

## SUSTAINABLE LAND MANAGEMENT 1

# Using deferred grazing to improve pasture on sheep and beef farms

### THE FARMERS

Phil and Louise Alexander have been farming together in Hawke's Bay for 20 years, mostly with family but more recently on their own since the station was divided between Phil and his brother.

### THE FARM

- The 440 hectare Springvale Station can be found at Puketapu, about a 10 minute drive west of Taradale, Napier.
- It has mainly easy hills with some steep, the soil type is yellow grey earth and its average annual rainfall is 750mm (plus or minus 300mm – 2009/10 looking more like 1000mm compared to around 450mm for the three previous years).
- The Springvale Station homestead sits at 27 metres above sea level (asl) with the farm ranging from 100 metres asl on the tops of the hills to 15 metres asl on the flats.
- It is winter finishing country with mild winters (sometimes only a month) and early lambing seasons. But it is the typical dry summers that are key to a deferred grazing system.
- It is currently (2010) wintering 3643 stock units (1500 ewes, 30 rams, 800 winter lambs, 110 cows, 40 rising two year old heifers, 35 yearling heifer replacements, 72 yearling steers, 145 yearling heifers and six bulls). Compared with six years ago, before deferred grazing and dicalcic super were used on the farm, that's an increase in ewes and heifers, a reduction in cows and the addition of 800 winter lambs (3037su in 2004).
- An annual application of 200 to 300 kilograms per hectare of dicalcic super (half-lime and half-superphosphate) has replaced the traditional annual dressings of superphosphate. This change happened about the same time as the decision to try deferred grazing.
- Fifty hectares of the farm's flats winters 800 lambs and is put into process crops during the summer.

### A CHANGE IN PASTURE MANAGEMENT

*Phil and Louise Alexander shut up 20 percent of their farm for four months over summer, and let those pastures go – that's closing the gate on eight paddocks totalling 85 hectares in conjunction with selling lambs (about 80 percent from their mothers at weaning), cull ewes and yearling steers and heifers.*

### THE CHOICE OF DEFERRED GRAZING

A change in management of dry northerly faces goes against the grain of what many farmers have been taught about pasture management. But the northerly faces of Springvale Station, which have always been the barometer of summer for locals, have instead been producing quality feed full of clover. The new regime is giving pasture time to recuperate; resulting in longer residuals, deeper roots, more seeds and a lot more clover.

"There's a lot to be said for just giving paddocks a rest," says Phil.

"One or two months while they're going to seed and you zip back in when you need it."

To get the best result, that is, a good seed set and reasonable pasture covers built, closing up (in this case mid-October) will often conflict with other feed demands. But Phil says not to miss the boat. Paddocks need to be shut up while the grass is growing strongly. Ideally, they shouldn't be grazed again until after the seed has set, usually after January.



Cattle in clover.

## WHAT HAPPENS TO THE PASTURE?

Pasture improvement, particularly with clover, has been substantial. The grass plants grow bigger and deeper root systems to support the large reproductive plants. And because it's shaded out by grass plants, the clover tends to grow roots instead of leaves.

Phil says their northerly and westerly facing paddocks used to have a large component of rats-tail, which they had to force the cows to eat after weaning. But now the clover is re-establishing on the northerly faces and little or no rats-tail is left. Deferred grazing allows the pastures to reseed properly – allowing the seed bank to recuperate, resulting in a much higher clover content, he says.

The changes have made the pasture more palatable and those north-facing slopes have now become preferentially grazed.

“It was the most inhospitable pasture but now there has been a complete turn around. Stock graze it off like a billiard table and leave the south-facing country till last.”

As soon as the pastures have set seed, they are re-opened to grazing – some seasons as early as mating ewes in early February then grazing weaners (March). Grazing in-calf heifers follow in April with cows going on in May/June to tidy what's left before fresh pasture starts growing again through July-September when the deferred grazing cycle begins anew.

## WHAT HAPPENS TO THE SOIL?

Deferred grazing has seen an improvement in the moisture-holding capacity of the soils on the Alexander property, as well as improved levels of humus and earthworms. That's a side effect that pleases the Hawke's Bay Regional Council, which is promoting pasture deferral as a drought-proofing tool.

Land management advisor Ian Millner says for all its droughts, Hawke's Bay still has high rainfall compared to other parts of the country and other parts of the world, which points the finger at management decisions.



A dense sward with sub clover in pasture that had deferred grazing in the previous season (photo taken in mid-September 2009).

“A lot of what goes on below the soil surface is affecting our ability to cope with dry summers... or not. Principally, we're dealing with trying to get organic matter back into the soil profile – dead matter being incorporated back into the soil through insects and worms or directly through a larger or deeper root system in the plant. This improves the ability of the soil to absorb and hold moisture. Plus obviously the deeper the rooting profile, the more soil moisture the plant gets access to.”

Ian quotes research in the 1960s and 70s showing summer residuals should be the longest out of the whole year, which is quite the converse of what farmers tend to practice. It showed leaving the longer residuals in summer meant at least 20 percent more feed through the winter into the following spring.

“There was between 25 percent and 40 percent more moisture where that was done, simply because the soil surface can absorb more moisture and there's less evaporation off the surface,” he says.

## WHAT IS THE FINANCIAL BENEFIT OF DEFERRED GRAZING?

There are definite fiscal benefits in deferring grazing of pasture if pasture production increases in “renovated” paddocks can be maintained, says agricultural consultant Rod Savage. Pasture grazing deferral comes at a cost in the first year, but with a long-term focus deferred grazing can be treated as an investment and a management opportunity, he says.

Extra growth needs to be generated – with dollars added to the bottom line if a renovated paddock(s) produce extra kilograms of dry matter annually.

In the Springvale Station example, in year three, with 100 hectares renovated (50 hectares deferred each year for the previous two years), a 600 kilograms of drymatter (DM) increase per hectare on the renovated area (a 12 percent improvement in pasture production) added \$7500 to the farm's gross margin; and a 1500 kilograms DM increase per hectare on the renovated area (a 30 percent improvement) added \$16 000.



Sub-clover flowering mid-November 2009 in pasture that had deferred grazing the previous season.



## AN ANALYSIS OF DEFERRED GRAZING ON SPRINGVALE STATION

Farmax was used to model the economics of deferred grazing on Springvale Station.

It was assumed the property averaged 6900 kilograms of dry matter (kgDM) per hectare in a normal year, with the north facing country producing about 35 percent less on average than the property's better country.

The paddocks to be rested are shut up in mid-October (after weaning). In the first year, the deferral of grazing on 50 hectares of pasture on those northerly faces cost between \$3500–\$9000 (the lower cost when the pasture was grazed in February compared to being grazed in April). In year two, when an additional 50 hectares was also being deferred, just 600kgDM per hectare extra growth on the area renovated (deferred the previous year) was required to break even. Success in year three depends on pasture production increases being maintained – one example showed an extra 7 percent farm gross margin per year if 30 percent (1500 kilograms per hectare) more DM was grown on the renovated 100 hectares.

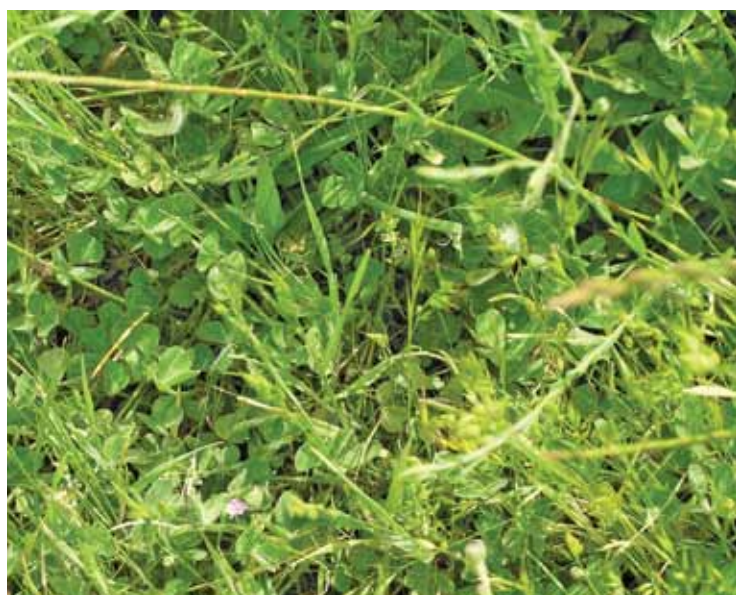
Modelling showed that the poorer the pasture production on the area being deferred (for example, dry, northerly faces), the smaller the reduction in returns in the first year.

Springvale Station's stock policies (including early lambing and a flexible spring cattle sales policy) mean the farm has a pasture supply and demand curve with good potential for deferred grazing. But the economics on every farm is different – depending on feed supply and demand, flexibility of stock enterprises and differing responses to grazing deferral (quality, volume, persistence).

Any deferred grazing needed careful planning – the key to the system's success is whether or not improved pasture is generated in the years after the deferral.

### RISKS

Any paddock grazed later than autumn doesn't recover as well in the following spring.



Clover response mid-November 2009 in pasture shut up (being deferred) for the current season.

## Handy hints

- 1 This system may suit your property if your property's typical summer is a dry one.
- 2 The less productive the area you defer, the lower the cost to the overall system in the first year.
- 3 Be prepared to close the gate at a time when it doesn't really suit.
- 4 The timing of the shutting up and later grazing is crucial.

On properties like Springvale Station, the cost of deferral would be twice as high in a dry spring.

Under normal circumstances, he says it's imperative to make sure there's adequate moisture in the ground when the gates are shut. If it's a dry spring, there's not much point until there is a decent rainfall. But Phil says he closes his gates anyway, regardless of the spring, because his destocking policies allow him to.

### BENEFITS IN A DROUGHT

Having pastures shut up also gives greater flexibility to maintain capital stock in the event of a drought. Much of the benefit of the deferral can still be achieved even if it is necessary to reintroduce stock.

Drought has also forced Phil to open up deferred paddocks for flushing ewes in January/February. Those paddocks had been set aside for cattle, but the ewes were the stock class that needed it the most at the time, he said.

### REFERENCES

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