NUTRIENT MANAGEMENT – A FARMERS PERSPECTIVE

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Otaitai Dairys, Riverton, Western Southland

Our farm is situated on the south coast in Western Southland near Riverton. Soils are roughly 1/3 Waikiwi silt loam, 1/3 well developed Otaitai peaty loam over sand and 1/3 very recent Otaitai sandy loam.

My great grandfather leased the property, which was largely coastal swamps and dunes to harvest flax for rope and twine making 100 years ago. A network of open drains was dug by drag line in the 1950's to aid flax production and access but no fertiliser was applied.

My father closed the mill in 1972 when prices became uneconomic and set about developing the property into an extensive sheep and beef property. 250kg/ha Super Phosphate was applied most years and 2.5 t/ha lime was applied to the heavier paddocks when they were developed and every 5 -10 years there after.

Megan and I took over half of the property in 1988 and converted to Dairy in 2002.
Now: 425 ha, 60 bale rotary, 900 cross bred cows, 365,000 kg MS semi self-contained.

Nutrient Management
We soil test monitor paddocks annually to map trends and plan winter cropping and pasture renewal.

While we have used Overseer in the past we didn't find it particularly useful for our system on our soils and the predicted results were not matched by soil test trends. When we did test, the potassium level in our effluent was less than half that predicted by the model and this appears to tie in with our soil testing results. This doesn't mean I don't support nutrient modeling and look forward to trying out the Overseer update.

We aim to apply 150 units of N/year (14 units following the cows), 30-40 P and 60 of K. Highly mobile nutrients like K and S are applied little and often to reduce losses. The effluent area is fertilized separately after an effluent application to take into account the tested nutrient applied.

Soil testing has shown considerable nutrient movement around the farm from the far ends towards the dairy shed. This reflects our pattern of supplement making to reduce cow walking distance when possible.

Uptake of Best Management Practice
Our decisions have always been driven in the first instance by financial efficiency with the environment as a secondary consideration:

- We expanded the effluent area to 100 ha and changed from a traveling irrigator to solid separation and low rate liquid application via pods to keep mobile nutrients within the plant root zone.

- Installed Tracmap in the tractor and updated to a more consistent fertilizer spreader to place fertilizer more accurately and efficiently. This gave us confidence to spread the same amount of N over the season following the cows.
- All 14km of open drains have been fenced to exclude the cows and a program of planting started.
- All drains are sprayed and/or cleaned annually as required and spoil is shifted to low spots.
- We have some lanes adjacent to drains, which we manage to minimize run off particularly two lanes relatively close to the dairy shed, which cross drains. These have trinkets to direct run off away from the drain.
- We identify sub surface drains in the effluent area and avoid them and have done a detailed soil map of the effluent area to identify soils not suitable for effluent when wet.

Barriers to Farmer uptake of BMP

There is a lack up understanding of the potential gains from optimizing nutrient management amongst farmers and a lack of understanding of how Overseer works. This isn't helped by the variability between Overseer prediction and soil test results. I am very hopeful this can be overcome as the model is developed further. It will be particularly helpful to be able to account for the balage fed on winter crop.

In general, there is a level of farmer distrust of Nutrient Budgets and Nutrient Management Plans as being all about "ticking the boxes" for either the milk company or the regional council. This is justified to some extent as practical experience will tell you that any plan needs to be a living document to be relevant to a weather dependent biological system such as farming. I'm not sure this is currently the case on the majority of dairy farms now required to have a nutrient budget. In truth the levels of nutrient application are more likely to be related to feed levels on farm than nutrient budgets. The challenge we face is to make nutrient planning decisions based on soil testing and good modeling the accepted norm to maximize profit, not just to keep the regulators happy.

The future

There is definitely potential to refine modeling and soil testing systems to track nutrient movement around the farm and even within the paddock. With GPS technology it is definitely possible to target nutrients to paddocks and even areas of paddocks where they will get the best return.

We have the crop calculator for winter and summer brassica cropping and getting nutrients right is vital to maximize the return from the cost of cropping. Mineral N testing of soil under pasture prior to cultivation may provide a useful tool. A tool to predict the likely nutrient loss under paddock grazed brassica's would also help planning. Placing a dollar value on these losses would aid strategic planning for winter grazing versus building a wintering shed.

In the future we may measure productive efficiency against nutrient loss instead of kg/ha or EFS.

The scary alternative is regulation and nutrient capping or possibly catchment group self management to keep under trigger levels in waterways.

There is no doubt the future looks is quite intimidating at this point for us on the ground. We are constantly being told we are to blame for deteriorating water quality. Our best chance of a reasonable outcome is to have good science on nutrient losses and potential mitigation, and rapid farmer adoption of best practice. It will become an easier argument as the financial cost of losing nutrients goes up with rising energy costs and fertiliser prices.