



Wise Use of N-Fertiliser on Hill Country

What is Best Management Practice for N Fertiliser Use?

Frequently Asked Questions

New Zealand agriculture must constantly strive to increase productivity in order to be competitive in world food and fibre markets. Part of the productivity equation is increasing input efficiency and fertiliser nutrients are inputs which represent a major expenditure item. In addition, farm practice and its impact on the wider environment is coming under ever increasing scrutiny by the public at large. Resource Managers have, in the main, relied on voluntary compliance by farmers to minimise the adverse effects of farm practices on the environment. **Best Management Practices, when based on the current state of best science knowledge, are designed to ensure the most profitable use of expensive nutrients and to minimise potential ‘leakages’ of nutrients outside the farm boundary.**

- ***Avoid single dressing, high application rates by applying nitrogen at rates of 20 kg N/ha – 50 kg N/ha.***

Rates of nitrogen application of 20-40 kg N/ha in single applications are most efficient and minimise leaching loss. Rates can be increased up to 50 kg N/ha in rapid growth periods.

- ***Reduce fertiliser application rates in wetter conditions.***

Under wetter conditions the risk of nitrogen loss due to direct leaching from the fertiliser is increased.



- ***Avoid applying fertiliser when the soil is saturated (i.e. above field capacity).***

When soils are saturated or waterlogged growth responses tend to be small and the risk of nitrogen loss is high.

- ***Avoid applying nitrogen when pasture height is less than 25mm or 1 000 kg DM/ha.***

Plants are slow to respond to applied fertiliser when height is less than 25mm due to insufficient plant leaf area for photosynthesis.

- ***Avoid applying nitrogen when soil temperature is less than 6°C and falling.***

How Does N Fertiliser Affect Soil pH?

At soil temperatures below 6°C plant uptake of nitrogen is slow and the risk of loss due to leaching is increased.

- ***Match nitrogen applications to plants growth to increase N uptake by plants.***

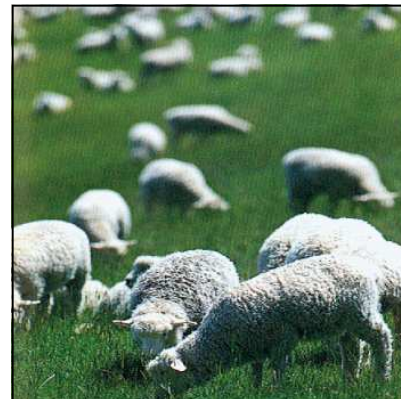
Nitrogen uptake increases during periods of active plant growth.

- ***Avoid applying nitrogen during dry (drought) periods.***

Dry periods reduce plant growth and hence the ability to take up nitrogen.

- ***Avoid applying nitrogen after a dry (drought) period until sufficient regrowth has occurred after rain.***

This will ensure that applied nitrogen is not lost prior to plants actively growing and able to take up nutrients.



- ***Ensure that applied nitrogen is in proportion to other nutrients, according to plant requirements.***

Applying nitrogen will increase plant growth and the uptake of other nutrients. If excess nitrogen is applied relative to other nutrient requirements, plant growth will be restricted thereby reducing the efficiency of nitrogen use.

- ***Consider the use of nitrification inhibitors especially on camp areas.***

In areas where animal urine is deposited, the use of nitrification inhibitors will reduce nitrate leaching and increase the amount of nitrogen available for plant uptake. The overall effect is to reduce nitrogen loss (NO_3 to groundwater and N_2O to the atmosphere) and increase dry matter production.

- ***Ensure that soil fertility and pH levels are at economic optimum for the farm before embarking on a high nitrogen use strategy.***

Increased nitrogen use will increase the uptake and export of other nutrients and may result in pH changes. Soil tests and nutrient budgets should be used to ensure soil fertility and pH levels are optimum.

- ***Ensure that your farm system and infrastructure allow the full utilisation of extra pasture growth.***

To obtain the benefit of increased nitrogen application, any increased pasture growth must be fully utilised.

For more information call Clare Johnston on 06 324 7033