

June 2009

## The Changing Face of NZ Farming

### Why Boom and Bust is not Working

#### Intro:

Climate change is an issue New Zealand farmers cannot ignore. It is already having a profound impact on our farming methods and the impacts will only intensify as the problem becomes more extreme.

New Zealand's agricultural sector is responsible for almost half of all our domestic greenhouse gas emissions (49 per cent), with the dairy sector by far the biggest contributor. One third of all agriculture's emissions are from nitrous oxide gas (from livestock urine, manure and artificial fertilizer use) and two-thirds come from methane, emitted when cows burp. Methane is an extremely potent greenhouse gas; 25 times more potent than carbon dioxide. But nitrous oxide is even more potent; 300 times more climate-damaging than CO<sub>2</sub>.



© Dean Sewell

New Zealand's agricultural emissions have already increased by 15 per cent since 1990. The dairy sector is responsible for this entire increase. Between

1990 and 2007 there was a 58 per cent rise in dairy cow numbers from 3.39 million to 5.28 million.<sup>1</sup>

Government figures project that the number of dairy cows in New Zealand will increase dramatically, by up to a further 21 per cent by 2010, to 6.4 million dairy cows.<sup>2</sup>

According to the Ministry of Agriculture and Forestry (MAF) some 455,000 hectares of forestry land is at risk of being deforested and converted into pastoral use – the majority for dairying.<sup>3</sup> This is equivalent to 910,000 rugby fields or over seven times the size of Lake Taupo.

The national forestry plantation estate is currently 1.8 million hectares. This means that over 25 per cent of the nation's plantation is at risk of being deforested to convert into mainly industrial dairy farming, without Government intervention.

Dairy conversion of forestry land functions as a 'double whammy' on the climate, as it destroys forests and replaces them with dairy farming which is one of the most greenhouse gas intensive forms of land use.

Under the Kyoto Protocol, New Zealand must buy credits to cover any increase in emissions over 1990 emission levels. A recent Sustainability Council report<sup>4</sup> estimated the likely cost to the New Zealand taxpayer of covering agriculture's increased emissions would be around \$1.3 billion; a direct subsidy to the sector.



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<sup>1</sup> MFE, Appendix A. Agriculture Emissions Projections provided by Ministry of Agriculture and Forestry, September 2007; Statistics New Zealand, 2007, Dairy Cattle Number in New Zealand as at 30 June, from 1971.

<sup>2</sup> MFE, Appendix A. Agriculture Emissions Projections provided by Ministry of Agriculture and Forestry, September 2007

<sup>3</sup> MAF, Area of forest 'at risk' from deforestation, August 2006, <http://www.maf.govt.nz/climatechange/forestry/ets/area-at-risk/page-04.htm>

<sup>4</sup> <http://www.sustainabilitynz.org/docs/TheCarbonChallenge.pdf>

New Zealand agriculture is, in fact, one of the industries most at risk from the effects of climate change in New Zealand. The drought of the late 1990's, for example, cost our economy \$1 billion. According to MAF, this year's drought in the Waikato cost the farming sector over \$1.24 billion, while Fonterra estimates the cost to dairy farmers alone will be over \$500 million.

Agriculture generates the bulk of our export earnings and has a reputation not only for quality products, but also for being clean and green. This image - along with the sector's economic sustainability - is under threat.

Consumers, in key overseas markets, are becoming more concerned with where their food comes from and the environmental impact of its production. Non-tariff trade barriers are a possibility. Agriculture in particular should be itching to get out in front of a new wave of opportunity fuelled by consumer concern over climate, and doing everything it can to corner and monopolize that high end of the market. Instead, the sector is following a kind of boom and bust cycle involving a high input, high output, and commodity-driven model.



Tried  
&  
True

Greenpeace wants New Zealand to be farming into the future and passing on truly sustainable, healthy farms to future generations. This is unlikely to occur, however, if we continue down the road of expansion, intensification and deforestation. This direction comes at proven environmental cost, and greatly increases the risk of economic damage by destroying New Zealand's clean and green image.

## Intensification, commoditisation and risk to market advantage

Over time, New Zealand's dairy sector has shifted from traditional and less intensive pasture farming to a more intensive model. This is having a huge impact on the environment, rapidly increasing greenhouse gas emissions, eroding the clean and green brand on which New Zealand agriculture is built, and lowering economic returns to farmers.

When farmers around the globe compete to produce the same commodity at the lowest possible price, that price invariably gets forced down. When that happens, consumption can jump, driving more demand and pushing prices up again.



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This cycle pressures commodity farmers to strive for ever-greater production, regardless of returns. Low profits put pressure on farmers to step up production through efficiency gains or expansion. High profits encourage farmers to protect any advantage by investing in production capacity.

This ceaseless quest for productivity – the “treadmill” as many farmers refer to it – has driven the intensification of the New Zealand dairy sector. Small farms, the stuff of rural communities, have all but been declared uneconomic; more than 4000 of them disappeared between 1994 and 2005 as they were subsumed into bigger units. There were 164 cows in the average dairy herd in 1990; today's farms run an average of 350, with some industrial-scale units milking 2000 cows.

Intensification brings problems of its own; the national dairy herd has burgeoned from under three million in 1984 to 5.6 million, and daily excretes sewage waste

equivalent to 78 million humans.

In 1990, a hectare of dairy pasture produced 351 kilograms of milk fat. In 2007, it produced 534 kg. That sort of increase doesn't happen without prodigious fertiliser use; application in New Zealand rocketed by 113 percent between 1986 and 2002 to 4.3 million tonnes. Nitrous oxide emissions have increased by 27% and now account for 16% of all NZ greenhouse gas emissions – more than total road transport emissions.

Other environmental impacts include polluted waterways and groundwater.

According to National Institute of Water and Atmospheric Research figures, 90 per cent of lowland rivers are polluted by farming, either with animal effluent, or fertiliser run-off.

Fonterra is the economic driving force behind the intensification of New Zealand dairy, but other key players are reinforcing unsustainable farming practices. Top of the list are the fertiliser companies, which are changing how farmers are working with their pastures. Essentially these companies are replacing a traditional reliance on legumes (such as clovers) to provide the pasture's main source of nitrogen, with a reliance on fossil fuel manufactured chemical fertilisers such as Urea. In adopting this high-input farming model, farmers are unwittingly creating a fertility time-bomb in their soils, The more fertiliser used, the more the natural sources of soil fertility are destroyed, and the more fertiliser you need each year just to maintain production levels for pasture growth.



The Greenpeace 'tried and true' dairy exhibit at the 2009 Fieldays, Mystery Creek. © Greenpeace

Allowing high numbers of stock to graze on degraded high fertilized soils produces much greater quantities of greenhouse gas emissions, and also damages soil, animal and pasture growth. Herds are also more prone to rumen

digestion problems and a host of other animal health/veterinary issues. Rumen digestion problems are directly linked to increased methane production.

The intensification of New Zealand dairy farming practices is also eroding the sector's advantage over international competitors when it comes to emissions performance. New Zealand has always prided itself on being ahead of the pack in this regard, with its traditionally low emission, energy efficient farming methods. But we're losing our edge. Reports indicate that even in the early part of this decade, low emission farming in Sweden and Denmark was already starting to draw equal to (and in some cases ahead of) New Zealand in terms of emissions performance – this is without 'food-miles' being taken account for our produce's transportation to Europe.



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More worryingly, New Zealand's dairy farming greenhouse gas emissions performance is becoming uncomfortably close to that of the UK. This increases the risk of future market erosion, particularly in light of UK supermarkets' push to implement "carbon lifecycle" labelling on products. As intensification of New Zealand dairy continues, the carbon footprint advantage that New Zealand dairy produce has historically held over the world is being lost; unnecessarily and to the detriment of future generations of NZ dairy farmers.

New Zealand now focuses more on commodity exports than finished dairy products. This increasing reliance on milk powder production for the international mass market, over and above traditional finished products of butter and cheese, risks undermining our brand image and our prime position in valuable markets such as the UK, EU and USA.

Tried and true branded dairy products are a key part of the solution to a stable economy and a return to a healthy environment.

To retain our clean green brand and ensure the longevity of the industry, we need to secure and return to branded products and move towards low input, smart farming practices.

### **UN report slams intensification; backs more traditional farming methods**

A five year scientific assessment of global agriculture was recently undertaken by multiple stakeholders including the UN and released in April this year.  
<http://www.agassessment.org/>

The report's findings slam intensive, high input based approaches to food production and find that traditional, holistic farming practices increase productivity and benefit communities.

### **Social costs of boom and bust dairying**

On top of the loss of thousands of jobs in the sheep and beef industry, partly thanks to a rush to dairy, hundreds more are losing jobs within the forestry sector (our third biggest export sector)

Landcorps clearing of 25,000 Ha of pines in the Central North Island last year saw hundreds of forestry jobs axed to make way for 10 corporate dairy farms that will employ only 30-40 people.

The clearance also destroyed birds' habitats, soil quality and drainage and prize hunting and fishing spots; to say nothing of what impact the cows will have on local water quality.

Graeme Hart, owner of Carter Holt Harvey also converted large swathes of his own forests (conservative estimates of 22,000 Ha) into corporate dairy – again at the cost of hundreds of forestry jobs.

In 2007, when dairy prices reached an all time high, Fonterra axed one in 10 employees, mainly in cheese factories.

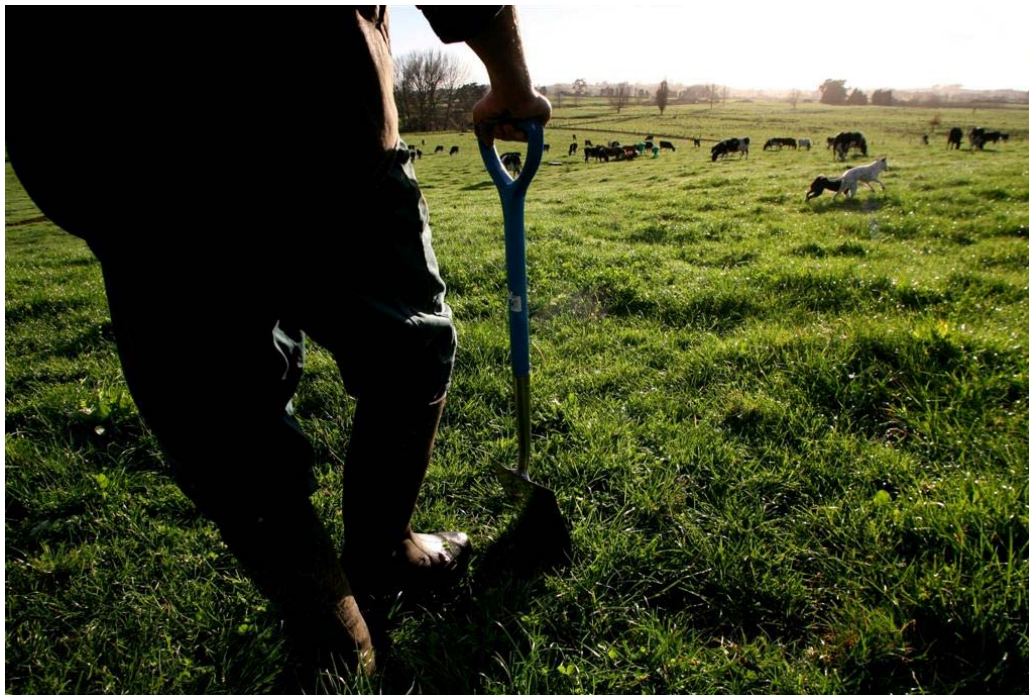
As Fonterra strives to consolidate and centralise its corporation, New Zealanders are losing out. Many hundreds of jobs have been lost:

- About 120 jobs were lost from Fonterra's cheese processing plant in Panmure
- about 100 jobs were believed to have been lost at its Palmerston North innovation centre
- there were also job losses at Eltham, Tirau and Lichfield
- About 120 jobs have gone at Fonterra's cheese processing plant in Dunedin
- about 60 jobs have been cut at the Tip Top plant in Christchurch

Meanwhile the growth and emissions output of milk drying factories continues to climb, with Fonterra factories churning through hundreds of thousands of tonnes of coal each year.

## Solutions

So what can be done? Well the good news is there are solutions that are not only better for the climate and the environment, but also good for farmers' bottom lines. Some New Zealand farmers have already cottoned on to this and a growing number are changing practices accordingly. Greenpeace is not saying "stop farming"; rather we're advocating a win-win way forward. It's smart farming, or what's known globally as '*bio-logical*' farming.



This bio-logical farm in Te Awamutu was not affected as severely as neighbouring farms during the Waikato drought. © Dean Sewell

Ironically, smart farming is about reverting back to more traditional farming practices. It's about less input, and better output. It's about cutting down on chemicals, cutting back on herd numbers and looking after soil so that pasture thrives and lasts. Generations of farmers have successfully used this method in New Zealand. In a way, it's time to go back to basics. This view was reiterated in the UN report mentioned on Page 3.

Bio-logical farming takes advantage of natural processes which promote good soil, healthy crops, and healthy animals. These natural processes include: best tillage methods; proper livestock manure use; promoting soil life; reducing compaction from overstocking of livestock; using rotational grazing to maintain pasture root health through leaving residual pasture cover, and balancing the soil's minerals through the use of soil conditioners. Essentially it's using natural systems to improve soil structure and pasture quality and to control weeds, pests and diseases.

To some degree, bio-logical farming involves farming the soil, rather than the pasture or herd. It encourages beneficial organisms in the soil. These organisms make the soil alive and fertile, which also feeds pasture forages. As one New Zealand bio-logical dairy farmer recently told the media: “If you look after the stock below the ground, they’ll look after the stock above the ground”.

Sounds too good to be true? Does it actually work? Yes. Lower stocking per hectare has indeed been shown to increase milk and meat production from each animal<sup>5</sup>. As well, lower costs for inputs such as fertilizers and the resulting reduction of expensive animal health problems allows farms to become more profitable and sustainable.

This was all outlined in a study by AgResearch<sup>1</sup>, which was based on studying different demonstration farms in New Zealand. It showed that intensification of dairying farming is detrimental to a farm’s eco-efficiency in terms of both milk production and land use functions, and can greatly reduce its greenhouse gas emissions advantage compared to European systems. The study found that milk produced and delivered per cow per year was highest under the ‘low input’ farming system.

The low-input system used no chemical nitrogen fertilizer and lower numbers of cows per hectare. This system also recorded the lowest impacts per kilogram of milk and per hectare for global warming potential, acidification, nitrogen contamination of water and energy use. The study also demonstrated that the low input system was the least risky, financially, for the farmer and more profitable when milk-price payouts were low - which was the norm from 1987–2006.

This will come as no surprise for New Zealand farmers, who have wondered why intensification on their farm has led to myriad problems and lower economic performance.

New Zealand is ideally positioned to lead the world on lower-emission pastoral farming – what are we waiting for? Greenpeace is calling for the farming sector and the New Zealand government to adopt and promote this type of farming, for the sake of the climate, the environment and generations of farmers to come.

For more information, go to [www.greenpeace.org.nz/smartfarming](http://www.greenpeace.org.nz/smartfarming)

Or contact Simon Boxer, Senior Climate Campaigner - +64 21 905579  
Or Kathy Cumming, Greenpeace Communications - +64 21 495216

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<sup>5</sup> Eco-efficiency of intensification scenarios for milk production in New Zealand, Claudine Basset-Mens, Stewart Ledgard, Mark Boyes, AgResearch Limited, *Ecological Economics*, In Press 2007.