



Fertiliser Matters

New Zealand Fertiliser Manufacturers' Research Association Newsletter

Europeans prove Nitrogen fertiliser tax futile

An analysis of European research and a review of fertiliser use on New Zealand farms show that one of the options for reducing agricultural emissions put forward in the Government's Sustainable Land Management and Climate Change options paper – that of imposing a charge on nitrogen fertiliser – is futile.

The options paper suggested that a 10 percent increase in the price of nitrogen fertiliser "might reduce nitrogen fertiliser use by up to 10 percent".

A recent analysis* of European research and experience reached the conclusion that "over the last 20 years in Europe, the price of nitrogen fertilisers has weakly influenced its consumption trends".

It found in those European countries that introduced taxes, no major change in use occurred (with 'perhaps' the exception of Austria), even though the taxes imposed ranged between 3 percent and 70 percent of the fertiliser's price.

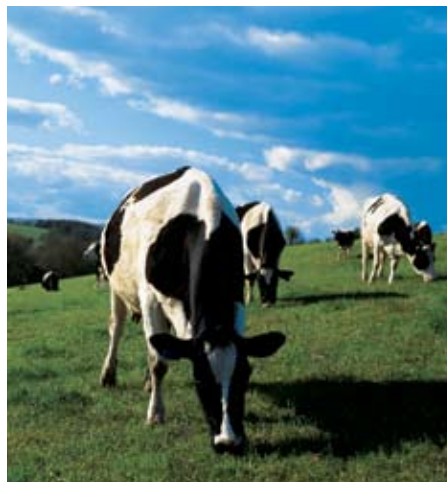
The analysis also found there was no discernable difference between usage patterns between countries with, and without, taxes.

The research reported that "fertiliser demand was more sensitive to agricultural output demand than its own price".

They concluded that taxation was unable to reverse the pull of agricultural production.

A simple comparison between nitrogen fertiliser use, and the cost of that fertiliser to New Zealand farmers, supports the European finding that a nitrogen fertiliser tax would not produce a marked change in consumption.

In New Zealand, industry data on Urea use vs. Urea price over a 10 year period indicate price increases of more than 10 percent have not been accompanied by a decline in Urea use.



This is supported by the observation of New Zealand's two major fertiliser co-operatives, which are of the view that there is a closer correlation between Urea use and production, than between Urea use and its price.

Recent industry reports have noted a rise in the international phosphate rock price of 50 percent and a doubling of sulphur prices in the last six months. In addition, the cost of nitrogen fertiliser to New Zealand farmers increased significantly as a consequence of international demand increasing prices, and this is expected to have only a limited impact on usage.

The European researchers concluded the taxing of fertiliser inputs in an attempt to address outcomes of fertiliser use was not an effective way of addressing adverse effects.

The strategy of focusing on desired outcomes rather than limiting inputs to change behaviour is an approach Fert Research has been advocating for a decade. Tools such as the OVERSEER Nutrient Budget model, when used in conjunction with site specific nutrient management plans and *The Code of Practice for Nutrient Management*, gives

farmers the means to manage nutrient use in a sustainable way.

In Fert Research's submission to the Government on its Climate Change options paper, the Association strongly advocated focusing on addressing effects.

* F Bel, G D d'Aubigny, A Lacroix and A Mollard. (2004) Fertiliser taxation and regulation on nonpoint water pollution: a critical analysis based on European experiences. *Int. J. Water*, vol 2, no 4, 2004, pp 247-266

Inside



editorial

by Dr Hilton Furness
Technical Director

Farmers expect government to get it right first time

As we draw closer to decision time for the role agriculture plays in reducing greenhouse gas emissions, the failure of the European experiment of taxing nitrogen fertilisers (page 1) should be seen as a pertinent reminder of the need to get things right.

The Europeans started from the theoretical premise that if you increase the price of nitrogen fertiliser, then farmers will use less.

The results demonstrated that in reality, price as a trigger did not work the way the computer models, theorists and economists said it would.

Even more disappointing to the theorists is that the fall-back position of, "even if it doesn't work, any reduction in nitrogen use will be good for the environment" does not stand up. The European researchers noted that, "some studies have shown that a decrease in nitrogen fertiliser use only had a limited impact on water quality."*

This is a finding that needs further investigation.

Fert Research has always been a strong advocate for farming practices based on best management practices, and is working with Government to achieve that end. We remain committed to sustainable farming, and believe we demonstrated that in our submission on the climate change options.

However, we are firmly of the view that before changes are introduced we must spend the time necessary to get those measures 100 percent right, not half right.

Some European countries have wasted 20 years applying a tax that in practice has proved to be futile in achieving its stated intention.

A suggestion sometimes heard around Wellington is that regardless of whether an initiative will work, there will be value in moving to 'interim measures' initially while longer term answers are developed and agreed.

That misses a fundamental point. Farmers will be 'compelled' to adopt measures that contribute to sustainable land management and lessen the impact of climate change. If the Government wants buy-in at the farmer level, then farmers have the right to know what they are being asked to do, what price they will have to pay, and that their actions will make a real difference.

A good example of farmers' making positive changes – financially and environmentally – is the impressive uptake of nutrient budgets.

Virtually every dairy farmer is now operating a nutrient budget. Part of the motivation for this is undoubtedly the commitment to do so under Fonterra's *Clean Streams Accord*.

Just as compelling, however, was the work of fertiliser company technical field staff who demonstrated to dairy farmers the financial gains that can be made from using nutrient budgets. This means farmers evaluate their nutrient use and can use those nutrients more efficiently by decreasing losses and incorporating more into their produce.

Belief that what you are doing is worthwhile, and effective, is a far greater motivator than being forced to comply with actions or rules in which you have little or no faith.

* F Bel, G D d'Aubigny, A Lacroix and A Mollard. (2004) Fertiliser taxation and regulation on nonpoint water pollution: a critical analysis based on European experiences. *Int. J. Water*, vol 2, no 4, 2004, pp 247-266

2007 Code of Practice for Nutrient Management

The recently launched Code of Practice for Nutrient Management is available online at www.fertresearch.org.nz as a fully searchable document, or it can be downloaded as a PDF. The nutrient budget template in the Code is free, easy to use, and recommended for farmers as part of the whole farm nutrient management planning process.

For people who require a hard copy of the Code, it's simple to download and print from the Fert Research website. We have a very limited number of hard copies if you don't have access to an internet connection – these are printed or available on a CD.

Call Fert Research on 09 415 1357 to discuss availability.

Nutrient budgets destined to become standard reference

More than 98 percent of dairy farmers have completed a nutrient budget for their farm, according to industry data.

Fonterra undertook to achieve nutrient budget uptake under its Market Focussed programme and as part of the Clean Streams Accord, and the member companies of Fert Research: co-operatives Ballance and Ravensdown, provided the technical support and people-resource to make it possible.

For dairy farmers, achieving this goal represents a major step down the path of practising better sustainable nutrient management.

With a nutrient budget, a farmer is in a position to examine three major aspects of nutrient use:

- A nutrient budget provides the farmer with a quick measure of how efficiently nutrients are being used. It provides the basis for the farmer to engage their fertiliser adviser in a discussion as to options, alternatives and different approaches.

- It is a warning to the level of any nutrients being lost to the environment. It points to whether there is a problem, and if there is one, provides the motivation to act.
- The third benefit comes from evaluating increased efficiency gains against cost.

It would be unrealistic to suggest that the nutrient budget prepared for every dairy farmer is as accurate as it could be, or that every dairy farmer will use the information now in their possession to its full advantage.

What has been achieved is the means to take the next major steps forward. This includes progressively updating and making nutrient budgets more accurate, farmers and fertiliser advisers analysing the information at their disposal and making management decisions based on that data, and working towards developing a whole farm nutrient management plan.

The real benefit of using a nutrient budget can be seen in the highlighted example

of the shaded column (Nitrogen) of the table below. Looking at the 'N' input, and comparing it with the outputs, a farmer can begin to make decisions on how to, for example, better utilise nitrogen so more goes into the product and less is lost into the system. Analysing this example in detail shows that of the total nitrogen input:

- 40% goes into the product
- 26% is attributed to on-farm transfer
- 10% is immobilised
- 24% is output to the atmosphere and leaching/runoff combined.

In this case, understanding the balance between inputs and outputs now enables the farmer to develop a plan that reduces the losses and increases the proportion and efficiency of nutrients incorporated into product; milk solids.

Fert Research is confident that in the coming years nutrient budgets will become a standard reference document when farmers and fertiliser advisers plan the season's nutrient requirements.

Nutrient budget for Block 1 – OVERSEER example

(kg/ha)	N	P	K	S	Ca	Mg	Na	H*
Inputs								
Fertiliser	66	60	63	56	97	19	0	-0.5
Effluent Added	0	0	0	0	0	0	0	0.0
Atmospheric / clover N	179	0	4	8	6	13	80	0.0
Irrigation	0	0	0	0	0	0	0	0.0
Slow Release	0	3	21	0	0	0	2	0.0
Supplements	34	6	38	3	31	18	12	-1.5
Outputs								
Product	112	20	25	7	28	2	7	-1.0
Transfer	73	8	66	6	15	8	3	-1.6
Supplements removed	0	0	0	0	0	0	0	0.0
Atmospheric	37	0	0	0	0	0	0	-0.1
Leaching/runoff	31	3	28	55	31	9	58	-2.3
Immobilisation/absorption	26	35	0	0	0	0	0	-0.1
Change in inorganic soil pool	0	3	7	0	61	32	26	3.1
* acidity (affects lime requirements)								

This table represents an actual Overseer Nutrient Budget for a typical farm block.

1. N,P,K and S are the inputs of fertiliser, supplements and N fixed by clover, and are available for the production cycle.
2. These outputs show losses (leaching/runoff), minimal accumulation (immobilisation/absorption) and very little soil change (inorganic soil pool) from the four major inputs.
3. The supplements, such as silage, contribute to slowly increasing soil calcium and magnesium concentrations (3a).

Farmers making a difference in Rotorua

Lake Rerewhakaaitu is a shallow lake near Rotorua with land use in the catchment dominated by dairy farming. In 2004 the local farmers initiated a project to reduce the impacts of farming on the lake and surrounding catchment area.

During its three years, the project aimed to identify ways to minimise the environmental impact of dairying on the lake's water quality, while ensuring sustainable and profitable farming.

Nutrient management software tool, OVERSEER® was used by the farmers to address farm runoff and leaching by estimating and understanding the potential impact of different management options.

As a result of the three year project, changes made within farming systems, that provided environmental benefits, were inexpensive and practical and did not reduce farm production.

Key changes to management practices included:

- Reduced nitrogen and phosphorus fertiliser inputs – especially on the effluent block
- Accurate measure of effluent application areas, and increase in size of the effluent block

- Effluent block was monitored and managed separately
- Optimum soil Olsen P levels were targeted with mitigation options introduced to avoid high phosphate levels in runoff
- Autumn and winter fertiliser applications (with a high risk of leaching/runoff) of nitrogen and phosphorus were stopped – without any obvious reduction in pasture growth
- More maize silage was introduced as a low nitrogen feed alternative to late autumn/winter applications of urea
- Soil sampling was conducted more regularly (1–2 years rather than every 5 years).

Additional management practices recognised as options for reducing nutrient losses included:

- Stand off pads to reduce the time stock spent on fields which contributes to pugging damage and nutrient leaching in winter
- Introduction of cut and carry strips, particularly on the effluent blocks to 'harvest' and transfer nutrients
- Careful management of intensive stocking rates on summer fodder crops – due to its potential for high nitrogen leaching losses.



The Overseer Nutrient Budgets model is a tool to examine the impact and flow of nutrients within a farm (received as fertiliser, effluent, supplements or transfer by animals). The model is based on science and uses New Zealand research results.

The next version of Overseer is scheduled for release in December 2007, and includes mitigation options for nitrogen management, such as nitrification inhibitors, riparian plantings, wetlands, and improved winter management of livestock.

Overseer is available free from www.agresearch.co.nz/overseerweb

The Lake Rerewhakaaitu project was funded by Fert Research, MAF Sustainable Farming Fund and Environment Bay of Plenty. Science and technical support was provided by AgResearch, Environment Bay of Plenty and Bay of Plenty Farm & Pastoral Research. Other participants were Fruition Horticulture, Dairy Insight, Landcare Research and Geological and Nuclear Sciences.

Heavy fine for making false fertiliser claims

Companies that misrepresent the effectiveness of products as fertilisers have been given a timely warning 'to beware' by the Commerce Commission and the District Court.

In June, Probitas was fined \$272,500 for 'misleading the public' in making claims as to the benefits it offered as a fertiliser.

The Commerce Commission successfully challenged those claims in Court.

In announcing the decision, Chair of the Commerce Commission, Paula Rebstock said, "It is critical farmers can trust the

claims made about fertilisers and need to know that they are getting what they are promised."

The Court was told it was estimated that production losses of \$5 million could be attributed to the use of Probitas in one year.

Fert Research has been a long time supporter of the *Fertmark* quality assurance scheme. *Fertmark* validates the nutrient

values claimed for products, and ensures advertising and marketing claims can be upheld.

Fert Research encourages farmers to only buy nutrients that carry the *Fertmark* seal of approval.

For more information on quality assurance schemes; *Fertmark* and *Spreadmark*, visit www.fertqual.co.nz



New Zealand Fertiliser Manufacturers' Research Association
Suite F Building E, 42 Tawa Drive, Albany 1331, New Zealand
Telephone 09 415 1357 Facsimile 09 415 1359 Email info@fertresearch.org.nz
www.fertresearch.org.nz

THE CONTENT OF FERTILISER MATTERS IS COPYRIGHT TO FERT RESEARCH. THE CONTENTS MAY BE FREELY USED PROVIDED ACKNOWLEDGEMENT IS GIVEN TO: FERT RESEARCH'S FERTILISER MATTERS