



Wise Use of N-Fertiliser on Hill Country

How Does N Fertiliser Affect Clover Growth and N Fixation?

Frequently Asked Questions

Pasture N requirements



Most sheep and beef pastures are made up of ryegrass (20-60%), other unsown grasses (20-60%) and white clover (5-30%). In a well grazed pasture with no N fertiliser applied, the white clover component will fix about 25-150 kg N/ha/yr on average.

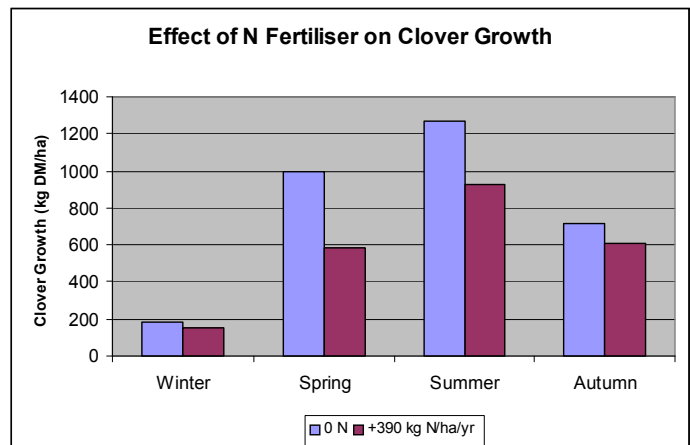
Where soil moisture and temperature and nutrient supply are adequate, grass growth depends mainly on the supply of nitrogen. Outside urine patches, in the absence of N fertiliser, grass growth is limited by soil N-deficiency. Depending on rate, the application of N fertiliser will overcome this limitation and in ideal growing conditions (e.g. late spring) when growth can exceed animal feed demand, it can result in grasses shading the leaves and stolons of the more low growing clovers.

Clovers compete with grasses for light, water and nutrients (apart from N). Shading of clover plants by grasses results in less clover growth and therefore less N fixed by clovers.

How much is clover growth and N fixation reduced by N fertiliser?

For this particular trial, the first figure shows that the effect of N fertiliser reducing clover growth was greatest in the seasons where pasture growth was greatest e.g. spring 40% and summer 25%. This translated to much greater reductions in clover N fixation in the second figure (over the page). For the year, the application of 390 kg N/ha reduced fixation from 111 to 47 kg N/ha/yr. Note that this

Figure 1



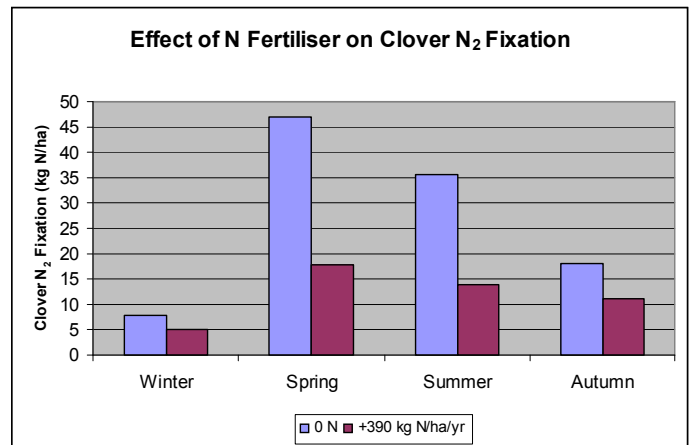
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experiment had a very high N application rate. At commercial application rates of 50 kgN/ha or less effects on clover growth and N fixation would be much less.

What is the effect of rate of N on clover growth?

If spring pasture is grazed to ensure that covers do not exceed 1500 kg DM/ha, then the application of up to 50 kg N/ha/yr will only reduce clover growth by about 20%.

Figure 2



What can be done to control grass growth in late spring?

Ensure that set stocked and post-grazing rotationally grazed pasture masses do not exceed 1500 kg DM/ha in the period from tailing to weaning.

General

- A higher stocking rate and/or higher lambing percentage will mean more lambs grazing to consume the pasture
- Ensure that soil test levels are adequate so that clover growth is not limited
- If irrigation is available, ensure that soil moisture levels are kept up to encourage the more shallow rooting clovers.



On flat and rolling land

- Take paddocks out for silage when pasture growth exceeds stock demand.
- Chemically top some paddocks to reduce grass growth and encourage clover.
- Develop other methods of decreasing farm pasture supply (e.g. cash or forage crop areas) or increasing animal feed demand, e.g. take on grazing stock.

On steep hill country

- Fallow paddocks i.e. take them out from grazing from late spring until autumn/winter. This will increase clover content once they are grazed again.
- Chemical topping using aerial application for reasons of consistency.
- Design grazing systems that ensure wherever possible pasture growth is controlled through the spring period

For more information call Clare Johnston on 06 324 7033