

MINIMAL FOOTPRINT – OPTIMAL PROFIT FARMING SYSTEMS

TOMORROWS FARMS TODAY – UPPER WAIKATO

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Background

This is a SFF project that is in its first of three years. There are 25 farmers in the study group, all of whom have had their total business assessed for profit and risk, and who have also had a full environmental assessment undertaken.

This project aims to ascertain what farming systems are the most resilient (most profitable at \$7.50 kg MS and also \$6.00/kg MS), and also what farming system is demonstrating the lowest footprint on the receiving environment.

Summary:

The first 100 K of the Waikato River is of critical importance for the amenities it provides, especially that of tourism. The farmer (project) group is between Taupo Gates via Orakei Korako and Atiamuri. This is cited by the Waikato Regional Council to be a “high value water body” which means it has priority status.

There are around 200 dairy farms, in the sub catchment, on both sides of the river, on pumice or ash soils. In the whole of the Upper Catchment, between Huka Falls and Karapiro, there are around 700 dairy farms. The rainfall ranges from 1000 mm to 1300 mm in this locale.

25% of the farmer group of 20 are already demonstrating low impact farm systems with nutrient leaching of less than 28kg N/ha on pumice soils. (Dairy NZ average for Central Plateau is 39 kg N/ leached/ Ha)

Some of these farms are profitable and productive with lower than average impacts.

The farmer group is supportive of the co management of the river, but wish to understand how or if this may influence directions of agriculture in the future.

As a group already demonstrating unique interest in stewardship, they have requested more information about improved performance of their businesses both economically and environmentally, along with the wider policy directions and the changes that may occur with co governance.

This will be achieved by looking in detail at a range of farm systems, and quantifying their physical and financial performance, and their relative environmental impact (“footprint”).

Project Design

For each farmer, it involves two fully funded visits to assess both economic (Red Sky) and environmental performance (Overseer + some environmental indicators) over a three year period. The aim is to work in with their present farming consultant and nutrient advisor to create a team that can collect and deliver the data in the most efficient manner for the farmer.

This data is confidential to the farmer and the consultant, and it is joined to an anonymous database, so only each farm business will know their own figures, against that of the group in the local area.

In a matter of 3 hours in the initial visit, the farm business data is collected, the farm physical data, and the nutrient management data is collated alongside the nutrient advisor. The accountant also was key in providing a recent set of accounts for the business in digital format. A farm drive allows further data to be collected on biophysical characteristics and relevant risks.

This full scope of data is then taken away and analysed, then presented back to the farmer in a user friendly way for a discussion on key areas to action moving forward.

Awareness will come from both self-assessment, and group interactions. There is one community focus/farm groups each year, to tie the individual information into the wider farmer group. This has been made into a virtual farm tour.

This was the top 5 farms that were demonstrating a Return on Dairy Assets of > 8% with leaching >30% below the average for the region. They also demonstrated a range of parameters on their environmental scorecard that indicated high levels of both environmental protection and resource use efficiency.

The 5 Dairy Systems were looked at in more detail, both from an economic and environmental perspective, and by the end of it, all participants will be more aware of their system, its strengths, weaknesses, challenges and opportunities, in the context of the “broader picture” of what is happening the Upper Waikato.

Who is involved? Farmers + MAF funded Sustainable farming fund. Dairy NZ, Headlands, VETPlus, Sustainable Ag team from Waikato Regional Council, Red Sky, and others.

What is Red Sky? Red Sky is farm business analysis software already operating with a wide database across NZ. It is different from Dairy Base in that it allows farmers to test farm system scenarios and plan forward. (www.redskyagri.com)

The Environmental Scorecard Approach This will be part of developing the environmental information for the farms in the study. The farms data from overseer and a physical farm audit are entered into the scorecard and a single numeric is derived to quantify the farms risk to the receiving environment.

The parameters included for the Upper Waikato Catchment include the following.

- Nutrient Efficiency on Farm
- Nutrient Loss Risk
- Waterways, Waterway Fencing, Riparian Planting, Wetlands + Protection, Tree/Bush Stands + Protection, Points of Connectivity to Waterways.
- Effluent System + Malfunction Alerts
- Soil Protection, Winter Cropping Process, Buffer Zones, Managing Pugging
- Water Saving Initiatives + General Farm Water Management + Leakage Alerts
- Energy Use + Efficiencies + Renewable Energy Technology used on farm
- Silage Wrap /Plastics /Hazardous Waste Disposal

Initial Findings Year 1

Table 1: The profile of the group: key performance indicators.

	RETURN ON ASSETS % (Owners)	Operating Profit per Ha	Pasture Harvest T DM/Ha/Yr	MS per Hectare	Kg N LEACHED/Ha
RANGE	2% - 12%	\$448 - \$4,462	8.1 – 11.9	726 - 1477	22 - 57
AVERAGE of group	6.4%	\$3,015	10	1088	32.5
TOP 10%	9.5%	\$4,477	11.3	1180	23

Table 2: Farm systems are also representative of the wider region

	System 1	System 3	System 4 + 5
Farm Systems	8%	38%	54%

Table 3: The averages for the group vs. the average for Central Plateau

	TFT (2011)	Central Plateau typical
Herd Size	476	380
Effective Ha	171	140
SR	3	2.8
MS/Cow	385	330
MS/Ha	1088	920
N leached/ha	32	39

The key physical performance indicators that are monitored over the three years are milk solids and pasture harvested per hectare, pasture cost, forage and concentrate cost (per Tonne DM consumed) and efficiency measures such as the kg DM per kg MS produced, and cows per full time staff unit.

Economic measures are those that can be compared readily between farms, such as Return on Total Assets at a range of milk prices, operating profit per hectare, operating profit margin.

Initial Findings

Although this group of 25 is only a small sample size, it does present an opportunity to compare a group of pastoral based dairy businesses with similar biophysical attributes and risks.

When analysed for any sort of correlations between farm systems and economic performance, it was interesting to note the following:

There were **no significant correlations** apparent between the following parameters:

Pasture harvested and N leached

Stocking rate and N leached

Return on Assets and Milk solids production per cow, and per Ha

Return on Assets and Pasture Harvested per Hectare

Return on Assets and Nitrogen Leached per Hectare.

Summary

The goal of the project is to ascertain the level of profit and resilience of each business, and also gather information on what systems might prove to be the most suitable should there be a more constrained operational environment in the future.

Upon completion of the project, the goal is to not only derive what farm systems are the most resilient, but also understand what degree of change in both profitability at a 3 year averaged milk price, risk management and environmental footprint (including factors such as % drop in leaching) are able to be achieved in a short time frame, when farmers are armed with suitable information, coupled with good examples of success in their local area.

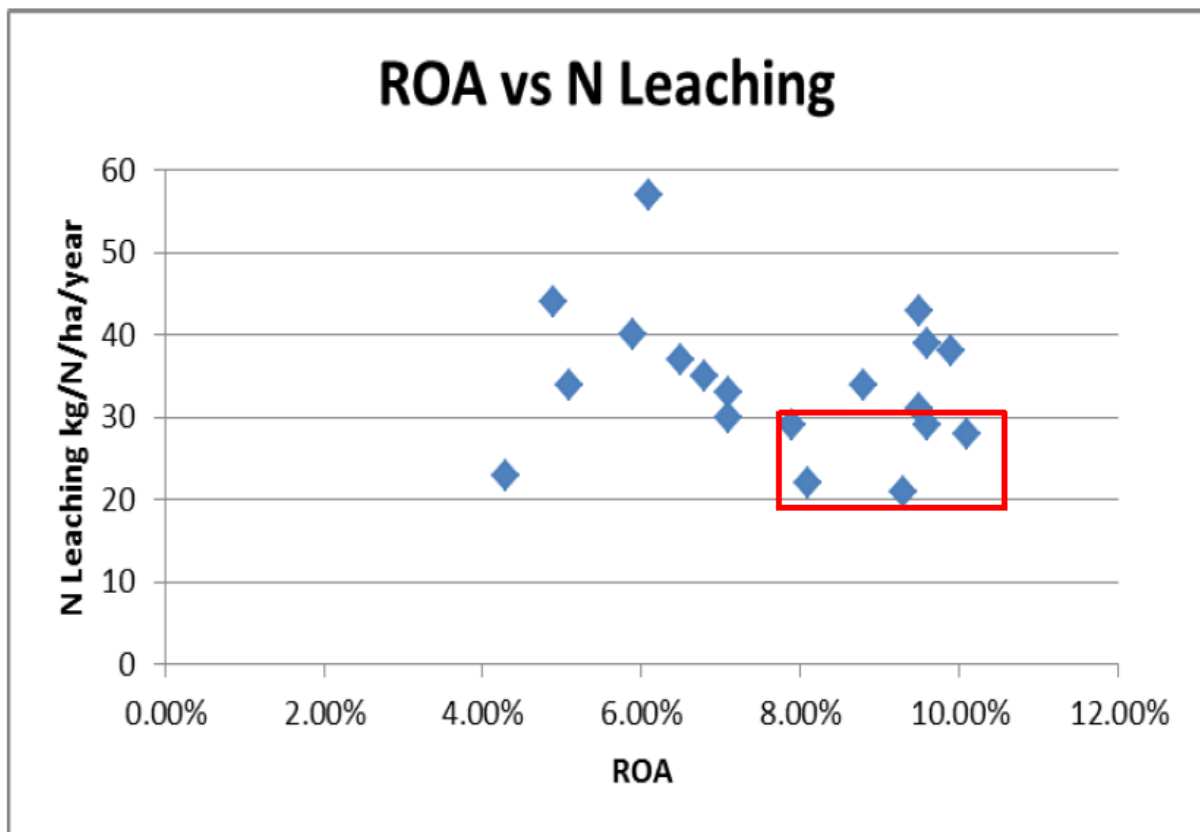


Figure 1: Farms selected for extension process year 1

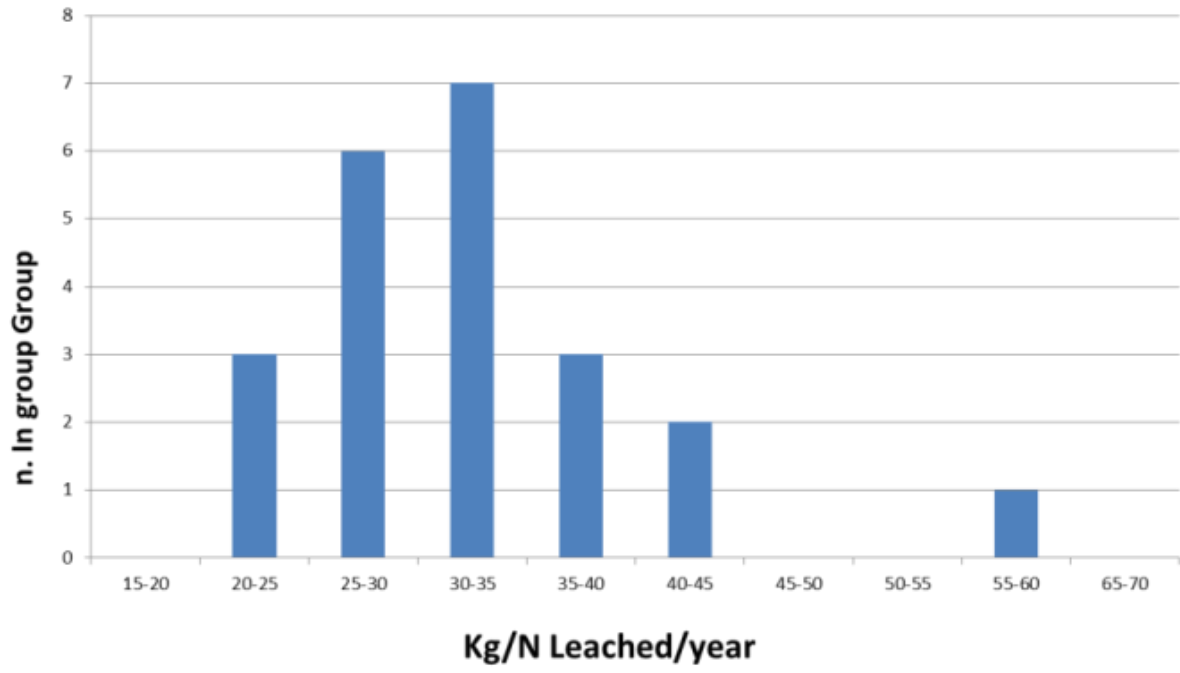


Figure 2: Spread of N leaching across the group of 25 farms.