



Fertiliser Matters

New Zealand Fertiliser Manufacturers' Research Association Newsletter

World population growth and growing affluence drive up fertiliser prices

Local agriculture has been rocked in recent months by the unprecedented increase in the price of fertilisers, with superphosphate more than doubling in the past 12 months to around \$470 a tonne and urea prices creeping close to \$1000 a tonne.

Nor is there any early end in sight to higher prices, with both the country's major fertiliser co-operatives warning that further increases in prices are likely.

Superphosphate availability in some regions was also tight towards the end of autumn.

World fertiliser prices have been increasing since 2004, and started to rise sharply in 2007.¹

An insight into what is driving these price increases, and a good understanding of where supply, and hence prices, are likely to track over the coming five years can be found in a recently released report entitled, *Current world fertiliser trends and outlook to 2011/12*, prepared by the United Nations Food and Agriculture Organization (FAO).²

The report says the cause of the increases is the world-wide demand for more food and primary products, the growing affluence of developing nations and biofuels.

The report acknowledges that while the world's population growth has slowed significantly to around 1.1% a year, given the huge population the world now supports this still results in the global population increasing at between 50 and 70 million people annually.

This requires a significantly higher level of food and fibre to feed and clothe the world's population, before even starting to tackle the need to increase the daily food requirements of an estimated 830 million 'undernourished' people.

At the same time, it notes the income and dietary changes taking place in developing countries has seen a move away from staples such as cereals, roots and tubers to diets containing more meat products, vegetable oils, fruits and vegetables.

The role of biofuels on food production is both direct and indirect, in that biofuels use productive land and nutrients for a non-food end use, and also decrease the volume of food available for humanitarian aid. According to the UK Guardian,³ the United Nations estimated in February that biofuels can explain 30% of the recent increase in food prices and that a third of the world's corn crop goes to making biofuels.

These are trends which have been with us for some years. The FAO says they have finally combined to cause an explosion in food and fertiliser prices. Farmers worldwide have chased soaring returns from food production by seeking

to increase output, and to replenish the productive capability of the soil through the use of nutrients.

The FAO confidently predicts that world fertiliser production over the next five years will 'outstrip' the demand for nutrients through increased production and new sources becoming available, and that 'supplies will support higher levels of food and biofuel production'.

The report estimates the world fertiliser supply of nitrogen, phosphate and potash will increase from the present 207 million tonnes a year to 241 million tonnes in five years' time. This is ahead of demand forecasts through to 2011/12.

The encouraging forecast for New Zealand farmers within the United Nations report is that by 2011/12 the worldwide supply of phosphate will exceed demand by 2.9 million tonnes, from the current situation where output and demand are in balance. Nitrogen will exceed supply by 10%.

¹ IFDC Report, 33 (1), March 2008

² FAO (2008) *Current World Fertiliser Trends and Outlook to 2011-2012*, FAO, Rome

³ www.guardian.co.uk/environment/2008/feb/26/food.unitednations



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by Dr Hilton Furness – TECHNICAL DIRECTOR

Balancing on the tipping point

The situation the world finds itself in around global food supply and prices (as on page one) is a timely reminder that small adjustment to one part of a balanced equation can create dramatic consequences.

For the past 30 years or so, the real cost of food has been in decline and world food supplies have been sufficient (theoretically) to meet demand.

Yet within a relatively short space of time the tipping point has arrived through a growing world population, efforts to distribute excesses to regions of shortage, the changing dietary preferences of people as their nation's affluence increases and increased cost of fossil fuels resulting in greater use of biofuels.

The United Nations Food and Agricultural Organization (FAO) has described developments as 'unforeseen and unprecedented' and 'the perfect storm for the world's hungry'. It also sees the current situation as 'a long-term trend'.¹

The FAO rightly makes the point that answers to the present situation lie in international co-ordination and the application of new strategies.

It is a lesson New Zealand needs to keep in mind as it seeks to find answers to the challenge of using our land (and water) in a sustainable way.

A wrong initiative, no matter how well-intended, could

have disastrous consequences for the economy and the environment.

New Zealand is currently on the brink of making major decisions on environmental issues at central and local government level.

On the central stage is how we tackle our carbon emissions nationally.

While, within regional decision making there are councils that are focused on finding answers to their 'regional issues' (eg water quality), and in the process will potentially establish benchmarks that nationally others will be compelled to follow.

Within such debates there are always some who would have us in the vanguard of taking up initiatives, of moving into uncharted change simply to show the world, or the country, the way forward. Conversely, there are always some who resist all change to the bitter end.

What we must find is the right balance between these two extreme positions, between taking the appropriate time to find and implement answers and circular go-nowhere debate, and the right balance between the economic needs of our growing population and a pristine environment.

At all costs, the moderates must not allow themselves to be shouted down by the extremists, from either side.

1 Jacques Diouf, Head, UN Food and Agricultural Organization, International Herald Tribune, December 17 2007 at www.iht.com

Rice researcher awarded IFA's 2008 International Crop Nutrition Award

The prestigious Crop Nutrition Award has been made to Deputy Director General for Research at the International Rice Research Institute, Dr Achim Doberman (pictured).

IFA describes the award as recognition for Dr Doberman's, "Pioneering research on the fine-tuning of fertiliser and crop management practices to promote the ecological intensification of rice, maize and soybean production in many countries."

His extensive research and innovative, flexible and collaborative approach to research has enabled compatibility between high food production, profitability, nutrient use efficiency and minimal environmental impacts.

- Rice is the staple crop of two thirds of the world's population
- It accounts for 15% of global fertiliser use
- 80% of the world's rice is grown by small-scale farmers.



Commitment to sustainable nutrient management sector-wide

With a reported near 100% of dairy farmers using nutrient budgets and the recent announcement that Meat & Wool NZ is working with the fertiliser industry to provide sheep and beef farmers with nutrient budgets, industry training becomes even more important.

A critical tool in helping the fertiliser industry deliver nutrient budgets is the OVERSEER Nutrient Budgets software. The model's sophistication requires an in-depth understanding of the science

of nutrient management and provides advisors with the ability to consider a number of interrelated factors. Helping advisors, and people from other sectors achieve this knowledge are two jointly developed Fert Research and Massey University post graduate level courses in Sustainable Nutrient Management – 'intermediate' and 'advanced' modules.

Since mid 2002 the courses have seen more than 650 successful graduates, the majority being fertiliser company field staff. Increasingly enrolments are received from central and regional

government, researchers and CRIs demonstrating the growing importance of the science behind nutrient management decision-making. In the coming year alone more than 100 people will attend one of the courses and its standing continues to grow.

The course is run by Massey's Fertilizer and Lime Research Centre which is recognised as teaching best practice in both theory and practical application. It is believed course completion will soon be one of the requirements for nutrient management advisor accreditation.

Primary sector sets specific water management targets

Fert Research is part of a primary sector grouping that recently released its 'plan of action' for the sustainable management of our freshwater resources.

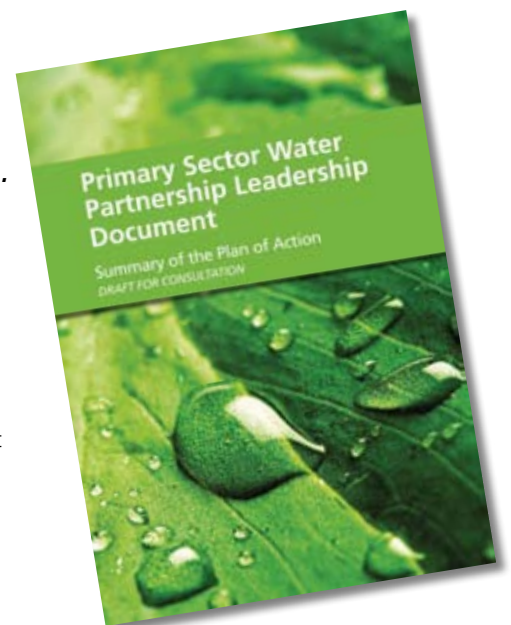
Working collaboratively for two years, the sector group has set specific targets aimed at achieving a positive change in water quality and improvements in water use efficiency within five years.

Specific commitments by Fert Research encompass a range of new initiatives, development of existing tools and the introduction of robust audit processes. These include the ongoing development and implementation of Overseer Nutrient Budgets, launching a scheme for the formal accreditation of Nutrient Management advisors, ensuring member companies undergo independent, external audit of their nutrient budget processes and integrating the Code of Practice for Nutrient Management into Overseer and Nutrient Management Plan templates.

The group will work with regional and central government to achieve its goals and is currently undertaking consultation with environmental and recreational groups.

Measurable action targets are:

Nutrient Management	<ul style="list-style-type: none"> • By 2013, 80 per cent of nutrients applied to land nationally are managed through quality assured nutrient budgets and nutrient management plans. • By 2016, 1.7 million ha of intensively farmed land will have implemented nutrient management plans, in the context of their wider farm management planning, to achieve improved environmental outcomes.
Industry "Good practice" benchmark marks of water use	<ul style="list-style-type: none"> • By 2016, 80 per cent of extracted water used by the partners will be under a self management approach to meet benchmarks of industry "good practice" for water use.
Sediment and Microbial Management	<ul style="list-style-type: none"> • By 2010 all forestry land, and by 2016 1.7 million ha of intensively farmed land will have implemented a management programme to minimise microbial and sediment deposition in waterways.



In addition to Fert Research, groups participating are Fonterra, Dairy NZ, The Foundation for Arable Research, Irrigation NZ, Horticulture NZ, Meat & Wool NZ, NZ Forest Owners Association, NZ Farm Forestry Association and Federated Farmers.

The *Primary Sector Water Partnership Leadership Document – Summary of the Plan of Action* is available online at www.fertresearch.org.nz

Research funding consolidated

After a lengthy and wide-ranging review process, Fert Research has made the decision to focus on funding research projects where we are part of a consortium, or which are joint initiatives. Projects of particular significance to the industry will continue to be initiated and funded by the Association.

There are a number of ongoing projects we continue to invest in, and our continued commitment to current PhD programmes remains unchanged.

The OVERSEER Nutrient Budgets model receives a large portion of our annual research investment. Model additions, refinements and the inclusion of new research data are vital to ensure the continued relevance of Overseer to our unique New Zealand nutrient

management situation. A current Overseer update is the focus of a horticultural sector project which aims to integrate data on the effects of nitrogen management to enable reporting and accountability of nitrate leaching losses. This is due for completion in the first quarter of next year.

Large projects, where a number of funding bodies contribute to research investment will have a bigger impact

than a piecemeal approach. Further, the consortium-approach helps assure funders that there's an audience for the research findings and that academic pursuit is translated into actions and practices to benefit farmers and growers.

Through Fert Research the fertiliser industry invests more than \$1million a year in industry-good research.

Spreading the message

Three new DVDs and the publication of a final research paper by Fert Research funded PhD student Robert Murray have recently raised awareness of the science of fertiliser spreading.



The DVDs are available through the Fertiliser Quality Council or can be viewed online at www.fertqual.co.nz. Each has been designed specifically to inform farmers.

Fert-smart 1	Introduction
Fert-smart 2	Four steps for sustainable farming
Fert-smart 3	Lincoln Dairy Farm – Intensive, Profitable and Sustainable

Robert Murray's groundbreaking research will lead to the greater use of technology to assist in accuracy of aerial fertiliser application. Both topdressers and farmers will achieve benefits through the automation of the fertiliser flow control which reduces off-target applications and so align nutrient inputs to land production potential. Variable application will help increase profitability for farming systems, particularly in hill country. The research is currently undergoing peer review for an international journal.



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

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