Climate Friendly Fertiliser Pty Ltd

The Australian Fertiliser Sector

Climate Change

Opportunity or Risk?

Climate Friendly Fertiliser Pty Ltd
52-54 Keon Parade Thomastown Victoria 3074
+61 3 9 460 2900

ABARE 09.6

- Agriculture to face higher input costs because of the CPRS from 2011
- Higher costs are a direct result of non agriculture greenhouse emissions of products used in agriculture such as fertiliser, pesticides, fuel and other consumables
- Also a risk of cost pass through from downstream agricultural processors back to farmers in the form of lower produce prices

The First Targets

- The easiest and cheapest emission reductions in the farming sector will revolve around the more efficient use of current 3rd Generation Fertiliser technology
- The second target for efficiency will be conserving soil carbon
- The third target will be fuel usage
- The fourth target will be herbicide and pesticide use

Emission Costs

- At a default value of $20 per tonne of $CO_2(e)$, expect the fertiliser price to rise by at least $80 per tonne
- The emissions cost will be built into the price paid by the farmer thus directly impacting profitability

What Do The Statistics Tell Us?

- Since 1980, the area farmed has declined by **16.79%**
- Reactive Nitrogen use has increased by **641%**
- Phosphorus use has increased by **50%**
- Potassium use has increased by **206%**
  - *All source data from ABARE 2008 commodity statistics*

Production Gain?

- Since 1980 the average coarse grain production per Ha has only increased by **46%**

- Since 1980, the average wheat production per Ha has increased by **35%**

Expanded Role For Agronomists

- To minimise risk under the CPRS, the task of the farm Agronomist will expand significantly into some currently quite unfamiliar areas:
  - Cumulative effects of actions
  - Recovery of soil bound nutrients
  - Annual Soil Carbon level monitoring
  - Highly detailed statistical modeling of cropping options
  - Ecological modeling at farm, area, regional scale
  - Detailed soil mapping using tools such as LIDAR

Fertiliser Services

- By 2016, the CPRS will re-shape the role of the fertiliser services sector into a <u>pivotal regional supplier of soil science service solutions</u>.

- Individual farmers may be buying as many as 20 different products to suit various parts of their farming area

Fertiliser Services

- Powdered Lime and Gypsum products for surface spreading will be replaced with a range of granulated product specifically formulated for individual soil and production requirements
- A new range of surface spread granulated P products that are formulated with a carbon substrate and products such as lime, gypsum, and trace elements as required

Fertiliser Services

- A rapidly growing tool box of new products that are not subject to monopoly pricing control:
  - Granulated Lime
  - Granulated Gypsum
  - Granulated Lime/Gypsum mixes
  - Carbon based Granulated Lime
  - Carbon Based Granulated Gypsum
  - Carbon based Lime/Gypsum mixes

Fertiliser Services

- More in the tool box:
  - Fully organic dryland fertiliser products
  - Carbon/Chemical dryland fertiliser products
  - Granulated nitrogen boost products for grasslands
  - Granulated pH adjustment products
  - Specifically formulated products for individual farm soil types (e.g sodic, high Al, low or high pH or combinations of these)

Fertiliser Services

- The **big** market going forward will be in the area of engineered soils.

- Some very rapid developments in this area and it should be a market that the ***Fertiliser Services Sector dominates***

Pasture Services

- For the grazing sector, a new range of “ grass seed in fertiliser” products will emerge over the next five years specifically for increasing biomass production on marginal lands that were previously considered unviable for pasture improvement

- These products are suitable for surface spreading, aerial spreading and application via disc and tyne type seeders

- The grass species to watch will be *Themeda Australis* (Kangaroo Grass) due to its significant root biomass

Pasture Services

- Under the CPRS, there will be strong focus on increasing sub soil biomass across the whole dryland sector in order to sequester carbon.

- Spreader operators need to “own this space” and work as a team to develop and control the product mix which may run to as much as 50 individually formulated products

Fertcare

- A Strong Business Case that Fertcare will need to be extended to include a new level which would be level D

- Most likely a TAFE (Minimum) level accreditation that has a focus on cumulative effects of nutrient options

- Core of this accreditation may flow from US EPA and SSA work on proposed catchment level Nutrient run off restrictions

- New understanding of principles based on tissue and soil analysis will need to be developed

Fertcare

- The Industry needs to be seen to front run on this issue to minimise cost and exposure to CPRS and to make sure the Industry is at the CPRS table along with the various farmer and environmental lobby groups

- This issue could be funded by the Commonwealth under a number of existing schemes

The Distribution Model

- The existing distribution model for the current 3rd generation fertilisers will become unsustainable under the CPRS

- As the permit price rises, imports of products such as DAP, MAP, and triple super will increasingly become uncompetitive

- The days of sending an empty B double to a port loading facility will be over

Changes to Distribution

- In the period up to 2016, the distribution model will change to one of Regional processing facilities.

- Transport of current 3rd generation product from the coastal bulk stores will be by backload on a consistent basis (probably by grain truck).

Storage

- Co-blending of 3rd Generation product with 4th generation product will create a much more stable product with a longer storage life and a higher crush strength

- At planting time the transport loop will be from the Regional Processing Facility

Basis of Change

- The Core Aims of 4th Generation Fertiliser are:
  - To provide just enough nutrient to grow each seed to the upper limit of its productive capability;
  - Provide optimum soil moisture conditions for the plants roots throughout the growing cycle;
  - Minimise agricultural nutrient emissions to air and water

4th Generation Technology

- Based on the recycling of nutrients from a range of waste streams with some nutrient augmentation from the 3rd generation system
- New technology which dramatically lowers the cost of production whilst delivering better environmental outcomes
- Provides a new Industry for Rural Areas – *money spent on fertiliser stays in the rural areas*

4^{th} Generation Fertiliser

- In many cases will eliminate the topdressing of Lime and Gypsum thus enhancing the effect of Low Till (LT) Minimum Till (MT) and No Till (NT)

- Real time air seeder sensors can monitor soil pH and adjust the application of fertiliser pH in the seeding zone accordingly

- The complete 4^{th} generation fertiliser package delivers major cost savings to farmers whilst also delivering significant environmental benefits

4th Generation Fertiliser

- Granules can be placed in the soil with the seed through an air seeder tube
- Entry into the soil can be carried out with a disc thus lowering the application energy by up to 80% and almost totally eliminating soil surface disturbance
- Air seeders are thus less complicated, lighter, cheaper to maintain and can have multiple fertiliser boxes to suit different soil types

Product Attributes

- Hard granular products, crush strength similar to or in excess of chemical fertiliser products
- Good mechanical handling properties
- Long shelf life for most products
- Can be co-blended with chemical fertilisers
- Exceptional spherical conformity
- Granules normally in the range 2-3 mm but some products can be made up to up to 8mm

4th Generation Market

- Market research indicates that over 1 million tonnes could be sold in 2010-2011 if it was available.
- Existing Major Markets are:
  - Horticultural operators who sell product that is eaten raw e.g salad vegetables, berry fruit, bresica and fruit.
  - No till operators who want a product with incorporated lime or gypsum
  - Broad acre organic grain growers
  - Dryland farmers in general

Resource

- According to the recently released Federal DEWHA Draft National Waste Policy Framework, in 2006-07, 21 million tonnes of organic waste was land filled in Australia.

- This figure does not include Animal manures and other rural organic waste resources

CFF Plant Roll Out

- 48 Plants across all states through to 2015/16

- Includes 10 dedicated Lime/Gypsum granulation plants

- Plant name plate capacity of 50Kt and 100Kt trains

The End

Andrew Helps
Managing Director
andrew.helps@cff.net.au
+61 (0) 448 500 222