Know Your Stuff With Dr Will Talbot

Maximising Your Nitrogen Fertiliser Response on Sheep and Beef Pastures

Key Points

To get the most out of your nitrogen (N) fertiliser, keep these key points in mind:

- **Timing of Application:** Apply nitrogen 3-4 weeks before you need the additional feed.
- **Growth Multiplier:** Nitrogen acts as a growth multiplier. Apply it when pastures are actively growing. You can also see valuable responses in late winter or early spring, around or prior to lambing, when the soil is very N deficient.
- **Leaf grows leaf:** Apply N fertiliser when there is enough pasture cover (more than 1200 kg DM/ha) to ensure a good response. Avoid applying N to hard grazed paddocks.
- **Grazing Management:** Allow the pasture time to respond before grazing. Ideally, avoid grazing for about 4 weeks after application. This gives the pasture time to take up the N, convert it to proteins, and express the growth response.
- **Efficient Rates:** Applications between 25-50 kg N/ha in a single application are the most efficient and practical.

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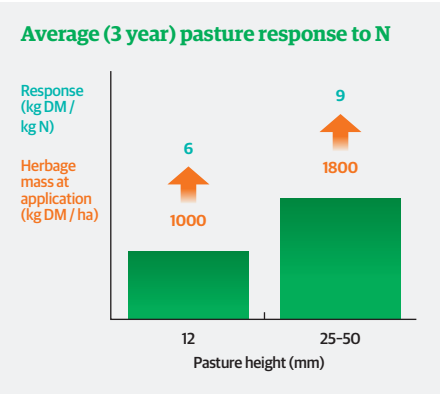
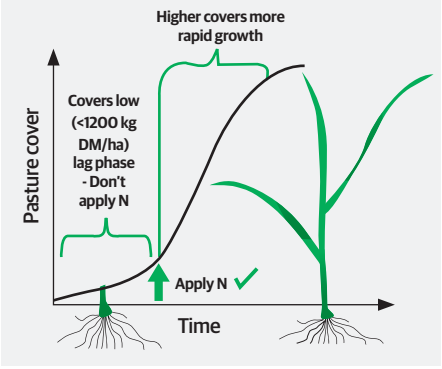
Growth Conditions

- N fertiliser is most effective when pastures are actively growing and not limited by moisture, temperature, or other factors.
- Avoid extremes in soil temperature (e.g., below 5ºC or above 30ºC for ryegrass) and soil moisture (near wilting point or saturation).
- Useful responses will occur in late winter and early spring due to soil N deficiency (low N mineralisation, low clover growth/N fixation and recent N leaching).
- Tactical use of N fertiliser four to six weeks before lambing or calving can significantly lift pasture production to help meet increased feed demand from lactating ewes and cows.

Grazing Management

- It takes time for plants to take up N, convert it to protein, and express a growth response.
- Cool soil temperatures slow down nitrogen uptake and pasture growth — wait until soils are above 6°C and rising for a reliable response.

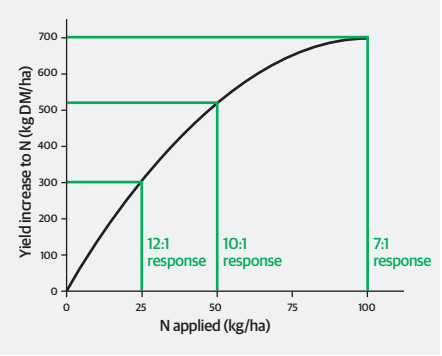




Leaf Grows Leaf

- It takes leaf to grow leaf and express a good N response. It takes leaf to grow leaf — a good leaf area is essential to drive photosynthesis and maximise N response.

Application Rate



- The efficiency of pasture yield response generally declines slightly between 25 and 50 kg N/ha but drops significantly above 50 kg/ha. However, responses may remain linear at higher rates due to significant N deficiency in many sheep and beef pastures.
- A commonly applied rate is 25-30 kg N/ha, with increases up to 50 kg N/ha if more feed is needed.

Land Slope and Aspect

- In hill country with lower rainfall (less than 800 mm), pasture responses are generally higher on steep slopes compared to easier slopes, and on northern aspects compared to southern aspects. This is due to the drier soil conditions in these areas, which limit the ability of legumes to grow and fix nitrogen, leaving these areas more nitrogen deficient. This assumes moisture and soil fertility (Olsen P >10) isn't limiting.
- In late winter and early spring, north-facing slopes tend to be warmer, which can boost the response compared to other areas.

N-Protect (Urease Inhibitor)

- Use a urease inhibitor like N-Protect from spring to autumn to reduce volatilisation losses.
- On average, 18% of N applied is lost as ammonia-N during these seasons. N-Protect can reduce average ammonia-N losses by 50% compared to uncoated urea.

By following these guidelines, you can maximise the efficiency and effectiveness of your nitrogen fertiliser applications.

Want to know more?
Contact your local Agri-Manager or Customer Centre team on 0800 100 123.

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