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## Valuing our farm environment

L AND K McCALLUM

Wilson's Crossing, Winton, Southland

### WHO ARE WE, WHY ARE WE HERE?

Lloyd and Kathy McCallum farm 447 ha at Lochiel on the Central Southland Plains. The milking platforms consist of two units each of 147 ha and 152 ha, the remaining being run-offs. We milk 850 Freisan/ Jersey X cows through two herring bone sheds on adjoining farms. The milking platform has two supporting run-offs one leased and the other owned.

We have always been in the top 5% for production in the Southland area.

2.8 cows/ha

450-460 kg ms/ha

1300 kg ms/ha

In 2002, we won the Westpac Trust NZMP Farmer of the Year, the highlight being also being recognised for environmental integrity in the performance awards. Strong points that have contributed to winning these awards have been our pro-active environmental effects

We are also involved in an equity partnership that is pioneering the use of irrigation in Northern Southland. Policies we have in place on our farms are now being adapted to fit this property especially in all environmental areas including land use, stocking rate, nutrient management, etc.

We are often called upon to host field days, training days and international groups.

### WHY IS IT IMPORTANT TO BE ENVIRONMENTALLY AWARE?

Our family has farmed our original farm for three generations and it is our hope that this will continue for further generations. We see the need to continually improve our property and its environment in the time we are the custodians of this land. When we hand on our farm to the next generation, we plan for it to be a strong and sustainable business.

### Perceptions of our industry both locally and internationally

Over the past few years, dairying has received a lot of negative press, at times deserved but equally at times undeserved. Our desire to see dairying portrayed in a positive light has led us to become more pro-active in promoting environmentally positive farming.

### Non-tariff trade barriers

We must be aware of perceptions of our trade partners when they look at our procedures and the environment that we farm in and must be prepared to meet their requirements if we are to continue to be able to supply their markets. To compare our standards with those of our trade partners will not open more markets.

### Preferred supplier

We need to have farms that we would show our

customers around at any time. On our farm, we have an open door policy for visitors at all times, both national and international. In the future, we see that customers will ask to visit suppliers, on farm, not just manufacturing sites. As dairy farmers we must be prepared to meet that challenge, therefore, it is our aim to be a "preferred supplier"

### WHAT ARE WE DOING ON OUR FARM?

#### Effluent management

Currently our local regional council requires our application of effluent to equate to 4ha /100 cows, we currently spread effluent on 30ha /100 cows giving a much larger area covered with a lower application rate. Not only are we exceeding requirements but we also do this for the benefits that it provides. These include effluent supplying significant fertility that enables us to reduce fertiliser and nitrogen application to those areas and avoiding high levels of effluent on a small area affecting animal health and grazing management.

#### Linking sheds/labour

Due to the close proximity of the two farms, we are able to utilise the large storage facility on our original farm to hold the effluent from both farms. The original farm had an aerobic/anaerobic pond system in place initially and when this didn't work, an effluent irrigator was put in place. The aerobic pond was retained as a storage tank and we now feed the second shed (previously only had a 12 hour storage capacity) into it so we can now hold effluent from both sheds for approximately four weeks. The use of the one storage tank has enabled us to utilise one irrigator and cover a much greater area by connecting the extra hoses together and has had a much more efficient use of labour. Each team has turns of being responsible for the moving of the irrigator and monitoring its use. Instead of having to shift the irrigator every day of the milking season, we have significantly reduced the labour input and can also store effluent when the soil water levels are too high and could cause effluent run-off.

#### Water management

##### Rock wall

The Oreti River runs along our western boundary and over the past few years in conjunction with Environment Southland we have undertaken much flood protection work along the river bank. This has included various plantings of trees and erecting a rock wall to prevent further erosion of the river bank. This not only protects our land from being flooded but also reduces soil erosion.

#### Riparian areas

With three streams flowing through the property we have planted trees along the stream banks. All are fenced

so as to stop all stock having access to the water or causing damage to the banks.

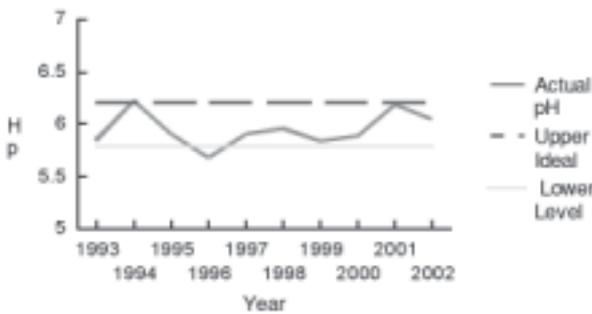
**Crop feeding**

Water run-off from bare dirt is a major source of soil erosion. Not only do we minimise the amount of black dirt but we also back fence our crops and start crops at the far end of the paddock if there is a waterway adjacent.

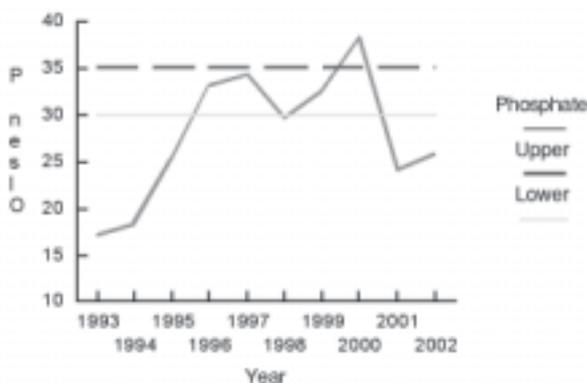
**Soil fertility management**

Each August we divide the milking platforms into areas according to soil type and effluent application and do soil tests. According to the results of these soil tests, our fertiliser requirements are calculated. This gives us a record each year of what type of fertiliser is required and the quantity to apply. The areas that have received effluent have quite a different requirement to those areas that don't receive any effluent.

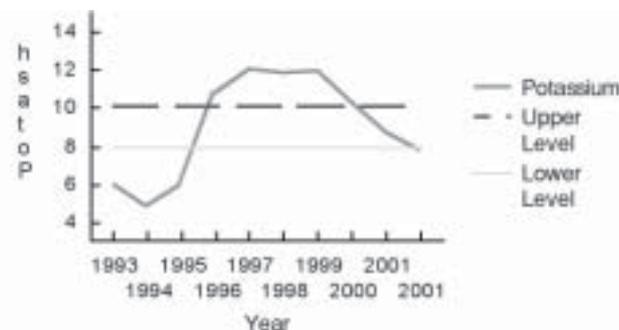
**FIGURE 1:** Trends in soil pH over time for the original dairy farm.



**FIGURE 2:** Trends in soil Olsen P over time for the original dairy farm.



**FIGURE 3:** Trends in soil K quick test over time for the original dairy farm.



Both run-offs also have soil tests taken and fertiliser planned according to the information gained. The drop-offs in P and K levels (Figures 2 and 3) in the above in the last two years relate mainly to new blocks purchased. Our original dairy property levels have been maintained.

Although our fertiliser programme is complicated at times our aim is to keep soil test levels within optimal ranges. An example of this is shown in Figures 1-3.

**Feed management**

**Shelter belt:**

It is our objective to have shelter on every second fence line. The reasons for this are to have shelter from cold winds and rain and shade in the summer. We have tried to have a variety of trees, both to protect from any disease, but also to be visually pleasing. The tree lines have been alternating deciduous and evergreen.

**Feed budgets**

On a regular (monthly) basis, we do feed budgets to ensure our requirements for feed will be met. The use of nitrogen is calculated to give the best return for money. We use small amounts ( 20-30 units) on a regular basis rather than large amounts. The overall amount of nitrogen used varies a little from year to year but is usually in the range of 140-170 units/ha. We are proactive in our budgeting rather than reactive, that is, we plan our feed management rather than waiting for a feed deficit and having to apply a lot more nitrogen or bring in additional expensive supplements.

**Staff management**

**Education**

All staff are trained in the management of the effluent irrigator and aims and objectives of the farm are explained. Staff are encouraged to attend field days and / or training days. We spend time on staff training to comply with OSH and ACC requirements. All resource consents are on display in dairy shed. We have a "buy in" policy with our staff which basically means that they know what our policies are and support them right from the start.

**Stock management**

**Lanes**

Lanes are maintained on an annual basis, with all build up on sides removed allowing drainage, river gravel is the base with silt and sand used to compact down with a thin layer of coal fines on top to cushion the cow's hooves.

**Stocking rates**

We run 2.8 cows to the hectare, with emphasis being on per cow production and keeping our costs per cow low. We annually produce 450-460 kgs /ms/cow from our original herd, with the herd purchased this season from Te Puke doing 400 kg/ms/cow and we are budgeting on them lifting production each year to achieve 450 kg/ms/cow within four years. Most costs are based on the number of cows we have (e.g., animal health, breeding, feed etc.) so if we have a high-genetic-merit herd and we can do the same production with fewer cows, then everybody, and the environment benefits.

**TABLE 1:** Fertiliser nutrient policy for the dairy farms.

Sample/area	Fertiliser type	Rate (kg/ha)	N	P	K	S	Estimated cost/ha
September							
No 2 Dairy	DAP	250	45	50	0	2	\$128.50
No 1 Dairy	UREA	75	35	0	0	0	\$27.53
Buick's	DAP	190	34	38	0	2	\$96.66
Drayton's	DAP	190	34	38	0	2	\$96.66
November/ December							
Both dairy units	20% Pot Super	375	0	29	37	32	\$92.25
Silage blocks (post silage)	30% Pot Super	375		25	56	28	\$101.63
January/ February							
Both Dairy Units	20% Pot Super	375	0	29	37	32	\$92.25
Bottom No 2 Dairy + Buicks							
	Lime	2500					\$45.00

### Grazing management

The farm has been subdivided up into reasonably even paddock sizes so so we are able to run two herds of approximately 420 cows, one herd for each shed. The cows graze a paddock per feed through the main part of the season and during the shoulders they receive 2/3rds of a paddock with silage as required.

- Purchasing additional 90mm effluent main line to enable us to cover a greater area with the effluent irrigator.
- We bought a farm next door with a bad reputation for effluent management that we are now currently changing.

### Break feeding crops

In winter, we feed brassicas with hay. We minimise any soil damage from pugging by running a number of smaller herds (no more than 100), moving portable troughs up with the cows and maintaining a back fence to prevent cows trampling over previously eaten ground. All hay is run into the paddocks with tractors over the crop, not over ground already fed, and fed in waste-not feeders.

### THE FUTURE – WHAT MORE ?

We don't intend to stop looking for ways of improving our systems – there is always a better way of doing things! Some of these will include:

- Further refine our nutrient budgeting through "Overseer" (computer programme). We are presently doing our own system but we want to see what "Overseer" has to offer as a further tool that gives us more information in our fertiliser use.
- Further analysis/research of our effluent paddocks – can we get away with applying even less fertiliser to them or should we be putting on other products such as calcium to offset high potash levels.
- Management/trace elements – both soil and animal
- Herbage testing (more individual paddocks)
- Efficient water usage under irrigation – this needs more investigation on our equity farm – there is no point in irrigating for the sake of it, it needs to be planned for maximum financial and environmental return.
- Additional shelter belts/duck pond development
- Continued riparian management