

agriseeds
superior pastures



DO THE RIGHT THING

PASTURE MANAGEMENT
TIPS FOR AUTUMN 2016



DOING THE RIGHT THING

Pasture has never been more important in creating strong, resilient farm systems than it is now. So what is the right pasture focus for this autumn?

Under the current payout, costs of production (c/kg MS) need to be tackled in three ways:

- Invest in increased MS production.
- Produce more for the same cost (better efficiency).
- Reduce or delay spending.

This booklet covers three ways of getting the best out of your pasture, to make your farm more efficient and profitable, and set up a successful spring.



Pasture Tip ①

Page 4

Get the best out of autumn

Good grazing management through autumn will help you grow and utilise more DM/ha and set the farm up well for the coming spring.

Pasture Tip ②

Page 8

Plan a strategic dry off

The right dry off strategy gives you a head start on a successful spring.

Pasture Tip ③

Page 10

Implement the right renewal programme

Pasture renewal is essential to maintain both your bottom line and the resilience of your business. While ex cropping paddocks need to be re-sown, should you also undertake extra 'grass to grass' renewal?

Pasture Tip ①

GET THE BEST OUT OF AUTUMN

Good grazing management through autumn will help you grow and utilise more DM/ha and set the farm up well for the coming spring. Here's how to make the most of the coming months.

Recovering from a dry summer

If the summer has been dry, the key now is how you manage pasture when rain comes. Get this right, and the farm will recover as fast as possible.

While it is dry

In dry conditions look after ryegrass and avoid overgrazing, so it recovers well when the rain comes – in practice what does this mean?

For ryegrass, 'overgrazing' means grazing below 5 cm, into the dry stem part of the plant. This area is a no-go zone when pasture is under stress, because it holds the energy ryegrass needs to survive.

Ryegrass holds its reserves above ground, in the base of the plant (unlike tap rooted plants like chicory which hold reserves below ground). Graze this part of the plant too often, and you'll kill it.

How to avoid overgrazing

1. The number 1 tactic is on/off grazing: graze to 5cm, but don't leave animals in the paddock. Instead shift them onto a feed pad, sacrifice paddock (maybe a paddock you plan to renew) or some other area.

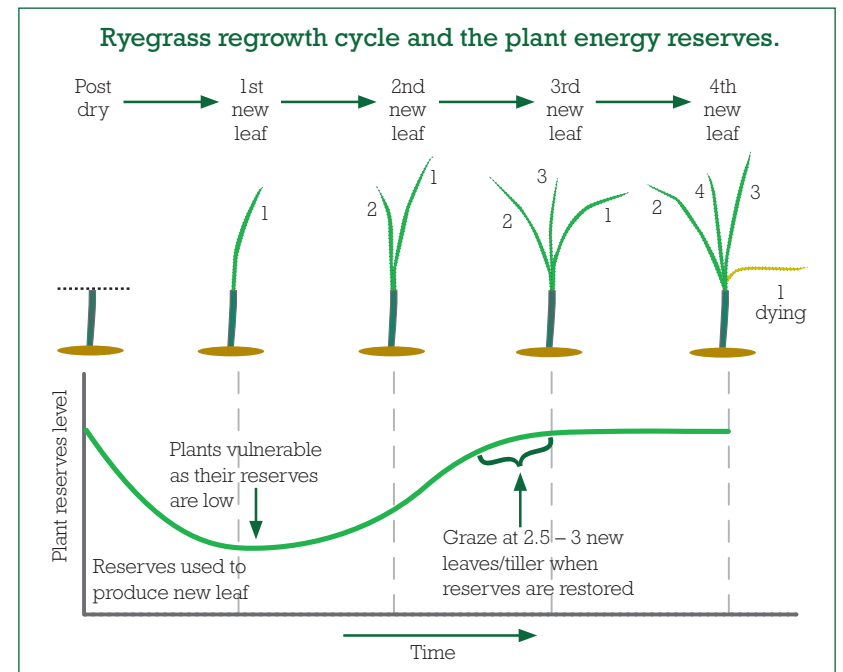
- 2. Prioritise new pastures and best paddocks:** these will fuel autumn recovery when rain comes. You can't look after the whole farm, but on/off grazing allows you to look after a good proportion.
- 3. Feed supplements to look after pasture as well as animals:** when feed is short supplements are needed to keep cows well fed. They also allow you to look after pastures.
- 4. Reduce feed demand:** strategies such as quitting cull cows early; milking OAD and/or dry off light early calvers can help when pasture is in short supply.

When rain comes

Don't change from dry weather pasture management until paddocks recover.

Ryegrass plants must be allowed to build back up to 2.5-3 leaves per tiller before being grazed. At this stage their energy reserves are replenished, and they will regrow quickly after grazing.

Grazing too early, nipping off the first pick of green after a dry period, or grazing at the one leaf a tiller stage can kill a recovering pasture, because it has used its reserves to put up the first leaf and has nothing left to support further growth, as shown below.



Good utilisation

A key driver of profit in every dairy industry analysis is the amount of pasture eaten/ha.

The secret to optimising pasture intake is leaving a consistent post-grazing residual, day in, day out. This ensures high cow intakes and high pasture utilisation from the current grazing, and sets up pasture quality for the next grazing so the cycle will repeat itself in the next round.

Follow these 4 steps for success:

1. Graze pasture before it gets too long (e.g. ≤ 3 leaves/tiller or $\leq 3,200$ kg DM/ha)
2. Give cows the right area (m^2)
3. Take them out when they hit the desired residual (e.g. 1,500 or 5 cm height)
4. Repeat steps 1 to 3 as often as possible!

Late autumn management

Late autumn sets the scene for spring 2016, so what are the things you should be thinking about?

Late nitrogen

If farm pasture cover is below where it should be (in order to meet target cover at calving) N fertiliser can be a great 'circuit breaker' to get growth back on track. Use on a large part of the farm for best effect.

Nitrogen also acts a bit like antifreeze and helps pasture stay green and retain ME in cold and frosty conditions.

Deal to any pasture quality issues

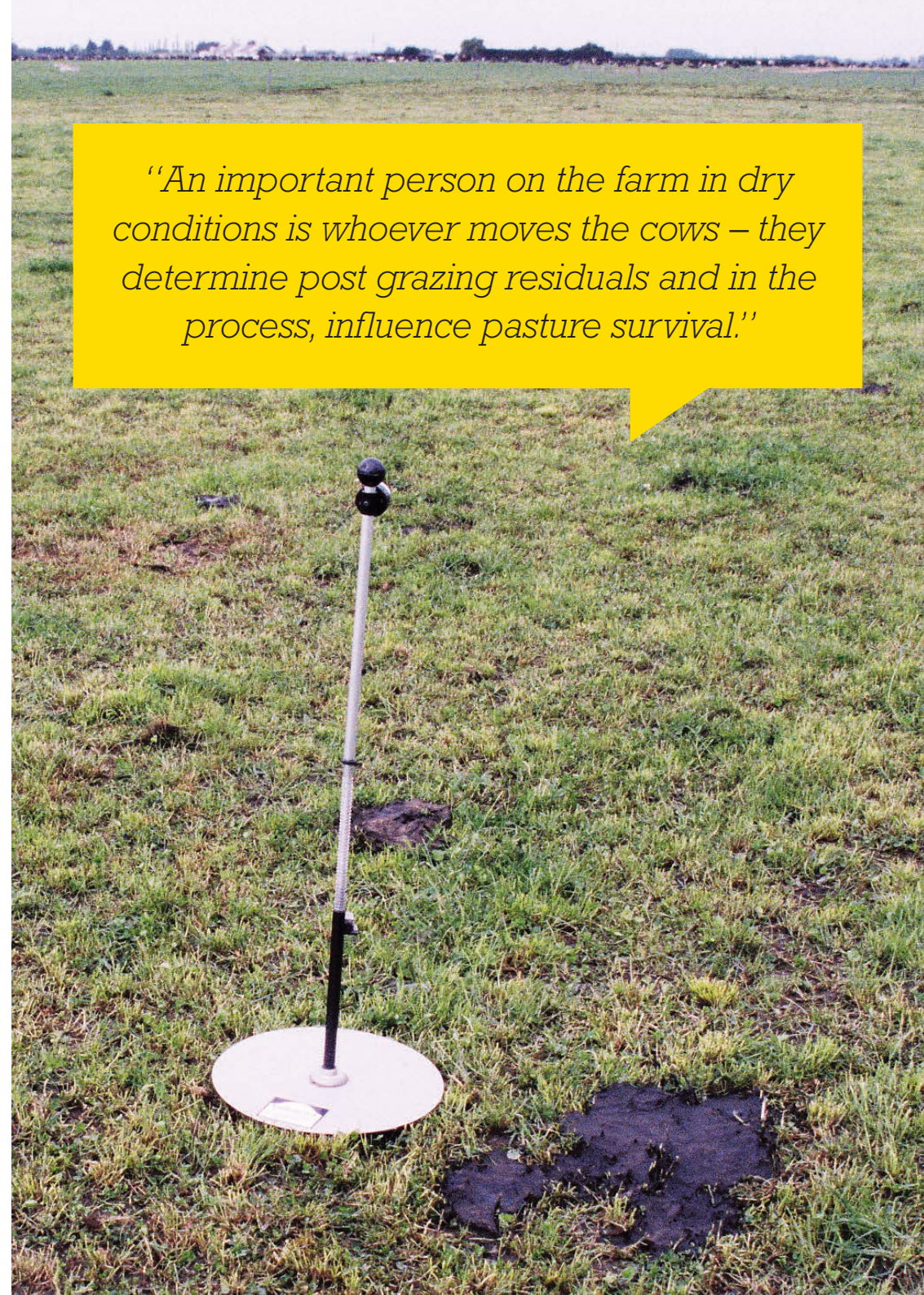
The end of lactation, and availability of dry cows, gives an opportunity to tidy up any poorly grazed paddocks, or remedy feed quality issues. In doing so, you will set up pastures for good quality in spring.

Look after new grass

Nip off new grass and if possible fully graze it once or twice, before a possible wet winter. This encourages new ryegrass plants to tiller, and prevents clover from being shaded, so the young pasture is well set up for the coming years.

If broadleaf weeds are an issue spray them. They compete strongly with ryegrass and clover, impairing establishment, and lead to reduced utilisation from uneven grazing.

"An important person on the farm in dry conditions is whoever moves the cows – they determine post grazing residuals and in the process, influence pasture survival."



Pasture Tip ②

PLAN A STRATEGIC DRY OFF

The right dry off strategy gives you a head start on a successful spring.

This year cow condition is lower than normal on many farms, because of the cool spring and poor early growth, so the right dry off strategy is even more important.

Limit any issues to this season

Drying off is a critical tool for confining any issues to the current season. Sort out any potential feed or BCS issues now, to be well-primed for calving and a successful 2016/17 lactation.

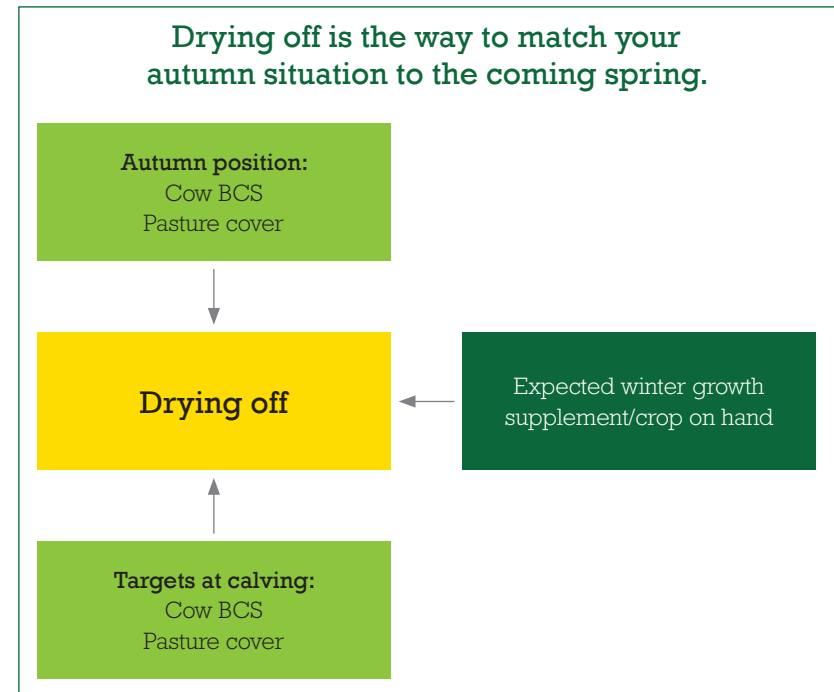
Continuing to milk cows through autumn improves income but it should not be at the expense of making the coming winter and spring more difficult (in terms of trying to put BCS on cows) or expensive (in terms of having to purchase extra feed).

Planning ahead

The right dry off strategy starts with knowing where you want to be at the start of calving. That applies to cow condition (e.g. cows at BCS 5 or above; heifers at BCS 5.5 or above) as well as pasture cover (e.g. 2,400 kg DM/ha) and the amount of supplement on hand.

Then work backwards from these targets through expected winter growth and feeding to identify where you need to be at the end of this season.

Finally, develop a plan to get to the right place at the end of this season based on current cow condition and current and expected pasture growth.



Helpful hints

1. **OAD milking:** can be a useful tool to help younger and/or lighter cows gain weight prior to dry off.
2. **Prioritise:** dry off light, early calvers first. They need to gain more BCS and there is less time to achieve that.
3. **Assess supplement or crop(s):** quantify the amount of supplement on hand accurately, and where winter crops have been sown, assess both yield and DM %, because DM greatly affects crop yield. This data provides a solid base for feed budgeting through to spring.
4. **Manage late autumn pastures well:** this can improve DM growth - see page 6.

Monitor

Even the best farm plans need adjusting, as each season is different. But having a plan and monitoring progress through winter will prevent any nasty surprises in spring, because you'll be able to quickly see (and act) if things are not on track.

Pasture Tip ③

IMPLEMENT THE RIGHT RENEWAL PROGRAMME

Pasture renewal is an essential tool to maintain pasture yield and ME. Without it farm productivity and profitability deteriorate, affecting both your bottom line and the resilience of your business.

While paddocks that have been summer cropped need to be re-sown this autumn, should you also undertake extra 'grass to grass' renewal?

This section answers this question and shows how to do the right thing with new pasture on your farm, so you get the best return from your investment. Five steps are critical in this process:

1. Understand the economic value of renewal
2. Analyse your farm
3. Choose the right renewal method
4. Choosing the right seed mix
5. Suggested seed mixes

1. Understand the economic value of renewal

Replacing a poor pasture means filling bare soil and replacing weeds with desirable plants, and provides three benefits: higher DM yield, higher ME and greater palatability.

If we conservatively assume a new pasture lasts 5 years (often longer for a perennial ryegrass); has 0.6 MJ ME higher feed quality, and is 5% better utilised, an estimate of the return from spending \$1,000/ha in renewing a pasture might look like this.

Typical returns from pasture renewal based on \$4.60/kg MS

Extra grown (t DM/ha/year)	Do nothing	1 t DM	3 t DM	5 t DM
How many years expect increased growth	0	5 years = +5 t DM/ha	5 years = +15 t DM/ha	5 years = +25 t DM/ha
Profit extra kgDM ¹	0	\$1,590/ha	\$4,770/ha	\$7,950/ha
Value extra ME ²	0	\$1,090/ha	\$1,250/ha	\$1,420/ha
Value extra 5% eaten ³	0	\$1,290/ha	\$1,490/ha	\$1,690/ha
Cost of renewal ⁴	0	-\$1,000/ha	-\$1,000/ha	-\$1,000/ha
Gross return after cost of renewal	0	\$2,970/ha	\$6,510/ha	\$10,060/ha

Assumptions: 1. Conversion of 132MJ ME/kg MS. 2. 0.6 MJ ME/kg DM improvement. 3. Base 80% pasture utilisation. 4. Cost of renewal per hectare includes pre-cultivation herbicide (\$80), cultivation (\$150), drilling (\$100), seed (\$320), broadleaf herbicide (\$95), & lost pasture yield (\$255).

A profitable result comes not only from increased DM growth, but also higher ME and higher pasture utilisation.

If you can grow an extra 3 t DM/ha/year of new pasture for 5 years, this is a very attractive investment with an estimated return of 651% (\$6,510) on a \$1,000 cost.

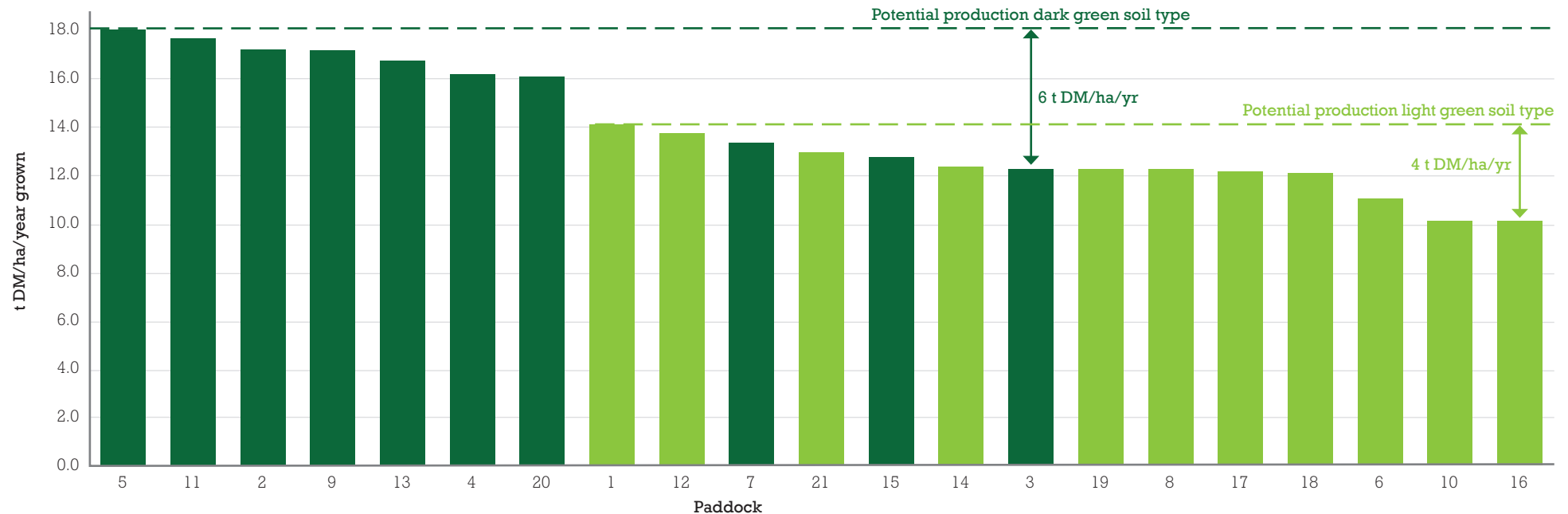
In the current environment arguably the best way to utilise pasture renewal is to reduce imported feed and produce a similar amount of milk using more home-grown pasture, thus reducing costs.

2. Analyse your farm

Pasture performance typically varies widely across any farm, and the best way to determine the need for extra 'grass to grass' renewal this autumn is to analyse the growth of all paddocks.

To illustrate this we have used a fictional farm, with two soil types and 21 paddocks, with pasture growth for last season for each paddock graphed below. The potential benefit for renewal is the difference between current growth and the potential growth for a particular paddock (shown by dark and light green arrows).

Paddock performance across farm



Often farms have areas with different productive potential, which needs taken into account. In this scenario, for example, there are two soil types, the dark green soil which has the potential to produce 18 t DM/ha (paddock 5), versus the light green soil at 14 t DM/ha (paddock 1).

Deciding which paddocks to target for renewal also depends on the cost and ease of renewal, which can vary widely depending on the reason(s) for underperformance. These problems must be corrected if pasture renewal is to succeed.

The objective here is targeting the 'low hanging fruit', i.e. those paddocks with high performance gains at lowest cost.

There are several ways to analyse growth of individual paddocks on your farm, including using weekly cover data, analysing the number of grazings, or scoring pasture condition.

Paddock performance from weekly cover data

Data from assessments of pasture cover can be collated over a season (or any period desired) into total growth (t DM/ha) of individual paddocks. These can often be done automatically by functions in software such as 'Pasture Coach' or 'Land & Feed'.

Look at the range of growth within each section of the farm, to gauge the potential gains of renewing different paddocks.

Number of grazings

Sometimes a simple collection of the number times paddocks have been grazed per season can give a good indication of paddock growth.

Fast growing paddocks may be grazed 12-14 times a year, while poor pastures stand out as having perhaps only 7-8 grazings a year. A single grazing can be estimated at 1 t - 1.5 t DM/ha eaten.

For example 5 more grazings off a paddock over a season, with an extra 1 t DM/ha eaten per grazing, adds up to a 5 t DM/ha difference.

Remember to add in any silage, baleage or other supplement made in a paddock to that paddock's growth.








What we have found on farms is the best paddock typically grows at least twice as much as the worst.

Pasture condition scoring

DairyNZ developed a Pasture Condition Scoring tool for use in spring, but we have adapted it for autumn use. It is useful where pastures have been damaged in dry summers, and you need a way to assess your farm.

Walk the farm, score each paddock according to the guidelines below, and identify paddocks with thin or weedy pastures for possible renewal.

Rank	Description		Suggested action
5	Whole paddock has dense sward of desired grasses and clovers.		No action required. Would be happy if whole farm in this state.
4	Parts of the paddock show signs of low level damage, less vigorous grasses and some weeds.		No action required. Looks okay.
3	Majority of paddock has low level damage, weeds and less vigorous grasses.		Pasture has thinned out, and has bare space. Undersowing is an option to thicken pasture (see page 16 for more).
2	Parts of the paddock have severe damage, a lot of weeds and bare ground.		Renewal would likely give significant benefit to paddock performance.
1	Entire paddock severely damaged.		Renewal would give significant benefit to paddock performance.

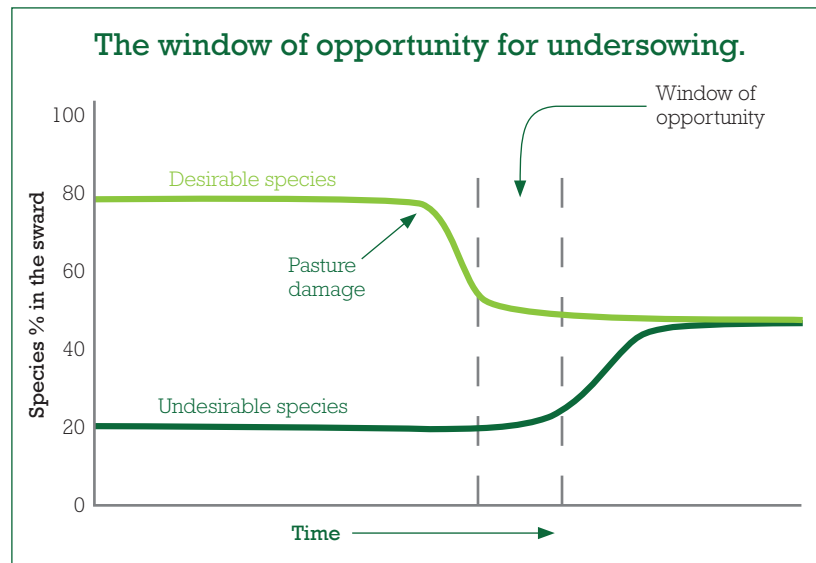
3. Choose the right sowing method

There are 3 main ways to renew extra paddocks grass to grass: undersowing, spray-drill and spray-cultivate. These all have different strengths and can all work well in different situations.

Undersowing

This is simply direct-drilling seed into a thin pasture, with no prior herbicide. It is relatively cheap, quick and easy to do, and can be used over large areas as there is little lost growth.

The key to undersowing is timing, as the diagram below explains. It works well in thin open pastures where desirable ryegrass has been lost, but before weeds have established into that space. (If many weeds are present see spray-drilling on page 17).



Annual ryegrass (e.g. *Hogan*) can be sown where the paddock is destined for spring crop. For longer term pasture arguably the best option to undersow is *Shogun* hybrid ryegrass, as it establishes very rapidly, is very high yielding and has an endophyte to allow it to last 2-3 years in this situation. Always use treated seed for insect and fungal control during establishment.

Spray-drilling

This is spraying a herbicide to kill weeds e.g. glyphosate (sometimes with an insecticide added), typically grazing 72 hours later, then direct-drilling seed.

This gives much better results than undersowing where weeds or seedling weeds are present, as these will compete strongly with the establishing pasture plants.

Treated seed should be used. Check for slugs (e.g. put sacks out in the paddock overnight) and use slug bait as necessary.

Spray-cultivation

This is spraying a herbicide to kill weeds (e.g. glyphosate); cultivating a paddock to produce a seedbed, then sowing seed. This is generally a slower technique, but consistently gives the best results. Lime can also be incorporated or paddocks levelled.



This tyre pattern is from poor seed bed consolidation. A firm seed bed conserves moisture, gives good seed:soil contact, and allows a seed drill to sow at the right depth - your heel should press to more than 1cm into the soil.

4. Choosing the right seed mix

When you look to maximise return on land worth maybe \$50,000/ha the seed genetics sown are a cheap – but critical – part of future pasture performance.

Cheap seed

Bargain seed is always available, but a basic rule of life is you get what you pay for!

There is always a reason something sounds too good, and with cheap seed it may be poor germination, high weed content, minimal endophyte, or simply poor genetics.

'Saving' \$100/ha on cheap seed can end up costing much more. For ryegrass the DairyNZ's Forage Value Index (FVI) is a valuable tool for choosing cultivars.

DairyNZ's Forage Value Index

FVI is a welcome relief for anyone looking for more objective data on different ryegrass cultivars in the NZ market. DairyNZ has worked with the country's main seed suppliers (including Agriseeds) to make this data available.

Profit \$/ha from ryegrass

The FVI has developed this estimated profit index for perennial ryegrass and short term ryegrass cultivars for dairy farmers, somewhat similar to 'breeding worth' in cows.

On page 20 is an example of the FVI list for perennial ryegrass for the upper North Island, with two key points marked.



“Pasture is cheaper than any feed that comes on a truck.”

Perennial Ryegrass Forage Value List

Evaluation date: Oct 2015



Cultivars are sorted by star rating, and then by confidence level

Note: Perennial ryegrass FVI is currently a combination of seasonal dry

*Cultivars with SE are not recommended as they can cause ryegrass staggers

**Cultivars with AR1 endophyte are not recommended as they provide limited

matter performance values and economic values

in summer and may reduce milksolids production at this time

protection against black beetle

Cultivar	FVI ¹ (Star rating)	FVI Star Band (\$/ha)	Conf ²	Performance Values ³ (1-5 Rating)					Endo ⁴	Ploidy ⁵	HD ⁶	Marketer
				Winter	Early Spring	Late spring	Summer	Autumn				
One50 AR37			10+	5	4	3	5	5	AR37	D	L	Agricom
Prospect AR37	★★★★★	\$621 to \$755	10	5	4	4	5	4	AR37	D	L	Agricom
Trojan NEA2			9	5	5	5	5	4	NEA2	D	L	Agriseeds
Base AR37			5	4	4	4	5	5	AR37	T	VL	PGG Wrightson Seeds
Alto AR37			10+	5	4	4	4	4	AR37	D	L	Agriseeds
Ultra AR1**	★★★★	\$487 to \$620	8	3	3	3	4	4	AR1	D	L	Cropmark Seeds
Request AR37			7	5	4	5	3	4	AR37	D	M	Agricom
Matrix SE*			5	3	4	4	5	4	SE	D	VL	Cropmark Seeds
Bealey NEA2			10+	4	3	1	4	3	NEA2	T	VL	Agriseeds
Alto AR1**			10+	3	3	3	3	3	AR1	D	L	Agriseeds
Halo AR37			10+	4	3	1	4	4	AR37	T	VL	Agricom
One50 AR1**	★★★	\$353 to \$486	8	3	3	1	4	4	AR1	D	L	Agricom
Banquet II Endo5			6	3	3	2	4	3	Endo5	T	L	PGG Wrightson Seeds
Arrow AR1**			6	2	4	3	3	3	AR1	D	M	Agriseeds
Expo AR1**			5	3	4	3	3	3	AR1	D	L	PGG Wrightson Seeds
Expo AR37			4	5	3	3	3	3	AR37	D	L	PGG Wrightson Seeds
Samson SE*	★★	\$219 to \$352	8	2	3	4	3	2	SE	D	M	Agricom
Samson AR37			4	4	2	1	1	3	AR37	D	M	Agricom
AberMagic AR1**			4	2	1	3	3	3	AR1	D	L	Germinal
Nui SE*	★	\$85 to \$218	10+	1	3	2	1	1	SE	D	M	Common
Ohau AR37			6	4	3	4	1	1	AR37	T	L	Agricom
Pacific SE*			3	1	3	5	1	1	SE	D	M	PGG Wrightson Seeds

¹ 5 = top rank, 1 = bottom rank, ² Confidence (number of trials), ³ Winter = Winter dry matter production (May-June), Late spring dry matter production (Sept-Oct), Summer = Summer dry matter production (Nov-Jan), T=Tetraploid). ⁶ Heading date (M=Mid, L=Late, VL=Very late). For more information visit

(May-June), Early Spring = Early spring dry matter production (July-Aug), Late Spring = Autumn = Autumn dry matter production (Feb-Apr), ⁴ Endophyte, ⁵ Ploidy (D=Diploid, www.dairyNZ.co.nz/fvi)

Example:

Sowing *Trojan* perennial ryegrass is predicted to produce \$536/ha extra farm operating profit over *Nui*, each year, on an upper North Island dairy farm.

The FVI models a dairy farm system (in this example the upper North Island) and how it would turn extra pasture into milk, the extra income and associated costs. To compare the cultivars in this example, the expected operating profit of sowing 5 star rated *Trojan* ryegrass is \$688/ha (an average of \$621-\$755), \$536/ha better than the return from 1 star *Nui* ryegrass of \$152/ha (an average of \$85 - \$218).

Example:

Trojan perennial ryegrass has top early spring growth on upper North Island dairy farms.

The FVI gives ratings from 5 (=excellent) to 1 (=low) for growth through the different seasons. This can be important as growth in some seasons, such as early spring, is more valuable.

5. Suggested seed mixes

Successful, profitable renewal depends on matching pasture species to the unique soil, climate and requirements of your farm system. Here are 5 contrasting high performance options.

Treated seed

Treated seed (e.g. *AGRICOTE*) is always advised to help ensure strong, even establishment, by providing fungicides and insecticides (and sometimes nutrients) to protect and enhance seedlings.

	Seed mix example	Estimated cost	Estimated return on investment (@\$4.60/kg MS)	Estimated payback period	Summary
1	Diploid perennial ryegrass mix <i>Trojan</i> ryegrass 20 kg/ha <i>Kotare</i> clover 2 kg/ha <i>Weka</i> clover 2 kg/ha Total 24 kg/ha	\$1,000/ha	650% Perennial ryegrasses always provide the best returns. 650% assumes an extra 3 t DM/ha is grown for 5 years as on page 11.	12 months This depends on aspects covered in part 1, but payback can typically be expected in year 1, with profit in following years.	Perennial ryegrass remains the most profitable in our dairy systems, as it persists well in most situations (often 8-10 years, depending on situation & management).
2	Diploid/tetraploid perennial ryegrass mix <i>Trojan</i> ryegrass 10 kg/ha <i>Bealey</i> ryegrass 15 kg/ha <i>Kotare</i> clover 2 kg/ha <i>Weka</i> clover 2 kg/ha Total 29 kg/ha	\$1,050/ha	650% Similar to Seed mix 1. The addition of tetraploid <i>Bealey</i> increases palatability and utilisation, but makes pasture a little less robust.	12 months This depends on aspects covered in part 1, but payback can typically be expected in year 1, with profit in following years.	Perennial ryegrass remains the most profitable pasture, and this mix suits those looking to maximise cow intakes and graze at 3 leaf stage.
3	2-3 year hybrid ryegrass (Spray-drill) <i>Shogun</i> ryegrass 30 kg/ha <i>Kotare</i> clover 2 kg/ha <i>Weka</i> clover 2 kg/ha Total 34 kg/ha (Note: If undersowing use 50-75% of these sowing rates, depending on openness of pasture.)	\$800/ha	350% Intermediate to options 2 and 4 in both cost and persistence. Fits well where 2-3 year pasture is required. (Note <i>Shogun</i> can last longer under good management.)	7-8 months The fast turnaround time and medium cost means much faster payback, typically well within a year of sowing.	This is ideal where a 2-3 year option is required with good black beetle control. <i>Shogun</i> can also be undersown, a cheaper option where weeds are not an issue (see page 16).
4	12 month Italian ryegrass pasture (Spray-drill) <i>Tabu</i> ryegrass 20 kg/ha Total 20 kg/ha (Note: If undersowing use 50-75% of these sowing rates, depending on openness of pasture.)	\$600/ha	250% The payback is faster, but as this is only a 12 month crop, so lower overall. This is ideal where there are grass weed issues.	4-5 months The very fast turnaround time and lower cost means much faster payback, typically well within year of sowing.	This is an ideal fit for poor pastures that will be sown in new pasture or crop next autumn (2017).
5	6-8 month annual ryegrass winter crop (Spray-drill) <i>Hogan</i> ryegrass 30 kg/ha Total 30 kg/ha	\$625/ha	200% This assumes the annual ryegrass produces 7 t DM/ha, 3 t more than an old pasture through this period.	4-5 months	This is an ideal fit for poor pastures that are to be sown in crop in spring.



Member of the Royal Barenbrug Group

Agriseeds © is a registered trademark of New Zealand Agriseeds Limited.

AGS0304 01/15

Superior pastures
from Agriseeds.

0800 449 955
agriseeds.co.nz