



Fill the winter feed gap

Nitrogen fertilisers are particularly useful to fill predicted feed gaps or produce a feed wedge for grazing or fodder conservation. Lee Menhenett and Jim Laycock, Incitec Pivot Fertilisers' technical agronomists, discuss effective nitrogen strategies for graziers and dairy farmers.

Increasing the production of home-grown feed with nitrogen fertiliser in winter is still one of the most economical ways to meet feed requirements in pasture-based grazing businesses.

Nitrogen can be viewed as another feed source, similar to hay, silage or grain, because nitrogen will stimulate additional dry matter (DM) production above normal pasture growth rates.

However, unlike other feed sources, more forward thinking is required. This includes grazing management, pasture growth rates and estimated DM responses to nitrogen at various times of the year.

Cold soils have low growth rates and nitrogen responses, but the value of winter feed is high.

To achieve maximum nitrogen responses, grazing management is critical. Allow plants to express their maximum number of leaves (three for ryegrass and four for phalaris and cocksfoot) and do not overgraze. Overgrazing reduces pasture recovery time, decreases seasonal DM production and can impact on stand viability (sward thinning and weeds).

Which fertiliser should I use?

The right fertiliser can make all the difference when pastures are hungry for nitrogen.

Nitrate nitrogen is the primary source of nitrogen for grasses and is quickly taken up and used by actively growing pastures.

The conversion of urea and ammonium in fertilisers to nitrate nitrogen is slower in winter and may result in a two to three week lag in response times.

Products containing some nitrate nitrogen can provide quicker responses, such as the liquid nitrogen fertiliser, EASY N®, or Cal-Gran® Aftergraze.

What rate of nitrogen should I use?

The rate of nitrogen required will depend on how much additional dry matter is required and can be utilised.



As a proven rule, single minimum rates of nitrogen should not be below 25 kg/ha of nitrogen. Below this level, you can expect variable and unreliable responses.

The maximum single rate of nitrogen applied should be no more than 60 kg/ha. There may be exceptions to this. These include high performing modern perennial ryegrass cultivars and annual/Italian ryegrasses at certain times of the year. Any decision to increase nitrogen rates should take into account the cost of nitrogen and the cost of alternative feed.

Estimates of dry matter responses to applied nitrogen (kg DM/kg N) additional to base growth rates, by season and ryegrass type

	Old perennial ryegrass cultivars	New perennial ryegrass cultivars	Annual/Italians
Autumn	5-15	10-20	10-20
Winter	5-10	5-15	5-15
Spring	15-25	15-25	15-25
Summer	0-15	0-15	0-10

Source: Incitec Pivot Fertilisers, 2019

When should I apply nitrogen?

Using nitrogen on the shoulder of autumn when soil temperatures are still warm and growth rates and nitrogen responses are good provides a feed bank of pasture for the winter period.

If there are known pasture requirement peaks, for example late winter to early spring calving/lambing, then leaf emergence rates need to be worked back from that date to establish a nitrogen application date.

Late winter and early spring nitrogen applications allow for higher nitrogen responses and in years that have failed springs allow for additional pasture growth while soil moisture is still adequate.

Mid-spring applications are generally used to stimulate additional pasture dry matter for fodder conservation.

Nitrogen fertiliser can be reapplied immediately after grazing or cutting pastures for regrowth of quality feed. Nitrogen fertiliser is best applied prior to an effective rainfall event or irrigation.



Where should I apply nitrogen?

To maximise responses to applied nitrogen, paddocks need to have good general soil fertility and adequate soil moisture for growth.

Choose paddocks with a good pasture density and understand the growth curve of individual species and cultivars.

Ideally, nitrogen fertiliser should be broadcast prior to a significant rain event of more than 10 mm to move the nitrogen safely into the soil and allow it to start working. If it is available, irrigation can be used to achieve the same result.

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