Pasture and crop harvested
(homegrown feed)

Pasture and crop harvested remains the cornerstone of competitiveness and profitability in New Zealand's dairy industry, serving as a key driver of operating profit per hectare nationally. However, in northern regions pasture and crop harvested volumes are declining, and the downward trend is continuing.

What is DairyNZ doing?

- **Forage Value Index** – Research to ensure genetic gains in plant breeding seen in small plot trials are captured on-farm. Read more at dairynz.co.nz/fvi
- **Resilient Pastures** – A collaborative, cross-sector programme to enhance the resilience and recovery of pastures from future climate and weather events. Read more at dairynz.co.nz/resilientpastures
- **Adapted Systems** – Research to increase resilience of our farms to climate through pasture species selection, management practices and feed supply strategies.
- **Gene Technology** – Advocating for the safe testing and use of gene technologies in NZ. Read more at dairynz.co.nz/gene-tech
- **Pasture Performance Solutions** – Tools to measure and track performance at scale, supporting informed decision making, to maximise pasture harvested.

Using supplements and nitrogen to boost homegrown feed

Increasing homegrown feed boosts farm operating profit per hectare and can also lower emissions intensity (greenhouse gas emissions per kg of milksolids).

Start by identifying what is limiting your farm's pasture and crop harvested performance. Supplements and nitrogen are key levers to help achieve pasture management targets throughout the season – ensuring maximum utilisation and milksolids response.

Operating profit per hectare is MORE sensitive to milksolids response than to supplement price. Focus your effort on achieving a top milksolids response.

Principles for high milksolids responses to supplements:

- Minimise supplement wastage.
- Monitor post-grazing pasture residuals, and be prepared to reduce supplements fed, if residuals rise above 1700kg DM/ha.
- Monitor your residuals rather than milk production to drive supplement decisions.
- Profitability will increase when supplements complement pasture management, no matter your farm system (1-5).

An example of the effect of post-grazing residual and profitability at $10/kgMS payout.

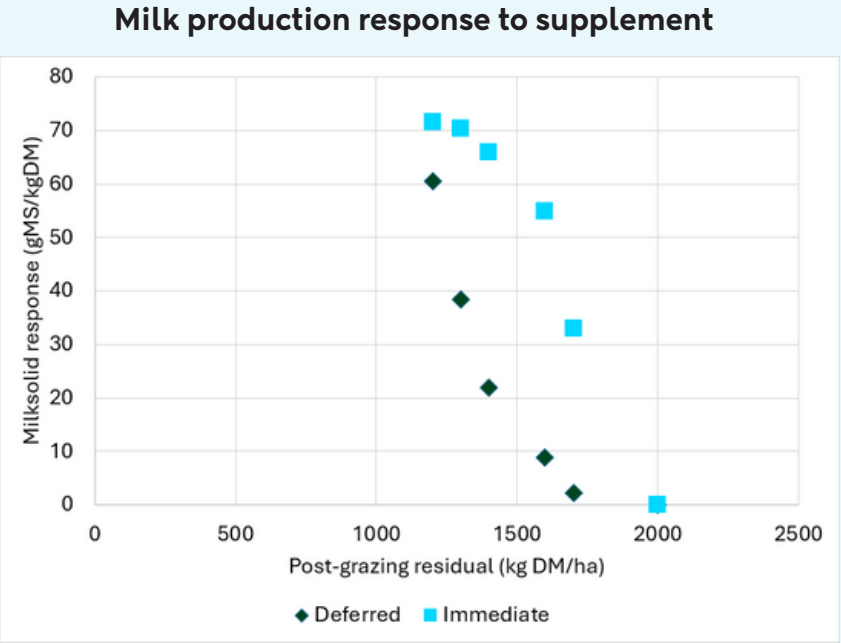
Note: this scenario is fed through in-shed at 95% utilisation, 2.5 months since calving.

PKE - fed at 2kgDM per day, $350 per tonne delivered			
Post-grazing residual (kgDM/ha)	1500	1600	1700
Margin over feed and feeding expenses	$300/t	$200/t	$40/t

The supplementary feed price calculator helps you work out how profitable supplementary feed can be throughout the season. Have a go here:

An example of milksolids response at different post-grazing residuals. Above 1700kgDM/ha, there is a significant drop-off, meaning substitution is occurring and pasture is being wasted.

Immediate and deferred milk production responses to supplement (g MS/ kg DM) with increasing post-grazing residual. The response to supplement decreases with increasing post-grazing residual; in particular, the amount of milk produced post-supplementation (i.e., the deferred response) declines quickly.



Principles for high pasture growth rates from nitrogen:

- Apply nitrogen when pasture cover is no less than 1500 kg DM/ha.
- The response rate diminishes when applied at more than 50kg N/ha.
- Nitrogen won't immediately fix a feed deficit. Use a feed wedge or budget to determine deficits and apply N in advance.
- Avoid N applications on nutrient dense areas e.g. stock camp areas.
- Use urease-coated fertilisers to minimise nitrogen loss to the atmosphere, meaning more available for plant uptake.
- Apply N when soil temperatures are between 7 to 16 degrees C.
- Ensure 5-10mm of rain within 8 hours of application to maximise the response.

Expected pasture responses and expected time for response			
Pasture growth rate	**Pasture growth (kg DM/ha/day)**	**Response (kg DM/kg N)**	**Time to full response (weeks)**
Slow	10	5	10-14
Moderate	20-40	10	6-8
Fast	50-70	15	5-6
Rapid	>80	20	3-4

Pasture renovation of poor performing paddocks

Poor performing paddocks with low annual pasture yields are limiting the farm's overall pasture potential. To increase the amount of homegrown feed harvested, these paddocks need to be improved.

Start by identifying your low-performing paddocks. What is the main factor limiting this paddock's performance?

Weeds

Does the paddock have less than 50% of the desired sward? If yes, consider a spray programme to remove weeds before cropping or regrassing. Choose crops/swards that suit the conditions. You may be able to use deferred grazing as an option to multiply the current sward if weeds are controlled first.

- Identify the weed species and the environment they are growing in, as underlying factors may be promoting their growth.

Soil limitations

If weeds are not the issue, the problem may be soil related. The paddock's soil may not be suited to the current pasture species. Ideally, you should try to identify these paddocks and improve them when appropriate. Sometimes, this may require temporarily removing them from the rotation so the limiting factor can be improved or removed.

- Paddock contour – Allow time after cropping to improve paddock contour and consider species more adaptable to a wetter climate.
- Fertility – Complete soil tests to align crops with base fertility. This will then inform fertiliser applications pre and post crop.
- Poor drainage – Correct drainage issues promptly, as even small problems can affect larger areas.
- Compaction – Highly compacted soil encourages root growth to remain near the topsoil, potentially leading to pulling, drought intolerance, and ryegrass establishment issues.

Improving these limiting factors and choosing the right crop or pasture species will help boost paddock performance. When establishing high performing pasture, consider the endophyte, ploidy and complementary mixes. Key tips to ensure new sward persistence include:

- Use a longer rotation in the first winter until balance date. This will help plant resilience through greater root mass and depth.
- Avoid overgrazing during the first and second grazings, and ensure residuals don't drop below 1500 kg/DM/ha.
- Wait at least 12 months post-establishment before harvesting pasture for baleage or silage.

These actions will help boost your paddocks performance, ultimately increasing the amount of pasture harvested.