

FARMER'S PASTURE GUIDE.

AGRICOM.CO.NZ

AGRICOM 
Pastures for Profit®



INTRODUCTION TO AGRICOM

Agricom markets a wide range of proprietary pasture and forage crop seeds to the agricultural industry. Our core business is investing in the research and development of forage options, and in the advancement of endophyte technology to deliver products that support farm sustainability and profitability. We have partnerships in place with Grasslands Innovation, a joint venture which includes Grasslanz Technology, a subsidiary of AgResearch. Forage crops are also sourced from external relationships via Plant & Food Research (NZ) within the Forage Innovations joint venture programme.

We understand that there are many cultivar options currently available. We were the first to initiate grazing system trials to identify the critical link between using a product and using the right management to achieve the greatest sustainability while maintaining return per hectare.

We also invest in an on-farm trial system to compare the different forage cultivars under a wide range of environments around New Zealand. This trialling system gives us confidence in recommending the correct cultivar for each situation. We are also active participants in the independent National Forage Variety Trials (NFVT) system co-ordinated by the NZ Plant Breeding and Research Association Inc.

**AGRONOMIC
LEADERSHIP
FROM OUR R&D
TO YOUR FARM.**

FOREWORD

Welcome to Agricom's Farmer's Pasture Guide, our dedicated resource to assist farmers in making informed decisions around forages, their respective fit and likely on-farm performance. Much progress has been made in the world of forage breeding during the last few decades, and this guide is an attempt to consolidate much of this information, along with trial and demonstration outcomes across the many sites Agricom operates at any one time across New Zealand.

Demonstrating how our forages work across multiple sites around the country has for a long time been a key focus of Agricom's.

We understand the need to demonstrate product performance in as many varied locations as possible, which include grazed sites wherever we practically can. Such is the importance of this to our business, we have over 50 locations NZ wide where we are generating such information. This represents a significant but very important investment in both people and resource to achieve what are critical outcomes. It's not only important for us but equally to you as a farmer, ensuring there is an understanding and confidence around product fit and likely performance on your farm.

Regardless of the economic environment in which we operate, a well-executed home-grown feed programme continues to deliver the most efficient, cost-effective feed available. Take the time to contemplate this and to understand how well grown forages could maximise financial outcomes within your farming operation. We hope you find this guide both interesting and informative as you look to gain the most reward from your forage cropping decisions.



Mark Brown
Australasian Brand Manager



For more discussion and agronomy insights, follow us on



Facebook [@AgricomNZ](#) and Instagram [@agricomnz](#) or visit [agricom.co.nz](#)

Agricom trial sites

Agricom invests in a wide range of trial activities to ensure it understands its products inside out. This enables our team to confidently place our products into a range of farm systems and feed rotations for the betterment of most farm businesses. Trial systems are run to a very high standard; they are often fully replicated and measured trials which provide reliable outcomes and accurate messaging.

Agricom has eight Agronomists planning and implementing a range of research activities, supported by an Agronomy Project Coordinator, Extension Manager and a Portfolio Manager to round out Agricom's technical R&D group.

Types of trials include:

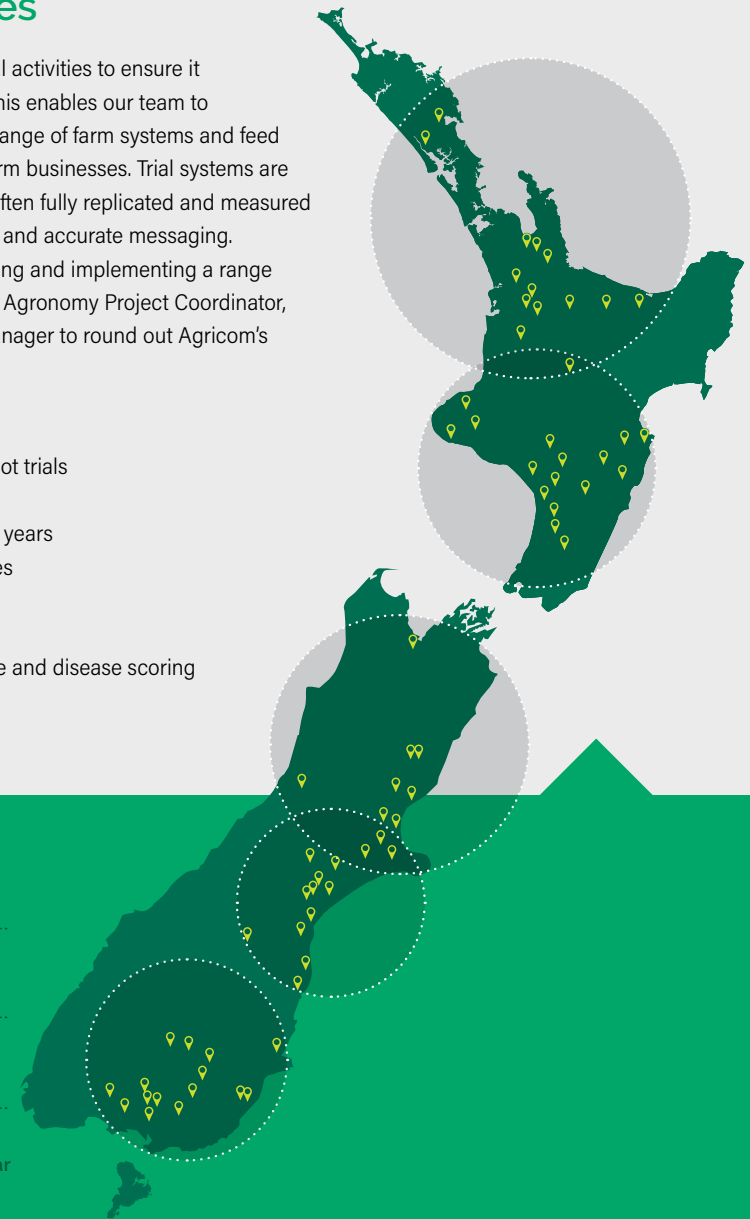
- Annual forage cropping systems plot trials
- Grazed demonstration plot trials
- Yielded grass cultivar plot trials 1-5 years
- Fodder beet cultivar evaluation sites
- Plantain system and cultivar trials
- Chicory system and cultivar trials
- Heading row plots for heading date and disease scoring
- Diverse pasture species trial
- Beef and sheep research

\$18+ million spent on R&D per year

91 plot trials across New Zealand


13,500 plots harvested per year


270 tonnes of forage cut and measured per year



TECHNICAL MADE SIMPLE.



 **Allister Moorhead**
Portfolio Manager

 **Glenn Judson**
Animal Nutritionist

Have you ever spent long nights awake thinking about the role of the different types of ryegrasses? Or perhaps you pass your time on the tractor considering Ecotain® environmental plantain's ability to reduce nitrate leaching?

Al and Juddy are here to help explain the technical, practical, and sometimes humorous implications of forages and animal systems that keep New Zealand farmers leading the world.

ALLISTER MOORHEAD (AL)

Al is Agricom's Senior Agronomist and Portfolio Manager and with almost 30 years in the industry, has a wealth of practical knowledge and experience in all things agronomy. Having provided agronomic support throughout New Zealand, Australia and South America, Al has first-hand knowledge of most forage plants in most environments and situations. For a practical, down-to-earth view on a range of relevant topics, Al's worth a listen.

DR GLENN JUDSON (JUDDY)

With 20 years of industry experience, Juddy is Agricom's Nutritional and Farm Systems Specialist and leads an extensive research programme aimed at developing plant-based solutions for a range of industry challenges. Glenn has travelled extensively through New Zealand, Australia, and Europe providing technical support on matters of forage nutrition and grazing management. For an animal-specific view on forages and grazing systems tune in to Juddy's unique perspective.





PODCASTS AVAILABLE NOW!

More episodes of the The AI & Juddy Show podcast will be released monthly and are available on the Agricom website or whichever app you choose to listen to podcasts.



Technical:

- What on earth are endophytes?
- Pasture mixes - bringing the species together
- Factors affecting intake
- Cheap seed - satisfaction may be limited to the day you purchase it
- How to win a winter feed competition
- Just like a game of chess - paddock rotations

Forages:

- Ryegrass types explained
- What's not to like about white clover?
- Ecotain® - the only proven environmental plantain
- Relish the rewards of red clover
- Productive and persistent fescues
- Summer brassicas
- You've got kale
- Dactylis* - a dinosaur or a modern grass species?
- Chicory dickory crop - a herb for your hungry stock
- Alternative grass species
- Don't let it be bemusing when it's summer brassica crops you're choosing

Systems:

- Marshdale, where the rubber hits the road
- Capital stock - feeding the engine
- Ewes should be into this
- Wintering systems
- Trials and tribulations of picking a favourite

Interviews:

- Forging lasting relationships with Chris Chamberlain
- Brainstorming lease block with Chris Chamberlain
- A biological control - when nature failed with Stephen Goldson
- A career in agriculture - meet former PGW Seeds CEO John McKenzie
- Fighting drench resistance with forage plants with Greg Mirams
- Career development in ag - surviving AI & Juddy with Sarah McKenzie
- Rethinking parasite control in NZ sheep farming with Trevor Cook
- The future of NZ farming with Richard Green
- Shedding light on deer systems with Stu Stokes
- From free diving to forage innovation with Martin Harmer

Agricom provides a full portfolio of products, information and systems fit for a broad range of New Zealand farming requirements.

SUSTAINABILITY THROUGH MULTI-FUNCTIONAL FORAGES.



A focus on sustainability leadership

Efficient and sustainable pastoral agriculture remains the cornerstone of New Zealand's agricultural industry.

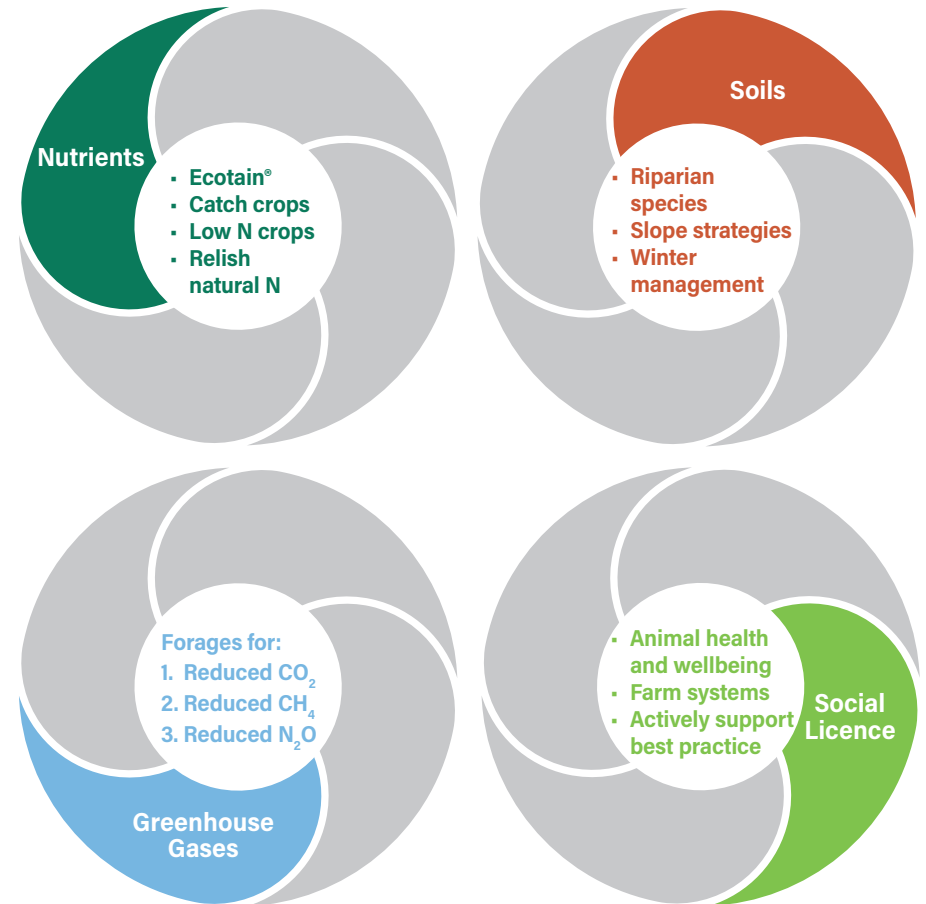
However, there is an increasing demand from customers to produce food in a sustainable way and where animal welfare implications are considered. Meeting the expectations of consumers in these aspects is becoming increasingly important.

Nitrate leaching limits, sediment control, welfare of animals during the winter, carbon sequestration and greenhouse gas mitigation are now all aspects of producing food, running in parallel with production and profitability.

Agricom provides a full portfolio of products, information and systems fit for a broad range of New Zealand farming requirements. These products and forage systems have been designed to achieve high levels of production across a range of environments. Agricom's Environmental Lens Framework (pictured right) provides real tools, products and systems to help reduce the impact of nutrients, soils and greenhouse gases on water, land and air. 'Functional Forages' (refer to page 6) are an important part of the Agricom Environmental Lens as they represent Agricom's suite of products and systems, which can be considered as contributing tools from an environmentally sustainable view.

SUPPORTING FARMERS AND COMMUNITIES

Agricom proudly supports Meet the Need, a farmer-founded, farmer-led charity that provides quality protein to people in need. We also sponsor Surfing for Farmers, a nationwide initiative helping farmers take a break, connect with others, and support their mental wellbeing. In addition, we participate in the Agrecovery Product Stewardship Scheme, promoting a circular economy through the recycling of our seed bags.





Ecotain® environmental plantain is a valuable, broad-leaved herb that, when included in pastures not only delivers significant benefits to pasture and animal productivity, but also offers a cost effective option for reducing nitrate leaching.

With strong year round growth, especially during cooler months, it helps fill summer and autumn feed gaps when traditional pastures slow down, and is important for ensuring plantain is present in the sward during periods of highest nitrate leaching risk.

Whether used as a pure sward or within a ryegrass mix, **Ecotain** improves feed quality, supports quicker recovery from dry spells, and adds flexibility to grazing systems.

Ideal as a 2-3 year crop or as part of a permanent pasture with regular seed input, **Ecotain** fits well into both dairy and dry stock systems, supporting animal performance and helping drive profit through tough seasons.

FOUR DIFFERENT WAYS TO ESTABLISH ECOTAIN ENVIRONMENTAL PLANTAIN:



Pure stand

Direct drill 10-12 kg/ha of **Ecotain** environmental plantain



New pasture

Include 3-4 kg/ha of **Ecotain** environmental plantain in your perennial pasture mix. Include 6-8 kg/ha of **Ecotain** in your Italian or hybrid pasture mix



Undersow

Direct drill 4-8 kg/ha of **Ecotain** into damaged or open pasture



Broadcast

Broadcast 4-8 kg/ha of **Ecotain** into damaged or open pasture

PRODUCTION WITH SUSTAINABILITY.



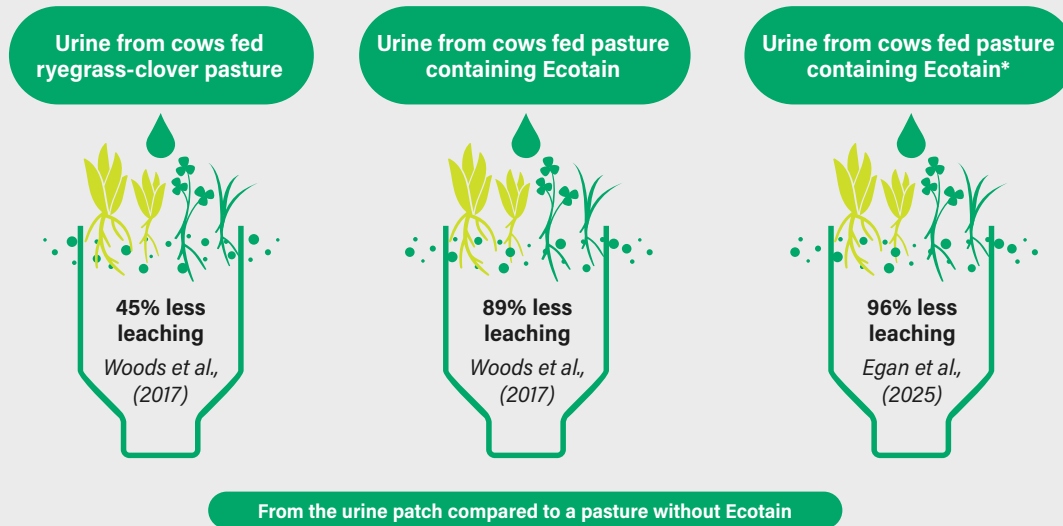
ECOTAIN SEED DATING PODCAST



NEW

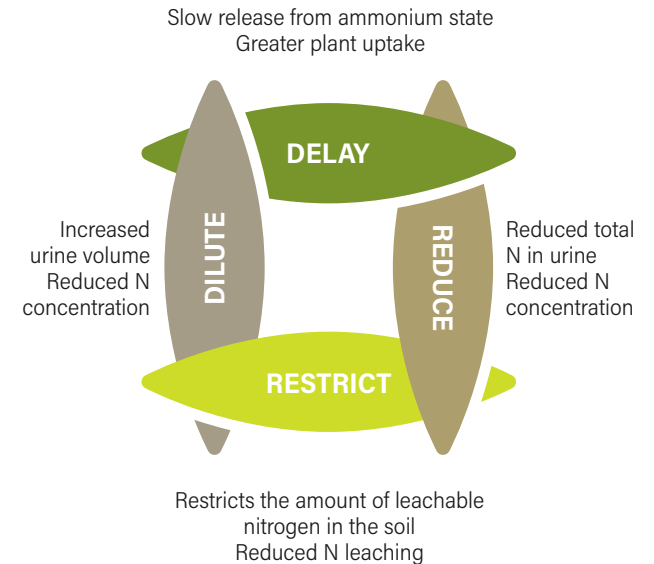
Irish research supports New Zealand findings

Research in New Zealand and now internationally continues to demonstrate that the inclusion of **Ecotain**[®] in grass-clover pastures is an effective tool for reducing nitrate leaching losses.



WHAT WE COULD ACHIEVE IF WE WERE USING ECOTAIN AT SCALE:

If 30% of all New Zealand dairy pasture intake consisted of **Ecotain** environmental plantain, the value created between 2012 and 2040 would be \$1.88 billion. Under a 45% intake scenario, cumulative nitrogen leaching would be approximately **5000 t lower** than without plantain by 2040 (Doole et al., 2021).



IMPACTS ON GREENHOUSE GASES

Methane and nitrous oxide are potent greenhouse gases, and some evidence suggests that the presence of **Ecotain** in the diet of ruminants or in pastures could reduce the production of these.

Methane is a byproduct of ruminant fermentation. When fed to dairy cows as sole diets of **Ecotain**, methane emissions per unit of drymatter intake (methane yield) were 15% and 28% less than those fed ryegrass in two consecutive periods (Della Rosa et al., 2022).

Urine deposited by grazing animals is the main source of nitrous oxide (N₂O) emissions in New Zealand. In New Zealand experiments there was a strong trend of lower N₂O emissions with an increasing proportion of plantain in the diet (Simon et al., 2019) and reductions in some but not all seasons (Luo et al., 2018).

*Bulk urine from cows grazing ryegrass-clover pastures some of which contain **Ecotain**.

WATCH DAIRY FARMER
STEVE HOLDEN SHARE
HOW HE INTEGRATES
ECOTAIN INTO HIS
FARMING SYSTEM.



**STAY
PRODUCTIVE
WITH N
CYCLING.**

3t

More DM/ha/year
than commodity
clovers.*

White clover advantage trial

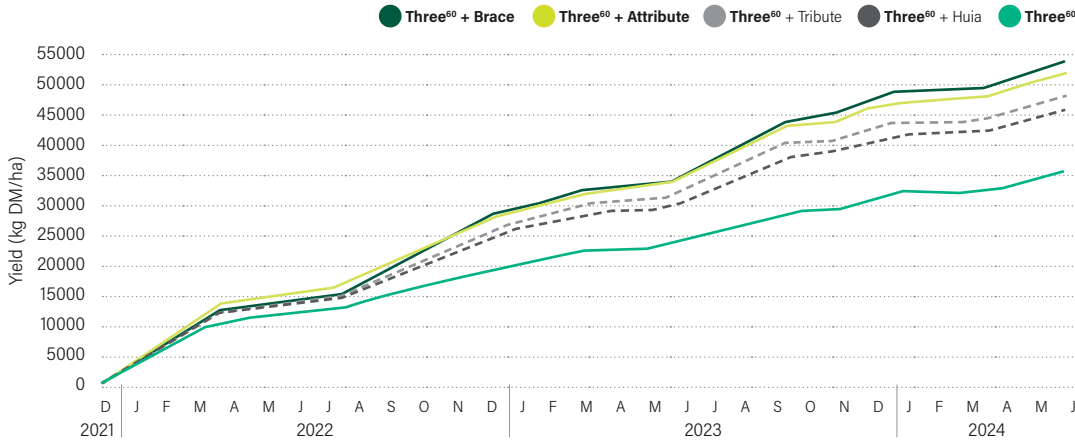
EVALUATING THE PERFORMANCE OF MODERN WHITE CLOVER GENETICS IN A RYEGRASS + WHITE CLOVER MIXED SWARD

In spring 2021, Agricom established a plot trial with four replicates to evaluate four different white clover cultivars (Huia, Tribute, **Brace** and **Attribute**) which were sown with **Three**⁶⁰ perennial ryegrass. The grass cultivar and sowing rates were kept consistent across the swards, enabling a comparison of the white clover cultivars based on both the quantity and quality of pasture produced.



*Visit agricom.co.nz/trials for more information.

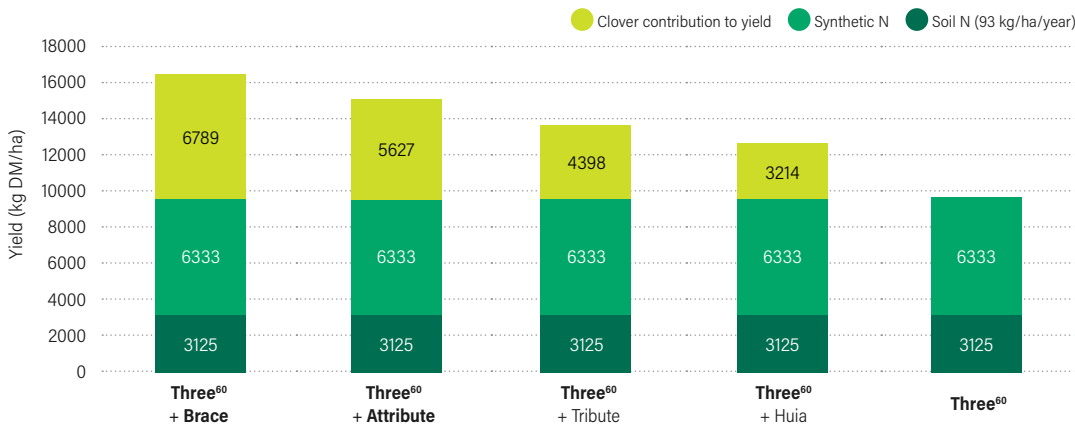
Figure 1. Lincoln white clover trial cumulative yield (kg DM/ha)



STEADY STATE 12 MONTHS YIELD FROM YEAR 2

Figure 2 presents drymatter production over a 12-month period, with each bar broken down into contributions from soil available nitrogen, applied nitrogen, and the growth attributed to these sources. These components were calculated based on the assumption that harvested pasture contained, on average, 3% nitrogen per kg of drymatter. The remaining drymatter shown in each bar reflects the competitiveness of the clover cultivars specifically, their ability to either contribute additional clover growth or enhance nitrogen cycling within the system.

Figure 2. Lincoln white clover trial breakdown - June 2023 - June 2024 (12 months)



YIELD CONTRIBUTION

We aimed to measure the yield contribution of modern white clover genetics in a mixed pasture under nitrogen-limited conditions.

Fertiliser was applied to the trial at 190 kg N/ha/year, using a complex blend to ensure phosphorus (P), potassium (K), and sulfur (S) were non-limiting factors. Under the full cut and carry system used in the trial, nitrogen was intentionally limited to encourage nitrogen fixation by the clovers. This restricted nitrogen return was important to prevent full white clover dominance and the potential loss of the grass from the trial.

Yield was measured 10 times per year using a forage harvester set to a cutting height of 4-6 cm. Fresh weights were recorded for each plot, and subsamples were taken for drying to calculate drymatter percentage. These measurements were then used to calculate total drymatter production for each treatment.

By incorporating modern white clover cultivars like **Brace** and **Attribute** into pasture mixes, we can offer farmers genuine genetic gain. These cultivars contribute to improved pasture quality, better pasture management, and valuable nitrogen cycling, all of which support greater productivity on farm. When considering where to invest in genetic gain in a farming system, a plant that fixes free nitrogen based on how competitive and productive it is, is a good bet.

PASTURE OPTIONS.



**RYEGRASS TYPES EXPLAINED
PODCAST**



RYEGRASS

Understanding the differences in these categories will help you determine which ryegrass best suits your farming systems. Ryegrasses can be categorised by their:

1. Species (annual, Italian, hybrid or perennial)
2. Ploidy
3. Heading Dates
4. Endophyte

Ryegrass varieties can be categorised by how long they live and their growth characteristics. These can be classified as:

- Annual – less than one year
- Italian – 1-2 years
- Hybrid – 2-5 years
- Perennial – 5 or more years

PERENNIAL RYEGRASS

Perennial ryegrass is the most widely sown grass in New Zealand as it grows well in a wide range of conditions, is easy to establish and manage, provides high animal performance, generally has good persistence and forms a compatible mix with white clover.

Production of perennial ryegrass-based pastures on dairy farms average 14 t DM/ha/year in New Zealand, with yields over 20 t DM/ha/year achieved under irrigation.

In summer moist environments with good management and low pest pressure perennial ryegrass pastures can last indefinitely.

Where summer dry conditions and significant pest pressure prevail, a more realistic expectation of persistence may be less than 10 years. Pasture management is a key determining factor, so persistence varies widely in these situations.

HYBRID RYEGRASS

Hybrid ryegrasses are generally derived from crossing perennial ryegrass and Italian ryegrass. Cultivars vary, but typically persist from 2-4 years, depending on conditions.

Their feed quality and winter growth are very good, generally a little higher than perennial ryegrass in similar circumstances. Many cultivars contain endophyte, which improves their persistence. The total drymatter yield of ryegrasses is similar, or higher, than perennial ryegrass over a 12 month period. The major difference however is the cool season production, which is typically higher. Summer feed quality is influenced by aftermath heading (or seeding) and potential summer growth varies between cultivars.

Ryegrasses are used in several ways including:

- As a short term pasture, where a paddock is destined to go into crop in 2-4 + years
- For undersowing into thin runout pasture to improve its growth for 2-3 + years
- Added to perennial pasture seed mixtures to provide increased winter production during the first few years and to boost animal performance in cooler regions

ANNUAL AND ITALIAN RYEGRASS

These two ryegrass species are described together because they are used in similar situations, for their fast establishment and high winter - early spring drymatter yield. Annual and Italian ryegrasses both establish very quickly and in good conditions are typically ready for a first light grazing 4-6 weeks after sowing, up to 2 weeks sooner than a perennial ryegrass.

When sown in March as a winter crop, annual and Italian ryegrasses produce a similar amount, normally 7-8 t DM/ha over 6-8 months. Annual ryegrass is less persistent and is most commonly autumn sown as a 6-8 month winter/spring crop. Italian ryegrasses typically last 12-18 months in drier areas and 2 or more years under mild summer conditions. Some Italian ryegrasses such as **Manta AR128** or **AR37** have endophyte so may persist a year longer than those without, depending upon the pests present.

Italian ryegrasses keep growing into summer and over a 12 month period typically produce 15 t DM/ha. However, this figure varies widely with yields of 20 t DM/ha measured in summer wet or irrigated conditions, whereas in very dry summer conditions yields have been as low as 10 t DM/ha.

RYEGRASS PLOIDY

Ploidy refers to the number of chromosomes per cell in a plant, a diploid ryegrass has two sets of chromosomes while a tetraploid ryegrass has four sets. These differences create differing plant characteristics with associated advantages and disadvantages for each type.

Diploids

Diploid plants have more tillers per plant and due to lower water content per cell, have a higher drymatter percentage per kilogram of fresh weight. Diploids have a slightly lower metabolisable energy level (around 0.1-0.3 ME lower depending on heading date). Both diploids and tetraploids have similar protein levels even though diploids are regularly lighter in colour. Diploids are recommended for high stocking rates and where overgrazing and pugging may occur.

Tetraploids

Across literature tetraploids have shown about a 3% increase in intake across multiple stock types.

Tetraploids are more palatable, are preferred by grazing animals and have been shown to improve milksolids production by up to 7%. However, tetraploid ryegrasses are less robust and require more careful management under stressful conditions.

Because of the extra chromosomes, tetraploids have a bigger cell size and they have higher water content which means they have a lower drymatter percentage per kilogram of fresh weight. Tetraploids are regularly darker in colour than diploids but have no differences in crude protein. They are recommended in systems capable of excellent pasture management, particularly when looking to increase animal performance per head.

DIPLOIDS	
Advantages	Disadvantages
Robust - less likely to be overgrazed	Less palatable
Less preferred by Argentine stem weevil	Less clover friendly - lower, denser growth habit can shade clover
More tolerant to pugging	

TETRAPLOIDS	
Advantages	Disadvantages
Higher metabolisable energy, more palatable to stock, easier to digest	More prone to overgrazing
Better utilisation (easier to graze to good residuals)	Require careful management in wet and drought conditions
Clover friendly - open, erect growth habit promotes more clover	Can be more preferred by Argentine stem weevil
Less facial eczema spores (as better grazed)	

AR1

AR37

UNBEATEN PEST PROTECTION FROM A RYEGRASS ENDOPHYTE.

Ryegrass with AR37 endophyte (right) demonstrates persistency advantages over AR1 endophyte (left) in the same cultivar, in the presence of black beetle adult, Ohaupo, Waikato.



Insects controlled by AR37 endophyte include: black beetle adult, Argentine stem weevil larvae, root aphid, pasture mealy bug and porina.

Both on and off-farm trials have proven the ability of ryegrass with AR37 endophyte to persist when under attack from these insects.



INTRODUCING...

AR128 is a new generation of epoxy-janthirem endophyte providing strong insect protection, similar to AR37, but with improved storage and delivery to the paddock.

Initially available in a very limited range of cultivars, this will gradually expand over the next four years. As a result, most cultivars will continue to be offered in the trusted AR37 form for foreseeable future.

i AR37 and AR128 are only suitable for sheep, beef and dairy. Manta AR37 and AR128 are only recommended for beef and dairy.

i Visit ar37endophyte.com for important animal health information and more info on endophyte type and protection against insect pests.



- Recommended for AR37 or AR128
- Recommended for AR1, AR37 or AR128
- Recommended for AR1, AR37, AR128 or LE



WHAT ON EARTH ARE ENDOPHYTES? PODCAST



WE'VE GOT YOU COVERED THIS SEASON.



For more forage options and technical advice see below.

Perennial ryegrasses

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Legion*	17
Samson	17
Three⁶⁰ + Align	17

Other perennial options

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Titan 5 lucerne	19

High performance finishing/rotation

Align tetraploid hybrid ryegrass +	20
Mohaka tetraploid hybrid ryegrass	20
Anvil tetraploid hybrid ryegrass	20
Mohaka tetraploid hybrid ryegrass	20
Manta AR37 Italian ryegrass	21
Manta Italian ryegrass	21
Manta Italian ryegrass +	21
Hunter forage brassica	21

Powerhouse legumes and herbs

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*Legion has been bred, selected and successfully tested as a perennial and will function as a perennial ryegrass. Due to a small number of tip awns Legion is certified as *Lolium Boucheanum*.

NEW

Grasslands®

Align

Tetraploid
Perennial Ryegrass

ONE SMART GRASS.

- Outstanding annual yields
- Very strong summer and autumn growth
- Excellent crown rust tolerance
- Ideal for dairy pastures, and sheep and beef finishing

Align is a high performance tetraploid perennial ryegrass that is productive throughout the year providing resilient, quality drymatter for modern production systems. **Align** is characterised by a dense and productive growth habit throughout August and September, providing improved grazing tolerance at this time.

Ploidy	Tetraploid
Suggested Sowing Rate (kg/ha)	22-25
Heading Date	Extremely late (+39)
Endophyte	AR37 & ARI
Rust Tolerance	Excellent

ALIGN PODCAST

NEW

Grasslands®

Three⁶⁰

Perennial Ryegrass

STRONG SUMMER PRODUCTION, CONSISTENT SPRING QUALITY.

- Very high annual drymatter production
- Excellent spring quality and summer leafiness
- Outstanding use of summer irrigation or natural rainfall
- Excellent crown rust tolerance

Three⁶⁰, like ONE⁵⁰ before it, has demonstrated a staygreen habit through dry summer conditions. This is particularly noticeable in the hot northern areas of New Zealand where **Three⁶⁰** has been very visual in its tolerance to hot and dry summer conditions.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	18-20
Heading Date	Late (+20)
Endophyte	AR37 & ARI
Rust Tolerance	Excellent

THREE⁶⁰ PODCAST

NEW

Grasslands®

Reason

Perennial Ryegrass

EARLY SEASON BOOST, ALL SEASON PERFORMANCE.

- Well balanced seasonal growth with excellent early spring growth
- Very good tiller density
- Extremely low aftermath heading in summer
- Excellent tolerance to a wide range of environments

Reason is a high performance, resilient diploid perennial that has low aftermath heading in summer and maintains summer and autumn productivity similar to existing late heading dairy options. **Reason** is ideal for early spring set stocking, while its summer quality makes it well suited for a range of stock classes.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	18-20
Heading Date	Mid (+3)
Endophyte	AR37 & ARI
Rust Tolerance	Very high

REASON PODCAST



Grasslands®
Legion
Perennial Ryegrass*

Grasslands®
Samson
Perennial Ryegrass

Grasslands® **NEW**
Three⁶⁰
Perennial Ryegrass

Grasslands® **NEW**
Align
Tetraploid Perennial Ryegrass

ALL REGIONS, ALL SEASONS, COMPLETE ALL ROUNDER.

- Very high summer, autumn and winter growth
- Excellent density for periods of set stocking and winter grazing
- Very low aftermath seeding and excellent summer leafiness
- Very good tiller size and leaf length

Legion can be used in general sheep and beef pastures having excellent density for periods of set stocking and winter grazing. It is also a high-performance grass that is highly suited to dairy pastures and runoffs. **Legion** is one of the recent generation of particularly strong perennial ryegrasses for autumn production.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	18-20
Heading Date	Late (+13)
Endophyte	AR37, ARI & LE
Rust Tolerance	Very high

PROVEN AND TRUSTED TO DELIVER SPRING LAMBING FEED.

- **Samson** has been used extensively in developing **ARI** and **AR37** novel endophytes
- Proven persistence in a wide range of New Zealand environments
- Productive under sheep and beef management
- Bred for improved rust tolerance

Samson is a general purpose perennial ryegrass that excels under sheep and beef grazing. **Samson** was bred from a wide range of genetics from around New Zealand making it an excellent long term pasture choice countrywide. **Samson AR37** possesses a typically early spring production.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	18-20
Heading Date	Mid (+3)
Endophyte	AR37, ARI & LE
Rust Tolerance	Very high

THE ULTIMATE SUMMER COMBO.

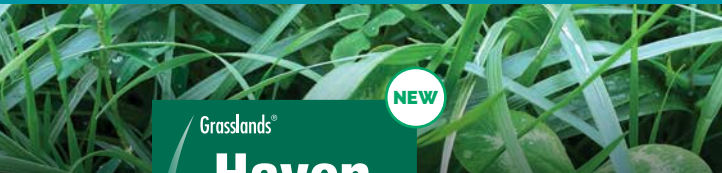
- Very high yield potential
- Maintains quality through late spring and early summer
- Improved summer productivity and palatability
- Excellent disease tolerance and pasture resilience

Three⁶⁰ diploid and **Align** tetraploid perennial ryegrasses are outstanding examples of their type. When mixed together, they deliver the best of both worlds for resilient, high-performing pastures, balancing diploid persistence with tetraploid productivity and quality to create a pasture that thrives through the hotter months.

Ploidy	Three⁶⁰ Diploid Align Tetraploid
Suggested Sowing Rate (kg/ha)	Three⁶⁰ 10 kg Align 12 kg
Heading Date	Three⁶⁰ +20 Align +39
Endophyte	AR37 or ARI
Rust Tolerance	Excellent

LEGION PODCAST

***Legion** has been bred, selected and successfully tested as a perennial and will function as a perennial ryegrass. Due to a small number of tip awns **Legion** is certified as *Lolium Boucheanum*.



NEW

Grasslands®

Haven

Tall Fescue



Oakdon

Meadow Fescue

PRODUCTIVE, PALATABLE, HEALTHY HAVEN.

- Soft leaves for an early heading tall fescue
- High total production with improved autumn and winter growth
- High crown rust tolerance
- Tolerant to a range of insects and supplied with **MaxP**** endophyte

Haven is one of the highest-producing tall fescues Agricom has trialled. While maintaining its high early spring growth similar to the previous generation material, **Haven** has captured more summer, autumn, and winter growth leading to an impressive annual yield potential for a **Haven** tall fescue pasture.

Ploidy	Hexaploid
Suggested Sowing Rate (kg/ha)	20-25
Heading Date	-18 relative to Nui [#]
Endophyte	MaxP*
Rust Tolerance	Very High

BRED IN NEW ZEALAND FOR THE SEASONS AHEAD.

- Highly palatable species
- Strong mid spring to late summer growth
- Ideally suited to high fertility soils
- Good fit for legume finishing pastures and in mixes with tall fescue to improve palatability and management

Oakdon is a New Zealand bred meadow fescue which contains the loline-producing endophyte **MaxR****. **Oakdon** in a 50:50 pasture mix with **Hummer** or **Haven** is the ideal option for people using fescue for the first time who are concerned about potential pasture management issues.

	Diploid
	20-24
	+11 relative to Nui [#]
	MaxR*
	High

[#]Nui heading date is the 22nd of October. *For more information on **MaxP*** and **MaxR*** endophytes visit www.agricom.co.nz/products/endophytes/endophyte-selection.



NEW

Grasslands®

Haven

Tall Fescue

Oakdon

Meadow Fescue

FESCUE MIX, BEST OF BOTH WORLDS.

- Improved palatability and pasture utilisation over traditional tall fescue pastures
- Extended spring growth from late August to late November
- Ideally suited to high-fertility soils
- Extended endophyte protection for a fescue pasture

Haven in a 50:50 pasture mix with **Oakdon** is the ideal option for people using fescue for the first time who are concerned about potential pasture management issues. This mix has consistently shown elevated palatability and utilisation over a range of other tall fescue types, and represents an ideal first step into tall fescue usage.

Ploidy	TF Hexaploid, MF Diploid
Suggested Sowing Rate (kg/ha)	24 (50% TF: 50% MF)
Heading Date	Haven -18, Oakdon +11
Endophyte	Haven MaxP* , Oakdon MaxR*
Rust Tolerance	High



Grasslands®
Savvy

Cocksfoot

Ceres
Atom

Prairie Grass

Titan 5

Lucerne

LIFTING DRYLAND PRODUCTION.

- Rapid establishment for a cocksfoot
- High autumn and winter production
- High quality and leafy in summer
- Excellent disease tolerance

Cocksfoot is well known for its drought tolerance and its ability to tolerate lower soil fertility and many insect pests, including grass grub. **Savvy** retains all these features while adding animal acceptability that most cocksfoot varieties lack. **Savvy** is ideal for cattle of all ages while also being very tolerant of intense sheep grazing and was bred to have a softer leaf and increased palatability.

Perenniality	Perennial
Suggested Sowing Rate (kg/ha)	3 mixed sward 6-8 pure sward (with dryland clovers)
Heading Date	Mid
Leaf Size	Fine
Growth Habit	Erect
Winter Activity	High (for cocksfoot)

EXCELLENT DURABILITY AND PALATABILITY.

- Long seasonal spread of growth
- Excellent winter growth and summer heat tolerance
- Highly palatable
- Potential for high legume and herb content

Atom has no endophyte, a palatable seedhead, potentially high legume and herb content and summer heat tolerance, which makes it a perfect fit for late spring, summer and autumn finishing of young stock. **Atom** prairie grass also has good winter production, similar to short rotation ryegrasses, making it a useful pasture tool at this time of year. Lax rotational grazing is recommended for **Atom** making it ideal for sowing into run-out lucerne stands.

Perenniality	Medium to long term
Suggested Sowing Rate (kg/ha)	25-30
Heading Date	Early
Winter Activity	Very high

PRODUCTIVE AND DISTINCTIVE LUCERNE.

- Highly productive dormancy 5 lucerne with strong early spring growth
- Fine stemmed leafy lucerne
- Good grazing tolerance
- Excellent disease tolerance

Titan 5 is a dual purpose lucerne ideal for both high quality supplementary feed and direct grazing. **Titan 5's** fine stems help maintain quality for silage and hay production and supports good utilisation when fed out to all stock classes, including horses. **Titan 5** is highly tolerant of grazing, making it a great option.

Perenniality	Perennial
Suggested Sowing Rate (kg/ha)	10-15 pure stand
Winter Dormancy Index	5*
Flowering Date	Medium
1000 Seed Weight (grams)	2.0

*1-10 winter active dormancy scale, with 10 being the most winter active.

Grasslands® NEW

Align

Tetraploid
Perennial Ryegrass

Grasslands®

Mohaka

Tetraploid
Hybrid Ryegrass

FOR SEASONAL RESILIENCE.

- Very high yield potential
- Improved cool-season activity
- Very high summer productivity and palatability
- Excellent disease tolerance and pasture resilience

This mix is an answer to longer rotation lengths, where hybrid persistence can be uncertain. **Align** tetraploid perennial and **Mohaka** tetraploid hybrid ryegrasses are both outstanding examples of their type. Agricom trials suggest that a 65% **Align** and 35% **Mohaka** mix provides the best balance across the seasonal growth curve, while getting the resilience of a perennial grass base into the rotation.

Ploidy	Tetraploid
Suggested Sowing Rate (kg/ha)	Align 16 kg Mohaka 9 kg
Heading Date	Align +39 Mohaka +20
Endophyte	AR128, AR37 or ARI
Rust Tolerance	Excellent



Grasslands® NEW

Anvil

Tetraploid
Hybrid Ryegrass

A BREAKTHROUGH IN HYBRID RYEGRASS GENETICS.

- An extremely high yielding hybrid ryegrass
- Combines strong winter and summer growth traits for a powerful all season forage boost
- Unique very late heading date with an exceptional leafy growth habit in spring and summer
- Well suited for 2-4 + year pasture rotations

Anvil is a unique tetraploid hybrid ryegrass that blends winter and summer production traits in one genetic profile. Its very late heading genetics maintain pasture quality for silage production, finishing pastures and milk production through spring and early summer. **Anvil** also excels in summer and autumn growth and has exceptional disease tolerance.

Ploidy	Tetraploid
Suggested Sowing Rate (kg/ha)	Undersowing 15 Pasture mix 22-25
Heading Date	Very late (+30)
Endophyte	AR37
Rust Tolerance	Excellent

Grasslands®

Mohaka

Tetraploid
Hybrid Ryegrass

NEW ZEALAND'S
MOST POPULAR
HYBRID RYEGRASS

DENSE, HIGH QUALITY HYBRID RYEGRASS.

- Broader leaved, well tillered tetraploid hybrid
- Ideal for undersowing programmes
- Proven in 2-4 + year pasture rotations
- Perfect for short term finishing pastures, run-off pastures, supplementary systems

Mohaka has good density for short periods of set stocking and winter grazing. It has a good spring growth habit while maintaining low aftermath seeding in summer, helping with pasture quality through into autumn.

Ploidy	Tetraploid
Suggested Sowing Rate (kg/ha)	Undersowing 15 Pasture mix 22-25
Heading Date	Late (+20)
Endophyte	AR128 & ARI
Rust Tolerance	Very high

MOHAKA PODCAST

AR128 & AR37 are only suitable for sheep, beef and dairy.



Grasslands®

Manta

Italian Ryegrass



BIG, PROTECTED, AND HIGHLY PRODUCTIVE.

- Very strong winter growth
- High total yield
- Broad visual plant type in all farm systems
- Ideal for short-term pasture rotations

Manta is a new Italian ryegrass, and with **AR37** endophyte is a fast establishing highly productive variety which is a recent addition to the **AR37** endophyte line up. **Manta AR37** stands out as an excellent choice for undersowing into damaged pastures, leveraging its quick establishment and robust growth offering a dependable solution for such scenarios. It should be noted that **Manta AR128** and **AR37** may cause ryegrass staggers, and are only suitable for beef and dairy.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	20-25 Undersowing 12-15
Heading Date	Late (+15)
Endophyte	AR128 & AR37
Rust Tolerance	Very high



Grasslands®

Manta

Italian Ryegrass

BIG, BOLD, AND HIGHLY PRODUCTIVE.

- Very strong winter growth
- High total yield
- Broad visual plant type in all farm systems
- Ideal for short pasture rotations

Manta is a modern Italian ryegrass with **Manta LE** standing out as a late heading diploid Italian ryegrass that combines the traits of its size, productivity and persistence. **Manta LE** is fast to establish, has robust winter production, and an extended period of productivity. In the northern regions in New Zealand, **Manta LE** is anticipated to endure through a second winter, while in milder climates, it demonstrates significant persistence for an Italian ryegrass. **Manta LE** is suitable for grazing with all stock types.

Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	20-25 Undersowing 12-15
Heading Date	Late (+15)
Endophyte	LE
Rust Tolerance	Very high

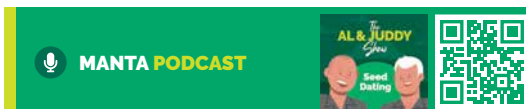


LATE SUMMER SOWN FAST FEED.

- Multi-graze crop mix
- Early grazing option
- Best suited to strip grazing with back fencing or rotational grazing
- Ideal for winter lamb and young cattle finishing

This mix of **Hunter** leafy turnip and **Manta** Italian ryegrass combines two fast establishing cultivars with similar early grazing windows and strong regrowth potential. **Manta's** resilience allows it to continue performing after winter, either supporting feed supply until a spring crop is established or carrying through into the following year.

Ploidy	—
Suggested Sowing Rate (kg/ha)	Manta 15 kg Hunter 3 kg
Heading Date	Manta +15, Hunter will flower early September
Endophyte	LE
Rust Tolerance	Excellent



Grasslands®

Brace

White Clover

ALL SEASON PRODUCTION.

- New generation of genetics for large-leaved white clover
- Very high spring and summer production
- Improved autumn and winter activity
- Ideal for dairy, beef and lamb finishing and silage pastures

Brace was finally selected after extensive dairy evaluation in the Waikato with proven persistence, high yield and adaptability to current environmental conditions in the presence of pests and current fertiliser practices. **Brace** has more consistently large leaves, making it a very visual white clover. It has production improvements in all seasons particularly noticeable in autumn and winter.

Perenniality	Perennial
Stolon Density	High
Leaf Size	Large
1000 Seed Weight (grams)	0.7
Suggested Sowing Rate (kg/ha)	3-5

BRACE PODCAST

Grasslands®

Attribute

White Clover

NEW ZEALAND'S NEW GENERATION OF CLOVER.

- New generation medium to large-leaved white clover
- Very high total productivity
- Maintains high productivity under a wide range of grazing management practices
- Ideal for sheep and beef pastures, finishing pastures, dairy and dairy support pastures

Attribute has shown a high level of performance in dryland sheep pastures under both set stocking and rotational grazing in Canterbury while being just as successful in the intensive grass growing areas of the rotationally grazed cattle pastures in the upper North Island. **Attribute** is the perfect white clover base for a clover mix.

Perenniality	Perennial
Stolon Density	High
Leaf Size	Medium-large
1000 Seed Weight (grams)	0.7
Suggested Sowing Rate (kg/ha)	3-5

ATTRIBUTE PODCAST

NEW

Grasslands®

Emblem

White Clover

RESILIENT WHITE CLOVER.

- Medium to small-leaved white clover
- High production under periods of set stocking
- Selected for performance over time
- Recommended for sheep and beef pastures both dryland and higher rainfall

Emblem is a medium to small-leaved white clover that is a third generation of this style. It has been bred and selected from a highly successful New Zealand breeding programme focused on broadly adaptive genotypes successful in variable environmental conditions and grazing managements.

Emblem has especially been successful in low input and set stock conditions predominantly found in sheep and beef farming systems.

Perenniality	Perennial
Stolon Density	High
Leaf Size	Medium-small
1000 Seed Weight (grams)	0.7
Suggested Sowing Rate (kg/ha)	3-5



Grasslands®
Relish

Red Clover

Ceres
AgriTonic

Plantain

Grasslands®
Choice

Chicory

**OUTSTANDING
PROVEN PERSISTENCE.**

- A major improvement in red clover persistence within grazing systems
- High yield potential over time
- Semi-prostrate growth habit
- Low levels of formononetin (oestrogen)

Relish red clover is a major advancement in red clover breeding. It has shown outstanding persistence in ryegrass pasture under rotational grazing compared to current alternative varieties. It must be remembered that sowing rate often has the biggest impact on red clover persistence as it is a much larger seed than white clover. Low sowing rates will lead to low plant populations from the very start of the pasture.

Perenniality	Perennial
Oestrogen	Low
Leaf Size	Medium
1000 Seed Weight (grams)	2.5
Ploidy	Diploid
Suggested Sowing Rate (kg/ha)	4-6 grass or brassica mix 12 pure stand

RELISH THE REWARDS OF RED CLOVER PODCAST

**LACTATION
POWERHOUSE.**

- Strong seasonal production
- Upright growth habit
- High tiller density for set stocking
- Suitable addition to grass pastures mixes and high legume density pastures

Benefits of an autumn sown AgriTonic pasture

Sowing in autumn delivers a quicker return from a lactation crop, while a spring sowing means establishing a full year before lambing.

- High weaning weights from increased daily intake
- Early forage consumption by young lambs
- Improved ewe conditions and post-weaning liveweight
- Low internal parasite larvae challenge and resilient ewes
- Potential for reduced drenching

Perenniality	Perennial
Cool Season Growth	Very high. Similar to perennial ryegrass
Growth Habit	Erect
1000 Seed Weight (grams)	2.0
Suggested Sowing Rate (kg/ha)	1-3 pasture mix, 2-3 in brassica mix, 12 pure stand (or plus white clover)

**NEW ZEALAND BRED,
CERTIFIED CHICORY.**

- A long-lived chicory with strong persistence
- Superior disease tolerance
- Improved drymatter production
- Ideal for short term 'finishing' or dairy pastures

Choice was bred in New Zealand by AgResearch Grasslands, the breeders of the original forage chicory, Puna. It has improved disease tolerance and very good early season growth. **Choice** also provides increased levels of required trace elements compared to ryegrass and gives high volumes of good quality summer feed for increased animal production.

Perenniality	Perennial
Cool Season Growth	High (for chicory)
Growth Habit	Erect
1000 Seed Weight (grams)	1.2
Suggested Sowing Rate (kg/ha)	1-3 mixed stand 8-10 pure stand

CHOICE CHICORY PODCAST

DAIRY PASTURE EXAMPLE MIXES

REASON	+3 DAYS	RATE (KG/HA)
<p>Reason is ideal for modern dairy pastures requiring September and October growth while maintaining summer quality and autumn pasture covers.</p>	Reason AR37 or AR1* perennial ryegrass	20
	Brace white clover	3
	Attribute white clover	2
	TOTAL	25

LEGION	+13 DAYS	RATE (KG/HA)
<p>Legion's strong autumn and winter activity helps with all grass wintering systems, while summer leafiness is a benefit to dairy pastures.</p>	Legion^ AR37, AR1* or LE perennial ryegrass	20
	Brace white clover	3
	Attribute white clover	2
	TOTAL	25

THREE ⁶⁰	+20 DAYS	RATE (KG/HA)
<p>Three⁶⁰ is perfect for dairy production due to its outstanding summer, autumn and winter growth, quality and persistence.</p>	Three⁶⁰ AR37 or AR1* perennial ryegrass	20
	Brace white clover	3
	Attribute white clover	2
	TOTAL	25

ALIGN	+39 DAYS	RATE (KG/HA)
<p>Align is a perfect ryegrass choice for maintaining peak lactation well into early summer and for farmers looking for a grass to maintain quality at higher pre-grazing yields.</p>	Align AR37 or AR1* tetraploid perennial ryegrass	25
	Brace white clover	3
	Attribute white clover	2
	TOTAL	30

DRYLAND DAIRY	RATE (KG/HA)	
<p>Legion and Savvy are ideal for dryland dairy production especially where persistence is desired. Savvy and Choice provide extra summer and autumn feed in dryland conditions.</p>	Legion^ AR37* perennial ryegrass	18
	Savvy cocksfoot	3
	Brace white clover	2
	Attribute white clover	3
	Choice chicory	2
TOTAL	28	

SHEEP AND BEEF PASTURE EXAMPLE MIXES

LEGION	+13 DAYS	RATE (KG/HA)
<p>Legion is ideal for sheep and beef farms due to its increased summer, autumn and winter growth, quality and persistence.</p>	Legion^ AR37, AR1* or LE perennial ryegrass	18
	Attribute white clover	3
	Relish red clover	4
	Ecotain® environmental plantain or AgriTonic plantain	1
	Choice chicory	2
	TOTAL	28

REASON	+3 DAYS	RATE (KG/HA)
<p>Reason has excellent density for periods of set stocking and winter grazing. It also has good pasture quality through summer into autumn for mating.</p>	Reason AR37 or AR1* perennial ryegrass	18
	Attribute white clover	3
	Nomad white clover	2
	Relish red clover	4
	Ecotain environmental plantain or AgriTonic plantain	1
	Choice chicory	2
	TOTAL	30

ALIGN	+39 DAYS	RATE (KG/HA)
<p>Align is tolerant of set stocking for lambing and is the perfect grass for supporting liveweight gain of both ewes and lambs during late lactation.</p>	Align AR37 or AR1* tetraploid perennial ryegrass	22
	Emblem white clover	3
	Attribute white clover	2
	Relish red clover	4
	Choice chicory	1
	TOTAL	32

TALL FESCUE MIX

HAVEN	-18 DAYS	RATE (KG/HA)
<p>Haven has a very high spring and summer growth and with MaxP is tolerant to many insects. The high water use efficiency makes Haven pastures ideal for regions that irrigate.</p>	Haven MaxP tall fescue	25
	Brace white clover	3
	Attribute white clover	2
	TOTAL	30

FESCUE MIX

HAVEN + OAKDON		RATE (KG/HA)
<p>Haven has a very high spring and summer growth and with MaxP is tolerant to many insects. The high water use efficiency makes Haven pastures ideal for regions that irrigate. Oakdon meadow fescue with MaxR endophyte is often mixed 50:50 with Haven tall fescue to maintain all the advantages of a tall fescue pasture but to greatly improve grazing management.</p>	Haven MaxP tall fescue	12
	Oakdon MaxR meadow fescue	12
	Attribute white clover	5
	Relish red clover	4
	TOTAL	33

DRYLAND SHORT TO MEDIUM TERM PASTURES

ATOM		RATE (KG/HA)
<p>Atom based pasture is a good option for short to medium-term pasture, particularly on light, free draining soils which are predominantly rotationally grazed.</p>	Atom prairie grass	20
	Titan 5 lucerne	4
	Relish red clover	4
	Attribute white clover	3
	Choice chicory	1
	TOTAL	32

RUNOUT LUCERNE UNDERSOWING MIX

ATOM		RATE (KG/HA)
<p>Atom prairie grass is a perfect grass to be undersown into a running out lucerne stand to extend the life by 2-3 years.</p>	Atom prairie grass	16-20
	Ecotain environmental plantain	2
	TOTAL	18-22

SHORT TERM PASTURES

MOHAKA	+20 DAYS	RATE (KG/HA)
<p>Mohaka has very strong spring production which makes it ideal for early spring pastures or part of a 3-4 year rotation in a run-off situation where silage production is a high priority.</p>	Mohaka AR128 or AR1 * tetraploid hybrid ryegrass	22-25
	Brace white clover	3
	Attribute white clover	2
	TOTAL	27-30

MANTA	+15 DAYS	RATE (KG/HA)
<p>Manta low endophyte is an ideal option for a short term pasture for all stock classes.</p>	Manta LE Italian ryegrass	20-25
	Attribute white clover	3
	Relish red clover	4
	TOTAL	27-32

UNDERSOWING OPTIONS

MANTA AR37	+15 DAYS	RATE (KG/HA)
<p>Manta AR37* is ideal for undersowing into thinning or run-out pastures. It has improved insect protection leading to increased second year persistence.</p>	Manta AR37 Italian ryegrass	18
	Ecotain environmental plantain	7
	TOTAL	25

MOHAKA	+20 DAYS	RATE (KG/HA)
<p>Mohaka is ideal for extending the life of a damaged or degraded pasture with a quality tetraploid hybrid ryegrass containing AR128.</p>	Mohaka AR128 or AR1 * tetraploid hybrid ryegrass	18
	Ecotain environmental plantain	7
	TOTAL	25



***Legion** has been bred, selected and successfully tested as a perennial and will function as a perennial ryegrass. Due to a small number of tip awns **Legion** is certified as *Lolium Boucheanum*.

***Manta AR37** and **AR128** are only suitable for beef and dairy.

Spitfire

Forage Rape

MULTI-PURPOSE FORAGE RAPE.

- Potential 6-9 t DM/ha (sowing date dependent)
- 13 weeks to grazing
- Suited to lambs, sheep or cattle
- Sow 3-4 kg/ha straight or 2 kg/ha with short term ryegrass

Spitfire is a multi-purpose forage rape with a characteristic soft stem, excellent regrowth potential and aphid tolerance, delivering both forage quality and yield, allowing very good livestock performance.

Suggested Sowing Time	Late January to early March
Suggested Sowing Rate (kg/ha)	3-4 alone, 2 with short term ryegrass
Time to First Grazing	13 weeks
Number of Potential Grazings	1 Mixes extend number of grazings
Potential Yield (t DM/ha)	6-9 depending on sowing date

Mainstar

Forage Rape

EXCELLENT REGROWTH POTENTIAL.

- Potential 5-8 t DM/ha (sowing date dependent)
- 10-12 weeks to first grazing
- Suited to lambs, sheep or young cattle
- Sow 3-4 kg/ha straight or 2 kg/ha with short term ryegrass

Mainstar is a modern early maturity forage rape. Traditionally rape has been used as a summer lamb finishing crop and ewe flushing feed. **Mainstar** has extremely good aphid tolerance. **Mainstar** is a very versatile brassica, being suitable for a wide range of soil fertility and environmental conditions, stock classes and sowing times.

Suggested Sowing Time	February to March
Suggested Sowing Rate (kg/ha)	3-4 alone, 1-2 with short term ryegrass
Time to First Grazing	10-12 weeks
Number of Potential Grazings	1 Mixes may extend number of grazings
Potential Yield (t DM/ha)	5-8 depending on sowing date

Ceres

Hunter

Forage Brassica

FAST AUTUMN FEED FROM A BRASSICA.

- Early-maturing from autumn sowing, 8-10 weeks with minimal ripening requirement
- Excellent quality forage for finishing animals through the summer months
- Fast recovery from grazing with excellent subsequent yields
- Strong plant survival from multiple grazings

Hunter is a quick growing, leafy turnip, with minimal bulb development and is best suited to multiple grazings. **Hunter** was selected for vigorous regrowth, resulting in a variety with fast recovery from grazing and excellent ability to yield in the second, third and sometimes fourth regrowth cycles.

Suggested Sowing Time	February to March
Suggested Sowing Rate (kg/ha)	4
Time to First Grazing	8-10 weeks
Number of Potential Grazings	2-3
Potential Yield (t DM/ha)	10*

Grasslands®

NEW

Revel

Tetraploid
Annual Ryegrass

RAPID WINTER GROWTH WITH EXCELLENT SPRING PERFORMANCE.

- Strong establishment from autumn sowing
- Consistent performance through winter and spring
- Good tiller density for a traditional annual
- Outstanding regrowth potential

Revel is a New Zealand-bred, late heading and high performance tetraploid annual ryegrass. It is a fast establishing annual suited to winter and spring production systems. While being recognisable as a broad annual ryegrass, **Revel** has good tiller density for its style, this contributes to the consistency of performance from grazing to early silage cuts.

Ploidy	Tetraploid
Suggested Sowing Rate (kg/ha)	20-30
Heading Date	Late (+12)
Endophyte	—
Rust Tolerance	Very high

Plant and Food

Coronet

Forage Oats

HIGH YIELDING FORAGE CEREAL.

- Later maturity
- High quality feed later in the season
- High leaf-to-stem ratio
- The earlier sown in autumn, the larger the yield

Coronet is a high yielding forage cereal that has a fine stem and high leaf content, combined with excellent disease and cold/frost tolerance, making it the preferred crop where very high quality feed is wanted.

Suggested Sowing Time	Mid-March to May
Suggested Sowing Rate (kg/ha)	100-120
Intended Use	Single winter grazing, green chop cereal silage and catch crop
Planting Time	Early autumn or late winter to early spring (for silage)
Rust Tolerance	Very good

Plant and Food

NEW

Crowa

Forage Oats

IMPROVED FLEXIBILITY.

- Fast establishing
- Improved rust tolerance
- High yield potential across multiple sowing windows
- Proven performer in winter sown 'catch crop' trials under difficult conditions

Agricom's latest release oat has been selected as a fast starting, high yielding early to medium maturity type. Agricom has been evaluating **Crowa** for over three years across a wide range of climatic zones and farm systems to ensure it has the versatility and flexibility to perform to meet growers expectations.

Suggested Sowing Time	Mid-March to May
Suggested Sowing Rate (kg/ha)	120 (can use 80/ha if in a mix eg. with Italian ryegrass)
Intended Use	Single winter grazing, green chop cereal silage and catch crop
Planting Time	Autumn, winter, spring
Rust Tolerance	Very good

 REVEL PODCAST


Seed treatment

Superstrike[®] grass seed treatment provides seedlings with a high level of early plant protection, delivering both insecticide and fungicide protection during pasture establishment.

The **Superstrike** treatment includes important micronutrients; zinc, manganese and molybdenum - applied evenly around the seed to help support early plant development. The combination of chemical additives and micronutrients in the seed treatment means seedlings are in a better position to withstand environmental stresses. With a positive effect from the treatment on seedling vigour and early plant growth, this may result in the first grazing occurring earlier. **Superstrike** is recommended for all grasses including ryegrass, cocksfoot and fescue where Argentine stem weevil, black beetle or grass grub are likely to have a detrimental effect on plant establishment.

Visit seedtreatment.co.nz for more information.

TABLE 1. SUPERSTRIKE GRASS PRODUCT PROFILE

	Pest Protection	Disease Protection	Micronutrients	Sowing Rate Compared to Untreated	Withholding Period
Superstrike Grass	Argentine stem weevil (ASW)	Pythium and Fusarium	Zinc	Same*	6 weeks (full renovation)
	Grass grub		Manganese		3 weeks (undersowing)
	Black beetle	Molybdenum			

*For grass grub protection a minimum sowing rate of 15 kg/ha is required.

Best practice pasture establishment

Successful pasture establishment starts with planning. A rushed decision can result in late planting, weed invasion, low feed production in the first winter and spring, and poor persistence. Use the Best Practice Pasture Establishment checklist below to help ensure that your pasture renewal programme is successful.

1. Paddock Selection

- Begin with the paddock with the greatest difference between current and potential performance, as the return on investment will be higher
- Select paddocks early; six months is required to properly prepare for new pastures

2. Paddock Preparation

- Control weeds and weed-seed production in the spring and summer prior to sowing a new pasture. Techniques available include grazing, mowing, silage and fodder crops

3. SOWING

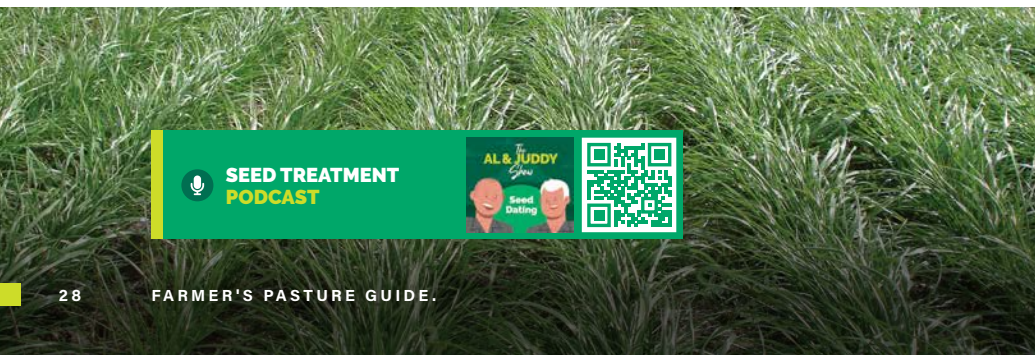
- Assess what insects are present, or likely to be, and decide on the best seed treatment or spraying options. Common problem insects are Argentine stem weevil, black beetle, grass grub, porina, and slugs (direct-drilling)
- Order seed several weeks before planting from your retailer, with instructions on the seed treatment you require so it will be available when you are ready to sow
- Wait until pastures are actively growing in early autumn and then use a knockdown spray in order to control germinating weeds. Sowing can commence 3-5 days later
- Ensure that cultivated paddocks are even, and have a fine and firm seedbed
- Sow seed at 10 mm depth. Deep sowing is the most common cause of poor clover establishment
- Press-wheels or a roller are often needed for seed-soil contact and to get the pasture up quickly and evenly
- Paddocks that are being direct-drilled should also be level and clear of excessive trash
- Use fertiliser at sowing. Ready access to nitrogen (N) and phosphorous (P) will ensure rapid and vigorous early growth

4. MONITORING THE Paddock AFTER SOWING

- Frequently monitor newly sown pastures for weed and insect pests. Controlling weeds early requires less chemical, is more effective and often has less impact on the sown pasture. Insect pests can decimate an emerging pasture; prompt action prevents significant plant losses and loss of production

5. FIRST GRAZING

- First grazing should only occur once the plant has begun to tiller out and is at least 10 cm high. Ensure plants are firmly anchored in the ground before grazing and avoid over-grazing or pugging damage
- Calves or heifers are best, and avoid grazing when the soil is wet
- Consider an application of N-based fertiliser after the first grazing to promote quick recovery and to encourage further tillering of the plants



What is undersowing?

The practice of undersowing, where seed is drilled into old or failing pastures (without sprayout), is a common practice on many farms.

Pastures with low numbers of ryegrass plants will produce little feed over the all-important winter period. Drilling with the right seed to boost sward density can be a cost-effective way of maintaining pasture production over these periods while also improving pasture quality.

In past years, undersowing has been a simple management tool used with great success. After recent seasonal extremes (too wet or too dry), farms have much larger proportions of poor performing pastures and farmers can't afford to wait for 10 plus years to get them back up to the required performance.

In an undersowing situation shorter term products such as annuals, Italians and hybrids have more of a fit than perennials as they are quicker to establish and more winter/spring active, making them more competitive for establishment in existing pasture growth rates.



Undersown with **Manta** Italian ryegrass (left) and not undersown (right)

UNDERSOWING CULTIVAR SELECTOR

Pasture Condition Score	Level of Pasture Degradation	Ryegrass Type
	Pasture planned to be renovated in 8 months	Revel Tetraploid Annual Ryegrass <small>NEW</small>
	Pasture planned to be renovated in 12-18 months	Manta Italian Ryegrass <small>LE</small>
	Pasture planned to be renovated in 18 months	Manta Italian Ryegrass* <small>NEW AR37 or AR128</small>
	Pasture planned to be renovated in 2-3 years	Mohaka Tetraploid Hybrid Ryegrass <small>AR128</small>
	Pasture OK but open	Legion Perennial Ryegrass* <small>AR37</small>

When weeds are controlled, include **Ecotain®** environmental plantain with these undersowing options

***Manta AR37** or **AR128** are only suitable for beef and dairy.

***Legion** has been bred, selected and successfully tested as a perennial and will function as a perennial ryegrass. Due to a small number of tip awns **Legion** is certified as *Lolium boucheanum*.

Key considerations when undersowing

CONDITION SCORE PASTURES

Assess which species will be the best fit for the situation (refer to page 29 'undersowing cultivar selector' for guidance). Having a large area in short term products such as annuals can cost more in the future if feed needs to be imported over the summer when annuals may run out. As annuals have no endophyte they can be a significant host for insect pests, this is an important factor to take into consideration when planning for future pasture rotations.

TIMING IS CRUCIAL

- The longer drilling is delayed, the slower the species will be to establish and therefore reduce winter yield
- Also, the later you start, the more opportunity there is for weeds to fill in the open space, which will limit the result of undersowing

WEEDS

- Check the presence of broadleaf weeds and weed grasses

SLUG BAIT AND CRICKET BAIT

- If direct drilling or undersowing, slug bait and/or cricket bait are key insurance policies. If you're unsure as to whether these are a concern, put a damp sack out overnight and check under the sack in the morning to detect slugs

FERTILISER

- Sow with start up fertiliser
- Products such as DAP (Di-Ammonium-Phosphate) will give establishing ryegrass plants a great kickstart, as the phosphate is great for root development and the extra nitrogen will help speed up establishment

USE TREATED SEED

- Seed treatments such as **Superstrike**® will protect new seedlings from pressure for the first six weeks from insects such as Argentine stem weevil and black beetle adults. This is important as grasses with endophyte takes about six weeks for the endophyte to start functioning
- **Superstrike**® contains a fungicide to protect the seedling from 'damping off' diseases, as well as micronutrients to aid with establishment
- Withholding period for new pasture is six weeks; for undersowing it is three weeks

CULTIVAR OPTIONS

- **Manta AR37** or **AR128**[#] diploid Italian ryegrass: Robust, high yielding diploid Italian. Great for ease of management over the winter, particularly in wetter areas
 - Undersowing rate: 12-15 kg/ha
- **Mohaka AR128** tetraploid hybrid ryegrass: Dense, high quality hybrid with excellent winter production. Increased persistency over an Italian ryegrass
 - Undersowing rate: 18-20 kg/ha
- **Legion AR37** diploid perennial ryegrass*: Dense high-quality perennial with excellent summer and autumn recovery ideal for boosting future summer recovery of an existing perennial pasture
 - Undersowing rate: 12-15 kg/ha

[#]Manta AR37 or AR128 are only suitable for beef and dairy.

*Legion has been bred, selected and successfully tested as a perennial and will function as a perennial ryegrass. Due to a small number of tip awns Legion is certified as *Lolium boucheanum*.

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