

Northland Pastoral Extension: Popular Summary

Opportunities for Dairy Production in Northland



Summary of Key Findings

The main challenges in front of Northland dairy farmers continue to be:

- Finding ways to fill feed deficits during the dry summer months
- Growing more dry matter per hectare and increasing yield of forage crops.
- Avoiding pugging damage on heavy clay and podzolised soils during winter
- Improving reproductive performance

Summer feed - What can be done?

Cropping

Summer cropping remains a popular and profitable option for Northland dairy farmers. Computer modelling in the 1980s indicated forage cropping increased production and profit, by providing a more reliable feed supply. One of the biggest effects was to provide more stable income as outlined in the table below, where minimum net income increased by more than 3 times when 20% of the farm was cropped.

Conserving the crop as silage or hay brought additional benefits, allowing farms to operate with higher stocking rates.

Effects of levels of cropping and conservation on average system performance

Feed Conserved (% of feed grown)	Percent of Farm Cropped					
	0		20		40	
Amount of feed grown that is conserved.	5	12	11	33	11	16
Dry matter (t/ha)	9.5	9.5	12.6	14.4	14.0	14.7
Stocking rate (cows/ha)	2.4	2.2	2.7	3.2	2.9	3.1
Milkfat (kg/cow)	139	155	157	161	162	159
Net income (\$/ha)	170	199	253	273	278	292
Minimum net income (\$/ha)	26	57	75	150	140	147
Rate of return (%)	1.3	2.2	3.8	4.4	4.6	5.0

NB. Income worked on average net incomes of Northland dairy farms in mid 1970s, estimated at \$90/ha.



Sorghums

Sorghums show a considerable variation in maturity and size, and hence in potential yield and water use. The best sorghum to use depends on early season soil temperatures, soil moisture availability during summer and minimum night time temperatures in late summer on that site.

Sorghum silage is high in energy (43% soluble carbohydrates) and low in protein (6%). Well made, high-protein pasture silage could be an ideal feed to use in conjunction with sorghum silage. Machinery used for harvesting and feed-out will be the same and the use of silage from two sources made at different times of the year allows two decision-making steps and better assures adequate supply.

Sorghum, grown for forage or stalk sugar, was studied in Northland from 1979 to 1983. Trials were conducted on the effect of sowing date, seeding rate, row spacing, harvest regime, weed control, fertilizer requirements and the use of land during winter after sorghum. The main results are summarised here:

- Sowing Date – Best late October, early November, but even December-sown crops yielded well by an April harvest.
- Seeding Rate – Recommended rates around 25kg/ha make the cost of seed a major decision factor, but half rates sown at optimum times and conditions did not significantly reduce yields.
- Harvest Regime – Sorghum can be cut early and left to regrow, then cut a second time for silage in June. Or it can be left for only one cut in April/May.
- Winter Land Use – Following the autumn cutting or grazing of sorghum, farmers have the option of regrassing or growing a winter forage crop.

Summary

Sorghum, while well adapted to Northland, will develop and yield variably depending on the cultivar or hybrid chosen, the soil type and the season. Crop management can strongly influence growth and development. The key requirements are the correct sowing date and a weed-free seedbed. Flexible harvesting or grazing regimes can be devised to provide multiple harvests.

Summer brassicas

Trials in Northland have assessed the production of October-sown forage brassica crops – turnips, kale, wairoa brassica and fodder radish. Timing of the harvest had the greatest

effect on crop yields in these trials. No significant differences were measured between crops harvested during late February or early March.

Turnips yielded significantly more dry matter than kale or wairoa brassica when harvested in early February while kale yielded more than rape or wairoa brassica if harvested in April in two out of four trials. The yields were average to low when compared to previous crops such as sorghum and maize grown in the same area. Therefore, brassicas as summer forages appear to have no special yield advantage for dry matter production when compared with alternative forage crops, but require less machinery for harvest. If the feed requirement is in January or early February then turnips should be sown. Kale may be a better choice for feeding in March or April. The results also suggest that wairoa brassica may provide better regrowth following a February harvest, and it appears that wairoa brassica is more prone to loss of yield by leaf fall if left unharvested after February compared with kale.

On-off Grazing in early Spring

Damage to soils and pastures in early spring remains a significant factor reducing pasture growth, feed utilisation, and animal production. Many Northland soils have a clay texture, often associated with poor drainage characteristics. A solution is to remove cows from pasture, after a period of grazing that is sufficient to meet their dry matter intake needs. This limits the extent of treading, and reduces damage to soils and pastures, allowing the farm to sustain higher pasture growth rates, maintain a higher average pasture cover, and achieve a longer first rotation.

Most pasture damage due to pugging occurs between July and October, after calving in late July. Pugging reduces pasture growth in spring and feed utilisation, potentially underfeeding of cows at a critical stage of their lactation, making it difficult to increase stocking rate or calve earlier. Underfeeding also impacts on the cow's reproductive performance and reduces the size of the spring feed surplus and slows summer pasture growth.

Where to remove cows?

If no specialist stand-off facilities are available on farm the best place to stand cows from farmers' experience is on the farm dairy's concrete yard, with the milking area blocked off. Washing the concrete daily reduces the risk of stone bruising to hooves.

More recent Dexcel studies would indicate that there may be detrimental effects on cow welfare if cows are not given sufficient time and space to lie down in a 24 hour period.





If unable to lie down during prolonged periods of standing off they will preferentially lie down in a paddock than graze thus affecting feed intake and consequently milk production. Detailed information on this topic can be found in the animal welfare section of the Dexcel website www.dexcel.co.nz

More future opportunities

Northland is not ideally suited to traditional New Zealand seasonal milk production. This

means future prosperity in dairy farming must be achieved through innovation, including the use of technology, improving management capability and alternative production systems.

Some of the projects currently being investigated by researchers within the dairy industry or which have recently concluded include:

- The Pastures From Space project – The use of satellite imaging technology to determine pasture covers and density on individual farms. Only being studied in the Waikato at present.
- Rapid Pasture Plate Meter – The development of an implement that can be towed around the farm behind the quad bike measuring pasture covers and eliminating the need for manual farm walks with a rising plate meter.
- Automatic Milking – The use of robots in the dairy shed to increase labour productivity and broaden lifestyle opportunities. The Greenfield site in Hamilton operates a fully automated dairy farm presently milking around 180 cows.
- Automatic Heat Detection – Technology to take the guess work out of detecting oestrous in dairy cows.
- Feed Conversion Efficiency – A major project which is currently in the planning stages with the goal of identifying cows with superior feed conversion efficiency genetics and determining the profitability of including this trait in the breeding index.
- Extended Lactation – Extending lactation to 670 days to avoid the problem of getting cows in calf each year.
- Once-a-day-milking – the pros and cons of milking once a day on lifestyle and profit.
- Herd Homes – new age wintering barns that can be used all year round to improve pasture utilisation and effluent use.

While the projects outlined above are not Northland specific, the technology can be applied and tested here and this can only be of benefit to the Northland dairy farmer.

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A project co-ordinated by the Northland Pastoral Farming Development Group.
The complete research stocktake on Dairying Opportunities in Northland is on the Enterprise Northland website: www.enterprisenorthland.co.nz