



Fertiliser Matters

New Zealand Fertiliser Manufacturers' Research Association Newsletter

Fert Research Confirms Availability of Nutrient Budgets

The commitment to offer nutrient budgets to all farmers has been made possible by a decade long investment in research, training and product development by the fertiliser industry.

The member companies of Fert Research; Ravensdown Fertiliser Co-operative and Ballance Agri-Nutrients made this commitment earlier this year.

Nutrient budgets will enable farmers to use nutrients more efficiently; reducing fertiliser costs and losses to the environment. This will do more for the environment than any other single initiative that can be undertaken voluntarily by farmers. The ability to offer nutrient budgets to all farmers has been made possible by a number of ongoing initiatives.

The three most significant have been:

- The development of a computer model (OVERSEER) relevant to New Zealand conditions that evaluates existing nutrient levels in the soil, what is added, what leaves the farm by way of production and through losses, and what is left for future use.
- The ability of all member company field staff to use nutrient budgeting to evaluate their fertiliser recommendations and incorporate the outcomes into Nutrient Management Plans.
- The compulsory post graduate sustainable nutrient management course, through Massey University, for all fertiliser company field staff.

The companies have also undertaken to audit the fertiliser recommendations field staff make. Fert Research's members

see the move to nutrient budgeting by all farmers as the first step towards the eventual universal adoption of nutrient management plans by all farmers.

Both member company CEOs, Rodney Green of Ravensdown and Larry Bilodeau of Ballance, acknowledge that amongst at least 20 percent of farmers who have already taken up the offer, some have reduced the level of nutrients applied. When shown to be appropriate through nutrient management planning, both companies support a recommended reduction in inputs. In fact, fertiliser use by volume declined by a combined 13 percent overall in the 12 months leading up to the 2006 financial result announcements of both companies.

The groundwork for these three key initiatives was made possible by the millions of dollars invested in research by the fertiliser industry to better understand the relationship between nutrients, soil and plant growth, and developing New Zealand's unique 'effects based' Code of Practice for Fertiliser Use.

Fert Research's approach to sustainable farming starts from the premise that farming is a business, that economic and environmental sustainability need to work alongside each other and that individual farmers need the flexibility to apply farm-appropriate solutions.

Given the access farmers now have to

expert advice and relevant tools, potentially conflicting environmental and economic considerations can co-exist.

Fertiliser companies announce fertiliser use drop

The annual results of Fert Research's member companies – Ballance and Ravensdown have both shown a drop in fertiliser volume sales.

Overall, approximately 13% less fertiliser was purchased by farmers and growers in the 2005/06 financial year. This is the largest annual decrease recorded since subsidies were removed in the 1980s.

Fert Research's Technical Director, Dr Hilton Furness attributes this in part to the increased use of nutrient budgets and subsequent nutrient management planning.

He says: "With more fertiliser users undertaking nutrient budgets and increasingly, nutrient management plans, we are seeing a reduction in the level of nutrients applied. I am pleased both companies support a recommended reduction in inputs when shown to be appropriate through careful nutrient management planning."



editorial

by Dr Hilton Furness
Technical Director

Regulations are easy – effective change is hard

The decision by the fertiliser industry to offer farmers the option to operate a nutrient budget within the next 18 months will, in one stroke, significantly advance the cause of sustainable farming.

It will do more to ensure farmers use only the level of nutrients required to achieve production targets than any number of regulations promulgated by regional councils to limit fertiliser application.

The key reason for this is that working to a nutrient budget is a self imposed discipline, and a proactive action taken by the farmer to achieve a positive outcome.

Regulations on the other hand are an imposition, and while giving those that make them a sense of certainty, there is a real danger that regulations create a false sense of security.

This can be particularly true in relation to nutrient use.

Both councils and farmers want to reduce the loss of nutrients to the environment. Councils because they want to protect the environment; farmers because they want to prevent commercial wastage and also to protect the environment.

Restricting the amount of fertiliser applied to the land (input management) is tackling the challenge from the wrong end of the equation. The real answer is to minimise nutrient loss to the environment at the end of the production cycle (output management).

Nutrient budgets are the first step to achieving output management, with nutrient management plans the next step in the process. Restricting application levels does not achieve output management.

The fertiliser industry has spent more than ten years developing the tools that will enable farmers to operate nutrient budgets. This includes computer modelling, such as the OVERSEER software, and the post-graduate university level training of field staff to prepare and implement nutrient budgets and nutrient management plans.

Already, it is estimated that as many as a quarter of farmers operate a nutrient budget.

The industry is aiming for 100% use of these by dairy farmers by June 2007, and eventually for nutrient budgets, and accompanying nutrient management plans, to be used by all farmers and growers in New Zealand.

It would be major step backwards if regional councils ignored this massive investment in sustainable farming and the willingness of farmers to progress to output management.

Research shows that New Zealand farmers are far more prepared to make a real change in their farming practices if they can see the benefits of their actions – both financial and environmental – receive recognition for the changes they are making and believe the changes they are undertaking are practical and make a difference (see page 4).

In that, farmers are no different from any other business person.

In good decision making there is no place for rhetoric, or intransigence of viewpoint. We should examine the alternatives, and settle on the most effective way of achieving the end goal.

Minister challenges agricultural sector to collaborate

At a recent “Good for Growing” forum in Napier, Agriculture Minister Jim Anderton highlighted some key points for New Zealand farmers and environmentalists.

At the forum, organised by the New Zealand Institute of Agricultural and Horticultural Science, Anderton emphasised the importance of “strong collaboration and effective partnerships” between farmers and environmentalists being the key to success, by removing a ‘them and us’ attitude. He congratulated farmers who prioritise environmental matters, pointing out that the environmental aspect of New Zealand farming practices was becoming increasingly important in overseas markets.

Anderton outlined the continued importance of primary industries to New Zealand’s current foreign exchange earnings, and lamented that too few urban New Zealanders understand this. He also noted that innovation and increases in productivity in this sector have been substantial in the last 15 years.

In order for this pattern to continue however, he listed some “very real threats to our future prosperity that we cannot afford to ignore”. These included:

- a greater awareness of the issue of “food miles” in Europe
- a greater demand for sustainable farming practices by overseas customers
- current New Zealand agriculture and horticultural practices where the environmental impacts can be reduced further
- a minority of primary producers not acknowledging the environmental impacts of their practices

Not addressing these issues will result in loss of export market earnings for the whole sector – not to mention compromising the natural resource base of New Zealand in the future.

As part of this, the Minister stated that he will unveil detailed policies on water catchment management and sustainable land management to meet New Zealand’s climate change and water quality goals within the next few months.

What are...

Nutrient budgets and nutrient management plans are often discussed – but do we really understand the difference between them? Below is a guide to each.

Nutrient budgets

A nutrient budget enables a farmer to estimate both inputs to the farming or growing system, and the anticipated outputs. This can help a farmer see whether or not the nutrients applied are being used efficiently, in other words, is the fertiliser investment judicious.

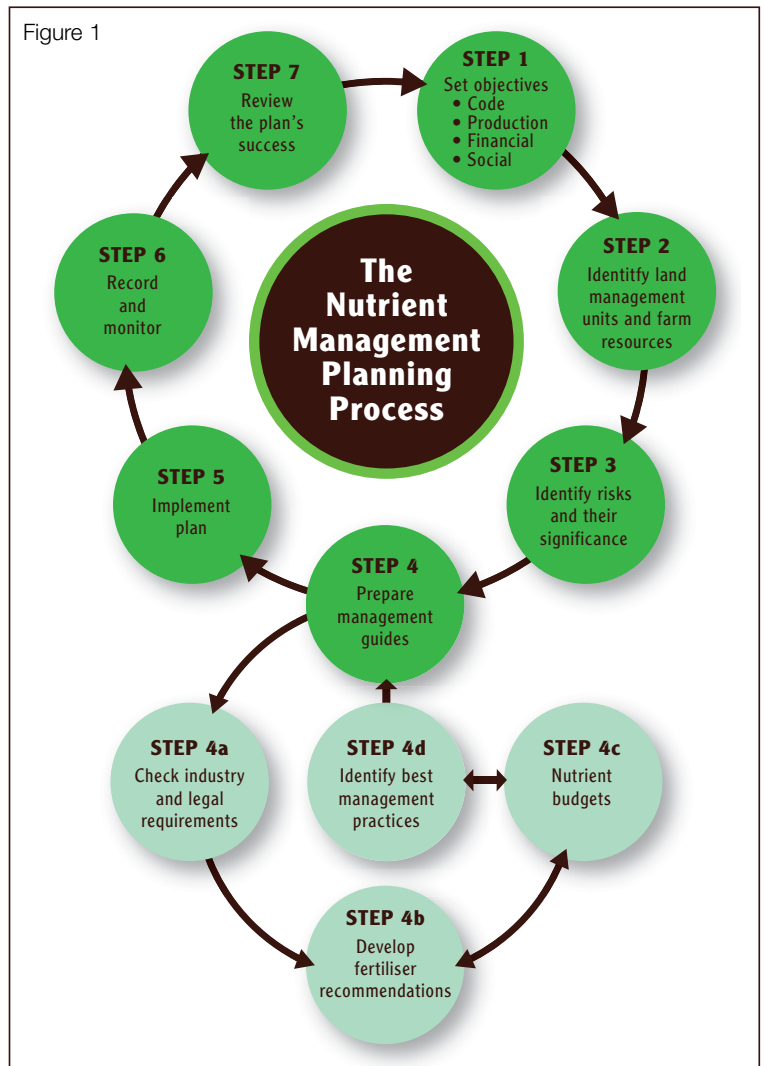
Nutrient management plans

A nutrient management plan provides a broader 'whole farm' picture than a nutrient budget and is far more holistic in its approach. It is generally a written plan, prepared with assistance from a trained fertiliser adviser, which describes how the major plant nutrients (nitrogen, phosphorus, sulphur and potassium, and any others of importance to specialist crops) will be managed. In suggesting management options, the nutrient management plan aims to maximise production and profit value from nutrient inputs while minimising losses to, and impacts on, the environment. See Figure 1 for an overview of the nutrient management planning process.

A good nutrient management plan...

- ensures that nutrient management meets all legal and industry requirements
- includes a nutrient budget which compares nutrient inputs from all sources with total nutrient outputs
- achieves desired changes in nutrient levels and production (e.g. increasing soil fertility from a poor base to support a higher stock carrying capacity; altering soil nutrient status to suit future crops)
- minimises the cost of supplying nutrients and avoids wasted spending on unnecessary nutrients
- minimises the risk of loss to the environment
- considers the farmer or grower's personal objectives

Figure 1



The new Code of Practice for Fertiliser Use due out in early 2007 will include a step-by-step nutrient management planning template.

Total Diet Survey assures food safety

The 2003/2004 Total Diet Survey results were announced by the NZ Food Safety Authority earlier this year.

The focus of the Survey is to assess people's dietary exposure to chemical residues, contaminant elements and selected nutrients from about 120 representative foods across the average diet of different age and gender groups. The findings are then measured against those from previous years' surveys.

In the latest results, the data for our cadmium intake is particularly interesting.

Oysters are by far still the largest single source of cadmium in the diet followed by potatoes, bread, mussels, carrots and wheat biscuits.

Cadmium is a naturally occurring heavy metal that enters the food chain through grazing animals or plant uptake. The application of phosphate fertilisers have increased the level of cadmium in the soil over the past 100 years.

The Survey shows that for all age and gender groups the estimated weekly dietary exposure to cadmium is well below

the Provisional Tolerable Weekly Intake. Estimated intake levels have fallen since the 1990/91 survey, even when including oysters in the simulated typical diet. When oysters are excluded, the trend of declining cadmium intake is even more significant in the 90/91, 97/98 and 2003/04 data. This trend towards reduced cadmium dietary intake is presumed to be due to changes in dietary consumption and a reduction in the cadmium concentrations in staple foods.

AgResearch surveys farmers' attitudes to change

Recent research by AgResearch, presented at the New Zealand Institute of Agricultural and Horticultural Science's recent "Good for Growing" conference in Napier, outlines why some farmers are not keen to change their farming practices despite mounting pressure to do so.

The research unearthed some surprising responses to change, especially in an area where the expectation to adopt sustainable farming practices in order to protect extensive natural resources, receives substantial attention.¹

During a series of personal interviews and workshops, farmers were asked questions which covered:

- what they thought about nitrogen and phosphorus entering lakes, research in the catchments and changes to policy and farming practices
- what they currently do about nitrogen emissions
- what future position they want to be in
- how they view new environmentally friendly land management practices and technologies

In general, farmers listed the following six on-farm practices as ways to improve impacts on water quality:

- nutrient budgeting (although the use of this was not widespread)
- riparian strips (use encouraged by financial incentives)

- decreased fertiliser use (encouraged by cost savings rather than emission control)
- erosion prevention (use encouraged by cost savings rather than emission control)
- destocking (use encouraged by cost savings rather than emission control)
- shelterbelts (use encouraged by financial incentives)

Many farmers outlined the importance of the land and the natural environment, and the need to protect it, with long-term plans in place to acknowledge this. As part of this, there was generally a high level of awareness about environmental issues, with most farmers applying some of the practices covered above to address these issues.

Although farmers acknowledged the reasons, needs and pressures to change, this wasn't sufficient to create substantial changes in practice for most. Three key barriers to adopting new technologies to reduce environmental impacts were:

1. Cost. Short-term economic drivers were identified as being more important to farmers than long-term environmental protection drivers. There are often significant increased costs associated with changing practices and technologies, without any obvious benefits to each farmer in the near future.

2. Compatibility. This is a problem when the changes/new technologies recommended are not compatible with the current systems used on-farm and are therefore seen as not adoptable.

3. Conviction. Not believing that any new technology or change in practice will actually reduce outputs.

The outcomes of this research provide valuable insight for promoting and adopting new techniques and technologies for environmentally sustainable farm management into the future.

1. Botha, N., Parminter, T and Roth, H. (2006) Changing farming practices in the Taupo and Rotorua catchments. "Good for Growing" Forum, 5 September 2006, Napier, New Zealand.

Decision support systems developed for hill country fertiliser use

Development of a model to aid in scientific recommendations for dry hill country fertiliser applications was funded by Fert Research and developed by AgResearch.

The model is a decision support system for differential fertiliser application, enabling strategic and selective fertiliser application to better match anticipated pasture response on hill country. Part of the research involved a three year evaluation of the lime component – looking at a combination of aspect, slope and application rates.

Fert Research's member companies have recently trialled and evaluated the model which will be used by field staff in future.



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