ravensdown

Agronomy

Seed, fertiliser and agrochemicals

Growing your investment above and below ground

Contents

Ravensdown's integrated approach

We all know in nature nothing happens in isolation. It's the same with producing quality grass.

It comes down to a combination of fertile soil, quality seed, weed and insect pest management, grazing management, smart thinking, attention to detail and hard work.

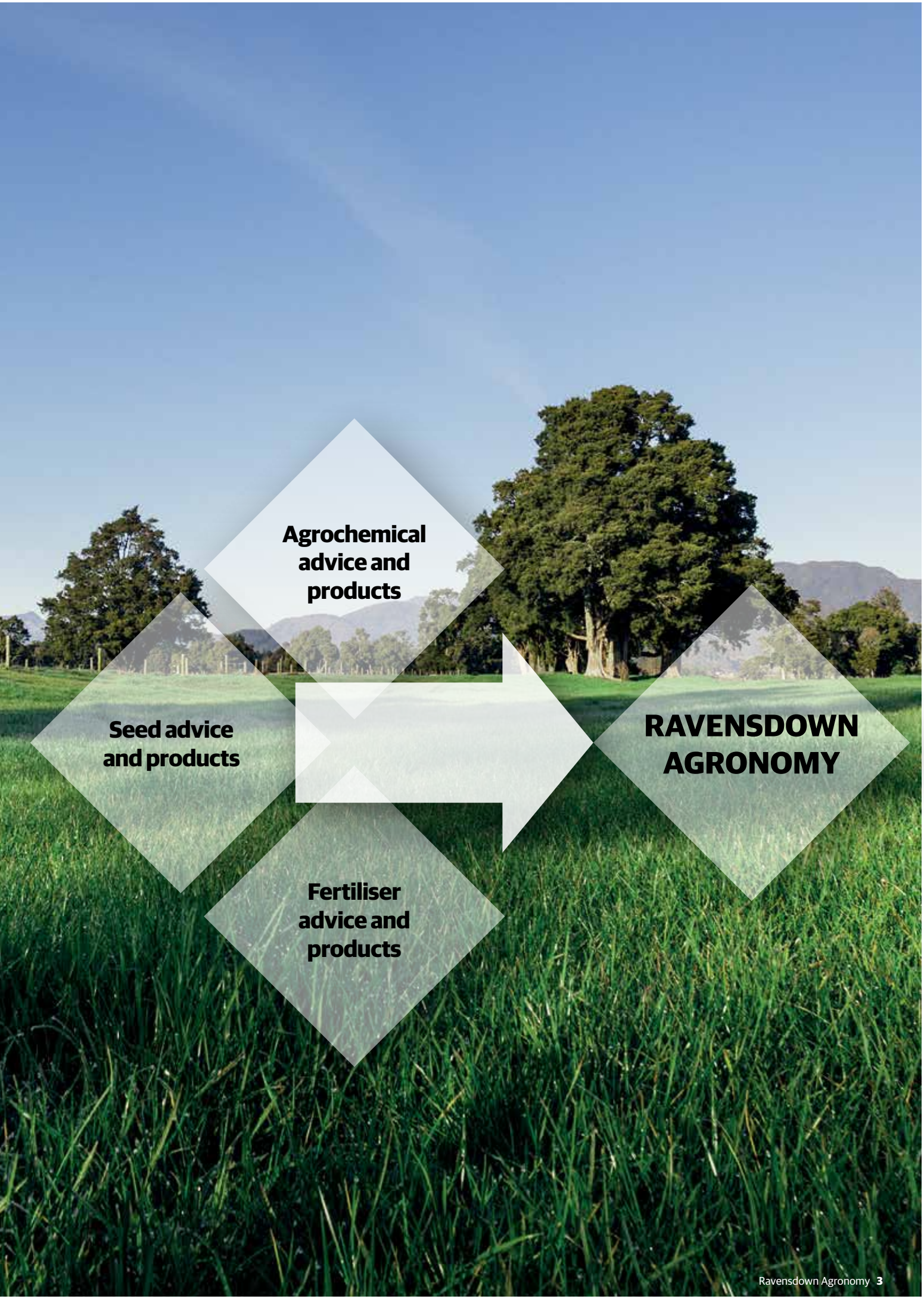
Ravensdown's team aims to provide the best agronomy options for your situation. Often there is more than one solution and our team will work with you to select the smart option(s) that best suit your farming system.

The Resource Management Regulations

The Resource Management Regulations for Freshwater and Stock Exclusion came into force on 3 September 2020, with rules that apply to the following farming activities:

- stockholding areas
- fertiliser applications
- winter grazing
- intensification
- wetlands
- stock exclusion.

If you have any concerns, questions or need help with the above, please go to **ravensdown.co.nz/services/environmental** or contact the Ravensdown Environmental team at environmental@ravensdown.co.nz.


Agrochemical advice and products
Seed advice and products
Fertiliser advice and products
RAVENSDOWN AGRONOMY

Invest for results, based on proven returns

New Zealand research shows that the advances over the last 60 years in plant breeding have:

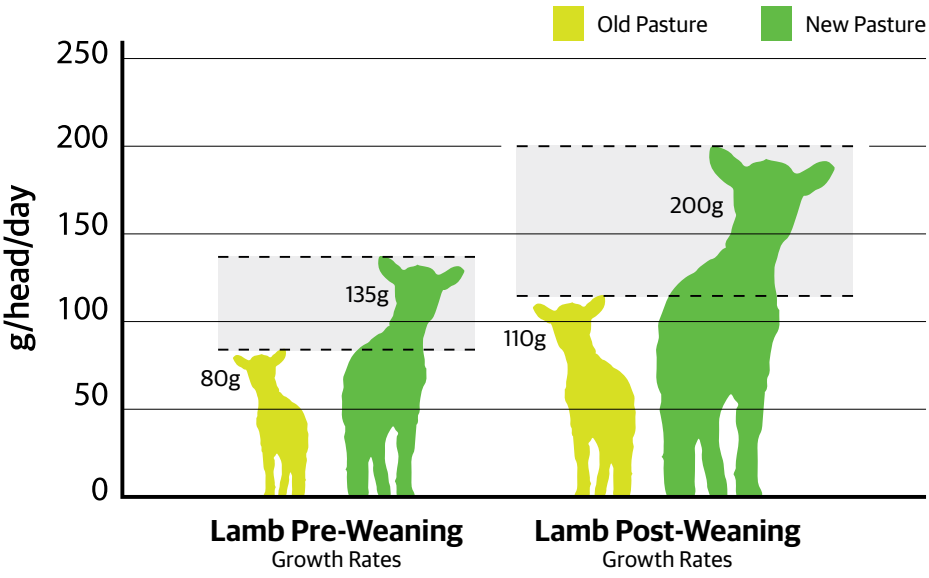
- **lifted forage production** by more than 1% a year.
- **improved forage quality** through the development of tetraploid ryegrass, increased disease tolerance and the focus on summer quality through lower aftermath seeding.
- **enhanced animal breeding** in terms of feed conversion efficiency and more focus on effective pasture and stock management. This has delivered significant productivity gains.

Results
Trial work has shown pre-weaning lamb liveweight and post-weaning liveweight can lift considerably (see graph). This is because, in terms of megajoules of metabolisable energy per kilogram of dry matter, the higher energy of the new pasture has the following;

- **a higher proportion of desirable species**
- **later and more uniform flowering**
- **leafier sward with fewer seed heads produced**
- **less dead leaf material**

Returns
There are not many investments that give an average internal rate of return (IRR) of 25.7% in less than two and a half years. But this is what new pastures can do for sheep, cattle or deer farms*. This return is based on an increase in total farm pasture production and the lift in pasture quality which improves animal performance.

*Source: www.pasturerenewal.org.nz/faq/



What's your score?

Paddock ranking system

The pasture scoring tool to the right is a way of ranking every paddock on the farm from the worst to the best. Paddocks are scored from 1 (worst) to 5 (best) using the photos and descriptions to make accurate decisions.

The system is designed to assist with plans for short, medium and long term pasture renovation and renewal strategies, depending on the farm system and feed requirements.

Look at underlying reasons for poor performance, and make the best decisions on actions to restore these paddocks back to full production. Addressing these issues prior to regrassing will ultimately increase the return gained from regrassing.

Key recommendation
Choose the best performing cultivar and endophyte for your locality to ensure longevity of pastures and sow treated seed for proven results.

Note: This ranking is indicative only and may need to be modified for your farm location. Weed content is a vital aspect to inspect as weed species vary between regions and farms.

Credit: Dairy NZ, Beef and Lamb NZ.

Description
Entire paddock severely damaged

Suggested action
Sow into summer crop in spring, and plan to sow in perennial pasture in autumn

Description
Parts of the paddock have severe damage, a lot of weeds and bare ground

Suggested action
Either sow in perennial ryegrass in autumn, or:

Undersow with Italian ryegrass in autumn and plan to renew in the following 6-12 months, or:

Oversow chicory with fertiliser in spring, or undersow paddocks with chicory, and plan to renew in 6-18 months

Description
Majority of paddock has low-level damage, weeds, and less vigorous grasses

Suggested action
Apply summer N. Undersow in the autumn with perennial ryegrass containing appropriate endophyte

Description
Parts of the paddock show signs of low-level damage, less vigorous grasses and some weeds

Suggested action
Check fertility. Apply summer N to encourage tillering. Paddock probably okay for coming season

Description
Whole paddock has dense sward of desired grasses and clovers

Suggested action
No action required. Would be happy if whole farm in this state

STEP 1

5 STEPS FOR PASTURE RENEWAL

Get the highest returns first

Why dilute your regrassing resources across the whole farm when you can funnel them into the areas that need them most?

Soil test
Our ARL lab can do an array of soil tests to give you a clear picture of what inputs you'll need for optimum growth.

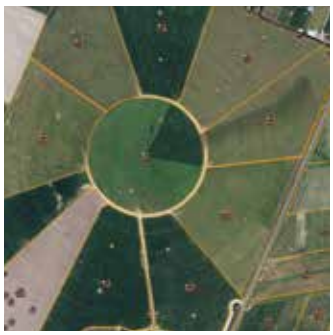
Technology tools
Our digital tools let you build up an accurate history of all harvesting, chemical and fertiliser applications. It also keeps a record of all completed soil analysis on each individual paddock.
Knowing your soil nutrient status means you can maximise the effectiveness of fertiliser on newly established pastures.

Lime
Use lime to alter soil pH if needed. Optimum levels are between 5.8 and 6.2.

Paddock selection
It is vital to identify the paddocks that are performing worst and the reasons why they aren't up to standard. For example, soil fertility or compaction, insect damage, weeds or pasture species present.

Pasture condition score
In combination with forage and animal production records for each paddock, a visual pasture condition score, just like you do for your stock is recommended.

Condition scoring every paddock on the farm will help determine your under-performing paddocks and identify those which may need to be renewed.



HAWKEYE® - MAP BASED SOFTWARE FOR SMARTER DECISION MAKING

SOIL TESTING BY ARL- CREATES A CLEAR PICTURE OF INPUTS NEEDED

How much pasture should be renewed?

If your pastures normally need replacing every 10 years, you would need to replace 10% of the farm each year to maintain a 10 year rotation.

Source: www.pasturerenewal.org.nz/faq/

STEP 2

Match forage selection to your feed requirements

You may have been using the same seed for years, but is it still the best available?

Use our expertise
Your Regional Agronomy Technical Manager has seed, fertiliser and chemical knowledge to offer while our innovative seed suppliers are constantly making breakthroughs in high-performance.

Depending on the reason a paddock is not meeting your expectations, you may need to go through a break crop to lift nutrient levels, remove problem weeds or reduce the impact of pasture damaging insects prior to sowing permanent pasture. If a break crop of brassicas is being used, the deciding factor is the time to first grazing.

For example, leafy turnips require an approximate 50 day period from germination to first grazing, with the ability to get more than one grazing off the paddock during summer in moist or irrigated environments. The next best option might be rape, with the timeframe to first grazing being 70-110 days.

Timing
Ensuring the sown crop can be grazed at the right time and meets your expectations is very important.

When it's time to sow your permanent pasture, matching the new pasture selection to your feed requirements will significantly increase the success of regrassing.

Grass species and cultivars
There are a range of grass species and cultivars with strengths and weaknesses. Making a well informed decision on what to use is important for the best outcome. Knowing your requirements and challenges for optimum pasture growth will help with the selection process and increase your success rate.

Ryegrass is the main pasture grass of New Zealand, but depending on your environment and grazing systems, other options include tall fescue, grazing brome, cocksfoot or other species such as herbs (chicory or plantain) and legumes (annual or perennial clovers and lucerne).

STEP 3

Always identify your targets

There are two main rivals for your grass production: insects and weeds.

You also have two main remedies for reducing their impact - our agrochemical treatments and our leading edge forage and endophyte technologies.

Insects

Endophytes are natures 'in-built' defence mechanisms, providing increased plant tolerance against some insects. Endophytes are fungi that live inside the plant and in return for the shelter and a food source, they release chemicals that affect particular insects. The range of insects affecting your pasture will determine the range of endophyte options you choose. Under certain conditions, some endophytes can have negative side effects on animal health.

Insects may also be a reason for pasture renewal; therefore identifying the damaging insects will affect the control methods used. Soil dwelling insects such as grass grub, black beetle larvae and porina will require different control methods to above ground insects such as argentine stem weevil and slugs.

Weeds

Identifying your problem weeds allows you to control all the weeds that will cause issues after sowing. Docks, buttercups, thistles, yarrow, ragwort and sheep sorrel are examples of some weeds that aren't fully controlled with just glyphosate. Using companion herbicides will allow more effective weed control (see below).

Weed and pest issues must be correctly identified, any underlying causes recognised and appropriate measures taken to ensure there are no negative effects on the establishment and performance of the newly sown crop or pasture.

COMPANION HERBICIDES	GRANIT® (tribenuron-methyl)	BACKUP® (thifensulfuron-methyl)	DICAM 480 (dicamba)	MULTIPLE® (clopyralid)	PASTURE GUARD® 2,4-D 680 (2,4-D ester)
Extra weeds controlled	Clovers, sheep sorrel, thistles, ragwort, wireweed, yarrow	Buttercup, dock	Clovers, dandelion, dock, mallow, pennyroyal, mayweed, ragwort, sheep sorrel, thistles, wireweed	Clovers, dandelion, plantains, thistles, yarrow	Nettles, ragwort, storksbill, thistles
Plant-back period					
Grasses and cereals	14 days	14 days	0 days	0 days	10 days
Clovers	14 days	14 days	28 days	3-6 months	21 days
Chicory	14 days	14 days	28 days	3-6 months	X
Plantain	14 days	14 days	0 days	3-6 months	X
Brassicas	14 days	14 days	0 days	0 days	28 days
Fodder beet	X	X	X	0 days	X
X - not recommended to be used in a sprayout prior to sowing these crops.					

Paddock preparation

STEP 4

Good paddock preparation, regardless of the sowing/ drilling method used, will allow your sown pasture to get the best start, increasing the return on your investment.

Weed and pest control - starting with a flat, even and firm seedbed, that is free of weed and insect pressures will allow a consistent sowing depth and competition free establishment.

Sowing depth - the sowing depth of seed is important for rapid and even establishment. It is a balance between ensuring adequate seed/ soil contact, moisture supply for germination, and allowing smaller seeds such as clovers and herbs to establish. Ideally seed depth should be 5-10mm to allow clovers and herbs to establish more successfully.

Soil temperature - soil temperature is a major factor in determining germination speed, with different pasture species requiring different temperatures for rapid germination. Soil temperatures above 10°C, are ideal for the main pasture species; ryegrass, clovers and herbs. Cooler soil temperatures will reduce establishment speed, with clover and chicory being first affected.

STEP 5

Monitor regularly

With all the good work done to get the new pasture sown, it would be a shame to let things slip now and impact the new pasture performance.

Check your new pasture paddocks regularly and see what is happening. Make sure you get your hands in the grass and monitor for weeds and/or insects. There are a number of insect pests that can have a significant impact on new pastures. Using treated seed will help reduce the chance of severe insect damage, but there is still potential for pasture damage. Endophytes take at least six weeks to establish in newly sown seedlings, so it is important to use other control options to prevent damage to grasses during early establishment. Once grasses are well established with multiple tillers, then you can rely on protection from the endophyte. Weeds are far easier to control when they are small. We recommend controlling weeds prior to the first grazing for a couple of reasons;

1. The weeds are smaller and more vulnerable.
2. Removing weeds before first grazing means there's no competition for the establishing pasture post-grazing, which means faster and stronger regrowth.

We can help you get on top of the weeds with a range of broadleaf herbicides.

HERBICIDES	PASTURE GUARD® NURTURE	AIM®	PASTURE GUARD® ELITE	PASTURE GUARD® BENTAZONE
ACTIVE INGREDIENT	MCPB and MCPA	Flumetsulam	MCPB and Bentazone	Bentazone
KEY BENEFIT/ DESCRIPTION	A clover safe herbicide making it suitable for young pastures containing seedling clovers. Plus it is very effective on seedling thistles and a wide range of broadleaf weeds in new pasture.	A grass, clover and chicory friendly herbicide for broadleaf weed control in new and established pasture. Plus Aim® will control atrazine resistant fathen.	A clover friendly herbicide for selective control of thistles and certain broadleaf weeds that are difficult to control with MCPB including: chickweed, cleavers, mayweeds, nettle, spurrey, storksbill, twin cress and willow weed.	A clover friendly herbicide that is useful in new pasture mixtures that is particularly effective against black nightshade, chamomiles, cleavers, shepherd's purse, spurrey, stinking mayweed and storksbill.
PASTURE STAGE	Clovers must have at least 2 trifoliate leaves			
TIP	More convenient to use than tank mixing MCPA with MCPB; Can be mixed with Aim® for increased weed spectrum.	Collaborate™ Spray Oil must be used with Aim®.	Provides better control of seedling buttercup and thistles where phenoxy herbicide resistance is suspected.	Can be tank mixed with other herbicides such as Pasture Guard® Nurture or Aim®.
OTHER PRODUCTS THAT MAY BE USED FOR THE SAME PURPOSE	Tropotox®, Select™, Thistrol® Plus	Preside®, Valdo®	Pulsar®	Basagran®, Broadstar®, Dictate®, Troy®
MIXING OPTIONS	Aim®, Pasture Guard Bentazone, Pasture Guard 2, 4-D 680	Pasture Guard Nurture Pasture Guard Bentazone	Aim®	Aim® Pasture Guard Nurture

Feed your pasture

First grazing and beyond

Soil moisture and nitrogen are the two main factors that limit new pasture establishment. This is providing that all other controllable factors are taken care of ie seed bed preparation, correct sowing depth, seed viability, suitability of the cultivar for the environment etc.

Nitrogen
There is not much we can do about the weather; however, we can manage nitrogen to improve productivity of new pastures. The quicker the establishment of the new pasture the higher likelihood of success. Grasses respond quickly to nitrogen when other growing conditions are good, however if soils are lacking in phosphorus and potassium, the pastures will not be as responsive.

Phosphate
Phosphate is required to enhance early root and leaf development.

Potassium
Potassium is important but an understanding of soil levels is needed as high concentrations of potassium can affect magnesium uptake by plants.

Maintaining soil pH and fertility
Clovers, particularly white clovers, need a continuous supply of phosphorus, potassium, sulphur, magnesium, and several trace elements. In addition, soils must not be too acidic. Where soil pH and nutrient status is less than optimal, pastures will revert back to less productive species over time.

DAP, Cropmaster 15 and Cropmaster 20
Fertilisers such as DAP, Cropmaster 15 or Cropmaster 20 can be drilled at planting (using a separate dropper to the seed) or broadcast and incorporated prior to sowing seed.

N-Protect® or urea
Encourage tillering and leaf expansion by applying 60-70kg/ha N-Protect or urea after the first grazing. This will help the vigour of both grasses and clovers.

Regular applications of nitrogen should continue as clovers do not fix enough nitrogen for the first 12-18 months. Use applications of 60 -70kg /ha N-Protect or urea, or 90 – 100kg/ha Ammo 31 where sulphur is also required.

N-PROTECT® WILL HELP ENCOURAGE TILLERING AND LEAF EXPANSION

Pluck test

Testing whether your paddock is ready for grazing is one of the simplest tests you can do; simply grasp some leaves between your thumb and forefinger and pull it.

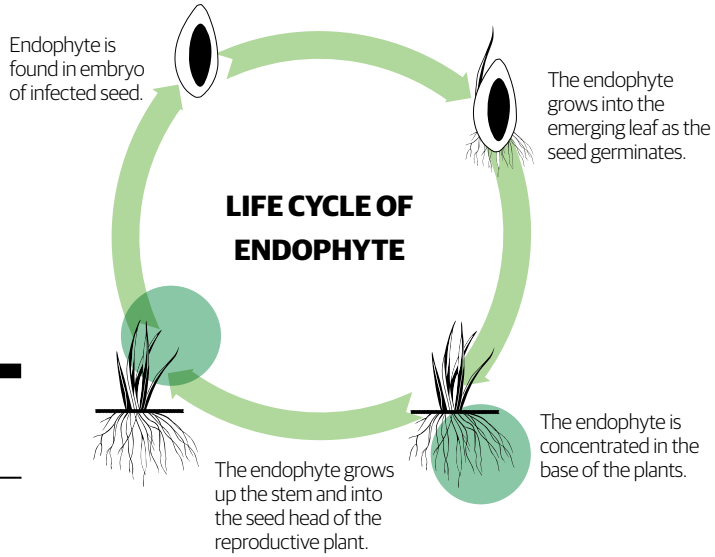
If the whole plant pulls out it's not ready, but if the leaf snaps off leaving the roots in the ground it's ready. This simulates grazing and is called the 'Pluck' test.

Grazing young pastures is ideally done when plants have adequate moisture and/or pugging damage is unlikely.

Lighter stock should be used to reduce any treading damage to the newly sown pasture, encouraging strong recovery from grazing.

Good early weed control and grazing at the right stage will assist the establishment of clovers and other herbs, as well as grasses in the new pasture mix.

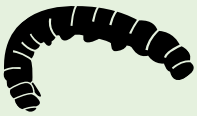
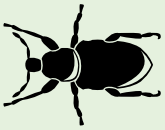
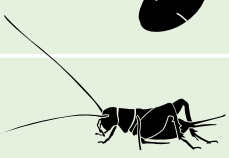
Managing pests



Cultural control
The use of different management techniques can reduce the impact some insects have on pasture production. Your local agri manager will be able to identify the damaging insect present and advise control options.

Endophyte – help plants defend themselves
Endophytes have been developed to reduce the potential impact insects have on pasture plants. There are a number of factors to consider when determining the correct endophyte for your situation.
Endophytes take at least 6-8 weeks to fully establish in newly-sown seedlings, so it is important to use other control options to prevent damage to grasses during early establishment. Once grasses are well established with multiple tillers, then you can rely on protection from the endophyte.

Strategic chemical intervention
Use of insecticides in the spray-out and seed treatment are valuable steps in reducing the potential of insect damage. Following drilling, monitor paddocks closely because insects can migrate from surrounding areas to newly-sown areas and cause damage.
Seed treatment is very effective with moderate insect levels, however in high insect populations there is still a risk of some pasture damage because insects have to feed on the crop to ingest the chemical. This means with high insect numbers there will still be enough 'bites' to cause damage. In high insect areas, the use of further chemical control may be required.

INSECT	CULTURAL CONTROL	ENDOPHYTE OPTIONS	CHEMICAL CONTROL	IDENTIFICATION
Slugs	Cultivation and rolling	None known	Endure & Endure Mini slug bait	
Grass grub	Cultivation Mob stocking Heavy rolling with grooved roller	GrubOUT® U2 (larvae only)	Seed treatment Diazinon based products	
Porina	Cultivation	GrubOUT® U2 AR37 Standard endophyte	Avert 25WP Toppel® 500	
Argentine stem weevil	Regrass with effective endophyte	GrubOUT® U2 AR1 AR37 NEA2 Standard endophyte	Seed treatment Toppel® 500	
Black beetle	Cultivation Crop rotation	GrubOUT® U2 (adult and larvae) AR37 (adult only) NEA2 (adult only) Standard endophyte (adult only)	Seed treatment	
Black field cricket		GrubOUT® U2	Maldison grain bait	

PRODUCT	ACTIVE INGREDIENT	LABEL USE RATE	MOST COMMON USE RATE	COMMENTS
Endure	50g/kg metaldehyde 60,000 baits/kg	4-8kg/ha	4-5kg/ha	Under high slug pressure it is usually better to make two applications of 4-5kg/ha, 3-4 weeks apart, than a single application of 8kg/ha.
Endure Mini	50g/kg metaldehyde 110,000 baits/kg	3-4kg/ha	3-4kg/ha	Endure Mini is designed for mixing with seed or applying via a precision granule applicator directly in the drill slot with the seed. The smaller bait size provides more bait points per metre of drill row.

Pasture DM production

CONTROL
781
Kg DM/Ha

20Kg N/Ha (UREA)
+29%
Kg DM/Ha

EXPRESS 20g/Ha +WIDESPREAD 1000
+33%
Kg DM/Ha

EXPRESS 20g/Ha
+ WIDESPREAD 1000 + 20Kg N/Ha
+64%*
Kg DM/Ha

RESEARCH SHOWS THAT EXPRESS® GIBBERELLIC ACID + NITROGEN WILL GIVE YOU THE HIGHEST PASTURE PRODUCTION INCREASE.

Jeremy Klingender

Product Manager - Seed

Jeremy joined Ravensdown in 2011 having worked for many years in the field looking after forage crops, pastures and brassicas. His experience ranges from corporate farmers to lifestyle blocks, and summer dry areas like the East Coast to summer safe areas such as the Central Plateau.

George Kerse

Product Manager Agrochemicals

George joined Ravensdown in 2010. He has more than 35 years' experience in the agrochemical and rural supply industry in New Zealand. Previous roles include; Product Development, Category Management and Sales Management with both agrochemical manufacturer and rural retail companies.

Use our expertise

Andrew Airey

Agronomy Technical Manager
Upper South Island

Andrew joined Ravensdown in 2013 as an agri manager in Methven, before being appointed senior agri manager and more recently agronomy technical manager. Prior to joining Ravensdown Andrew's career included eight years in agriculture. Andrew is also a certified nutrient management advisor, and enjoys working with agri managers to provide solutions for farmers in the Upper South Island region.

Will Waddell

Agronomy Technical Manager
Central South Island

Will joined Ravensdown in 2019. Having grown up on a mixed cropping farm in Mid Canterbury, Will loved the integration of livestock with cropping. Will graduated from Lincoln University with a B Comm Ag and his work experience prior to joining Ravensdown includes time working on a large cropping farm in Saskatchewan and 4 years as a farm systems and agronomy advisor with a leading proprietary seed company.
Will is passionate about working with agri managers in his region to advise farmers on high performance forages, not only to sustainably optimise output but also profitably utilise the feed grown.

Chris Lowe

Agronomy Technical Manager
Mid-South Island

Chris joined Ravensdown in 2001 before returning to England to complete an MSc in crop protection. In England he worked as an agronomist in the West Midlands looking after 7000ha of crops and managing many on-farm trials. Chris returned to Ravensdown in 2015 and uses his extensive knowledge to really benefit Ravensdown shareholders.

Nathan Bensemann

Agronomy Technical Manager
Lower South Island

Nathan started with Ravensdown in 2013 after an extensive career in the agriculture sector. He has been an agri manager in the Northern Southland region and has progressed to an agronomy technical manager in the Lower South Island region. Nathan has a wealth of knowledge in winter forage crops and agronomy, livestock finishing crops and is a Certified Nutrient Management Advisor.

Tim Russell

Agronomy Technical Manager
Upper North Island

Raised on the family sheep and beef farm in the Hawke's Bay, Tim joined Ravensdown in 2013. He came from a research background with specialist knowledge in agronomy, including new product development to benefit both current and future farm systems.
Tim is passionate about New Zealand agriculture and the world class products it produces.

Julie Gaukrodger

Agronomy Technical Manager
Central North Island

Julie has over 15 years' industry experience. She is experienced in growing and providing quality feed for dairy and drystock systems and her extensive crop knowledge covers pasture, maize, brassica, lucerne, fodder beet, herbs and sorghum. She is committed to delivering the right agronomic solutions for customers' weed control, cropping or regrassing programmes.

Caroline Kirk

Agronomy Technical Manager
Eastern North Island

Caroline began with Ravensdown in 2002, progressing from agri manager to senior agri manager and agronomist. She has extensive knowledge with forage systems, regrassing and the challenging conditions faced by customers on the East Coast. Caroline comes from a farming background and runs a sheep and beef farm in Raukawa, Hawke's Bay with her husband and family.

Shane Brownlie

Agronomy Technical Manager
Western North Island

Shane joined Ravensdown in 2010 having been involved in the agricultural industry as a rural professional and farmer. He has progressed to the agronomy role and is passionate about supporting his regional team in helping Ravensdown shareholders with their regrassing and forage cropping programmes.

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0800 100 123
ravensdown.co.nz

Seed product options

Flexible options

You have specific characteristics you want in your pastures. We have a full range of forage options for inclusion in custom mixes. Your agri manager and/or regional agronomy technical manager will work with you to sort out a plan to help achieve your pasture/crop goals.

We've done the thinking for you

Our High Performance Pasture Mixes™ suit a wide range of livestock classes, farm and soil types, and geographical regions.

Each mix is designed to support you in driving performance from your farm. The use of optional extras allows you to use the High Performance Pasture Mixes as a base for your pasture, and add specific forages to lift productivity, such as red clover, chicory and/or plantain.

Exclusive Ravensdown Products

We can offer you products specifically designed for Ravensdown through our strong link with Cropmark Seeds, New Zealand's only 100% New Zealand owned seed breeding company. We currently have three Ravensdown exclusive products on offer backed by trial work and farmer experiences; Blade Italian ryegrass, Raider perennial ryegrass and Dash annual ryegrass (see pages 28-30 for more information).

Seed catalogue

Ordering is easy

Order online at My Ravensdown or call our Customer Centre on 0800 100 123.
Then pick up from your local Ravensdown store.

ravensdown

HP Dairy Mix

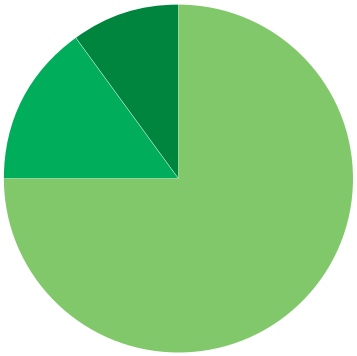
Quality and quantity

The HP Dairy Mix is designed specifically for the needs of dairy farms in regions where insects such as argentine stem weevil are causing persistence issues. The HP Dairy Mix combines one of the leading perennial grasses for production with a well-known, trusted and persistent, high yielding medium leaf white clover and a large leaf white clover.

Suitability / Use

Ideally suited to a wide range of high performance dairy or cattle farming systems including irrigated / higher rainfall or dryland, and to both rotational grazing and set stocking.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Ultra AR1 enhanced perennial ryegrass
- Demand white clover
- Mantra large leaf white clover

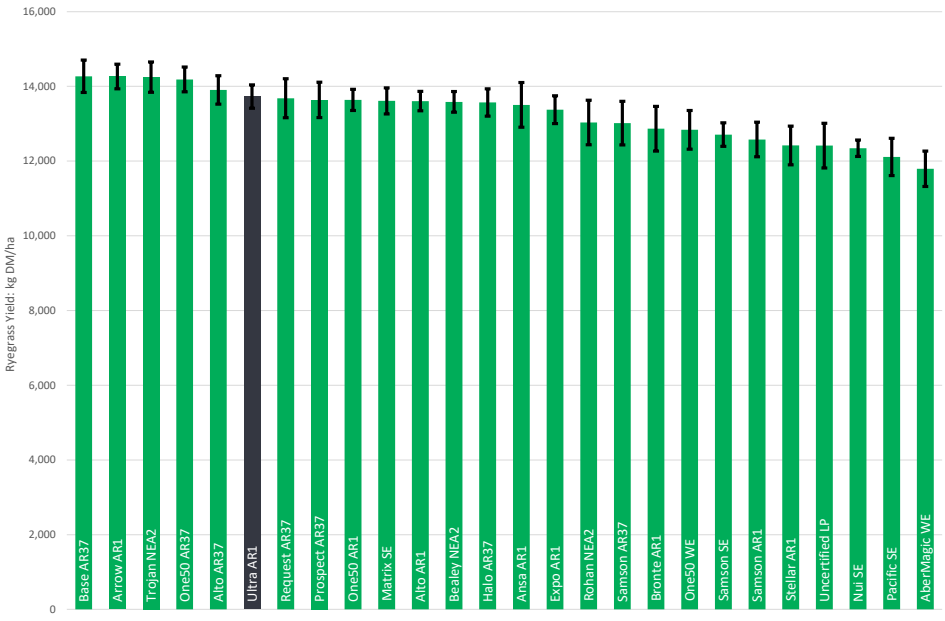
Key traits

- High year-round pasture production and quality
- Low aftermath seeding
- Excellent grazing tolerance
- High quality clover content

Pasture components

Ultra AR1 enhanced perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
AR1	+20	Diploid	9	Very high	500+

2016 NFVT Perennial Ryegrass Results South of Taupo Total Yield



The average yield of each cultivar is represented by the end of the green bar, with the variation around the cultivar mean represented by the error bars (match-sticks at the top of the bars). Cultivars where the error bars overlap are not significantly different from each other.

HP Dairy Mix Plus

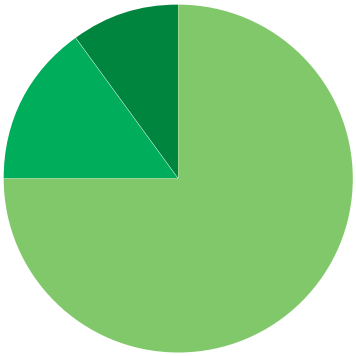
NEA2 Endophyte Protection

New to the market! A very persistent and high yielding diploid perennial ryegrass. Available with NEA2 endophyte for good animal health and insect pest control. Late heading (+ 18 days), with low aftermath heading and densely tillered. Rugged and dependable. Highly ranked for persistence in industry trials.

Suitability / Use

Ideally suited to high performance dairy systems throughout the country, particularly in areas where insect pressure is higher.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Raider NEA2 perennial ryegrass
- Demand white clover
- Mantra large leaf white clover

Key traits

- High yielding
- Late heading (+18 days) with low aftermath heading
- Contains the NEA2 endophyte for good animal health and insect control
- Excellent disease resistance

Agronomic traits

Raider NEA2 perennial ryegrass				
PERSISTENCE	**HEADING DATE** (DAYS CF NUI)	**SOWING RATE** (KG / HA)	**SOWING DATE**	**INSECT TOLERANCE**
5+ years	+ 18	18-20	Autumn and spring	Good

Diploid perennial ryegrass							
ENDOPHYTE	**ARGENTINE STEM WEEVIL**	**PASTURE MEALY BUG**	**BLACK BEETLE ADULT**	**ROOT APHID**	**PORINA**	**GRASS GRUB**	**FIELD CRICKET**
AR1	++++	++++	+	-[2]	-	-	Not tested
NEA2	+++	(++++)	+++	++	Not tested	-	Not tested
AR37	++++[1]	++++	+++	++++	+++	+	Not tested
SE	++++	++++	+++	++	+	-	Not tested
WE	-	-	-	-	-	-	Not tested

HP Sheep and Beef Mix

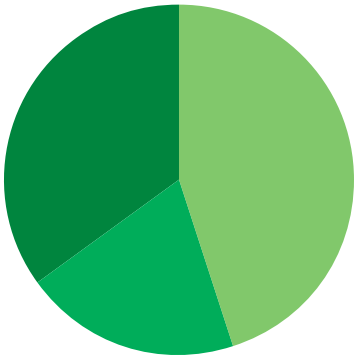
Production when you need it

A specially designed animal-safe mix for sheep and beef pastures, based on Ultra AR1 enhanced perennial ryegrass and Governor AR1 perennial ryegrass; providing increased early spring production and summer quality.
HP Sheep and Beef Mix is designed specifically for increased winter and early spring growth for calving and lambing. Along with high performing perennial ryegrass, it has a trusted and persistent high yielding medium leaf white clover.

Suitability / Use

Ideally suited to a wide range of high performance sheep, cattle and deer farming systems including irrigated / higher rainfall or dryland, and to both rotational grazing and set stocking.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Ultra AR1 enhanced perennial ryegrass
- Governor AR1 perennial ryegrass
- Demand white clover

Key traits

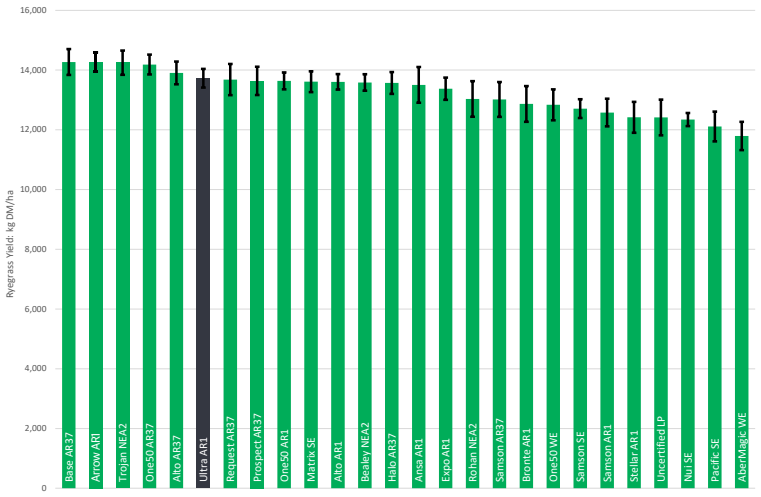
- High pasture production and quality
- Increased early spring growth
- Densely tillered grasses for increased grazing tolerance
- Animal safe endophyte

Pasture components

Ultra AR1 enhanced perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
AR1	+20	Diploid	9	Very high	500+

Governor AR1 perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
AR1	+5	Diploid	9	High	500+

2016 NFVT Perennial Ryegrass Results South of Taupo Total Yield



The average yield of each cultivar is represented by the end of the green bar, with the variation around the cultivar mean represented by the error bars. Cultivars where the error bars overlap are not significantly different from each other.

HP Dryland Mix

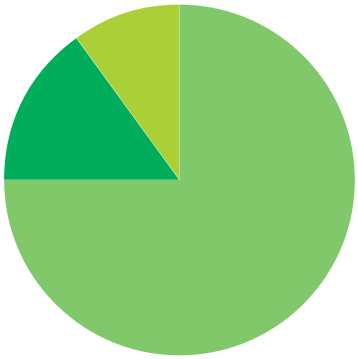
Dryland production

A high performance, animal-safe pasture mix for improved summer dry tolerance, based on Ultra AR1 enhanced perennial ryegrass and Vision cocksfoot.

Suitability / Use

Ideally suited for more reliable year-round feed, improved summer growth and persistence under unirrigated and summer-dry farming systems throughout New Zealand, under rotational grazing or set stocking.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Ultra AR1 enhanced perennial ryegrass
- Vision cocksfoot
- Demand white clover

Key traits

- Improved summer dry tolerance and production
- Proven, reliable high performing grass and clovers
- Very strong year-round growth
- Zero ryegrass staggers risk

Pasture components

Ultra AR1 enhanced perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
AR1	+20	Diploid	9	Very high	500+

Ultra is a densely tillered, late heading diploid interspecies cross of perennial ryegrass and meadow fescue parentage. Extremely high yielding across a range of seasons, with strength in autumn, winter and early spring which suits many farm systems.

Vision cocksfoot					
PERSISTENCE	**SOWING RATE** (KG/HA)	**DISEASE TOLERANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**PEAK GROWTH**	**TILLER DENSITY**
5+ years	Mixes: 1-2 Alone: 4-6	9	Medium - high	Spring - summer	High

Vision has a semi-erect growth habit, good winter activity and is mid-season flowering. It has a finer stem and leaf than some cocksfoot, but is not excessively dense, allowing for good compatibility with other grasses and clovers in pasture mixes. Has improved disease resistance.

HP Endurance Mix

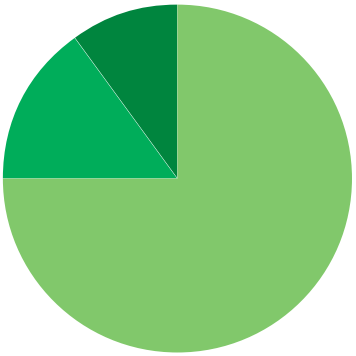
Production and persistence

A high performance, persistent pasture mix based on Matrix standard/high endophyte enhanced perennial ryegrass.

Suitability / Use

Ideally suited to areas where black beetle is prevalent (Waikato, Bay of Plenty, Northland), where persistence is an issue and where farmers are less concerned about grass staggers. Recommended for high performance systems, irrigated or higher rainfall, rotational grazing and set stocking.

Not recommended for animals sensitive to endophyte induced grass staggers such as deer, horses, goats or alpacas.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Matrix SE enhanced perennial ryegrass
- Demand white clover
- Mantra large leaf white clover

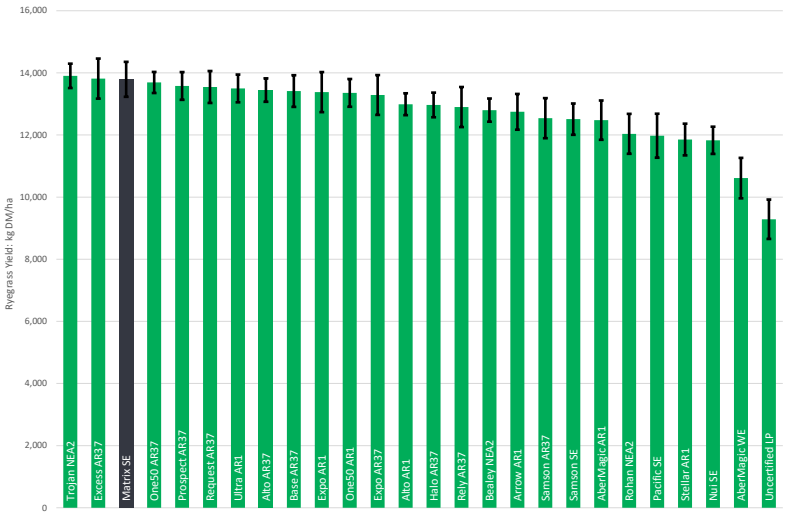
Key traits

- Proven and reliable high performing diploid enhanced perennial ryegrass
- Strong persistence under insect attack
- Very strong winter, early spring growth providing feed when most needed
- Suitable for full pasture renovation and under-sowing

Pasture components

Matrix SE enhanced perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
Standard Endophyte (SE)	+23	Diploid	9	Very high	500+

2016 NFVT Perennial Ryegrass Results North Island Total Yield



The average yield of each cultivar is represented by the end of the green bar, with the variation around the cultivar mean represented by the error bars. Cultivars where the error bars overlap are not significantly different from each other.

HP Swardmaster Mix

Maximise animal growth

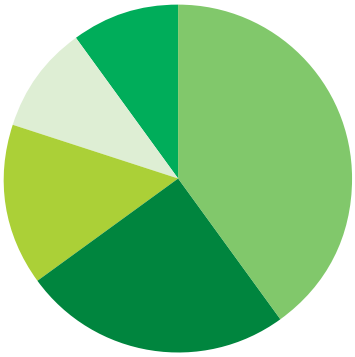
A high performance, animal-safe pasture mix based on Ultra AR1 enhanced perennial ryegrass and Kai tetraploid low endophyte perennial ryegrass. Together they provide high summer quality for improved livestock performance.

Suitability / Use

Ideally suited for reliable year-round feed, providing improved summer growth and quality grazing under set stocking or rotational grazing systems. Suits high performance finishing systems for a range of stock classes.

Not recommended for areas where insects such as black beetle, porina or grass grub reduce pasture persistence.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Pre-mixed into convenient 1ha (25kg) size bags.

Contents

- Ultra AR1 enhanced perennial ryegrass
- Avatar NEA tetraploid perennial ryegrass
- Chico chicory
- Reaper red clover
- Demand white clover

Key traits

- High production potential
- Increased summer production and quality
- Ideal for livestock fattening and finishing
- Zero ryegrass staggers risk

Pasture components

Ultra AR1 enhanced perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
AR1	+20	Diploid	9	Very high	500+

Ultra is a densely tillered, late heading diploid interspecies cross of perennial ryegrass and meadow fescue parentage. Extremely high yielding across a range of seasons, with strength in autumn, winter and early spring which suits most farm systems.

Avatar NEA tetraploid perennial ryegrass					
ENDOPHYTE	**HEADING DATE** (DAYS CF NUI)	**PLOIDY**	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER ACTIVITY**	**MIN RAINFALL** (ml)
Low endophyte (LE)	+22	Tetraploid	9	High	500+

Avatar is a very high yielding, late heading (+22 days) tetraploid perennial ryegrass containing the NEA endophyte, bred for a combination of improved animal safety and persistence against insect pests. It has strong year-round growth performance.

HP Finishing Mix

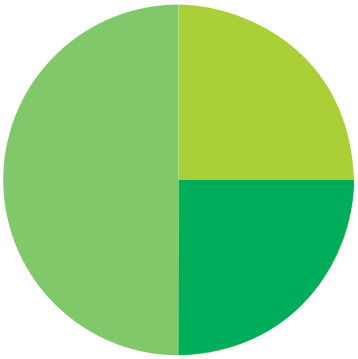
High yield, high quality

A high performance, short term pasture mix designed to provide high quality all-season forage for pastoral finishing systems. This mix is based on Ravensdown's exclusive Blade Italian ryegrass; providing fast establishment and strong winter production, coupled with the added high quality of red and white clovers. This mix is based on a Lincoln University paper which evaluated Italian seed mixes to determine the best mix for greatest yield and quality.

Suitability / Use

Ideally suited to high performance finishing systems throughout the country, particularly in areas where moisture is more reliable.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.



Contents

- Vibe Italian ryegrass
- Reaper red clover
- Demand white clover

Key traits

- All-round seasonal production
- High quality clover content
- High palatability

Pasture components

Vibe Italian ryegrass

PERSISTANCE	HEADING DATE (DAYS CF NUI)	PLOIDY	COOL SEASON GROWTH	MIN RAINFALL (ml)
1-2 years	+ 27	Diploid	Very high	950+

Reaper red clover

PERSISTANCE	FLOWERING DATE	PLOIDY	OESTROGEN LEVELS	DISEASE TOLERANCE
2-3 years	Medium	Diploid	Low	Strong

Demand white clover

PERSISTANCE	FLOWERING DATE	LEAF SIZE	GROWTH PEAK	DISEASE TOLERANCE
3+ years	Early-mid	Medium	Spring to autumn	Strong

Average total yield (t DM/ha) from seed mixtures with varied proportions of Italian ryegrass (IR) and red clover (RC)

	SOWN SPECIES (%)		ACCUMULATED DRY MATTER TONNES / HA / YEAR
	ITALIAN RYEGRASS	RED CLOVER	
Seed mix proportions*	100	0	9.75
	83	17	13.00
	67	33	14.15
	50	50	14.22

*Source: Proceeding of the New Zealand Grassland Association 74: 201-2018 (2012) Yield of Italian ryegrass mixed with red clover and balansa clover (T.P. Ryan-Salter and A.D. Black)

Other ryegrass options

DIPLOID PERENNIAL RYEGRASS

CULTIVAR	ENDOPHYTE	HEADING DATE	DESCRIPTION
Ultra	AR1, LE	+20	A densely tillered cultivar with very high year-round production suitable for all livestock classes, with excellent disease resistance for increased forage quality.
Matrix	SE, LE	+23	Thoroughly proven cultivar with good all year-round production with excellent growth over winter and early spring.
Raider NEW & EXCLUSIVE	NEA2	+18	A general purpose ryegrass with fine and densely tillered leaves with good rust tolerance. Very good late spring and summer growth.
Ceres One50	AR1, AR37, LE	+20	A general purpose medium leaf size ryegrass with high autumn and winter yields. Good tolerance to root pulling.
Expo	AR1, LE	+21	A densely tillered ryegrass suited to a range of stock classes with good cool season production and low aftermath heading.
Excess	AR1, AR37	+7	A mid heading diploid variety suited to dairy, sheep and beef systems.
Grasslands Prospect	AR1, AR37	+12	A densely tillered cultivar with good seasonal growth and persistence.
Governor	AR1, AR37, LE	+5	Ability to grow more DM on the shoulders of the season, in early spring and autumn. Shown outstanding survival through drought and high insect pressure. Fine, densely tillered and diploid.
Grasslands Request	AR1, AR37, LE	0	A low aftermath early heading cultivar with good growth in spring, summer and autumn.
Maxsyn	NEA4	+8	High yielding, superior summer and autumn growth and excellent insect protection.
Rely	AR1, AR37	0	A general purpose ryegrass with fine leaves.
Rohan	NEA2, LE	+18	A spreading ryegrass with dense tillers and fine leaves.
Trojan	NEA2, LE	+16	Bred for high forage production with key strengths in winter, early spring and autumn.

TETRAPLOID PERENNIAL RYEGRASS

Kai	LE	+20	A densely tillered, late heading tetraploid with high disease tolerance and quality attributes.
Avatar	NEA	+22	A superior ryegrass with exceptional DM production, and palatability.
Base	AR1, AR37	+22	A densely tillered tetraploid ryegrass ideally suited to dairy or intense sheep/beef farms, with low aftermath heading.
Viscount	NEA	+19	An upright highly palatable tetraploid.

ITALIAN RYEGRASS

Blade EXCLUSIVE	Without	+24	A late flowering diploid cultivar with excellent early spring and summer quality and production.
Appeal	Without	+28	A very persistent and very high yielding diploid Italian ryegrass, which has been developed as part of a 15 year plant breeding programme focused on developing more persistent Italian ryegrasses.
Vibe	Without	+27	A very high yielding diploid, developed as part of a persistence breeding programme. This new Italian is high in quality and very persistent.
Grasslands Asset	AR37	+14	Diploid cultivar selected for persistence into the second year. The AR37 endophyte has the potential to cause ryegrass staggers.
Feast II	Without	+17	A tetraploid cultivar with very good summer quality and production.
Lush	AR37	+17	A fast establishing tetraploid cultivar. The AR37 endophyte has the potential to cause ryegrass staggers.
Tabu+	Without	+13	A new improvement on the old Tabu. Tabu+ is fast establishing, with good winter growth and faster recovery time.

NEW & EXCLUSIVE

Raider NEA2

Persistent perennial ryegrass

A new high yielding diploid perennial ryegrass selected for superior persistence. Contains NEA2 endophyte for good animal health and insect pest control, including black beetle, argentine stem weevil and pasture mealybug. Late heading (+ 18 days), with low aftermath heading.

Suitability / Use

Raider is well suited for delivering both high performance and strong persistence under trying farming conditions and pressure from insect pests such as black beetle adult, argentine stem weevil and pasture mealybug. Suitable for use with cattle and sheep.

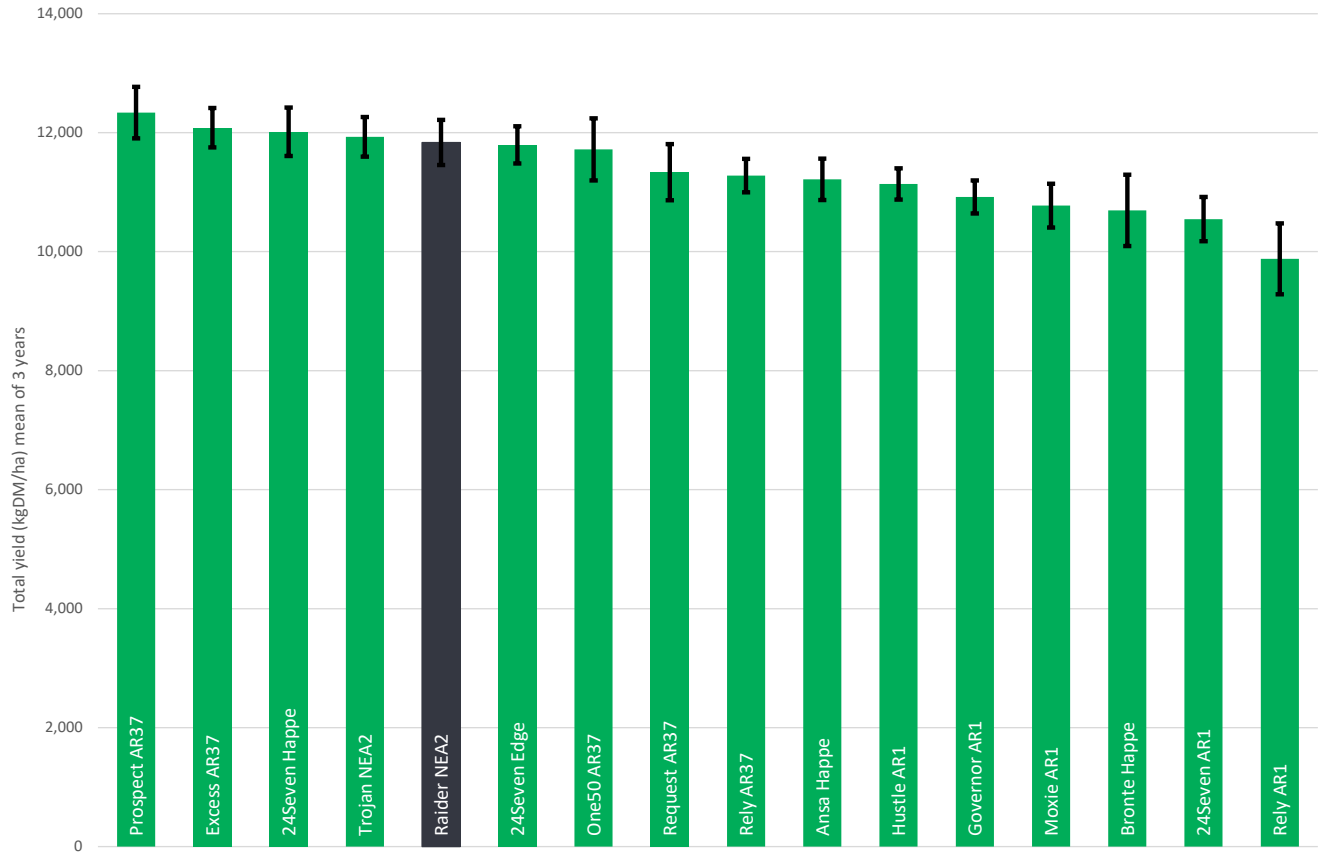
Key traits

- Good persistence under insect pressure
- High yielding across all seasons; but with strong cool season growth
- Excellent disease resistance
- Good animal safety

Agronomic traits

Raider NEA2 perennial ryegrass				
PERSISTENCE	**HEADING DATE** (DAYS CF NUI)	**SOWING RATE** (KG / HA)	**SOWING DATE**	**INSECT TOLERANCE**
5+ years	+ 18	18-20	Autumn and spring	Good

Perennial ryegrass yield in the Waikato NFVT trial (P214NSD) run by the NZPBRA at the DairyNZ Scott Farm 2014-2016



*Note; this trial included a total 28 varieties, on which the statistical analysis was conducted; however, 12 non-commercial lines have been removed from this presentation as requested by the NZBPRA

EXCLUSIVE

Blade Italian ryegrass

Bulk feed when you need it

A very late heading (+24 days) broad leafed, densely tillered diploid Italian ryegrass. Bred for fast establishment and strong year-round growth with high winter / spring yields to help minimise feed deficits.

Suitability / Use

Recommended for use with all high performance systems and livestock types (sheep, cattle, horses, deer and goats) as a specialist short term (1-2 year) pasture, or for oversowing into run-out or damaged pastures to extend their life.

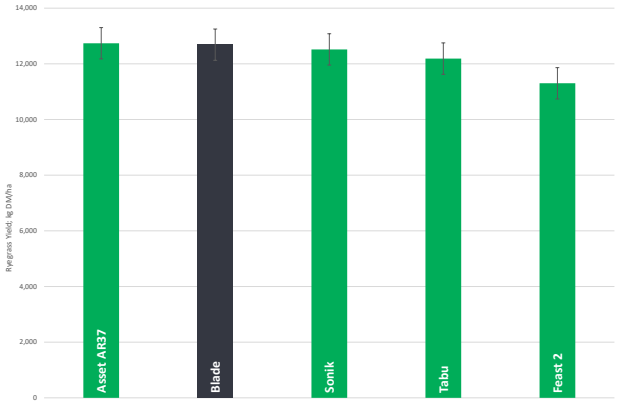
Key traits

- Rapid establishment and regrowth
- High yield performance across all seasons, with strong winter and spring growth
- Very good disease resistance

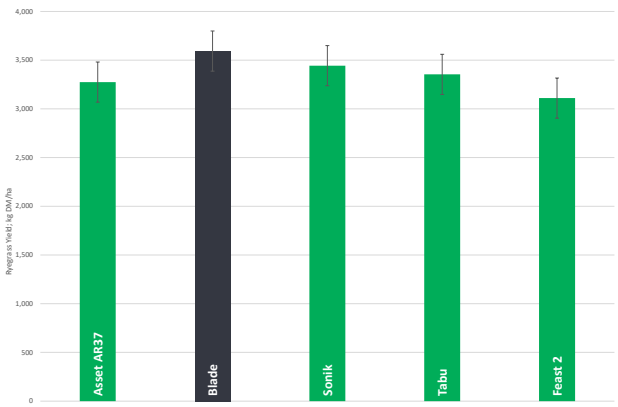
Agronomic traits

Blade italian ryegrass					
PERSISTENCE	**HEADING DATE** (DAYS CF NUI)	**SOWING RATE** (KG/HA)	**RUST RESISTANCE** (1 = SUSCEPTIBLE, 9 = RESISTANT)	**WINTER AND EARLY SPRING ACTIVITY**	**MIN RAINFALL** (MM)
1-2 yrs	+24	20-25	9	Very high	950+

Italian Ryegrass Trials - Total Annual Yield*



Italian Ryegrass Trials - Late Spring Yield*



*Source: Pooled yield results of 8 trials conducted by Cropmark on farms in Helensville, Hamilton, Crownthorpe, Masterton, Fairlie, Gore and Winton; 2014-2016

NEW & EXCLUSIVE

Dash annual ryegrass

Tetraploid annual ryegrass

A new fast establishing, palatable and high yielding tetraploid annual ryegrass. Dash is very late heading (+24 days) so maintains forage quality for over a week longer in the spring than traditional annual ryegrasses.

Suitability / Use

An ideal 8-10 month specialist winter feed suited to all livestock types. Due to its late heading date and high ME Dash is well suited for grazing and silage. Dash should be autumn sown at 22-25kg/ha or mixed with annual clovers for added quality and dry matter.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.

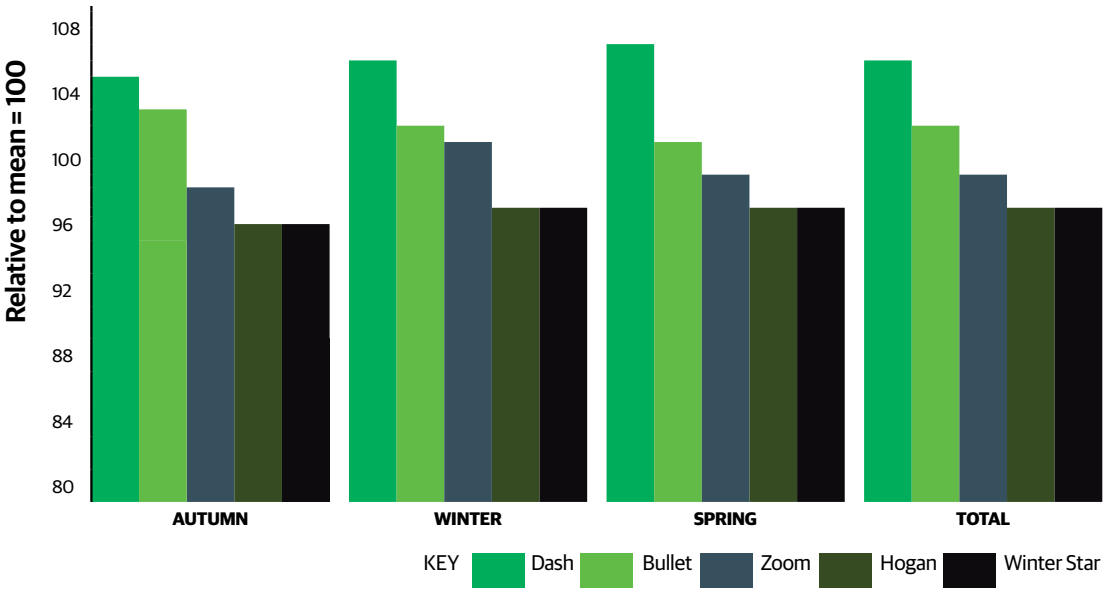
Key traits

- A specialist winter feed which is also great for high quality silage production
- Fast establishing
- High winter growth
- Excellent disease resistance

Agronomic traits

Dash annual ryegrass				
PERSISTENCE	**HEADING DATE** (DAYS CF NUI)	**SOWING RATE** (KG / HA)	**SOWING DATE**	**MIN RAINFALL** (MLS)
8-10 months	+ 24	22-25	Autumn	450+

Pooled Yield Results - Annual Ryegrass (Results expressed as a % of the Trial Mean).*



*Source: Pooled yield results of 4 trials conducted by Cropmark on farms in Helensville, Hawkes Bay, South Canterbury and Southland - 2015.

NEW

Reaper red clover

Adding quality when you need it

A high yielding New Zealand bred, large leafed, semi-erect growing diploid red clover which is suitable for grazing and for hay and silage. Reaper is a very palatable variety, with fine stems suitable for all stock types.

Suitability / Use

This exciting new red clover specifically bred in New Zealand for New Zealand conditions is ideally suited for mixing with short term grasses or as a finishing crop planted on its own. Red clover is well known as a specialist lamb finishing crop and the results from Reaper will not disappoint.

You have the option of coated or bare seed.

Key traits

- Dual purpose grazing and hay / silage use & compatible in mixes
- High yielding, with strong winter activity
- Highly palatable, with finer stems
- Low oestrogen levels

Agronomic traits

Reaper red clover					
LEAF SIZE	PERSISTENCE	SOWING RATE (KG / HA)	WINTER ACTIVITY	FLOWERING DATE	GROWTH PEAK
Large	3-4 years	4-6kgs	High	Early-mid	Spring to autumn

Red clover yield			
DRY MATTER YIELDS (% RELATIVE TO MEAN = 100)			
VARIETY	YEAR 1	YEAR 2	YEAR 3
Reaper	118ab	116ab	125a
Rossi	115bc	121a	126a
Sensation	106de	92d	78d
Pawera	101ef	116ab	129a
Tuscan	99ef	96d	102bc
Colenso	75g	74e	70d
Mean yield kg DM	15,204	8,335	5,062
CV%	4.8	5.3	13.8
LSD	1057.4	634.8	1,012.1

*Source: Cropmark red clover yield trial, Canterbury (2013-2016)

NEW

Mantra large leaf white clover

Maximise milk production

A new large leafed mid flowering white clover with semi-erect growth habit. It has high stolon number and thick stolons. Its medium to high growing point enables better competition with grass in swards. High yields with strong winter / early spring growth, very good persistence and reasonably good tolerance to sclerotinia. Best suited to rotational grazing.

You have the option of coated or bare seed.

Key traits

- Highly competitive in grass swards
- High yielding, with strong winter / early spring growth
- High stolon density and stolon length
- Highly palatable, with finer stems

Agronomic traits

Mantra large leaf white clover					
LEAF SIZE	PERSISTENCE	SOWING RATE (KG / HA)	WINTER ACTIVITY	FLOWERING DATE	GROWTH PEAK
very large	3-4 years	4-6kgs	High	Early-mid	Spring to autumn

White clover yield				
DRY MATTER YIELDS (% RELATIVE TO MEAN = 100)				
VARIETY	YEAR 1	YEAR 2	YEAR 3 (AFTER 30 MONTHS)	GROUND COVER AT END *
Mantra	113a	109a	126ab	7.3
Kopu II	109ab	109be	112af	6
Weka	100de	115ab	121ac	6.8
Mainstay	97ef	77h	52i	3
Tribute	96ef	95jg	119ac	6.5
Apex	93fh	104cf	125ab	6.5
Demand	85i	102df	95ef	5.8
Mean (kg DM)	14733	6654	748	5.5
CV%	3.6	7.0	14.0	23

Yields bearing different superscript letters differ significantly (P<0.05).
*Ground Cover scored 1 – 9, 9 = complete ground cover

*Source: Cropmark white clover evaluation trial, Canterbury (2015-2017)

NEW

Oracle plantain

Highly palatable herb with good all year growth

An upright herb that can grow in a range of soils and climatic conditions. Oracle has exceptional late spring, summer and autumn growth. When clover is added this makes the ideal finishing or milking platform.

Key traits

- Late heading for carrying quality into spring
- High forage quality and mineral content
- Ideal for use as a specialist forage crop, or inclusion in permanent mixes
- Suitable for all livestock types

Agronomic traits

Sowing rate (kg/ha)		Characteristics			
AS FORAGE CROP	IN PASTURE MIXES	HEADING DATE	FORAGE QUALITY	DROUGHT TOLERANCE	PERSISTANCE
8-10	1-2	Late	High	Very good	2-3 years

Chico chicory

Flexible multi-graze

A high yielding, leafy chicory showing upright growth, fast establishment, and good drought tolerance. Chico is noted for its strong summer, autumn growth, providing high quality summer forage, and for its improved winter activity. Being high in energy and minerals, Chico has very high livestock performance potential.

You have the option of treated or bare seed. We recommend treated seed to provide increased insect protection for your investment.

Key traits

- Fast establishing and rapid re-growth
- Very high quality, high yielding summer forage crop
- Its deep root system enables it to mine soil water and minerals

Agronomic traits

Chico chicory				
PERSISTENCE	SOWING RATE (KG / HA)	GROWTH PEAK	STOCK SUITABILITY	STOCK PERFORMANCE (1=LOW / 9=HIGH)
2-3 years	6-8 (sole species) 1-2 (in a mix)	Spring to summer	All	9

Agrochemicals catalogue

Order online at My Ravensdown or call our Customer Centre on 0800 100 123.
Orders can be picked up from your local Ravensdown store next day, or delivered on-farm.

Key

AGRECOVERY

Free recycling is available on plastic containers up to 60L and for plastic or steel large drums from 61L - 1000L.

TS

Tracked Substance; a Written Notification and Location Certificate (if required) are a legal requirement for purchase of tracked products.

RW

Restricted to a Workplace; a Written Notification is a legal requirement for purchase of products that are restricted to a workplace and use should be under the control of a competent/qualified person.

CP

Competent/Qualified Person; use of this product should be under the control of a competent/qualified person.

Disclaimer; Information provided in this document is to be used in conjunction with and is written to enhance not replace the information provided within the product label. This product must not be used for any purpose, or in any manner, contrary to the label unless authorised under appropriate legislation. The information is provided in good faith and no warranty is expressed or implied. Always read the product label.

ravensdown

Spray-out options

Glyphosate 540™

A water soluble herbicide for non-selective control of many annual and perennial weeds

- A high strength 540g/L glyphosate powered by Surfmax-G®
- Rainfast in 20 minutes when used with Accelerate™ penetrant
- Ideal spray-outs prior to sowing new crops and pasture

AGRECOVERY CP

ACTIVE INGREDIENT: glyphosate 540g/L
PACK SIZE: 20L, 200L, 1000L

Glyphosate G360™

A water soluble herbicide for non-selective control of many annual and perennial weeds

- Traditional strength 360g/L glyphosate powered by Surfmax-360™
- Rainfast in 20 minutes when used with Accelerate™ penetrant
- A broad spectrum herbicide used in a wide range of situations

AGRECOVERY CP

ACTIVE INGREDIENT: glyphosate 360g/L
PACK SIZE: 20L, 200L , 1000L

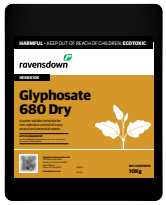
Glyphosate 680 Dry™

A water soluble granular herbicide for non-selective control of many annual and perennial weeds

- A higher strength water soluble granule
- Packed in a convenient 10kg cardboard box
- A broad spectrum herbicide used in a wide range of situations

CP

ACTIVE INGREDIENT: glyphosate 688g/L
PACK SIZE: 10kg



Accelerate™

For improved penetration and uptake of glyphosate and other herbicides in broad-acre and brushweed spraying

- Organo-silicone penetrant for use with glyphosate and other herbicides
- Especially beneficial when used with Eliminate™, Eliminate™ Brushkiller and Eradicate™ for brushweed control
- Reduces the rainfast period and improves plant uptake

AGRECOVERY

ACTIVE INGREDIENTS: organo-silicone penetrant
PACK SIZE: 5L, 20L, 200L

Backup™

A selective herbicide for use in conservation tillage and for the control of dock and buttercup in pasture, barley, oats and wheat

- Targets difficult broadleaf weeds, including giant buttercup and dock
- Effective companion herbicide with glyphosate for a cleaner spray-out
- Useful broadleaf herbicide in wheat, barley and oat crops

AGRECOVERY CP

ACTIVE INGREDIENT: thifensulfuron-methyl 750g/kg
PACK SIZE: 200g

Granit®

A selective herbicide for control of certain broadleaf weeds in conservation tillage programmes, barley, oats and in wheat

- Effective companion herbicide with glyphosate for a cleaner spray-out
- Improves control of many broadleaf weeds
- A short residual broadleaf herbicide for use in cereals

AGRECOVERY CP

ACTIVE INGREDIENTS: tribenuron-methyl 750g/kg
PACK SIZE: 500g, 1kg

Spray-out options

Dicam 480™

A selective herbicide for control of certain hard to kill broadleaf weeds in conservation tillage programmes and in cereals, maize, some forage brassicas, waste areas and spot treatment in pastures

- Effective companion herbicide with glyphosate for a cleaner spray-out
- No plant-back period for brassicas, grasses, maize, cereals and some other crops
- Useful for post-emergence broadleaf weed control in many crops

AGRECOVERY CP

ACTIVE INGREDIENTS: dicamba 480g/L
PACK SIZE: 5L, 20L

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, californian and other thistles in a range of crops, forestry and pre-cultivation

- A grass friendly herbicide ideal for control of thistles and other broadleaf weeds
- The best option for weed wiping californian thistles
- Can be used with glyphosate prior to beets, brassicas, grasses, cereals and maize

AGRECOVERY RW

ACTIVE INGREDIENT: clopyralid 300g/L
PACK SIZE: 5L, 20L

Toppel™ 500

A broad-spectrum insecticide for the control of insect pests in agricultural and horticultural crops

- Controls many insects through contact, fumigation or ingestion
- Ideal in the final spray prior to direct drilling
- Useful for control of pests like nysius and springtails in newly sown forage brassica crops

AGRECOVERY RW

ACTIVE INGREDIENT: chlorpyrifos 500g/L
PACK SIZE: 5L, 20L

Other herbicides used with glyphosate to improve the range of weeds controlled include;

Active ingredient	Brands	Handling	Plantback Period	Weeds
Oxyfluorfen	Oxy™ 500SC	CP	Pasture and brassicas; when used at low rates there is no problem with germination of direct drilled or cultivated crops.	Cleavers, nettles, mallows, tall willow herb
Saflufenacil	Sharpen®	CP	Plantback period varies depending on ground cover and crop sown, please refer to label.	Clover, dandelion, docks, mallow, plantains, tall willow herb

Insecticides

Avert® 25WP

An insect growth regulator for control of porina caterpillar and clover flea in pasture

- For the control of porina caterpillar and clover flea in pasture
- When used correctly it will prevent significant damage from these pests
- Low toxicity to humans and other mammals

CP

ACTIVE INGREDIENTS: diflubenzuron 250g/kg
PACK SIZE: 500g (10 x 50g water soluble bags)

Halex^CS

Synthetic pyrethroid for insect control in a variety of crops, amenity turf, ornamentals and public health situations

- For control of problem caterpillars like cutworm and diamond back moth
- Can be used in flowering crops when bees are not foraging
- Useful to prevent aphids spreading virus in sensitive crops eg BYDV in cereals

AGRECOVERY RW

ACTIVE INGREDIENTS: lambda-cyhalothrin 250g/L (in the form of a capsule suspension)
PACK SIZE: 250ml, 1L

Toppel™ 500

A broad-spectrum insecticide for the control of insect pests in agricultural and horticultural crops

- Controls many insects through contact, fumigation or ingestion
- Ideal in the final spray prior to direct drilling
- Useful for control of pests like nysius and springtails in newly sown forage brassica crops

AGRECOVERY RW

ACTIVE INGREDIENT: chlorpyrifos 500g/L
PACK SIZE: 5L, 20L

Insecticides

Other insecticides commonly used in forage and other crops.

Active ingredient	Brands	Mode of action group(s)	Handling	Comments
Permethrin + pirmiphos-methyl	Ambush™, Attack®	Group 1 + Group 3	RW	Broad spectrum insecticide for control of a wide range of pests including; aphids, caterpillars, nysius and springtails in forage brassicas and other crops
Chlorantraniliprole + lambda-cyhalothrin	Ampligo®	Group 3 + Group 28	CP	Broad spectrum insecticide for control of aphids, caterpillars, leaf miner and nysius in forage brassicas and other crops
Diazinon granules	Diazinon 20G	Group 1 insecticide	CP	Used for control of grass grub larvae in established pasture and newly sown pastures and crops
Diazinon EC	Diazol 800, Diazinon 800	Group 1 insecticide	RW	Liquid form of diazinon, can be used for control of grass grub larvae in established pasture
Diazinon EW	Zagro Diazinon 600EW, DEW™	Group 1 Insecticide	CP	Lower strength diazinon liquid, can be used for control of grass grub larvae in established pasture
Pirimicarb	Prohive™, Piritek®, Pirimor®	Group 1 insecticide	RW	Carbamate insecticide for control of aphids in a range of crops
Cyantraniliprole	Exirel®	Group 28 insecticide	CP	For control of caterpillars, leaf miner and suppression of grey cabbage aphid in forage brassicas
Cyantraniliprole + pymetrozine	Minecto™ Star	Group 9 + Group 28 insecticide	CP	For control of cabbage aphid, leaf miner, caterpillars and nysius in forage brassicas
Spinetoram	Sparta™	Group 5	CP	For control of springtails, nysius, caterpillars and leaf miner in forage brassicas and certain pests in other crops
Sulfoxaflor	Transform™	Group 4c insecticide	CP	Predator friendly aphicide for aphid control and virus protection in a range of crops

New pasture options

Endure®

A bait for the control of slugs and snails in crops

- Durum wheat bait which lasts longer, especially in the wet
- Uniform bait size for superior spreading and accurate application
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 15kg, 630kg (42x15kg) or can be mixed with fertiliser at your local Ravensdown store

Endure® Mini

- Purpose-designed mini bait for application with seed when sowing crops
- Endure® Mini will provide protection against slugs feeding on seed in the drill row
- The bait size (110,000 baits/kg) ensures a high number of baiting points in the drill rows

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg)

New pasture options

Aim®

For the selective control of broadleaf weeds in new and established pasture, chicory, clover, lucerne, and maize

- A clover friendly herbicide for broadleaf weed control in many situations
- Ideal for use in new and established pasture, chicory and lucerne
- Add to Pasture Guard® Nurture to improve weeds controlled in new pasture

AGRECOVERY CP

ACTIVE INGREDIENT: flumetsulam 800g/kg
PACK SIZE: 500g

Pasture Guard® Nurture

For the control of thistles and other broadleaf weeds in pastures, grass and white clover seed crops, peas and cereals

- Clover safe and ideal for broadleaf weed control in new pasture
- Great for cleaning up silage paddocks when locked up
- Provides above-ground control of Californian thistles

AGRECOVERY CP

ACTIVE INGREDIENT: MCPB 375g/L and **MCPA** 25g/L
PACK SIZE: 20L, 200L

Pasture Guard® Elite

For the selective control of broadleaf weeds in new and established pastures, clover, peas and cereals

- Clover friendly for broadleaf weed control in new pasture
- Controls many hard to kill weeds, eg chickweed, cress, nettles, spurrey and storksbill
- Provides better control of phenoxy resistant seedling thistles and buttercups

AGRECOVERY

ACTIVE INGREDIENTS: MCPB 200g/L and **bentazone** 200g/L
PACK SIZE: 20L

Pasture Guard® Bentazone

A selective post-emergence herbicide for use on onions, cereals, clover and grass seed crops, pasture, potatoes, soya beans, peas, lucerne and turf

- A grass, clover and lucerne friendly selective herbicide
- Use to control a range of broadleaf weeds in establishing pastures and/or crops
- Control seedling nodding thistles in lucerne

AGRECOVERY

ACTIVE INGREDIENT: Bentazone 480g/L
PACK SIZE: 20L

Pasture Guard® D-Amine 720

A broadleaf herbicide for control of broadleaf weeds in cereals and pasture

- Ideal for autumn and spring weed control programmes in new and established pasture and for control of a range of broadleaf seedlings in cereals
- A non-volatile form of 2,4-D that is softer on clovers than ester forms of 2,4-D
- Effective on a wide range of seedling broadleaf weeds including thistles and ragwort

AGRECOVERY CP

ACTIVE INGREDIENT: Contains 720g/L 2,4-D as the diethanolamine and dimethylamine salts in the form of a soluble concentrate
PACK SIZE: 20L, 200L

Established pasture options

Pasture Guard® 2,4-D 680

A broadleaf herbicide for control of most species of thistles and many common weeds in pasture and non-crop situations

- Ideal for autumn and winter weed control programmes in pasture
- Effective on a wide range of broadleaf weeds, including thistles and ragwort
- Tank mix with Multiple® for hard to kill thistles or if resistance is suspected

AGRECOVERY CP

ACTIVE INGREDIENT: 2,4-D ethylhexyl ester 680g/L
PACK SIZE: 20L, 200L

Pasture Guard® D-Amine 720

A broadleaf herbicide for control of broadleaf weeds in cereals and pasture

- Ideal for autumn and spring weed control programmes in new and established pasture and for control of a range of broadleaf seedlings in cereals
- A non-volatile form of 2,4-D that is softer on clovers than ester forms of 2,4-D
- Effective on a wide range of seedling broadleaf weeds including thistles and ragwort

AGRECOVERY CP

ACTIVE INGREDIENT: Contains 720g/L 2,4-D as the diethanolamine and dimethylamine salts in the form of a soluble concentrate
PACK SIZE: 20L, 200L

Pasture Guard® MCPA 750

For the control of broadleaf weeds in pastures and cereals

- For broadleaf weed control in established pasture from winter to spring
- Tank mix with Multiple® for hard to kill thistles or if resistance is suspected
- Useful in tank mix with Basis® and Granit® for broadleaf weed control in cereals

AGRECOVERY CP

ACTIVE INGREDIENT: MCPA 750g/L
PACK SIZE: 20L, 200L

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, californian and other thistles in a range of crops, forestry and pre-cultivation

- A grass friendly herbicide ideal for control of thistles and other broadleaf weeds
- The best option for weed wiping californian thistles
- Can be used with glyphosate prior to beets, brassicas, grasses, cereals and maize

AGRECOVERY RW

ACTIVE INGREDIENT: clopyralid 300g/L
PACK SIZE: 5L, 20L

Established pasture options

Eliminate™ Brushkiller

A selective herbicide for control of gorse, broom, blackberry, and other brushweeds and for the spot treatment of many broadleaf weeds including ragwort, thistles and docks

- A powerful grass friendly herbicide for the control of brushweeds
- Ideal for spot spraying brushweeds and a wide range of broadleaf weeds in pasture
- Can be used year-round through a knapsack, handgun or a mistblower

AGRECOVERY CP

ACTIVE INGREDIENT: **triclopyr** 300g/L and **picloram** 100g/L
PACK SIZE: 20L, 200L

Fumate™

For control of grass and broadleaf weeds in fodder beet, red beet, and barley grass and annual grass weeds in pasture and sports turf

- Control annual grass and some broadleaf weeds in fodder beet, red beet and ryegrass
- Used in pasture to control barley grass during the winter
- Used both pre- and post-emergence in fodder beet weed control programmes

AGRECOVERY CP

ACTIVE INGREDIENTS: **ethofumesate** 500g/L
PACK SIZE: 10L

Gibberellic acid

Express® Gibberellic Acid

Express® is a soluble form of the naturally occurring gibberellic acid GA3. When applied correctly to pasture, Express® will stimulate extra dry matter production under rotational grazing management

- Water-soluble form of the naturally occurring gibberellic acid GA3
- Stimulates extra pasture production when extra feed is needed
- Now available in two pack sizes, 200g (10 x 20g water soluble bags) and 1kg re-sealable foil packs.

ACTIVE INGREDIENT: **gibberellic acid (GA3)** 400g/kg
PACK SIZE: 200g (10 x 20g water soluble bags) 1Kg (re-sealable foil pack)

New lucerne options

Triflow® 480

Selective pre-emergence soil incorporated herbicide for the control of certain annual grasses and broadleaf weeds in field and vegetable brassicas, lucerne, peas and specific vegetable crops

- For pre-plant weed control in brassicas, lucerne and certain other crops
- Controls a range of grass and broadleaf weeds
- Good residual activity for weed control during establishment

AGRECOVERY CP

ACTIVE INGREDIENT: **trifluralin** 480g/L
PACK SIZE: 20L

New lucerne options

Aim®

For the selective control of broadleaf weeds in new and established pasture, chicory, clover, lucerne, and maize

- A clover friendly herbicide for broadleaf weed control in many situations
- Ideal for use in new and established pasture, chicory and lucerne
- Add to Pasture Guard® Nurture to improve weed-control in new pasture

AGRECOVERY CP

ACTIVE INGREDIENT: flumetsulam 800g/kg
PACK SIZE: 500g

Pasture Guard® Bentazone

A selective post-emergence herbicide for use on onions, cereals, clover and grass seed crops, pasture, potatoes, soya beans, peas, lucerne and turf

- A grass, clover and lucerne friendly selective herbicide
- Use to control a range of broadleaf weeds in establishing pastures and/or crops
- Control seedling nodding thistles in lucerne

AGRECOVERY

ACTIVE INGREDIENT: bentazone 480g/L
PACK SIZE: 20L

Other herbicides used in new lucerne include;

Active ingredient	Brands	Handling	Comments
2,4-DB	2,4-DB	CP	For control of seedling thistles, and a range of other broadleaf weeds.
Imazethapyr	Spinnaker®, Equate®	CP	Controls a wide range of seedling broadleaf weeds and will suppress many more

Established lucerne options

Atratec™

For the control of broadleaf weeds and annual grasses in maize, sweetcorn, established lucerne and linseed

- Residual herbicide to control some grasses and many broadleaf weeds
- Used extensively as a pre- and post-emergence herbicide in maize crops
- Often mixed with Parable® 250 in established (12 month+) lucerne

CP

ACTIVE INGREDIENTS: atrazine 900g/kg
PACK SIZE: 10kg

Established lucerne options

Atraflo™

A selective post-emergent residual herbicide for the control of some seedling grass and broadleaf weeds in maize, sweetcorn, established lucerne and non-cropland situations

- Residual herbicide to control some grasses and many broadleaf weeds
- Used extensively as a pre- and post-emergence herbicide in maize crops
- Often mixed with Parable® 250 in established (12 month+) lucerne

AGRECOVERY CP

ACTIVE INGREDIENT: atrazine 500g/L
PACK SIZE: 20L

Terbaflo™

For the control of broadleaf and grass weeds in forestry, established maize, lucerne, peas and sweetcorn. Terbaflo™ can also be used as a non-selective, residual herbicide in non-crop areas

- Residual triazine herbicide with stronger knockdown activity
- Used in crops including lucerne, peas and maize to control certain weeds
- Used in forestry establishment or for release treatment over young trees

AGRECOVERY CP

ACTIVE INGREDIENT: terbuthylazine 500g/L
PACK SIZE: 20L

Simaflo™

A selective pre-emergent residual herbicide for weed control in lucerne, orchards, vineyards, forestry and some horticultural crops

- Long-lasting residual herbicide with no knockdown of established weeds
- Used in tank mix with Parable® 250 in established lucerne
- Useful for barley grass control

AGRECOVERY CP

ACTIVE INGREDIENT: simazine 500g/L
PACK SIZE: 20L

Other herbicides used in established Lucerne include;

Active ingredient	Brands	Handling	Comments
Paraquat	Flash 250	TS	Non-selective contact herbicide for control of many annual and perennial grass and broadleaf weeds. Used widely in winter lucerne spray programs. Often tank mixed with Atraflo, Atratec or Terbaflo in established lucerne.
Chlorimuron-ethyl	Classic®	CP	For control of clovers, dandelions and beaked hawksbeard
Hexazinone	Viper®, Velpar®	CP	For control of a range of problem weeds including; clovers, nodding thistle, storksbill, wolly mullein and yarrow

Brassica options

Endure®

A bait for the control of slugs and snails in crops

- Durum wheat bait which lasts longer, especially in the wet
- Uniform bait size for superior spreading and accurate application
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 15kg, 630kg (42x15kg) or can be mixed with fertiliser at your local Ravensdown store

Endure® Mini

- Purpose-designed mini bait for application with seed when sowing crops
- Endure® Mini will provide protection against slugs feeding on seed in the drill row
- The bait size (110,000 baits/kg) ensures a high number of baiting points in the drill rows

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg)

Brassica options - pre emergence herbicides

Triflow® 480

Selective pre-emergence soil incorporated herbicide for the control of certain annual grasses and broadleaf weeds in field and vegetable brassicas, lucerne, peas and specific vegetable crops

- For pre-plant weed control in brassicas, lucerne and certain other crops
- Controls a range of grass and broadleaf weeds
- Good residual activity for weed control during establishment

AGRECOVERY CP

ACTIVE INGREDIENT: trifluralin 480g/L
PACK SIZE: 20L

Other pre-emergence herbicides used in in forage brassicas include;

Active ingredient	Brands	Handling	Comments
Clomazone	Magister®CS, Major®CS	CP	For control of grass and broadleaf weeds, one of the few herbicides that can give good control of shepherds purse
Alachlor	Merit®	CP	A tank mix partner for clomazone to improve the spectrum of weeds controlled
Clomazone + alachlor	Ombre®	CP	Herbicide combination used for control of grass and a wide range of broadleaf weeds
Dimethanamid-P	Frontier®-P	CP	Used for control of a range of grass and broadleaf weeds, often tank mixed with clomazone

Brassica options - post-emergence herbicides

Purge™

A selective herbicide for the control of certain broadleaf weeds in forage brassica crops

- For broadleaf weed control in all fodder brassica crops, including bulb crops
- Use with Collaborate™ Oil for best results
- Can be mixed with certain other herbicides and insecticides

AGRECOVERY RW

ACTIVE INGREDIENTS: picloram 150g/L and **clopyralid** 225g/L
PACK SIZE: 5L

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, californian and other thistles in a range of crops, forestry and pre-cultivation

- A grass friendly herbicide ideal for control of thistles and other broadleaf weeds
- The best option for weed wiping californian thistles
- Can be used with glyphosate prior to beets, brassicas, grasses, cereals and maize

AGRECOVERY RW

ACTIVE INGREDIENT: clopyralid 300g/L
PACK SIZE: 5L, 20L

Dicam 480™

A selective herbicide for control of certain hard to kill broadleaf weeds in conservation tillage programmes and in cereals, maize, some forage brassicas, waste areas and spot treatment in pastures

- Effective companion herbicide with glyphosate for a cleaner spray-out
- No plant-back period for brassicas, grasses, maize, cereals and some other crops
- Useful for post-emergence broadleaf weed control in many crops including oilseed rape and kale

AGRECOVERY CP

ACTIVE INGREDIENTS: dicamba 480g/L
PACK SIZE: 5L, 20L

Execute® 360

A selective herbicide for control of grass weeds in broadleaf crops and forestry

- Effective companion herbicide with glyphosate for a cleaner spray-out
- No plant-back period for brassicas, grasses, maize, cereals and some other crops
- Useful for post-emergence broadleaf weed control in many crops including oilseed rape and kale

AGRECOVERY CP

ACTIVE INGREDIENTS: clethodim 360g/L
PACK SIZE: 5L

Other herbicides used post-emergence in forage brassicas include;

Active ingredient	Brands	Handling	Comments
Oxyfluorfen + picloram	Pycus™	CP	For control of black nightshade. seedling docks, fathen, nettles, redroot (amaranthus) and thistles
Aminopyralid	T-Max™	CP	For control of a range of broadleaf weeds including seedling docks and willow weed
Aminopyrlid + clopyralid	Milestone™	CP	For control of black nightshade. seedling docks, fathen, nettles, redroot (amaranthus) and thistles
Halauxifen-methyl + clopyralid	Korvetto™	CP	For control of black nightshade, fathen, fumitory, hairy nightshade and shepherds purse in forage brassicas

Cropping options

Basis™

For use in wheat, barley and oats to control certain broadleaf weeds

- Controls a wide range of broadleaf weeds in cereal crops
- Used in tank mix with many other cereal herbicides to improve weed control
- Apply from two true leaf through until just prior to boot stage (GS12–45)

AGRECOVERY CP

ACTIVE INGREDIENT: chlorsulfuron 750g/kg
PACK SIZE: 1kg

Hat-Trick™

For the control of broadleaf weeds in wheat, barley, oats and ryegrass seed crops

- Triple mix broadleaf herbicide for cereals, ryegrass seed crops and turfgrass
- Controls some hard to kill weeds such as wireweed, fumitory and cleavers
- Suitable for mixing with most insecticides, fungicides and Basis®

AGRECOVERY CP

ACTIVE INGREDIENT: mecoprop 600g/L; **MCPA** 150g/L; **dicamba** 18.7g/L
PACK SIZE: 20L, 200L

Granit®

A selective herbicide for control of certain broadleaf weeds in conservation tillage programmes, barley, oats and in wheat

- Effective companion herbicide with glyphosate for a cleaner spray-out
- Improves control of many broadleaf weeds
- A short residual broadleaf herbicide for use in cereals

AGRECOVERY CP

ACTIVE INGREDIENTS: tribenuron-methyl 750g/kg
PACK SIZE: 500g, 1kg

Holdup™

A growth regulator used to shorten and stiffen the straw of cereal crops to improve the resistance to lodging

- Growth regulator used to shorten and stiffen the straw of cereal crops
- Reduces the risk of lodging and neck break in barley, ryecorn and triticale
- Always use with Widespread® 1000

AGRECOVERY

ACTIVE INGREDIENT: mepiquat-chloride 350g/L and **chlorethephon** 155g/L
PACK SIZE: 20L

Fortify®

A systemic fungicide for disease control in maize, cereal and ryegrass seed crops

- A systemic triazole fungicide for use in cereals and ryegrass seed crops
- Long-lasting protectant, curative and eradicant activity for up to five weeks
- Ideal in tank mixes with strobilurin fungicides such as Inspire®

AGRECOVERY CP

ACTIVE INGREDIENTS: epoxiconazole 125g/L
PACK SIZE: 10L

Inspire®

A fungicide for the control of a wide range of diseases in wheat, barley, ryegrass seed crops, peas, onions, potatoes, maize and sweetcorn, grapes, field tomatoes and turf

- Strobilurin fungicide with broad spectrum protection in many arable crops
- Up to six weeks disease control and prevention
- Ideal in tank mixes with triazole fungicides such as Fortify®

AGRECOVERY CP

ACTIVE INGREDIENT: azoxystrobin 250g/L
PACK SIZE: 10L

Cropping options

Other common agrochemicals used in arable crops include:

Herbicides	Brands	Handling	Comments
Flufenacet+diflufenican	Firebird®	CP	Pre-emergence grass and broadleaf herbicide for winter sown wheat and barley
Flufenacet	Invado®	CP	Pre-emergence grass and broadleaf herbicide for winter sown wheat and barley
Iodosulfuron-methyl-sodium	Hussar®		Post-emergence herbicide for grass and broadleaf weed control in autumn and spring sown wheat, triticale, ryecorn and barley
Halauxifen + pyroxsulam	Rexade GoDri	CP	For control of grass and broadleaf weeds in triticale and whest (excluding durum varieties)
Halauxifen-methyl + florasulam	Paradigm	CP	For post-emergent control of broadleaf weeds in wheat, triticale, barley and ryegrass seed crops
Iodosulfuron-methyl-sodium + diflufenican + mesosulfuron methyl	Othello® OD	CP	Post-emergence herbicide for control of certain broadleaf and some grass weeds in wheat
Isoproturon	Twister®, Protugan®	CP	Post-emergence herbicide for control of grass and broadleaf weeds in wheat and winter sown barley
Diflufenican	Quantum®	CP	For the control of broadleaf weeds in winter and spring sown cereals except oats
Tri-allate	Avadex® Xtra	CP	Selective pre-emergence herbicide for control of wild oats in barley, wheat and linseed
Pinoxaden	Twinax®		For selective control of annual ryegrass, lesser canary grass, gnawed canary grass and wild oats in barley and wheat
Plant Growth Regulators			
Trinexapac-ethyl	Moddus® Evo, Optimus®, Trinity™, Trexel®		To reduce the risk of lodging in wheat, barley and oats and to promote seed yield increases in ryegrass seed crops
Chlormequat	Cycocel®, Stabilan®	RW	A plant growth regulator for use on wheat, oats, and perennial ryegrass seed crops

Fungicides	Brands	Handling	Chemical/mode of action group (s)	Comments
Prothioconazole	Proline®, Vitalis®	RW	triazole/DMI (Group 3)	Systemic fungicide for control of diseases in wheat, barley and ryegrass seed crops
Tebuconazole	Folicur®	CP	triazole/DMI (Group 3)	Systemic fungicide for control of diseases in wheat, barely, oats, ryegrass seed crops, peas and onions
Prothioconazole + tebuconazole	Prosaro®	CP	triazole/DMI (Group 3)	Systemic fungicide for the control of diseases in wheat, barley and ryegrass seed crops
Folpet	Phoenix®	CP	phthalimide (Group M4)	For control of speckled leaf blotch in wheat and scald in barley
Prothioconazole + trifloxystrobin	Delaro®	CP	triazole/DMI + Stroby/QoI (Group 3 + 11)	Systemic fungicide for the control of various fungal diseases in cereals
Epoxiconazole + fluxapyroxad	Adexar®	CP	triazole/DMI + carboximide/ SDHI (Group 3 + 7)	Systemic cereal fungicide for the control of diseases in barley and wheat crops
Prothioconazole + bixafen	Aviator Xpro®	CP	triazole/DMI + SDHI (Group 3 + 7)	Systemic fungicide for the control of diseases in cereals

Cropping options

Benzovindiflupyr	Elatus™ Plus	CP	SDHI (Group 7)	For the control of a wide range of diseases in wheat
Fluxapyroxad + mefentrifluconazole	Revystar®	CP	SDHI + triazole/DMI (Group 7 + Group 3)	Systemic fungicide for control of diseases in wheat and barley
Isoflucypram	Vimoy Iblon®	CP	SDHI (Group 7)	Systemic fungicide for the control of diseases in barley, wheat, triticale and ryegrass seed crops
Isoflucypram + prothioconazole	Caley Iblon®	CP	SDHI + triazole/DMI (Group 7 + Group 3)	Systemic fungicide for the control of diseases in barley, wheat, triticale and ryegrass seed crops
fenpicoxamid	Questar™	CP	QiI (Group 21)	For the control of speckled leaf blotch in wheat

Insecticides - please refer to insecticide options on pages 38 & 39

Maize options

Maize Guard®

For the selective, pre-emergence control of certain annual grasses and broadleaf weeds in maize and sweetcorn

- For pre-emergence grass and broadleaf weed control in maize and sweetcorn
- An essential part of any maize planting programme
- Tank mix with Atratec™, Atraflo™ or Terbaflo™ to increase the weed spectrum

AGRECOVERY CP

ACTIVE INGREDIENT: acetochlor 840g/L
PACK SIZE: 20L, 200L, 1000L

Atratec™

For the control of broadleaf weeds and annual grasses in maize, sweetcorn, established lucerne and linseed

- Residual herbicide to control some grasses and many broadleaf weeds
- Used extensively as a pre- and post-emergence herbicide in maize crops
- Often mixed with Parable® 250 in established (12 month+) lucerne

CP

ACTIVE INGREDIENTS: atrazine 900g/kg
PACK SIZE: 10kg

Atraflo™

A selective post-emergent residual herbicide for the control of some seedling grass and broadleaf weeds in maize, sweetcorn, established lucerne and non-cropland situations

- Residual herbicide to control some grasses and many broadleaf weeds
- Used extensively as a pre- and post-emergence herbicide in maize crops
- Often mixed with Parable® 250 in established (12 month+) lucerne

AGRECOVERY CP

ACTIVE INGREDIENT: atrazine 500g/L
PACK SIZE: 20L

Maize options

Dicam 480™

A selective herbicide for control of certain hard to kill broadleaf weeds in conservation tillage programmes and in cereals, maize, some forage brassicas, waste areas and spot treatment in pastures

- Effective companion herbicide with glyphosate for a cleaner spray-out
- No plant-back period for brassicas, grasses, maize, cereals and some other crops
- Useful for post-emergence broadleaf weed control in many crops including oilseed rape and kale

AGRECOVERY CP

ACTIVE INGREDIENTS: dicamba 480g/L
PACK SIZE: 5L, 20L

Other herbicides used in maize include;

Herbicides	Brands	Handling	Comments
Saflufenacil	Sharpen®	CP	Used pre-emergence for control of broadleaf weeds in maize and sweetcorn, usually in combination with a grass herbicide
Mesotrione	Callisto®, Primiera®	CP	Used both pre- and post-emergence for control of broadleaf weeds in silage and grain maize, often tank mixed with other maize herbicides to increase the spectrum of weeds controlled
Topramezone	Arietta®	CP	Used for post-emergence grass and broadleaf weed control in maize and sweetcorn
Nicosulfuron	Latro WDG®	CP	For post emergence control of perennial and annual grasses and certain broadleaf weeds in maize for grain and silage

Fodder beet options

NOTE: it is important to be aware of the potential for damage to fodder beet crops from herbicides used in previous crops. There are a limited number of companion herbicides that can be used with glyphosate in a spray-out prior to sowing beet. Spraying equipment should be decontaminated to avoid the risk of herbicide residues that may be present, causing damage to fodder beet crops. For advice contact your agri manager, regional agronomy technical manager or give us a call on 0800 100 123.

Fumate™

For control of grass and broadleaf weeds in fodder beet, red beet, and barley grass and annual grass weeds in pasture and sports turf

- Control annual grass and some broadleaf weeds in fodder beet, red beet and ryegrass
- Used in pasture to control barley grass during the winter
- Used both pre- and post-emergence in fodder beet weed control programmes

AGRECOVERY CP

ACTIVE INGREDIENTS: ethofumesate 500g/L
PACK SIZE: 10L

Replace®

For pre and post emergence use in red beet, fodder beet, sugar beet and mangolds

- For both pre and post-emergence control of a range of broadleaf weeds in fodder beet, red beet, sugar beet and mangolds
- Replace has the flexibility to be applied up to 6L/ha in a maximum of 3 applications per year
- Replace is compatible with most other fodder beet herbicides and can be tank mixed to improve the spectrum of weeds controlled

AGRECOVERY

ACTIVE INGREDIENT: metamitron 700g/L
PACK SIZE: 10L

Fodder beet options

Beetril®

For control of broadleaf weeds in fodder beet, red beet and sugar beet

- Control of broadleaf weeds in fodder beet, red beet and sugar beet
- Pre-emergence treatments can be applied any time after sowing
- Post emergence treatments can be timed relative to weed emergence and growth stage regardless of crop stage (up to canopy closure)

AGRECOVERY

ACTIVE INGREDIENT: ethofumesate 50g/L, **metamtiron** 150g/L, **phenmedipham** 50g/L
PACK SIZE: 20L

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, californian and other thistles in a range of crops, forestry and pre-cultivation

- A grass friendly herbicide ideal for control of thistles and other broadleaf weeds
- The best option for weed wiping californian thistles
- Can be used with glyphosate prior to beets, brassicas, grasses, cereals and maize

AGRECOVERY RW

ACTIVE INGREDIENT: clopyralid 300g/L
PACK SIZE: 5L, 20L

Beetrizole®

For disease control in fodder and sugar beets

- Fungicide for disease control in fodder and sugar beets
- Beetrizole combines two active ingredients that both offer protectant and systemic activity for use as a preventative treatment for disease control in fodder and sugar beet
- Controls the most important diseases in beet crops; rust, powdery mildew, Cercospora and Ramularia leaf spots

AGRECOVERY

ACTIVE INGREDIENT: trifloxystrobin 375g/L, **cyproconazole** 160g/L
PACK SIZE: 5L

Other herbicides used in fodder beet programmes include;

Herbicides	Brands	Handling	Comments
Clomazone	Magister®CS, Major®CS	CP	A pre emergence herbicide for control of certain grass and broadleaf weeds
Chloridazon	Chloronion™, Pyramin®	CP	A pre- and post-emergence herbicide for weed control in fodder beet, red beet, sugar beet, mangolds, onions, chives and leeks
Phenmedipham + desmedipham	Betanal® Forte, Rifle™, Beetup Compact®	CP	For broadleaf weed control in fodder beet, red beet and sugar beet
Ethofumesate + phenmedipham + desmedipham + metamitron	Betanal® Quattro	CP	For broadleaf weed control in fodder beet, red beet and sugar beet

Slug bait

Endure®

A bait for the control of slugs and snails in crops

- Durum wheat bait which lasts longer, especially in the wet
- Uniform bait size for superior spreading and accurate application
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 15kg, 630kg (42x15kg) or can be mixed with fertiliser at your local Ravensdown store

Endure® Mini

- Purpose-designed mini bait for application with seed when sowing crops
- Endure® Mini will provide protection against slugs feeding on seed in the drill row
- The bait size (110,000 baits/kg) ensures a high number of baiting points in the drill rows

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg)

Brushweed options

Eliminate™ Brushkiller

A selective herbicide for control of gorse, broom, blackberry, and other brushweeds and for the spot treatment of many broadleaf weeds including ragwort, thistles and docks

- A powerful grass friendly herbicide for the control of brushweeds
- Ideal for spot spraying brushweeds and a wide range of broadleaf weeds in pasture
- Can be used year-round through a knapsack, handgun or mistblower

AGRECOVERY CP

ACTIVE INGREDIENT: triclopyr 300g/L and **picloram** 100g/L
PACK SIZE: 20L, 200L

Eliminate™

A general purpose herbicide for control of gorse, broom, blackberry, old man's beard and other brushweeds

- A grass friendly herbicide for control of broom, gorse and other brushweeds
- Use from late spring to early autumn when weeds are actively growing
- Safe to grasses and widely used where damage to pasture grasses is undesirable

AGRECOVERY CP

ACTIVE INGREDIENT: triclopyr 600g/L
PACK SIZE: 20L

Eradicate™ 600

For the control of gorse, blackberry and other brushweeds in pasture, forestry and non-cropland areas

- A powerful herbicide for brushweed control in farm and forest site preparation
- Use from late spring to early autumn when weeds are actively growing
- Used for weed wiping many brush and broadleaf weeds. If used for spot spraying these weeds in pasture, extreme care is required to minimise the amount of pasture damage
- For some weeds like thistles and ragwort, spot spraying the centre of the rosette will provide effective weed control and minimise pasture damage.

AGRECOVERY CP

ACTIVE INGREDIENTS: metsulfuron-methyl 600g/kg
PACK SIZE: 500g, 1kg (pricing for larger quantities available)

Brushweed options

Accelerate™

For improved penetration and uptake of glyphosate and other herbicides in broad-acre and brushweed spraying

- Organo-silicone penetrant for use with glyphosate and other herbicides
- Especially beneficial when used with Eliminate™, Eliminate™ Brushkiller and Eradicate™ for brushweed control
- Reduces the rainfast period and improves plant uptake

AGRECOVERY

ACTIVE INGREDIENTS: organo-silicone penetrant
PACK SIZE: 5L, 20L, 200L

Assist™ Easy Red

A temporary red spray indicator for applications where a marker is required

- Highly visual spray marker dye
- Visible for up to ten days post-application

AGRECOVERY

ACTIVE INGREDIENTS: Red spray marker dye
PACK SIZE: 5L, 20L

Long-lasting residual options

Simaflo™

A selective pre-emergent residual herbicide for weed control in lucerne, orchards, vineyards, forestry and some horticultural crops

- Long-lasting residual herbicide with no knockdown of established weeds
- Used in tank mix with Parable® 250 in established lucerne
- Useful for barley grass control

AGRECOVERY CP

ACTIVE INGREDIENT: simazine 500g/L
PACK SIZE: 20L

Terbaflo™

For the control of broadleaf and grass weeds in forestry, established maize, lucerne, peas and sweetcorn. Terbaflo™ can also be used as a non-selective, residual herbicide in non-crop areas

- Residual triazine herbicide with stronger knockdown activity
- Used in crops including lucerne, peas and maize to control certain weeds
- Used in forestry establishment or for release treatment over young trees

AGRECOVERY CP

ACTIVE INGREDIENT: terbuthylazine 500g/L
PACK SIZE: 20L

Accessories

Ezi Action Drum Pump

A dual action drum pump ideal for decanting out of 200L drums.

- Comes with multiple threads that will fit most 200L drums

Spot spraying

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, californian and other thistles in a range of crops, forestry and pre-cultivation

- A grass friendly herbicide ideal for control of thistles and other broadleaf weeds
- The best option for weed wiping californian thistles
- Can be used with glyphosate prior to beets, brassicas, grasses, cereals and maize

AGRECOVERY RW

ACTIVE INGREDIENT: clopyralid 300g/L
PACK SIZE: 5L, 20L

Eliminate™ Brushkiller

A selective herbicide for control of gorse, broom, blackberry, and other brushweeds and for the spot treatment of many broadleaf weeds including ragwort, thistles and docks

- A powerful grass friendly herbicide for the control of brushweeds
- Ideal for spot spraying brushweeds and a wide range of broadleaf weeds in pasture
- Can be used year-round through a knapsack, handgun or mistblower

AGRECOVERY CP

ACTIVE INGREDIENT: triclopyr 300g/L and **picloram** 100g/L
PACK SIZE: 20L, 200L

Eradicate™ 600

For the control of gorse, blackberry and other brushweeds in pasture, forestry and non-cropland areas

- A powerful herbicide for brushweed control in farm and forest site preparation
- Use from late spring to early autumn when weeds are actively growing
- Used for weed wiping many brush and broadleaf weeds. If used for spot spraying these weeds in pasture, extreme care is required to minimise the amount of pasture damage
- For some weeds like thistles and ragwort, spot spraying the centre of the rosette will provide effective weed control and minimise pasture damage.

AGRECOVERY CP

ACTIVE INGREDIENTS: metsulfuron-methyl 600g/kg
PACK SIZE: 500g, 1kg (pricing for larger quantities available)

Assist™ Easy Red

A temporary red spray indicator for applications where a marker is required

- Highly visual spray marker dye
- Visible for up to ten days post application

AGRECOVERY

ACTIVE INGREDIENTS: Red spray marker dye
PACK SIZE: 5L, 20L

Accelerate™

For improved penetration and uptake of glyphosate and other herbicides in broad-acre and brushweed spraying

- Organo-silicone penetrant for use with glyphosate and other herbicides
- Especially beneficial when used with Eliminate™, Eliminate™ Brushkiller and Eradicate™ for brushweed control
- Reduces the rainfast period and improves plant uptake

AGRECOVERY

ACTIVE INGREDIENTS: organo-silicone penetrant
PACK SIZE: 5L, 20L, 200L

Adjuvants

Accelerate™

For improved penetration and uptake of glyphosate and other herbicides in broad-acre and brushweed spraying

- Organo-silicone penetrant for use with glyphosate and other herbicides
- Especially beneficial when used with Eliminate™, Eliminate™ Brushkiller and Eradicate™ for brushweed control
- Reduces the rainfast period and improves plant uptake

AGRECOVERY

ACTIVE INGREDIENTS: organo-silicone penetrant
PACK SIZE: 5L, 20L, 200L

Collaborate™ Spraying Oil

A paraffin based petroleum oil with a blend of surfactants and an anti-foam, which improves the efficacy of certain pesticides when used as a spray additive

- A mineral spraying oil to improve effectiveness of some herbicides.
- Suitable for use with some insecticides and fungicides.
- Should always be used with Aim®, Purge®, and Valiant® 520 as directed

AGRECOVERY

ACTIVE INGREDIENT: paraffin based petroleum oil
PACK SIZE: 10L

Widespread® 1000

A non-ionic spreader, sticker and wetter for use with fungicides, herbicides, insecticides and plant growth regulators

- Get a better, more uniform spray coverage and better chemical adhesion to the plant leaf
- Improve the performance of fungicides, herbicides, insecticides and plant growth regulators that rely on a good spray coverage for best results
- May be used with fungicides, herbicides, insecticides and plant growth regulators where a non-ionic surfactant is recommended

AGRECOVERY

ACTIVE INGREDIENTS: non-ionic adjuvant and other non-hazardous ingredients
PACK SIZE: 1L, 5L

Assist™ Easy Red

A temporary red spray indicator for applications where a marker is required

- Highly visual spray marker dye
- Visible for up to ten days post application

AGRECOVERY

ACTIVE INGREDIENTS: Red spray marker dye
PACK SIZE: 5L, 20L

Assist™ Foam Marker

A highly concentrated foam detergent suitable for use through all foam marking systems

- Long-lasting, bright white foam marker
- Enables better use of chemical by assisting with precision of spray runs
- Use in suitably equipped booms, wipers and other application equipment

AGRECOVERY

ACTIVE INGREDIENTS: white foam marker
PACK SIZE: 20L

Agronomy planner

NOTES				
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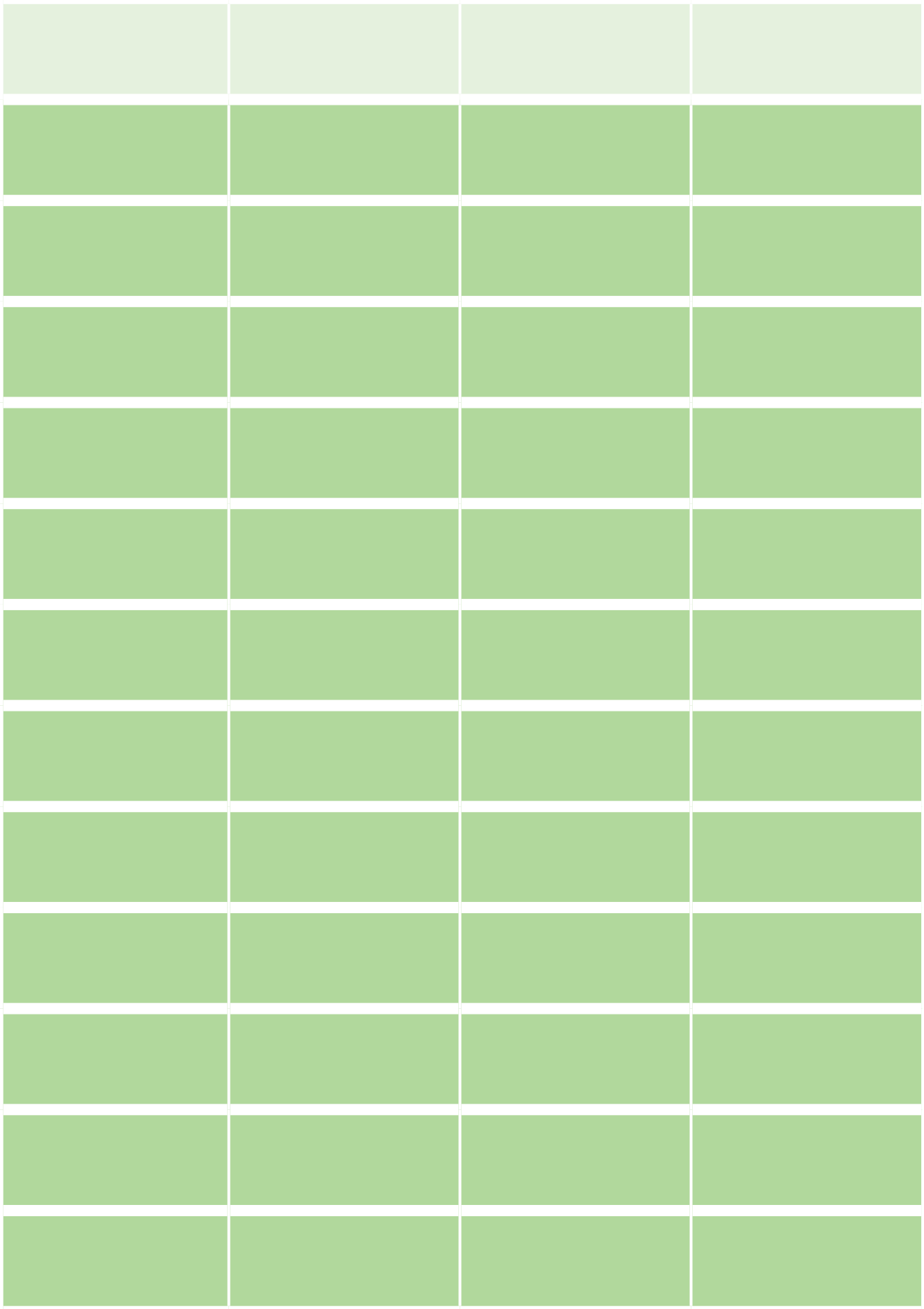

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