

AGRICOM

FARMER'S PASTURE GUIDE.

AGRICOM.CO.NZ

AGRICOM 
Pastures for Profit®



INTRODUCTION TO AGRICOM

Agricom researches, develops and 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 increase the profits returned to farmers. 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, so 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 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 the Farmer's Pasture Guide, Agricom's 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 50+ sites Agricom operates at any one time across New Zealand.

During the last 3-5 years we have observed and been involved in many conversations around farm grown feed and the cost effectiveness of these forages when grown and harvested efficiently. Much of this interest has stemmed from the rising costs of imported feed options, but the lessons learned and forage systems executed during this time have put many farmers in a much stronger position. Having high quality, cost effective farm grown feed available year round is a common theme for many leading farmers.

Interest continues to grow around greater pasture diversity. More farmers are exploring and opting to include a greater variety of complementary species across their farm systems. Understanding what differing species such as chicory and red clover can offer during a dry spell, or what **Ecotain®** environmental plantain provides in terms of mitigating N leaching losses are just some examples of why many farmers are looking outside 'the norm' when considering their pasture mixes. Agricom's broad product offering and extensive R&D network positions our business very strongly to inform and support such conversations.



Mark Brown
Australasian Brand Manager

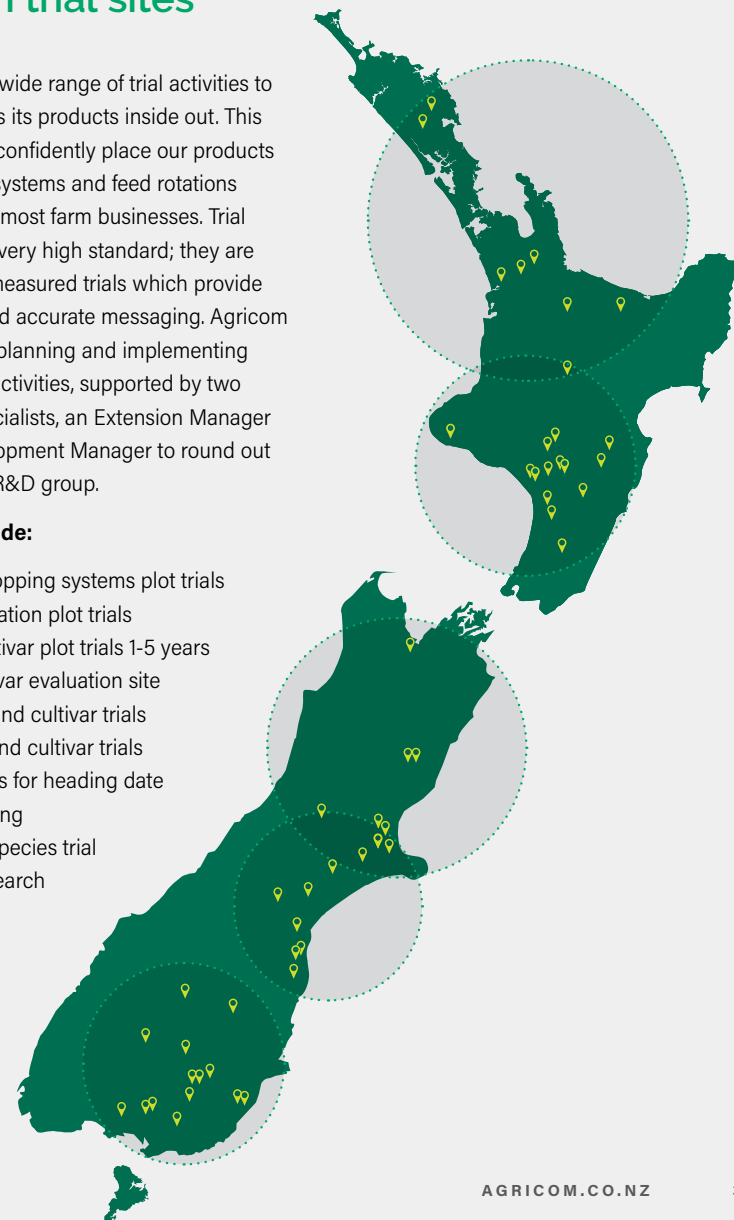
 For more discussion and agronomy insights, follow us on
 Facebook **@AgricomNZ** and Instagram **@agricomnz**
or visit **gofarmgrown.co.nz**

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 fully replicated and measured trials which provide reliable outcomes and accurate messaging. Agricom has six Agronomists planning and implementing a range of research activities, supported by two Forage Systems Specialists, an Extension Manager and a Product Development 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 site
- Plantain system and cultivar trials
- Chicory system and cultivar trials
- Heading row plots for heading date and disease scoring
- Diverse pasture species trial
- Beef systems research



TUNE IN FROM YOUR TRACTOR, UTE, OR COUCH TODAY.



 **Allister Moorhead**
Product Development Manager

Glenn Judson
Animal Nutritionist

AL & JUDDY FROM

The
Al & Juddy
Show
PODCAST



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 questioning 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 Product Development Specialist 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.



LISTEN NOW

More episodes of the Al & Juddy podcast will be released monthly and are available on the **Agricom website, YouTube, Spotify, Apple Podcasts, Google Podcasts, Amazon Music, pod.co, Deezer** or whichever app you choose to listen to podcasts.



PODCASTS AVAILABLE NOW!

THE RANGE INCLUDES:

Technical:

- Ep. 1 What on earth are endophytes?
- Ep. 13 Factors affecting intake

Systems:

- Ep. 16 Ewes should be into this
- Ep. 17 Wintering systems

Forages:

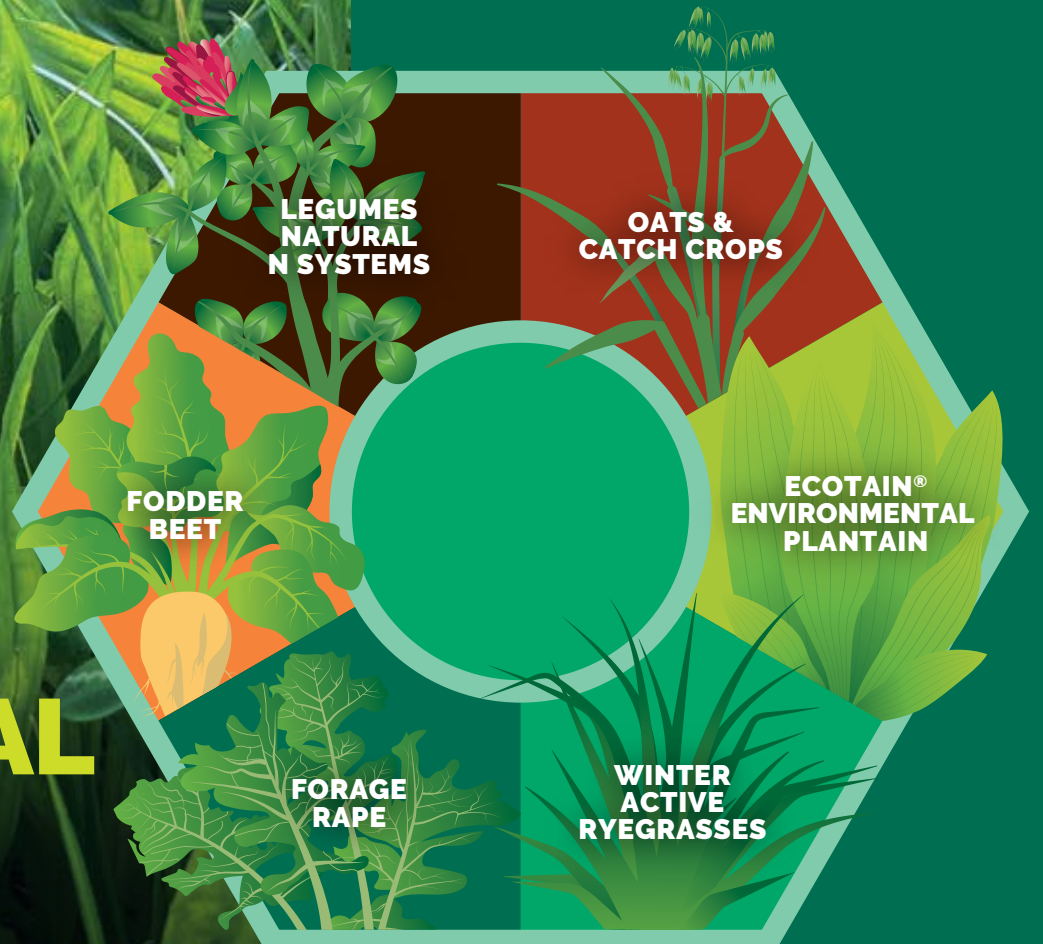
- Ep. 2 Ryegrass types explained
- Ep. 3 What's not to like about white clover?
- Ep. 18 Chicory dickory crop

Interviews:

- Ep. 15 Brainstorming lease block
- Ep. 20 A career in agriculture - meet PGW Seeds CEO John McKenzie

This is just a small selection from our podcast library, which is being added to regularly. Scan the QR code alongside to find additional podcasts not listed here.

FORAGE OPTIONS TO REDUCE ENVIRONMENTAL IMPACT.

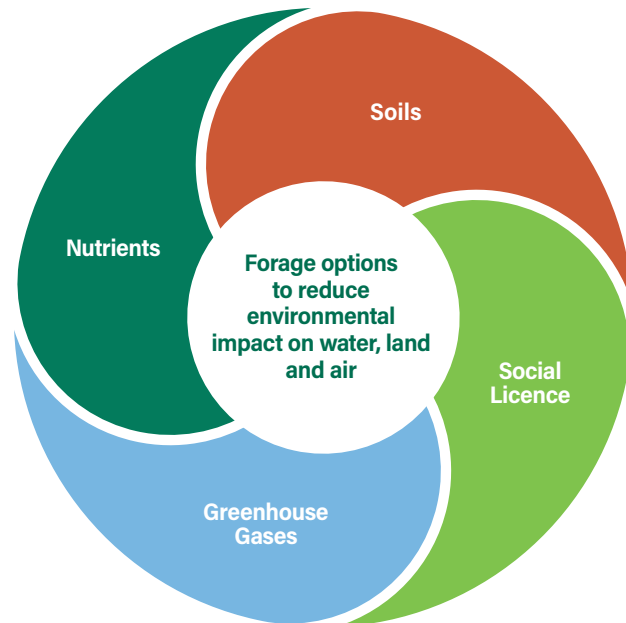


The Agricom Environmental Lens Framework

Efficient and sustainable pastoral agriculture remains the cornerstone of New Zealand's agricultural industry. However, there is 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's farming requirements. These products and forage systems have been designed to achieve high levels of production across a range of environments. The Agricom Environmental Lens Framework provides real tools, products and systems to help reduce the impact of nutrients, soils and greenhouse gases on water, land and air. 'Functional Forages' is an important part of the Agricom Environmental Lens as it represents Agricom's suite of products and systems, which can be considered as contributing tools from an environmentally sustainable view.



WHAT CAN BE DONE TO REDUCE MY IMPACT ON THE ENVIRONMENT THROUGH NUTRIENT LOSSES OR SURPLUSES?

Farm management factors such as pasture type, imported feed use and nitrogen fertiliser can help to reduce nitrogen (N) and phosphate (P) leaching. **Ecotain**® environmental plantain, catch crops like **Milton**, **Coronet** and **Crowa** oats, low N crops like **Jamon** and **Brunium** fodder beet and **Relish** red clover natural N systems are all options which may reduce the impact of nutrient losses and surpluses.

WHAT CAN BE DONE TO REDUCE MY IMPACT ON THE ENVIRONMENT THROUGH SOIL MANAGEMENT?

Soils are an incredibly important part of farming. To farm sustainably into the future, we need to manage and maintain soil health to prevent soil related issues such as erosion, excess nutrients, contamination and loss of carbon. Examples of forages to assist in slope strategies or heavily pugged areas are dense winter active grasses like **Reason** perennial ryegrass, or **Manta** Italian ryegrass, winter grazing management and riparian species such as **Savvy** cocksfoot and **Hummer** or **Haven** tall fescue can also positively influence soil health to reduce the impact on land and water.

WHAT CAN BE DONE TO REDUCE MY IMPACT ON THE ENVIRONMENT THROUGH GREENHOUSE GASES?

The two main greenhouse gases emitted by New Zealand pastoral systems are methane and nitrous oxide. The amount of methane produced is typically related to the amount of drymatter consumed. Therefore, using high quality feeds will reduce the volume of emissions per unit or product as animals need to eat less to achieve the same performance. However, there are some forages which result in less methane per kg DM eaten such as forage rape.

In terms of nitrous oxide, reducing the amount of protein in the feed like fodder beet is likely to reduce nitrous oxide. However, **Ecotain** has reduced both nitrogen excretion and emissions in some studies.

For more details on how different forages and different forage systems may assist in achieving both your productivity goals but also the growing expectation of consumers, talk to your local Agricom representative about Agricom's Environmental Lens.



RYEGRASS TYPES EXPLAINED PODCAST



Pasture Options

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

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 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.

HYBRID (SHORT ROTATION) RYEGRASS

Short rotation or 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 short rotation 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.

Short rotation 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

HYBRID (LONG ROTATION) RYEGRASS

Long rotation ryegrasses are crosses between perennial ryegrasses and existing hybrid ryegrasses or Italian ryegrasses. These grasses are defined by being heavily selected back toward their perennial heritage. Due to being more perennial like they often sit between 3-5 years in a rotation.

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.

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.

| 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

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.

| 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

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.

UNBEATEN PEST PROTECTION FROM A RYEGRASS ENDOPHYTE

AR37 endophyte has proven resistance to more pasture insects than any other ryegrass endophyte commercially available. Endophyte is the first choice to be made when deciding on perennial ryegrass options, as endophyte has a major effect on the persistence and production of ryegrass in high insect pressure environments.

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.

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

AR37 offers protection against the insect pests photographed below:



BLACK BEETLE ADULT



PASTURE MEALY BUG



ARGENTINE STEM WEEVIL LARVAE



PORINA



ROOT APHID



WHAT ON EARTH ARE ENDOPHYTES? PODCAST



PRODUCTION

In regions with high insect pressure AR37 increases the annual production of ryegrasses when compared to the same cultivar with different endophytes (SE, AR1 and LE). Trials run from Northland to Southland have shown the persistence and production benefits of the AR37 endophyte. Animal trials using the same perennial ryegrass cultivar with AR37, AR1 and LE endophytes have shown that the growth of sheep and milk production in dairy cows on AR37 is the same as on AR1 or LE.



- Recommended for AR37
- Recommended for AR1 or AR37
- Recommended for AR1 or AR37 or LE

i AR37 is only suitable for sheep, beef and dairy.

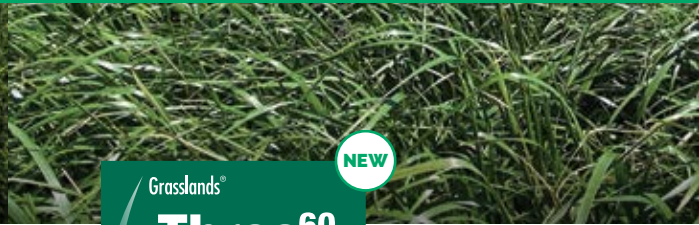
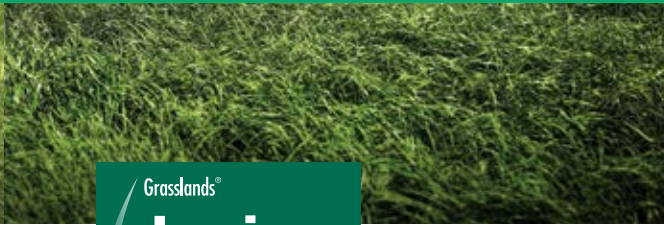
WE'VE GOT YOU COVERED THIS SEASON.



For more forage options and technical advice see below.

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*Prospect and Legion have been bred, selected and successfully tested as perennials and will function as perennial ryegrasses. Due to a small number of tip awns Prospect and Legion are certified *Lolium boucheanum*.



Grasslands® **Reason**
Perennial Ryegrass

Grasslands® **Legion**
Perennial Ryegrass*

Grasslands® **Three⁶⁰**
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 AR37 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, with its summer quality making it well suited for a range of stock classes.

| | |
|-------------------------------|------------|
| Ploidy | Diploid |
| Suggested Sowing Rate (kg/ha) | 18-20 |
| Heading Date | Mid (+3) |
| Endophyte | AR37 & AR1 |
| Rust Tolerance | Very high |

**ALL REGIONS, ALL SEASONS,
COMPLETE ALL ROUNDER.**

- Outstanding 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 AR37 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, AR1 & LE |
| Rust Tolerance | Very high |

***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*.

**OUTSTANDING SUMMER AND
AUTUMN PERFORMANCE
WITH LATE 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 & AR1 |
| Rust Tolerance | Excellent |

AR37 is only suitable for sheep, beef and dairy.



NEW ZEALAND'S ICONIC PERENNIAL RYEGRASS.

- Strong summer, autumn and winter growth particularly with **AR37**
- Excellent spring quality and summer leafiness
- Very good use of summer irrigation or natural rainfall
- One of the most commercially sown varieties in New Zealand

ONE⁵⁰ is a high performing variety with particularly strong growth from summer through to winter. **ONE⁵⁰** is one of the most trialled and widely sown cultivars in New Zealand in both **ONE⁵⁰ AR37** and **ARI**. This level of trialling creates confidence that performance will be consistent wherever **ONE⁵⁰** is used.

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

AR37 is only suitable for sheep, beef and dairy.



THE ADAPTABLE RYEGRASS.

- **Prospect** has been bred from a diverse range of genetic material
- Fine, dense diploid cultivar
- Strong all-year-round performance
- High total production

Prospect has strong all-year-round growth and impressive tiller density that improves persistence. **Prospect** is suited to a variety of situations from hill country development on sheep and beef farms. In regional trialling **Prospect** has shown excellent adaption to a wide range of environments.

| | |
|-------------------------------|-----------------------|
| Ploidy | Diploid |
| Suggested Sowing Rate (kg/ha) | 18-20 |
| Heading Date | Late (+12) |
| Endophyte | AR37 & ARI |
| Rust Tolerance | Good |

***Prospect** 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 **Prospect** is certified as *Lolium boucheanum*.



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 |



Grasslands®
Hummer
Tall Fescue

Grasslands®
Haven
Tall Fescue

Oakdon
Meadow Fescue

HIGH YIELDING AND PALATABLE.

- Fine tillered, very early heading tall fescue
- High yielding palatable cultivar
- Contains **MaxP**** endophyte for improved persistence and significant yield advantages
- Ideal for hot summer environments with moisture

The early heading date of **Hummer** leads to very impressive late winter and early spring growth potential, while **Hummer** as a tall fescue is an ideal option for irrigated or summer rainfall pastures in regions where it is too hot for perennial ryegrass to perform at its most efficient.

| | |
|-------------------------------|----------------------|
| Ploidy | Hexaploid |
| Suggested Sowing Rate (kg/ha) | 20-25 |
| Heading Date | -21 relative to Nui* |
| Endophyte | MaxP® |

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 tested. 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** pasture.

| | |
|-------------------------------|----------------------|
| Ploidy | Hexaploid |
| Suggested Sowing Rate (kg/ha) | 20-25 |
| Heading Date | -18 relative to Nui* |
| Endophyte | MaxP® |

NEW ZEALAND'S FIRST COMMERCIAL PROPRIETARY MEADOW FESCUE.

- 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.

| | |
|-------------------------------|----------------------|
| Ploidy | Diploid |
| Suggested Sowing Rate (kg/ha) | 20-24 |
| Heading Date | +11 relative to Nui* |
| Endophyte | 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®

Ohau

Tetraploid
Long-Rotation Ryegrass

EXPLOSIVE EARLY SPRING GROWTH.

- Strong spring growth
- A persistent long rotation tetraploid
- Ideal for medium-term finishing pastures

Ohau has strong early spring growth, providing greater production during the critical lambing and calving periods. **Ohau** is the ideal option for 3-5 year pastures with excellent quality and yield.

| | |
|-------------------------------|-------------------------------------|
| Ploidy | Tetraploid |
| Suggested Sowing Rate (kg/ha) | Undersowing 15 Pasture mix 25-30 |
| Heading Date | Late (+8) |
| Endophyte | AR37, AR1 & LE |
| Rust Tolerance | Good |

Grasslands®

Mohaka

Tetraploid
Hybrid Ryegrass

DENSE, HIGH QUALITY HYBRID RYEGRASS.

- **Mohaka** is a broader leaved, well tillered hybrid suited to 2-4 year pastures
- Ideal for undersowing programmes
- Ideal for short term finishing pastures, run-off pastures, supplementary systems

Mohaka is a broader leaved, well tillered hybrid suited to 2-4 year pastures. **Mohaka** is ideal for undersowing into run-out pastures, with **AR37** endophyte offering increased protection against insect attack and providing improved persistence compared to Italian ryegrass options.

| | |
|-------------------------------|-------------------------------------|
| Ploidy | Tetraploid |
| Suggested Sowing Rate (kg/ha) | Undersowing 15 Pasture mix 25-30 |
| Heading Date | Late (+20) |
| Endophyte | AR37 & AR1 |
| Rust Tolerance | Very high |

NEW

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 AR37** may cause ryegrass staggers. **Manta AR37** is only recommended for beef and dairy.

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

Grasslands®

Asset

Italian Ryegrass

RESILIENT ITALIAN RYEGRASS.

- Excellent second year production potential
- Low aftermath seedhead for a true Italian
- Dense cultivar suited to winter grazing
- Ideal for silage production

Asset was the first Italian ryegrass available with **AR37** endophyte. This improves the persistency of **Asset** by providing improved insect protection. It should be noted that **Asset AR37** may cause ryegrass staggers.

Asset without endophyte, is an ideal long-lived Italian for autumn and winter lamb production, or any short term pasture on sheep, beef, deer and dairy farms.

| | |
|--------------------------------------|----------------------------|
| Ploidy | Diploid |
| Suggested Sowing Rate (kg/ha) | 20-25 Undersowing 12-15 |
| Heading Date | Late (+14) |
| Endophyte | AR37 & LE |
| Rust Tolerance | Very high |

NEW

Grasslands®

Manta

Italian Ryegrass

BIG, BOLD, AND HIGHLY PRODUCTIVE.

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

Manta is a new 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 |

Jivet

Annual Ryegrass

RAPID WINTER GROWTH, EXCELLENT SPRING PERFORMANCE.

- Excellent winter production
- Ideal for high quality silage
- Maintains quality in spring with very good disease resistance
- Outstanding animal performance

Jivet annual ryegrass is a short term option with very fast establishment and high production. **Jivet** is an ideal cultivar to sow between maize crops and has excellent winter activity which carries through spring with extended performance and improved feed quality. **Jivet** is most suited for silage production and high ME for animal performance.

| | |
|--------------------------------------|------------|
| Ploidy | Tetraploid |
| Suggested Sowing Rate (kg/ha) | 20-30 |
| Heading Date | Late |
| Perenniality | Annual |
| Winter Activity | Very high |



Grasslands®
Brace
White Clover

Grasslands®
Attribute
White Clover

Grasslands®
Relish
Red 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 |

NEW ZEALAND'S NEW GENERATION OF CLOVER.

- Very high total productivity
- Maintains high productivity under a wide range of grazing managements
- Ideal for sheep and beef pastures, finishing pastures, dairy and dairy support pastures
- Bred in New Zealand by world leaders in white clover breeding

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 |

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 |



THE ONLY PROVEN ENVIRONMENTAL PLANTAIN.

| ECOTAIN® ENVIRONMENTAL PLANTAIN REDUCES LEACHING IN FOUR WAYS: | |
|--|--|
| 1. Dilute | Ecotain® environmental plantain increases the volume of urine animals produce, which means the N being excreted is in a more dilute form, resulting in a reduced N load in the urine patch. |
| 2. Reduce | Ecotain reduces the amount of dietary N which is excreted in urine, compared with ryegrass. This reduces the amount of N released into the soil via the urine patch. |
| 3. Delay | In urine patches from animals grazing Ecotain , the conversion from ammonium to nitrate is delayed. Slower conversion allows plants a greater opportunity to uptake N, significantly reducing the potential for leaching. |
| 4. Restrict | The presence of Ecotain plants in the soil reduces nitrification, likely through the effect of a biological nitrification inhibitor. |

| | |
|-----------------------------|--|
| Perenniality | Perennial |
| Cool Season Growth | Very high, similar to perennial ryegrass |
| Pure Sward | 10-12 kg/ha |
| Ecotain Dominant Clover Mix | 12 kg Ecotain 4 kg clover |
| Diverse Pasture Mix | 1-3 kg/ha |



GRAZING TOLERANCE.

- Strong all year round growth pattern
- Upright growth habit
- High tiller density
- Suitable addition to grass pasture mixes and high legume density pastures

AgriTonic has been bred from plants surviving our intense breeding process and we believe this has conferred some additional tolerance to grazing and other farm management stresses. **AgriTonic** provides an ideal option to include in a general pasture mix where grazing pressure is often unnoticed and intense.

| | |
|-------------------------------|--|
| 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 mix sward 2-3 brassica mix 12 pure stand |



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 |

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 ARI 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, ARI 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 ARI perennial ryegrass* | 20 |
| | Brace white clover | 3 |
| | Attribute white clover | 2 |
| | TOTAL | 25 |

| ONE ⁵⁰ | +20 DAYS | RATE (KG/HA) |
|---|---|--------------|
| <p>ONE⁵⁰ is reliable for dairy production due to its outstanding summer, autumn and winter growth, quality and persistence.</p> | ONE⁵⁰ AR37, ARI or LE perennial ryegrass* | 20 |
| | Brace white clover | 3 |
| | Attribute white clover | 2 |
| | TOTAL | 25 |

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, ARI 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 |

| SAMSON | +3 DAYS | RATE (KG/HA) |
|--|--|--------------|
| <p>Samson has excellent spring growth and persistency under set stocking and hard winter grazing. If hard dryland, drop Samson to 12 kg/ha, lift Savvy to 4 kg/ha and add 6 kg/ha of Coolamon.</p> | Samson AR37, ARI or LE perennial ryegrass* | 18 |
| | Savvy cocksfoot | 2 |
| | Attribute white clover | 2 |
| | Nomad white clover | 3 |
| | Choice chicory | 2 |
| | Ecotain environmental plantain or AgriTonic plantain | 1 |
| | 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 ARI 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 |

| PROSPECT | +12 DAYS | RATE (KG/HA) |
|--|--|--------------|
| <p>Prospect can be used on high producing areas where animal carrying capacity is maximised or hill country developments.</p> | Prospect** AR37 or ARI perennial ryegrass* | 18 |
| | Attribute white clover | 3 |
| | Nomad white clover | 2 |
| | Relish red clover | 4 |
| | Ecotain environmental plantain or AgriTonic plantain | 2 |
| | TOTAL | 29 |

*It is not advisable to mix **AR37** and **ARI** varieties. **ARI** is not recommended for areas where black beetle, porina or root aphid are common problem pests. Grass seed should be **Superstrike[®]** treated where Argentine stem weevil, black beetle or grass grub are a risk to seedlings. For more information on **AR37** endophyte, visit ar37endophyte.com. **AR37** is only recommended for sheep, beef, and dairy.

TALL FESCUE MIX

Hummer and **Haven** have a very high spring and summer growth and with **MaxP**® is tolerant to many insects. The high water use efficiency makes **Hummer** or **Haven** pastures ideal for regions that irrigate.

| EXAMPLE MIX | RATE (KG/HA) |
|---|--------------|
| Hummer MaxP ® or Haven MaxP ® tall fescue | 25 |
| Brace white clover | 3 |
| Attribute white clover | 2 |
| TOTAL | 30 |

FESCUE MIX

Hummer and **Haven** have a very high spring and summer growth and with **MaxP**® are tolerant to many insects. The high water use efficiency makes **Hummer** or **Haven** pastures ideal for regions that irrigate. **Oakdon** meadow fescue with **MaxR**® endophyte is often mixed 50:50 with **Hummer** or **Haven** tall fescue to maintain all the advantages of a tall fescue pasture but to greatly improve grazing management.

| EXAMPLE MIX | RATE (KG/HA) |
|---|--------------|
| Hummer MaxP ® or Haven MaxP ® tall fescue | 12 |
| Oakdon MaxR ® meadow fescue | 12 |
| Attribute white clover | 5 |
| Relish red clover | 4 |
| TOTAL | 33 |

DRYLAND DAIRY

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.

| EXAMPLE MIX | RATE (KG/HA) |
|--|--------------|
| Legion** AR37 perennial ryegrass* | 18 |
| Savvy cocksfoot | 3 |
| Brace white clover | 2 |
| Attribute white clover | 3 |
| Choice chicory | 2 |
| TOTAL | 28 |

DRYLAND SHORT TO MEDIUM TERM PASTURES

Atom based pasture is a good option for short to medium-term pasture, particularly on light, free draining soils which are predominantly rotationally grazed.

| EXAMPLE MIX | RATE (KG/HA) |
|-------------------------------|--------------|
| Atom prairie grass | 20 |
| Titan 5 lucerne | 4 |
| Relish red clover | 4 |
| Attribute white clover | 3 |
| Choice chicory | 1 |
| TOTAL | 32 |

SHORT TERM PASTURES

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.

| (+20 DAYS) EXAMPLE MIX | RATE (KG/HA) |
|--|--------------|
| Mohaka AR37 or ARI tetraploid hybrid ryegrass* | 25 |
| Brace white clover | 3 |
| Attribute white clover | 2 |
| TOTAL | 30 |

Manta low endophyte is an ideal option for a short term pasture.

| (+15 DAYS) EXAMPLE MIX | RATE (KG/HA) |
|--|--------------|
| Manta LE Italian ryegrass | 20-25 |
| Attribute white clover | 3 |
| Relish or Sensation red clover | 4 |
| TOTAL | 27-32 |

UNDERSOWING OPTIONS

Manta AR37® is ideal for undersowing into thinning or run-out pastures. It has improved insect protection leading to increased second year persistence.

| (+15 DAYS) EXAMPLE MIX | RATE (KG/HA) |
|---|--------------|
| Manta AR37 Italian ryegrass | 18 |
| Ecotain ® environmental plantain | 7 |
| TOTAL | 25 |

Mohaka is ideal for extending the life of a damaged or degraded pasture with a quality tetraploid hybrid ryegrass with **AR37**.

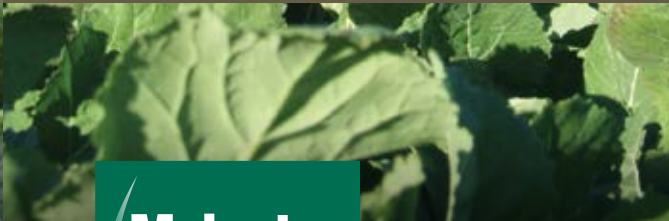
| (+20 DAYS) EXAMPLE MIX | RATE (KG/HA) |
|--|--------------|
| Mohaka AR37 or ARI tetraploid hybrid ryegrass* | 18 |
| Ecotain ® environmental plantain | 7 |
| TOTAL | 25 |

RUNOUT LUCERNE UNDERSOWING MIX

Atom prairie grass is a perfect grass to be undersown into a running out lucerne stand to extend the life by 2-3 years.

| EXAMPLE MIX | RATE (KG/HA) |
|---|--------------|
| Atom prairie grass | 16-20 |
| Ecotain ® environmental plantain | 2 |
| TOTAL | 18-22 |

****Prospect** and **Legion** have been bred, selected and successfully tested as perennials and will function as perennial ryegrasses. Due to a small number of tip awns **Prospect** and **Legion** are certified *Lolium boucheanum*.
***Manta AR37** is only recommended for beef and dairy.



Spitfire

Forage Rape

Mainstar

Forage Rape

Ceres

Hunter

Forage Brassica

MULTI-PURPOSE FORAGE RAPE.

- Potential 6-9 t DM/ha (sowing date dependent)
- 13 weeks to first 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 |

EXCELLENT REGROWTH POTENTIAL.

- Early-maturing, 10-12 weeks
- Regrowth potential for 3 grazings, particularly in mixes
- Fast recovery from grazing with excellent subsequent yields
- Ideal for mixing with herbs and clover

Mainstar is a modern early maturity 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 | 1-2 Mixes may extend number of grazings |
| Potential Yield (t DM/ha) | 5-8 depending on sowing date |

FAST AUTUMN FEED FROM A BRASSICA.

- Early-maturing from spring 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 |
| 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* |

*Depending on number of grazings.

Plant and Food

Milton

Forage Oats

VERY HIGH YIELDING OAT.

- Early maturing
- Quick feed early-mid winter
- Quicker to mature than **Coronet**
- Green chop cereal silage

Milton is a very high-yielding oat with improved disease resistance and has the ability to hold quality until grazing/cutting. It is ideally suited for planting in autumn to provide a single grazing in winter.

| | |
|----------------------------|--|
| Intended Use | Single winter grazing, green chop cereal silage and catch crop |
| Resistance to rust | Very good |
| Planting Time | Autumn or early spring |
| Sowing Rate (kg/ha) | 100-120 |

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.

| | |
|----------------------------|--|
| Intended Use | Single winter grazing, green chop cereal silage and catch crop |
| Resistance to rust | Very good |
| Planting Time | Early autumn or late winter to early spring (for silage) |
| Sowing Rate (kg/ha) | 100-120 |

NEW

Plant and Food

Crowa

Forage Oats

IMPROVED DISEASE RESISTANCE.

- 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.

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

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 now includes important micronutrients; zinc, manganese and molybdenum - applied evenly around the seed to 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) | <i>Pythium</i> and <i>Fusarium</i> | 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

| Level of Pasture Degradation | Ryegrass Type |
|---|--|
|  | <p>Pasture planned to be renovated in 8 months</p>  |
|  | <p>Pasture planned to be renovated in 12-18 months</p>  |
|  | <p>Pasture planned to be renovated in 18 months</p>  |
|  | <p>Pasture planned to be renovated in 2-3 years</p>  |
|  | <p>Pasture OK but open</p>  |

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

***Manta AR37** is only recommended 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*.

Some of the key considerations when undersowing are as follows

CONDITION SCORE PASTURES

Assess which species will be the best fit for the situation. 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 any 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[#]** 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 AR37** 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 is only recommended 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*.

Other Forage Products from Agricom

COMPLEMENTARY CULTIVARS

At Agricom we pride ourselves on providing a wide range of cultivars to farmers including a large range of brassicas, forage cereals, other grass species, legumes, herbs, fodder beet and ryegrass.

| GRASSES | LEGUMES | BRASSICAS | FODDER BEET | CEREALS |
|--|---|---|--|---|
| <p>Phalaris Hardy Perennial Grass</p> <p>Gala Grazing Brome</p> | <p>Sensation Red Clover</p> <p>Torlesse Lucerne</p> | <p>SovGold Kale</p> <p>Triumph Swede</p> <p>Domain Swede</p> | <p>Jamon Fodder Beet</p> <p>Brunium Fodder Beet</p> | <p>Monty Forage Barley</p> <p>Salute Slage Barley</p> |
| <p>Jeta Long-Rotation Ryegrass</p> <p>Tower Tall Fescue</p> | <p>Coolamon Subterranean Clover</p> <p>Viper Balansa Clover</p> | <p>New York Turnip</p> <p>Rival Turnip</p> | <p>Enermax Fodder Beet</p> <p>Feldherr Fodder Beet</p> | <p>Kudos Forage Triticale</p> <p>Prophet Forage Triticale</p> |
| <p>Halo Tetraploid Perennial Ryegrass</p> <p>Align Tetraploid Perennial Ryegrass</p> | <p>Resal Persian Clover</p> <p>Tribute White Clover</p> | | <p>Tadorne Sugar Beet</p> <p>Bangor Fodder Beet</p> | <p>Stark Forage Barley</p> |
| <p>Timothy Quality Perennial Grass</p> | <p>Nomad White Clover</p> <p>Emblem White Clover</p> | | <p>Delicante Fodder Beet</p> <p>Surf Sugar Beet</p> | |
| | | | <p>Lempa Fodder Beet</p> | |

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