Issue 42 November 2007

Fertiliser Matters

New Zealand Fertiliser Manufacturers' Research Association Newsletter

Providing the tools to address climate change

Nutrient budget software model Overseer could become central to the Government's emissions trading scheme. Overseer was included in the recent climate change announcements as a possible monitoring tool, showing the support the model is getting at a very high level.

FLRC consultant Linda Yates discussing Overseer options with a farm manager

Increasing nutrient use efficiency and managing on-farm nutrient losses are a vital part of a farmer's job, and is a priority for industry and government. For many years Overseer has been part of the fertiliser adviser's tool kit, and increasingly advanced versions are being developed.

The Government includes Overseer in its 'Investment Initiatives' for Monitoring and Measuring Farm Emissions and Mitigation. It includes Overseer as a key initiative where its upgrade will, "bring about better estimation of emissions and improve the effect of some mitigation methods at farm level."*

With Fert Research representing the fertiliser industry as the Government develops the trading scheme options for agriculture, the use of Overseer is likely to become more widely adopted and an integral part of our agricultural future. Overseer is a tool that will allow farmers to adapt their farm management and nutrient use to this future.

The climate change solutions website can be viewed at: www.climatechange.govt.nz

** Government Investment Initiatives under the Plan of Action, Monitoring and Measuring Farm Emissions and Mitigation, September, 2007.*

About Overseer

Overseer™ is a software programme for modelling nutrient flows and is based on New Zealand science. It is regularly updated using the latest scientific findings. It was developed some years ago by three co-founders – MAF, Fert Research and AgResearch. Software updates are developed by AgResearch incorporating research results, funded in partnership with MAF and Fert Research.

The member companies of Fert Research use an econometric version of Overseer when making fertiliser recommendations, which incorporates the financial component of fertiliser use. A post-graduate level training course in Sustainable Nutrient Management has been developed and is being implemented through the Fertilizer and Lime Research Centre (FLRC) at Massey University. An advanced course further extends their expertise and education. The courses use Overseer for determining nutrient budgets and understanding nutrient management plans.

Current research will be incorporated into the model by the end of this year including environmental mitigation options.

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

Inside

editorial

by Dr Hilton Furness
Technical Director

Agriculture required to pay its carbon dues too

Contrary to the claims being made by some urban business leaders, think tanks, lobby groups and commentators, agriculture has not been let off lightly by the Government delaying its entry into the climate change emissions trading scheme until 2013.

Agriculture faces unique challenges in terms of climate change emissions, and the Government has listened to farming leaders and accepted the case put forward for an acceptable phase-in period.

Also, the major manufacturing sectors of agriculture such as fertiliser production and meat and milk processing will come into the scheme as early as 2010.

Agriculture will be paying part of its dues well before 2013. It is aspects such as the greenhouse gas emissions associated with belching cows and urine patches that has been given a longer phase-in.

Some have estimated that by 2013 agriculture will have to reduce greenhouse gas emissions by some 9 million tonnes to get back to 1990 levels. At even the modest cost of $15 a tonne, failure equates to a bill of around $135 million.

As the countdown for the phased in entry to the trading scheme commences there will be the inevitable debates around issues such as “whether we need to, let’s be followers rather than leaders, future Governments – regardless of their political makeup – will change their position, or that a US led initiative will replace Kyoto”.

What no sector – agriculture included – can allow, is for the debate to create a mindset that leads to inertia. Whether we are climate change ‘believers’ or ‘skeptics’ all sectors need every moment of their phase-in period to get prepared.

For its part, the fertiliser industry is committed to accepting responsibility for being able to deliver on its contribution, and within agricultural forums we will advocate others also do the necessary preparatory work.

Within its emissions trading scheme initiatives, the Government has high ambitions for the Overseer programme, which can be used to monitor greenhouse gas emissions.

What is not well known is that along with MAF and AgResearch, the fertiliser industry is a co-owner and developer of Overseer, and has been closely involved in research funding, field testing and input from scientists and industry since its initial development.

In association with Massey University we have also developed a training course which uses Overseer. Every technical field representative employed by member companies of Fert Research is required to complete this course.

Without Overseer, the ability to determine greenhouse gas emissions is limited.

Through Overseer and the expertise of fertiliser technical field staff, all farmers now have the ability to operate nutrient budgets and nutrient management plans and in the near future Overseer will include mitigation options such as nitrification inhibitors, wetlands and riparian strips. Such tools will be of great benefit to farmers as they move to meet their obligations.

In other initiatives we have already tabled with Government the industry’s preparedness to act as a ‘point of obligation’ for emissions, and are committed to exploring how an emissions trading scheme as it relates to fertiliser use could work, including a cost/benefit analysis.

The phase-in periods for all sectors will pass very quickly, and the fertiliser industry at least is determined to be prepared to play its part – whatever form that takes, at whatever date it is required.

Greenhouse gases and animal agriculture

New Zealand is hosting the international Greenhouse Gases and Animal Agriculture conference, with a theme of “developing livestock systems for greenhouse and productivity benefits”. Sponsored by the PGGRC, AgResearch and Meat & Livestock Australia, the late November gathering in Christchurch aims to provide the information that industry and governments need to achieve cost-effective greenhouse gas mitigation outcomes.

Greenhouse gases and mitigation strategies have long been of interest to Fert Research. The Association is therefore pleased to confirm its continued support of the PGGRC for the next five years. This support will be through funding, involvement in specific projects and active participation on the Board.

Visit the news section of www.pggrc.co.nz for more information.

Enterprise Scholarships develop science leaders

PhD project results establish new science

The Enterprise Scholarship scheme facilitates a partnership between business and New Zealand tertiary students whose study has a significant research component.

Fert Research has participated in the Enterprise Scholarship programme by sponsoring PhD students for some years. The aim is to develop the student's agriculture capability and support new science with a goal of improving efficiencies in nutrient management. This will also aid in developing New Zealand's agricultural resources.

Two Fert Research sponsored projects have recently been completed. Described as 'ground breaking' both were supervised and managed by the New Zealand Centre for Precision Agriculture at Massey University.

Hayden Lawrence looked at the *"Adoption of Precision Agriculture Technologies for Fertiliser Placement in New Zealand"* and Rob Murray's research focussed on *"Variable Rate Application Technology in the New Zealand Aerial Topdressing Industry."*

Both developed methodologies for identifying and measuring efficiencies and economic impacts of fertiliser spreading variability and have achieved international recognition with presentations in Florida, USA, and Montoldra, France, and featuring in a range of high calibre publications.

Areas for further development and improvement were identified through the research. These include incorporating the use of digital technologies, global position systems (GPS) and geographical information systems (GIS) into fertiliser placement and spreading.

Over the past 10 years, Fert Research has supported the completion of seven PhDs and one Masters project, with two PhD projects in progress:

"Flow of particulate matter from a topdressing aircraft"
– Miles Grafton

"Understanding of nutrient transfers by livestock to improve fertiliser advice and reduce negative environmental impacts"
– Ina Draganova

More information about these and other projects funded by Fert Research can be found at www.fertresearch.org.nz.

The New Zealand Centre for Precision Agriculture is online at www.nzcpa.com

Wise use of N on hill country

In an effort to understand environmental and production issues related to increased use of nitrogen fertilisers on hill country farms, the Wise Use of Nitrogen on Hill Country Trials have been supported by Fert Research for some years.

The project consists of two parts. First, on-farm monitoring of fourteen sheep and beef focus farms represents a range of different farming enterprises over a wide geographical area. Secondly, scientific investigation into production efficiencies and environmental impacts continues on the AgResearch Research Stations, Invermay and Ballantrae.

Earlier this year representatives from farming communities, agricultural industry groups, regional councils and environmental groups reviewed project outcomes.

During the three years of the focus farm programme there were substantial economic changes which influenced farm management decisions; in particular, a decline in the price for lambs and a substantial increase in the price of nitrogen fertiliser. Annual and seasonal variation in pasture responses contributed to some outcome uncertainty.

However, key lessons were learned for successful on-farm management, including:

- Careful technical planning
- Close monitoring of pasture responses
- High level of experience in pastoral farming
- Good feed budgeting skills
- Good stock management
- Access to a network of consultants and specialist advisors

Some examples of successful strategic use of nitrogen on hill country farms included:

- Use on finishing areas where carefully targeted applications could be justified economically
- Filling feed gaps experienced due to extraordinary seasonal variation
- Establishing new pasture

On research farms where increased stock numbers are combined with high fertiliser use, the leaching losses and the benefits of mitigation technology continue to be evaluated.

More detailed information on individual farm experiences and research reports can be found at www.wisenuse.co.nz

IFA International Crop Nutrition Award

2008
APPLICATIONS OPEN

IFA is calling for applications to its 2008 Crop Nutrition Award.

Any individual researcher involved in crop or soil science is eligible. Applications are due by 15 January 2008. The candidates will be judged by an independent selection panel on the basis of research quality, originality and practical application.

The recipient of the Award will receive 10,000 Euros and will be invited as a guest to the IFA Annual Conference in Vienna, Austria, in May 2008. The recipient will also be sponsored to participate in one international conference.

The Award alternates each year between scientists based in developing countries and researchers from international agricultural research and development centres (IARDCs) and developed countries. The 2008 Award is for scientists from IARDCs and developed countries.

Visit www.fertilizer.org for more information.

Chinese researcher receives 2007 award

Over the last thirty years, fertiliser use in China has grown rapidly. However, information on how to use fertilisers wisely has not spread as quickly, leading to low nutrient use efficiency and related unwanted environmental impacts.

Fusuo Zhang received the 2007 IFA International Crop Nutrition Award for his pioneering efforts to correct excessive and inappropriate fertiliser use in China.

The nutrient management research directed by Fusuo Zhang, who was selected to receive the 2007 IFA International Crop Nutrition Award, has provided innovative approaches to help correct these problems.

Professor Fusuo Zhang is Dean of the College of Resources and Environmental Sciences at China Agricultural University.

His research is of interest and relevance in New Zealand as we increasingly import food ingredients and finished food products from countries such as China, to supplement local production or provide ingredients not available here.

Since 1998, Professor Zhang's work has concentrated on the development of optimised nutrient management techniques for high-yield and high-efficiency crop production. This method involves better matching of applications to crop nutrient requirements by taking into account all sources of nutrients. His approach involves nutrient budgeting, dynamic monitoring of nutrient concentrations in the root zone (rhizosphere) at different points in the growth cycle, real-time soil testing and plant analysis.

Fert Research communicates best management practices on the international stage

Fert Research presented at conferences in July and August, and has recently had an item published in IFA's *Fertilizers & Agriculture* newsletter.

IFA (the International Fertilizer Industry Association) prepared a special issue focusing on fertiliser best management practices (FBMPs). The *Fertilizers & Agriculture* newsletter was released at the 4th International Nitrogen Conference (October 2007) and will also be part of the information used in the 2008-09 cycle of the United Nations Commission on Sustainable Development.

Greg Sneath, Technical Manager presented "The Code of Practice for Nutrient Management" at the NZ Groundspread Fertilisers' Association Conference in Christchurch at the beginning of July, with a theme of "Working Together Safely."

And, in Australia the annual Fertiliser Industry Conference in Queensland featured Dr Hilton Furness presenting "International Experience, Nutrient Best Management Plans, and product Stewardship" in August. Key issues addressed at the conference were Environment and Food Safety, Quarantine, Markets and Application, with a focus on policy and strategy.

Fert Research

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