



The real benefits of the Functional Farming System

FFS are not reliant on fertiliser nitrogen for outstanding and steadily increasing pasture production.

All other systems currently available either recommend regular applications of urea or put the onus on farmers to apply N when they feel it's necessary. Either way reliance on applied N is a fundamental to those systems.

Government, backed by the wider community, are demanding that less N enters waterways, and although waterway plantings are worthwhile, they do not address the loss of N to groundwater via leaching.

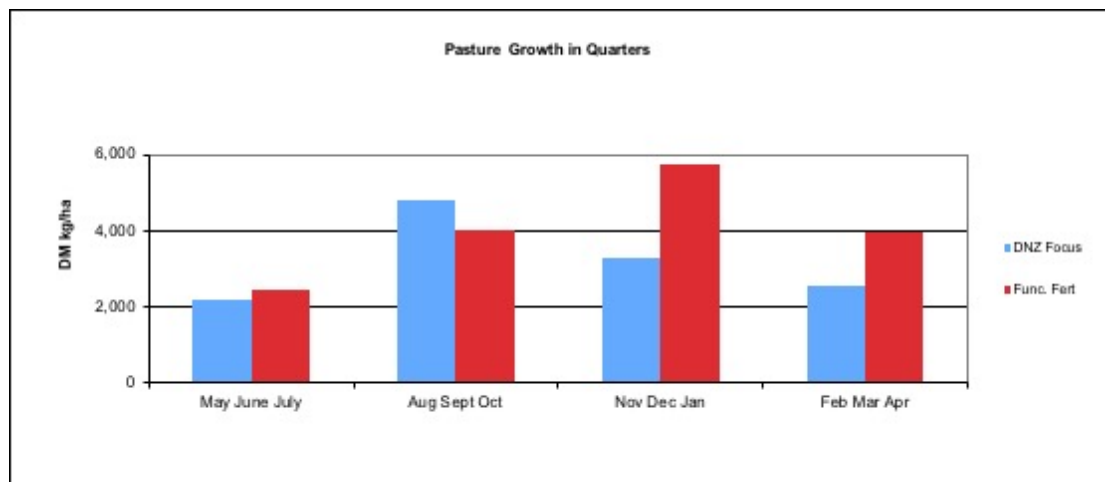
We've stayed out of politics however demanding fundamental change to farming systems and the associated fertiliser industries without supporting genuine alternatives is, in our view, irresponsible.

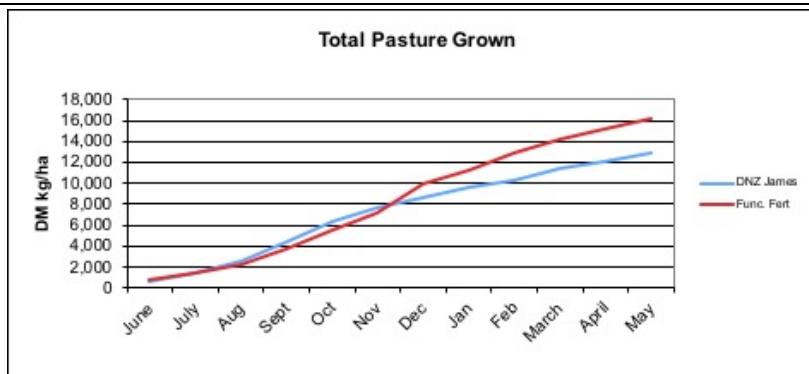
Farmers have every right to feel frustrated and let down, however given their resilience and ability to adapt, pastoral farming will survive albeit in a somewhat different form to what it is today.

Currently close to 30% of Ravensdown and Ballance's sales, in dollar terms, come from the sale of urea and urea-based products. With total sales close to \$1.5 billion annually, that's close to \$500m worth applied to our best land. The average N input on dairy farms is calculated at close to 230kgN/ha every year.

The application of N brings forward pasture growth

Following are the graphs from the Berryman property, a FF client at Otakiri close to Edgumbe, and the local Dairy NZ Focus farm for the 2008 - '09 season.





The results of many nitrogen trials carried out by government funded researchers in the Waikato/Bay of Plenty/Taupo region were summarised by the sentence, **“It would appear that the use of fertiliser N is seldom worthwhile,”** and there’s been no long-term trial work since that contradicts.

The use of urea reduces the availability of calcium for plant uptake thereby making the soil environment less suitable for clover growth. Clover thrives in a high calcium environment.

Clovers fix N in response to declining soil levels which means that when nitrogen is regularly applied N-fixation by clovers declines.

It’s assumed by the Overseer model that all N, regardless of whether applied or fixed naturally, is equally prone to leaching, which is incorrect.

Because only a very small portion of total soil held nitrogen is plant available at any given time, N fixed by clover is efficiently utilised by plants with little lost below plant roots.

The depression effect

“A depression in yield or “slumping” sometimes follows the use of N fertilisers. This is probably seldom caused by nutrient deficiencies...the most common cause of a slump in growth probably is suppression of white clover by shading in late winter/early spring.” During Page 127.

Yield Responses

Growth responses to applied N vary significantly throughout the year, with least response during winter when soils are coldest, and the strongest when growth is at its greatest in late spring, the time when plant available N is in greatest demand. However, in late spring pasture growth is naturally rapid and the time when extra growth is least required.

The FF philosophy has been to create the conditions favourable for clover growth and maximise natural N fixation. As a result, higher fertility grasses and herbs, including chicory and plantain, naturally thrive providing sustainable pasture yields in excess of 18 tonne DM/ha annually.

Spring growth in North Otago

It’s been slower than anticipated and our theory that the best springs follow dry frosty winters has somewhat let us down, probably due to continued cool nights with temps anchored in single figures.

On the farms we have close contact with, animals have come through winter in really good nick. Brix testing of pasture at the start of the month provided readings of 13+, well above the 10 normally expected on fresh young feed at this time of the year.

A brix reading of 10 indicates high quality feed on which well-fed animals thrive. Readings above suggest that although total DM growth has been slower than usual there’s been a compensatory lift in soluble sugars.

Why we prefer brix as a measure of quality

The highest ME (metabolisable energy) comes from grass growing at its most rapid, the time when soluble sugars are generally at their lowest. ME in our view is more a measure of digestibility, with high reading indicating that animals will respond positively to extra fibre and energy being made available. High quality meadow hay is extremely hard to beat as a source of both.

Brix readings are done in the paddock thereby providing data that is immediately relevant and can be acted on at the time.

Brix readings vary throughout the day providing an insight into the process of energy building as a result of photosynthesis. The highest pasture brix levels have been recorded at around 3.00pm and they steadily decline overnight as energy from the leaf is transferred to roots for uptake by mycorrhizal fungi.

Mycorrhizae extend root zone many times over allowing plants to access moisture and nutrient, particularly phosphorus, from areas normally inaccessible to plant roots.

It’s all part of the interconnectedness of animals and plants with soil health being the foundation on which all successful farming operations are built.

Reis