be factored in to discussions about how best New Zealand can meet the food production challenges of the future.

The OECD-FAO Outlook summarized reports indicating that farming systems are increasingly vulnerable to changes in water availability and temperature, as well as the increasing incidence of flood and drought events. The perturbations will necessitate a high level of adaptive responses – both to cope with impacts and to make the most of opportunities. New Zealand can take advantage of the information in the report, but it will take a concerted effort from researchers and practitioners – the farmers.

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The authors of the Agricultural Outlook 2009-2018 concluded that agricultural research and extension can introduce new technologies that will enhance agricultural productivity, and so meet the increasing demand for food. They pointed out, however, that there are substantial risks that must be managed and investments that must be made in order to ensure future food security. These include the societal concerns about environment, intensive farming, use of genetic engineering technologies, and food quality, for instance, which will play a role in shaping the policies around agricultural production in the medium term.

These risks are already apparent in New Zealand, but research investment is decreasing and publicly-funded extension services are minor. The OECD-FAO report highlights what we already know: if New Zealand is to continue a first world lifestyle

based on food production, existing agriculture become more productive while also becoming more environmentally sustainable. This will take an increased research effort. It will also require rapid adoption by farmers and industry personnel. Achieving the appropriate system and processes will take work and government support. The leadership from the Prime Minister's Science Advisor, Professor Sir Peter Gluckman will assist.

With New Zealand's superb reputation for innovation in the agricultural sector, we can make the changes that the rest of the world can copy. The FAO-OECD report shows the way.

Jacqueline Rowarth, Director, Massey Agriculture, Massey University

Coming Up.....

Managing Climate Change (MC²) Conference

Wednesday the 18th - Friday the 20th of November, 2009; Massey University, Palmerston North
"Processes, Measurement, Modelling and Mitigation of Greenhouse Gases"
The programme comprises 2 half day workshops and about 70 conference papers

Conference website and registration: <http://mc2conference.com>

Future Food Farming – New Zealand Inc. meeting tomorrow's markets

A book to promote discussion and vision, is being launched on 23rd November, Massey University, preceded by a Forum.

Conceived by a journalist farmer, developed by a combination of academics, scientists, researchers, and business people. Edited by Alan Emerson and Jacqueline Rowarth and published by NZX with sponsorship from AGMARDT. Authors include Massey, Lincoln, AgResearch, HortNZ, Plant and Food, business (including Mark Weldon).

Note from the Executive desk

Many thanks to all those who have paid their membership subs promptly. No doubt those of you who haven't paid will have mislaid the invoice somewhere on your desk and will now remember to look again for it, as you will be keen to get the latest Proceedings from the Northland conference.

We are still looking for some changes of address. If you know any members who have moved or changed jobs it would be appreciated if you could remind them to send us a change of address.

Newsletters: As the cost of printing and postage continue to increase and in an effort to reduce our carbon footprint the Association would like to move to online newsletters only in the future. Currently we have email addresses for over 700 members and hope that we can increase that number.

Welcome to all of our new members who have signed up recently. We have had an excellent uptake since July with 56 new members. Hopefully we will meet some (many) of you at the conference.

Marie