ravensdown

Study Pack

Getting you ready to become the FMG Young Farmer of the Year!

FMG YOUNG FARMER OF THE YEAR

Contents

Ravensdown overview and business model

External Factors
regulatory and governance requirements, risk management and volatility

Customer Relationships

Community Relationships

Integration

Buy / Ship

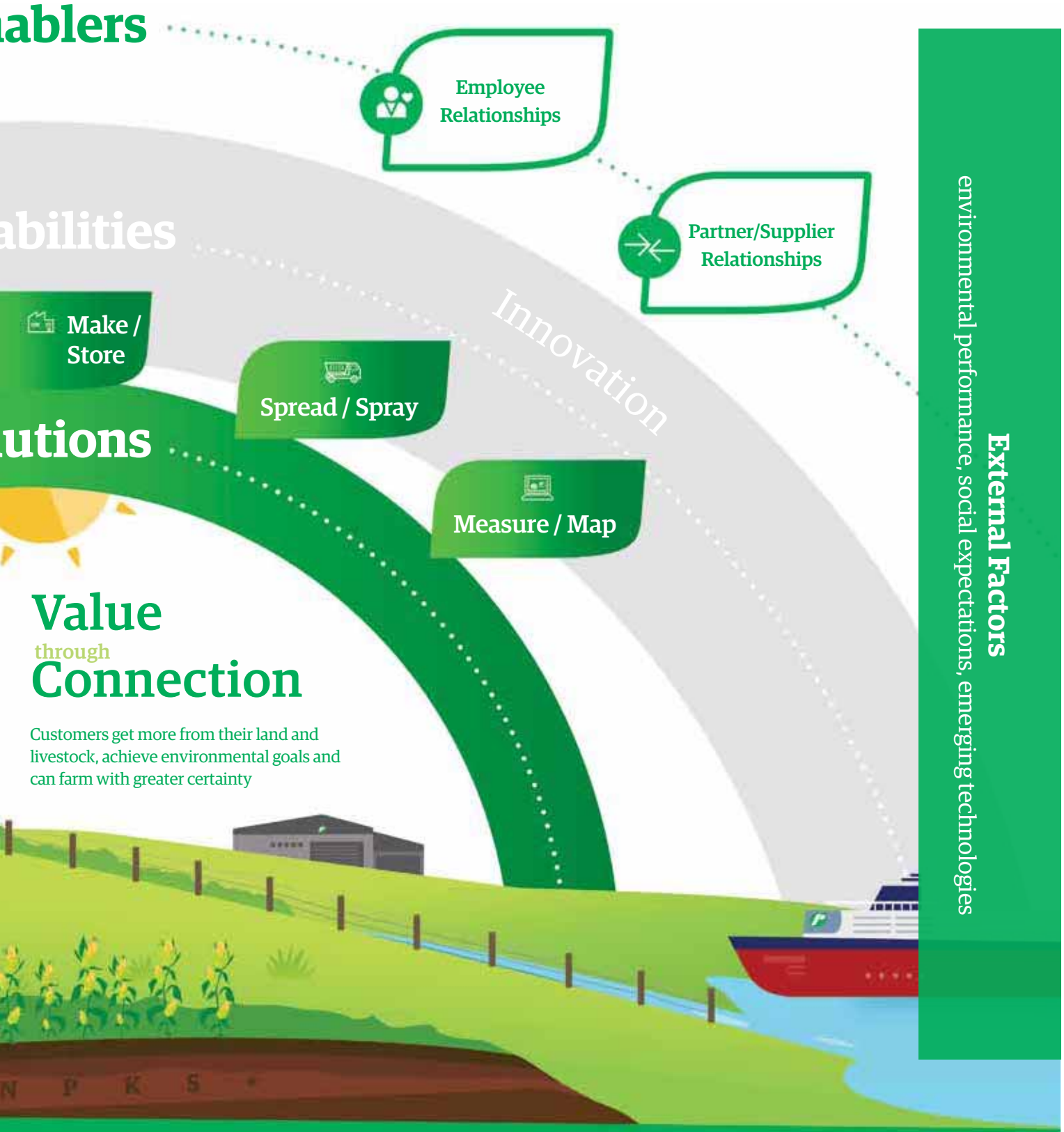
Test / Advise

Test / Advise

- Accredited Laboratory
- Agri-science Investment
- Research Collaborations
- Trained and Certified Advisors
- Agronomic Recommendations
- Environmental Consultancy
- Animal Health Guidance
- Accessible Customer Centre

Buy / Ship

- Global Sourcing
- Local Delivery
- Procurement System
- Physical and Chemical Testing
- Biosecurity Screening
- Shipping Venture



Make / Store

- Stores Network
- Manufacturing Capability
- Lime Quarries
- Precision Blending
- Convenient On-farm Silos
- Fertiliser, Agchem, Seeds and Animal Health Products

Spread / Spray

- Ground and Aerial Spreading
- Farmer Spreading and Spraying System
- Precision Application
- Placement Verification (under development)
- Aerial Soil Sensing (under development)

Measure / Map

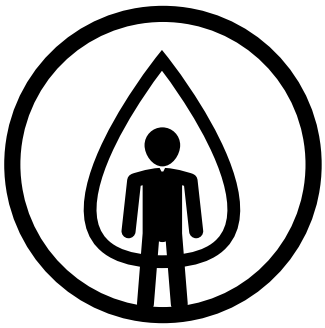
- Decision Support
- Proof of Placement
- Mapping Technology
- Pasture Management Tools
- Integrated Reporting Tools

Our values

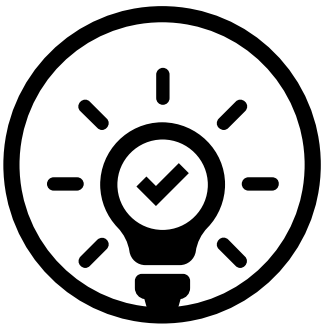
As a co-operative, we are the product of a pioneering spirit and a conviction that strength comes from pulling together. We are driven to challenge and improve; to provide exceptional service to customers in the New Zealand agri-sector and contribute to their success. We take care of each other and keep each other safe.

Here are the five values underpinning all our actions.

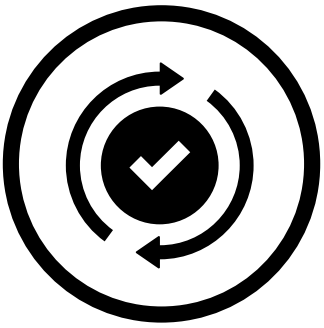
Empowered People



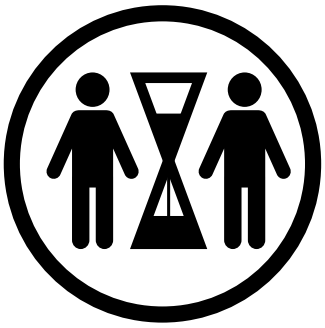
Environmental Leadership



Driving Innovation



Successful Co-operative



Enduring Relationships

Ravensdown's sustainable advantage

Ravensdown exists to support our customers' financial and environmental performance for a more prosperous New Zealand.
We believe in smarter farming for a more sustainable future.
Ravensdown creates value by helping customers farm with greater certainty. We do this through trained and trusted people using smart tools, through providing quality products such as fertilisers, lime, agchem, seed and animal health solutions that help customers get the most from their land and livestock.

We are the only co-operative who, without anyone in between, test for, advise about, buy, ship, make, store, spread, measure and map soil nutrients and fertiliser in a truly integrated way.

Ravensdown

Test / advise

What we have	What we do	How this adds value
IANZ-accredited laboratory.	80,000 tests a year at ARL including soil, water, plant tissue and feed quality analysis.	• **Fast and accurate diagnosis.** • **Providing insight to make the right decisions.**
GPS-enabled soil testing systems.	Whole-farm soil testing to reveal nutrient status between and within paddocks.	• **More targeted fertiliser to areas that actually need it means less waste.** • **Optimised productivity and improved environmental outcomes.**
61 certified nutrient management advisors (largest team in New Zealand).	Provide trusted advice with a farm-system perspective based on latest science and OVERSEER nutrient modelling tool.	• **More certainty over how much of which nutrients to use.** • **Optimises farming model and achieves farm goals.**
14 members in the environmental consultancy team.	Farm Environment Plans, actual nutrient budgets and assistance navigating regulatory constraints.	• **Fit-for-purpose nutrient budgets that help farmers comply with consents.** • **Land values can be maintained and more certainty around long-term investment decisions.**
Agronomists and animal health specialists.	Technical advice from experts based in the customers' region delivered face-to-face, by email or via Ground Effect magazine.	• **Seasonal guidance complements nutrient plans.** • **Practical problem solving enables better returns from land and livestock.**
Multiple product categories including fertiliser, lime, agrichemicals, seeds and animal health products.	Supply quality products backed up with technical advice.	• **The one-stop shop lowers transactional costs for vital farm inputs.** • **Cost-effective access to quality-tested products.**
Online tools.	Digital access to historic soil testing, agronomic recommendations, nutrient budgets and online ordering tools.	• **Map-based presentation of records, soil test results and applications.** • **Convenience of having reference documents in one place with 24/7 online access.**
New Zealand based Customer Centre for accessible service.	Direct advice without anyone in between.	• **Prompt answers to questions from a friendly team.** • **Use of farm information for added relevance.**
An experienced research team actively contributing to agri-science.	Fund initiatives with Crown Research Institutes and universities.	• **Access the latest developments in a dynamic sector.** • **Intellectual property accumulated over decades provides valuable insights.**

80,000 tests a year

Test / advise

14 members of environmental consultancy

Test / advise

Digital access to farm data

Test / advise

CNMA
Certified Nutrient Management Adviser

Largest number of Certified Advisers

Test / advise

Buy / ship

What we have	What we do	How this adds value
Valued partners across the world.	Import approximately a million tonnes of product and raw materials a year. Long-term contracts account for 76% of purchases.	• **Surety of supply, consistent quality and competitive pricing.** • **Access to global R&D.**
Quality procurement systems.	Measure suppliers against strict criteria including independently audited biosecurity screening process. 98% was within specification.	• **Physical and chemical quality allows fertiliser to be stored and spread more effectively.** • **Protection from contamination minimises trade risk.**
Shipping joint venture.	Utilising shipping experts allows more flexibility and efficiencies from backhaul loads and contracted vessels.	• **Control of shipping gives clearer forward view and aids planning.** • **Better control of handling process ultimately improves quality.**
Logistics network.	Transport over a million tonnes across the stores network.	• **Enhanced cost control.** • **Consistent availability of product where and when needed.**

ONE

million tonnes imported

Buy / ship

Biosecurity system

Buy / ship

Integrated supply chain

Buy / ship

TOP

tier global partners

Buy / ship

Ravensdown

Make / store

What we have	What we do	How this adds value
Manufacturing plants in Napier, Christchurch and Dunedin.	Efficient superphosphate manufacturing ensures access to quality product with excellent ballistic properties and less dust.	• **Smoother and wider application of NZ-made superphosphate.** • **Affordable source of key soil nutrients.**
87 stores across NZ.	Flexible and knowledgeable staff give access to quality bulk product when needed.	• **Storage and protection of fertiliser product maintains quality.** • **Assurance around availability aids planning.**
1,322 silos across NZ.	Fertiliser silos give access to products such as urea for self-spreading.	• **Convenience of having access to product on hand.** • **Maintenance taken care of as part of leasing flexibility.**
7 lime quarries plus two supply agreements provide a fifth of all NZ's aglime needs.	Provide quality lime in a safe and sustainable manner.	• **Affordable access to soil-health necessity.** • **Fertmark brings peace of mind.**
Precision blending plant.	Custom blends made to order according to individual farm's diagnosed needs.	• **Faster throughput so fertiliser arrives when needed.** • **New product development and innovations such as N-Protect. More precise coatings and mixes for better performance across the paddock.**

87 stores across NZ

Make / store

Manufacturing Super -phosphate

Make / store

1,322 on-farm silos

Make / store

Precision blending

Make / store

Spread / spray

What we have	What we do	How this adds value
Investment in 86 trucks – the largest groundspreading operation in NZ.	Approximately one million hectares applied across New Zealand by a skilled and dedicated team.	• **Spreadmark assurance and accuracy.** • **Convenience of working with the same testing, stores and spreading team.**
Differential GPS-enabled trucks.	Computer-controlled application – accurate to under one metre – directed by a wirelessly uploaded fertiliser map.	• **Right amount in right place reduces waste and environmental impact.** • **Data integration reduces chance of errors.**
21 aircraft and 40 loaders in aerial spreading / spraying subsidiary with owned maintenance facility.	Apply soil nutrients across 716,878 hectares of hard-to-reach areas.	• **Improving productivity of hill country.** • **Reliable aircraft increases dependability.**
IntelliSpread™ aerial fertiliser application with Airscan™, soil auditing, computer-controlled topdresser doors and placement verification technology.	Researching the potential for soil testing from the sky and GPS-guided fertiliser application to transform hill country productivity.	• **Efficiency of nutrient use can increase farm profitability or reduce costs.** • **Reduced waste compared to a blanket approach can mitigate environmental impact.**

Map / measure

What we have	What we do	How this adds value
99% market share in tow-behind measuring technology.	Provide tools that can measure pasture yield and interface with mapping and decision support tools to plan grazing rotations.	• **Fully utilise pasture in order to farm efficiently.** • **Target poor-performing paddocks to optimise dry matter production.**
Mapping technology demonstrates where fertiliser was applied.	Generate 29,428 proof-of-placement maps that can be stored on decision support tool.	• **Access to farm records in one location and more informed decision making.** • **Tracking of inputs and results for compliance.**
Decision support applications.	Enable farmers to manage their feed budgets and compare production with peer group.	• **More accurate climate forecasts account for improved planning of rotations.** • **Better feed utilisation avoids unnecessary expense of supplements.**

86 ground -spreading trucks

Spread / spray

Aircraft for aerial application

Spread / spray

Proof of placement maps

Map / measure

Decision support tools

Map / measure

Board of Directors

John Henderson LLB

Chairman

John runs a sheep and beef breeding and finishing operation, has been on the Board since 2004 and has been Chairman since February 2014. As well as running a legal practice in Marton, John spent many years as a director of RACE Incorporated, and of a number of farming and agricultural companies in NZ and overseas.

"My role is to understand the purpose of the company and to promote execution of that purpose. My position in the farming and business community provides insights required to execute the role."

Committees: Audit and Risk. Board Appointments and Remuneration.

Stuart Wright B. Ag. Com

Deputy Chairman

Stuart farms 330ha west of Christchurch growing arable crops, seed potatoes and finishing lambs and has been on the Board since 2006 and Deputy Chairman since 2014. Stuart is a Nuffield Scholar and has had a number of governance roles in the industry goods sector as well as not-for-profit organisations.

"It is a privilege to be a director of a company committed to adding value to farming businesses and leading the way with innovation."

Committees: Audit and Risk. Hugh Williams Scholarship (chair).

Peter Moynihan B. Ag. Sc

Peter owns a 190ha dairy farm located at Northope and has farming interests in Lochiel and Lorneville and has been on the Board since 2013. Peter is an Agribusiness Area Manager for a prominent bank and has been through the Fonterra Governance Development Programme.

"Governance is about developing strategies that will work and result in value for our shareholders, about continually monitoring performance to strategy and if the strategy remains relevant."

Committees: Share Surrenders. Board Appointments and Remuneration.

Bruce Wills B. Ag. Com

Bruce farms an 8000 stock unit cattle and sheep farm north of Napier and has been on the Board since 2015.
Bruce has held a wide range of governance positions, particularly in the science and environmental areas. He previously spent six years on the Federated Farmers Board as National President from 2011 to 2014.

"I only join a Board if I am confident I can make a positive difference and add value to what the organisation achieves."

Committees: Hugh Williams Scholarship.

Scott Gower

Scott owns and runs a large hill country sheep and beef station at Ohura in the Central North Island and has been on the Board since 2006. Scott is a member of the NZ Institute of Directors and holds a certificate in company direction. He has completed a number of governance courses and continues to prioritise professional development.

"For the continued success of our co-operative, it is essential Ravensdown continues to lead the way as agricultural, technological and regulatory requirements evolve."

Committees: Share Surrenders (chair). Audit and Risk.

Kate Alexander

Kate owns a 245ha dairy farm in Dargaville and has been on the Board since 2014. Kate is also Chair of Delta Produce Cooperative Ltd and is a ministerial-appointed Council member of the Open Polytechnic of New Zealand. She has previously worked in the primary industry training sector. Kate holds an IOD Company Directors' Certificate and a Diploma in Agribusiness Management. She has been through the Fonterra Governance Development Programme.

"I believe our obligation as directors is to ensure that we continue to have a financially sustainable cooperative - that delivers quality product/advice to shareholders."

Committees: Share Surrenders. Hugh Williams Scholarship.

Tony Howey

B. Ag Com (VFM & Business Management)

Through the companies Alpine Fresh Ltd and ViBERi NZ Ltd, Tony grows for the arable, vegetable and berryfruit sectors over 700 hectares. He has been on the Board since 2006.

His past governance experience includes with irrigation/dam companies, a zone committee and a Chamber of Commerce. Currently Tony is a director of several local companies and is a trustee of New Zealand Agricultural Education Trust and Vice President of Horticulture NZ.

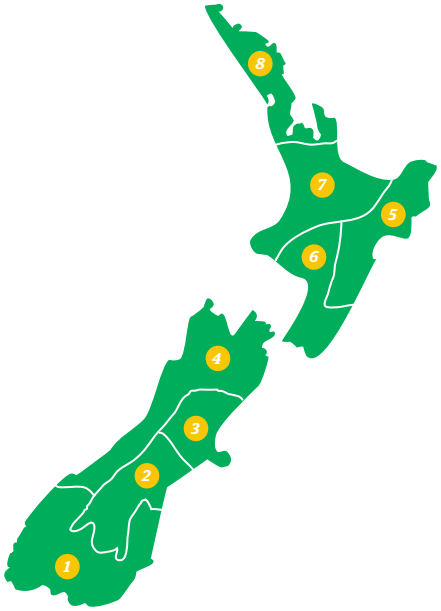
Committees: Board Appointments and Remuneration.

Tony Reilly B. Ag. Com

Tony runs the family dairy farming business and has interests in 1,600 cows and has been on the Board since 2004. Tony has been involved in agricultural governance at a local and national level, particularly in the dairy sector for 20-plus years. He was a director of the NZ Dairy Board and Kiwi Dairy Co-op leading up to the formation of Fonterra. Tony is a Nuffield Scholar and a Chartered Fellow of the Institute of Directors.

"I strongly support the co-operative business model in providing solutions for farmer shareholders in an environmentally sustainable manner."

Committees: Board Appointments and Remuneration (chair).



Independent directors

Glen Inger

Glen is a Northland-based entrepreneur who is also a beef, sheep, mushroom and forestry farmer and has been on the Board since 2007. Glen is an entrepreneur, was a founding director of the Warehouse Group and was a board member there for 11 years. He currently has directorships of 20 private companies across agriculture, property, retail and tourism sectors.

"My key objectives are firstly to governance and compliance duties but equally developing stakeholder value drivers through sustainable growth strategies."

Committees: Audit and Risk.

Jason Dale B. Com FCA

Jason, who is a former CFO of large listed and unlisted companies such as Auckland Airport, PGG Wrightsons, and Fonterra Ingredients, has been on the Board since 2014. He is currently Chair of the Audit Committee for Taranaki Investments Management Limited and previously LIC.

"I see my role as director to be part of the team at the Board that connects the strategy of the company, with the skills and passion of the people at Ravensdown, for the benefit of the members."

Committees: Audit and Risk (chair).

Feed your pasture

First grazing and beyond

Soil moisture and nitrogen are the two main factors that limit new pasture establishment. If all other controllable factors are taken care of i.e. 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 to nitrogen.

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.

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 soils cannot supply these needed elements right through the year at an adequate rate to maintain vigorous clover growth, or where soils are too acidic and biological activity is affected, the supply of nitrogen to grasses will diminish, pasture production will fall, and low-fertility tolerant species of grasses will replace high-fertility requiring grasses.

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

N-Protect / Urea
Encourage tillering and leaf expansion by applying 60 – 70 kg/ha Urea or N-Protect after first grazing, will help to reduce the impact weeds may have on new pasture.

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

Pluck test

Testing whether your paddock is ready for grazing is one of the simplest tests you can do; simply pinch a plant with your fingers 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 is called the 'Pluck Test' and simulates grazing.

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.

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 plus leading edge forage and endophyte technologies.

Insects
Endophytes are natures 'in-built defence mechanisms' providing increased plant tolerances against certain insects. Endophytes are fungi that live inside the plant and in return for the shelter and a food source, they release chemicals that affect certain 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.

Weeds
Identifying your problem weeds will allow 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).

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

It's a little like a rugby lineout, the glyphosate is a tall lock who can get the majority of ball (glyphosate), but with the lifters (companion herbicides) the reliability of getting the ball back (killing weeds) is significantly increased. The insecticide is like a cheeky elbow to the ribs of the opposing lock just to keep them down a little and the addition of Accelerate is like the tape around the locks legs, it just makes it more effective.

COMPANION HERBICIDES	TRIBENURON-METHYL e.g. Granit	THIFENSULFURON-METHYL e.g. Backup	DICAMBA e.g. Dicam 480		CLOPYRALID e.g. Multiple		2, 4-D e.g. Pasture Guard® 2, 4-D 680	
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	14 days: grasses, clovers, cereals, brassicas	14 days: grasses, clovers, cereals, brassicas	0 days: grasses, cereals, brassicas	28 days: clovers	0 days: grasses, cereals, brassicas	3-6 months: clovers, legumes	10 days: grasses, cereals	1 month: clovers, brassicas

Paddock preparation

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

• **Insect removal -** removing all the resident insects and weeds, combined with a flat, even and firm seed bed will allow a consistent sowing depth and competition free establishment.

• **Sowing depth -** the sowing depth of seed is important for a 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 2cm 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.

Tread carefully

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

Walk into your new pasture paddocks and see what's happening in terms of weeds and/or insects, making sure you get your hands in the grass to get a close up view of the new pasture. There are a number of insects wanting to get stuck into pasture, especially new pastures. Using treated seed will help reduce the chance of severe insect damage, but there is still potential for pasture damage. Endophytes take about 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 removing weeds prior to 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, so faster and stronger regrowth

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

ACTIVE INGREDIENT	FLUMETSULAM	MCPA AND MCPB	MCPB AND BENTAZONE	BENTAZONE
HERBICIDE	Aim®	Pasture Guard® Nurture	Pasture Guard® Elite	Pasture Guard® Bentazone
KEY BENEFIT/ DESCRIPTION	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 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 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 have at least 2 trifoliate leaves			
TIP	Collaborate™ Spray Oil must be used with Aim®.	More convenient to use than tank mixing MCPA with MCPB; Can be mixed with Aim® for increased weed spectrum.	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:	Preside®, Valdo®	Tropotox®, Select™, Thistrol® Plus	Pulsar®	Basagran®, Broadstar®, Dictate®, Troy®
MIXING OPTIONS	Pasture Guard Nurture Pasture Guard Bentazone	Aim®, Pasture Guard Bentazone, Pasture Guard 2, 4-D 680		Aim®

What's your score?

Paddock ranking system

The tool to the right is a way of scoring every paddock on the farm from best to worst. Paddocks are scored from 1 (worst) to 5 (best) using the photos and descriptions below 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: Pasture Renewal Charitable Trust, 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 the 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:

In spring oversow chicory with fertiliser, 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 OK for coming season

Description
Whole paddock has dense sward of desired grasses and clovers

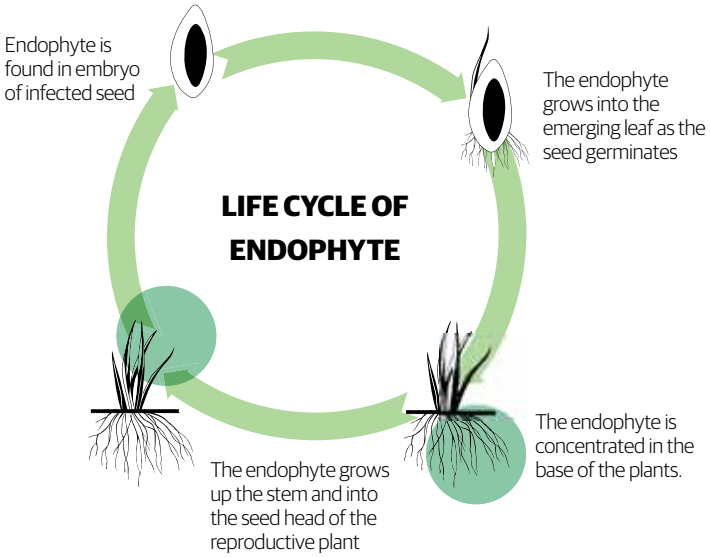
Suggested action
No action required. Would be happy if whole farm in this state

Battling pests

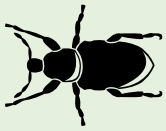
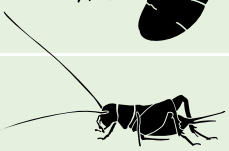
Cultural control
The use of different management techniques can reduce the impact some insects have on pasture production. Your local agri manager will be able to identify the damaging insect present and control options.

Endophyte – your ally inside the plant
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.

Chemical warfare
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 in 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
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 (adult only)	Seed treatment Toppel® 500	
Black beetle	Cultivation Crop rotation	GrubOUT® U2 (adult and larvae) AR37 (adult only) NEA2 (adult only) Standard endophyte	Seed treatment	
Black field cricket		GrubOUT® U2	Maldison grain bait	

Here to help

Jeremy Klingender

Product Manager - Seed

P: 021 900 483
E: jeremy.klingender@ravensdown.co.nz

Jeremy joined Ravensdown in 2011 as an agrochemical technical manager. Jeremy has 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.

Shane Brownlie

Agronomy Technical Manager Western North Island

P: 021 900 167
E: shane.brownlie@ravensdown.co.nz

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 programs.

Dan Pavey

Agronomy Technical Manager Upper South Island

P: 021 900 406
E: dan.pavey@ravensdown.co.nz

Dan has over 15 years' experience in the rural sector, joining Ravensdown in 2012 as an agrochemical technical manager. Dan then advanced to the agronomy team, and has a real interest in legumes, pastures and viticulture.

Chris Lowe

Agronomy Technical Manager Central South Island

P: 021 946 896
E: chris.lowe@ravensdown.co.nz

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 managed many on-farm trials. Chris returned to Ravensdown in 2015 and uses his extensive knowledge to really benefit Ravensdown shareholders.

Huw Murray

Agronomy Technical Manager Lower South Island

P: 021 900 711
E: huw.murray@ravensdown.co.nz

Huw grew up on a farm just out of Tekapo, and has a deep knowledge of the Otago/Southland region. Huw joined Ravensdown in 2015, after a number of years' in the retail and wholesale seed industry. This experience has given Huw knowledge in a range of farm environments.

ravensdown

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 + N WILL GIVE YOU THE HIGHEST PASTURE PRODUCTION INCREASE.

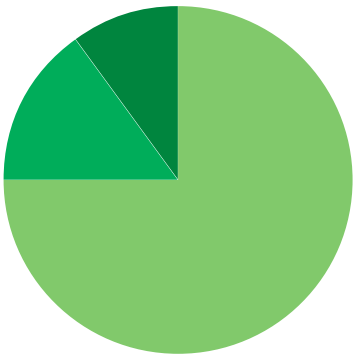
HP Dairy Mix

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.



Optional extras*

Chico chicory, Tonic plantain, red clover

**Mixing fee applies*

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

Contents

- Ultra AR1 enhanced perennial ryegrass
- Demand white clover
- Large leaf white clover

Key traits

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

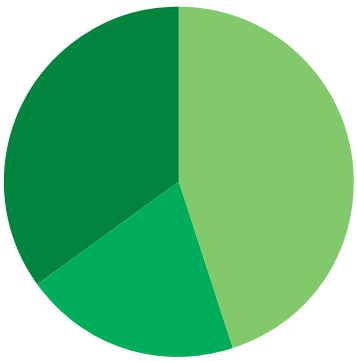
HP Sheep and Beef Mix

Production when you need it

A specially designed animal-safe mix for sheep and beef pastures, based on Ultra AR1 enhanced perennial ryegrass and Arrow 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 grass, it is a 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 sheep, cattle and deer farming systems including irrigated / higher rainfall or dryland, and to both rotational grazing and set stocking.



Optional extras*

Chico chicory, Tonic plantain, red clover

**Mixing fee applies*

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

Contents

- Ultra AR1 enhanced perennial ryegrass
- Arrow 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

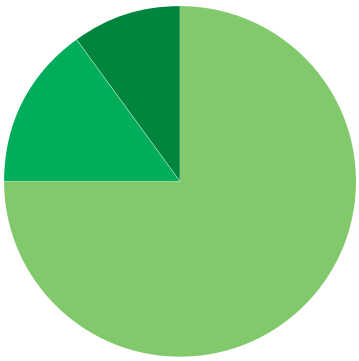
HP AR37 Mix

Robust and persistent

A high performance pasture mix with the AR37 endophyte for increased insect protection over AR1 cultivars, based on Alto AR37 perennial ryegrass.

Suitability / Use

Suited for cattle and sheep systems where insects such as Argentine stem weevil, porina and black beetle adults are causing pasture persistency issues. The AR37 endophyte has the potential to cause ryegrass staggers.



Optional extras*

Chico chicory, Tonic plantain, red clover

**Mixing fee applies*

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

Contents

- Alto AR37 perennial ryegrass
- Demand white clover
- Large leaf white clover

Key traits

- High year-round pasture production and quality
- High quality clover content
- Late flowering with low aftermath seeding
- Suited to either sheep and beef or dairy systems

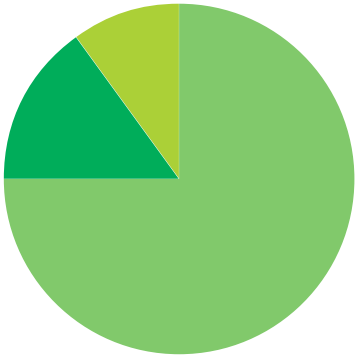
HP Dryland Mix

Dryland production

A high performance, animal-safe pasture mix for improved summer drought 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.



Optional extras*

Chico chicory, Tonic plantain, red clover

**Mixing fee applies*

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 stagger risk

HP Endurance Mix

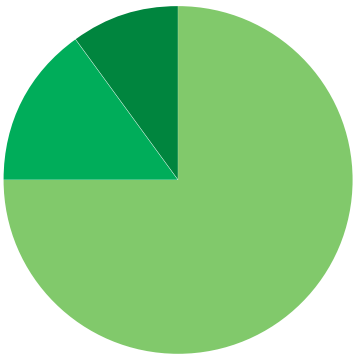
Production and persistence

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.



Optional extras*

Chico chicory, Tonic plantain, red clover, Vision cocksfoot

**Mixing fee applies*

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

Contents

- Matrix SE enhanced perennial ryegrass
- Demand white clover
- 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

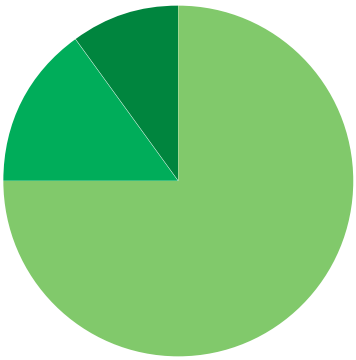
HP Southern Mix

Low endophyte production

A high performance, low endophyte pasture mix based on Ultra enhanced perennial ryegrass; providing the best combination of highest performing animal safe perennial grass and with the inclusion of white and red clover.

Suitability / Use

Ideally suited to high performance farming systems in areas where insect pressure is low, such as in Southland, South Otago and the lower West Coast.



Optional extras*

Chico chicory, Tonic plantain

**Mixing fee applies*

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

Contents

- Ultra LE enhanced perennial ryegrass
- Demand white clover
- Red clover

Key traits

- Very strong winter, early spring growth providing feed when most needed
- Contains Southland bred Demand white clover
- High animal performance potential
- Zero ryegrass stagger risk

HP Swardmaster Mix

Maximise animal growth

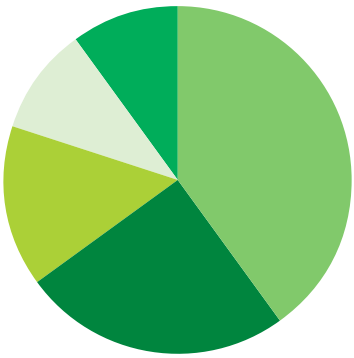
A high performance, animal-safe pasture mix based on Ultra AR1 enhanced perennial ryegrass and Kai tetraploid low endophyte perennial ryegrass; and providing high summer quality for improved livestock performance.

Suitability / Use

Ideally suited for more reliable year-round feed, improved summer growth and quality under rotational grazing and set stocking for high performance and 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
- Kai tetraploid perennial ryegrass
- Chico chicory
- Red clover
- Demand white clover

Key traits

- High production potential
- Increased summer production and quality
- Very high livestock fattening and finishing
- Zero ryegrass stagger risk

Blade Italian ryegrass

Bulk feed when you need it

An exciting new broad leafed, densely tillered diploid Italian ryegrass, bred for fast establishment and very 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 late heading (+24 days)
- Very good disease resistance

Bullet annual ryegrass

Faster, higher yielding, flexible winter feed

A rapidly establishing tetraploid annual ryegrass with superior cool season performance and re-growth.

Suitability / Use

An ideal 6-9 month specialist winter feed suited to all areas of New Zealand, for both grazing as well as silage and hay use. Recommended for all livestock types. Due to its high pasture quality (ME and digestibility), Bullet has the potential to produce high quality silage and hay. Bullet should be autumn sown and can be late sown.

Key traits

- Rapid establishment
- Exceptional autumn, winter and spring yields
- Excellent disease resistance
- High pasture quality

Agrochemicals - 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 for sprayouts prior to sowing new crops and pasture

AGRECOVERY

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/litre glyphosate powered by Surfmax-G®
- Rainfast in 20 minutes when used with Accelerate penetrant
- A broad spectrum herbicide used in a wide range of situations

AGRECOVERY

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

Glyphosate 360™

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

- A broad-spectrum, non-selective herbicide used in a wide range of situations
- Ideal for sprayouts prior to sowing new crops and pasture

AGRECOVERY AH

ACTIVE INGREDIENT: glyphosate 360g/L
PACK SIZE: 1000L

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 added to herbicides for control of brushweeds
- 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 AH

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

Granit®

A selective herbicide for control of certain broadleaf weeds in conservation tillage programs, 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 AH

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

Toppel™ 500

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

- Broad-spectrum insecticide for many agricultural and horticultural crops
- Controls many insects through contact, fumigation or ingestion
- Ideal in the final spray prior to direct drilling

AGRECOVERY TR

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

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
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg) or can be mixed with fertiliser at your local Ravensdown store

Insecticides

Toppel™ 500

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

- Broad spectrum insecticide for many agricultural and horticultural crops
- Controls many insects through contact, fumigation or ingestion
- Ideal in the final spray prior to direct drilling

AGRECOVERY TR

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

Rogor®

Systemic insecticide with contact activity for the control of Aphids, Mealy Bug, Leafminers, Red Scale, Lucerne Flea and certain other insect pests in crops

- A truly systemic insecticide ideal for aphid control
- Controls many biting, rasping and sucking insects
- Can be used over a large number of crops for many insects

AGRECOVERY TR

ACTIVE INGREDIENT: dimethoate 400g/L
PACK SIZE: 10L

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 TR

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

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

AGRECOVERY AH

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

Pirimisect

For controlling most aphid species in stonefruit, vegetable, forage and some flowering crops

- Controls aphids in a range of crops without harming beneficial predators
- Combines fumigant, contact and systemic activity for superior aphid control
- Can be used in flowering crops when bees are not foraging

AGRECOVERY TR

ACTIVE INGREDIENTS: pirimicarb 500g/kg
PACK SIZE: 1kg

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
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg) or can be mixed with fertiliser at your local Ravensdown store

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 AH

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 AH

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

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 AH

ACTIVE INGREDIENT: 2,4-D ethylhexyl ester 680g/L
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 AH

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

Fumate™

For control of grass and broadleaf weeds in 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 & ryegrass
- Used in pasture to control barley grass during the winter
- Used both pre- and post-emergence in fodder beet weed control programs

AGRECOVERY AH

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

Gibberellic acid

Express® Gibberellic Acid

Express is a soluble formulation 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 formulation of the naturally occurring gibberellic acid GA3
- Stimulates extra pasture production when extra feed is needed
- Convenient 20g water soluble bags for ease of measuring and mixing

ACTIVE INGREDIENT: gibberellic acid (GA3) 400g/kg
PACK SIZE: 200g (10 x 20g water soluble bags)

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 AH

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

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 AH

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

Valiant® 520

A selective herbicide for control of grass weeds in certain broadleaf crops, forestry, orchards, nurseries, non-crop areas and white clover

- A selective herbicide for the control of grass weeds in broadleaf crops
- Can be tank mixed with certain other herbicides for tree release
- Use with Collaborate Oil as directed for best results

AGRECOVERY AH

ACTIVE INGREDIENT: **haloxyfop-p** 520g/L
PACK SIZE: 1L, 5L

Lucerne options

Parable™ 250

Parable is a water soluble, non-selective contact herbicide for the control of many annual and perennial grasses and broadleaf weeds in the situations stated on this label

- Fast acting contact herbicide that desiccates all green plant tissue
- Used widely in winter lucerne spray programmes
- Often tank mixed with Atraflo, Atratec or Terbaflo in established lucerne

AGRECOVERY TR

ACTIVE INGREDIENT: paraquat dichloride 250g/L
PACK SIZE: 20L

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

AGRECOVERY AH

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 AH

ACTIVE INGREDIENT: atrazine 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 situations where long lasting residual control is required

AGRECOVERY AH

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 TR

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

Brassica 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 AH

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

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
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg) or can be mixed with fertiliser at your local Ravensdown store

Purge™

A selective herbicide for the control of certain broadleaf weeds in fodder 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 AO

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, turf, 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 AO

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 programs 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 AH

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

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 (GS 12–45)

AGRECOVERY AH

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 AH

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 programs, 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 AH

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 AH

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 5 weeks
- Ideal in tank mixes with strobilurin fungicides such as Inspire®

AGRECOVERY AH

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 6 weeks disease control and prevention
- Ideal in tank mixes with triazole fungicides such as Fortify®

AGRECOVERY

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

Maize options

Maize Guard®

For the selective, pre-emergence control of certain annual grasses and broadleaved 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

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

AGRECOVERY AH

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 AH

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

Guardian Plus™

For the post-emergence control of perennial and annual grasses, certain broad leaf weeds in maize for grain and silage

- Post-emergence herbicide for grass and broadleaf weed control in maize
- Controls atrazine and dicamba resistant fathen
- Ideal for control of problem summer grasses and broadleaf weeds

AGRECOVERY

ACTIVE INGREDIENTS: nicosulfuron 40g/L
PACK SIZE: 10L

Dicam 480™

A selective herbicide for control of certain hard to kill broadleaf weeds in conservation tillage programs 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 AH

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

Fodder beet options

Fumate™

For control of grass and broadleaf weeds in 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 & ryegrass
- Used in pasture to control barley grass during the winter
- Used both pre- and post-emergence in fodder beet weed control programs

AGRECOVERY AH

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

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, Californian and other thistles in a range of crops, turf, 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 AO

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

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
- Can be mixed and broadcast with fertiliser for easy application

ACTIVE INGREDIENT: metaldehyde 50g/kg
PACK SIZE: 10kg, 600kg (60x10kg) or can be mixed with fertiliser at your local Ravensdown store

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 a wide range of broadleaf weeds in pasture
- Can be used year-round through a knapsack, handgun or a mistblower

AGRECOVERY AH

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 mans 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 AH

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 or spot spraying many brush and broadleaf weeds

AGRECOVERY AH

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

Long-lasting, non-selective 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 situations where long lasting residual control is required

AGRECOVERY AH

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 TR

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

Spot spraying

Multiple®

A selective herbicide used to control clovers, yarrow, plantains, Californian and other thistles in a range of crops, turf, 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 AO

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 a mistblower

AGRECOVERY AH

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 or spot spraying many brush and broadleaf weeds

AGRECOVERY AH

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 10 days post application

AGRECOVERY

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

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 added to herbicides for control of brushweeds
- 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, 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 10 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 notes

Fertiliser

PASTORAL CROPPING

Key

- Meets Fertmark quality assurance standards. For more information see page 2.
- Contains a blend of products that are all Fertmark registered.
- Contains a blend of some products that are Fertmark registered.
- Available in bulk.
- Available in bulk bags.
- 40kg bags.
- 25kg bags.
- Products eligible for a rebate.

Nitrogen products mixed with super-based products have the propensity to become lumpy even in relatively short periods of time. Applications should take place promptly. Segregation may occur when mixed with product with differences of particle size. This should be considered by the applicator when determining the appropriate bout width for spreading product blends of this nature and Ravensdown recommends the equipment and the operation thereof should at least meet the Spreadmark minimum performance.

ravensdown

Cropping fertilisers – it's all in the mix

Fertiliser requirements can vary greatly depending upon crop type and soil properties. Compound and blended fertilisers are popular alternatives to separate fertiliser applications because of efficiency gains and ensuring crops have even access to nutrients.

COMPOUND fertiliser granules each contain a mix of the NPK nutrients.

BLENDED fertilisers have separate granules of different fertilisers.

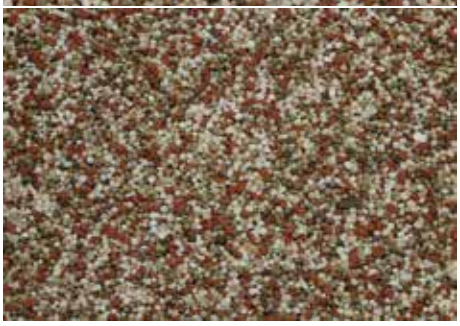
Cropping fertiliser snapshot

Nitrophoska 12-10-10
The only compound fertiliser developed specifically for New Zealand conditions**.** Nitrophoska 12-10-10 has the same composition of plant-available nutrients in each granule. The phosphate-to-nitrogen ratio encourages early root growth, making it an ideal starter fertiliser. It is used extensively for maize, sweet corn, onions, squash and market vegetables.

Cropmaster DAP (Diammonium Phosphate)
A granular nitrogen and phosphate fertiliser. DAP is an alternative source of P if soil sulphate levels are high or S is not required. DAP has good spreading and flow characteristics. DAP is not compatible with superphosphate or magnesium oxide.

Cropmaster 15
Cropmaster 15 is a blend of DAP, potassium chloride and granular ammonium sulphate providing readily-available nutrients. Commonly used in cropping situations where potassium **IS** required.

Cropmaster 20
Cropmaster 20 is a 50:50 blend of DAP and granular ammonium sulphate. Commonly used in cropping situations where potassium is **NOT** required.

FERTILISER	CROP	USE	APPLICATION RATE	
Nitrophoska 12-10-10	Arable	Planting fertiliser for field crops/ horticultural crops	250 - 500kg/ha	
	Horticulture		250 - 1000kg/ha	
Cropmaster DAP	Arable	Planting fertiliser for field crops, green feed brassicas	90 - 200kg/ha	
	Horticulture		100 - 300kg/ha	
	Pasture	Maintenance fertiliser for sheep, beef and dairy farms	90 - 200kg/ha	
Cropmaster 15	Arable/ Horticulture	Spring planting of cereals and legumes	180 - 375kg/ha	
	Pastoral	Boost pasture growth	125 - 250kg/ha	
Cropmaster 20	Arable	Spring cereal sowing	180 - 375kg /ha	
		Autumn grass seed	125 - 200kg/ha	
		Sowing new grass	100 - 180kg/ha	
	Pastoral	Boost pasture growth	125 - 250kg/ha	
		Hay and silage paddocks at closing	150 - 300kg/ha	

Fertiliser

Nitrogen

PRODUCT	N	P	K	S	Mg	Ca
Urea	46.0	-	-	-	-	-
N-Protect	45.9	-	-	-	-	-
Nitro S®	29.9	-	-	31.5	-	-
N-Protect S®	29.8	-	-	31.5	-	-
N-Protect Rapid S™	31.3	-	-	17.1	-	-
Ammonium Sulphate Granular	20.5	-	-	24.0	-	-
N-Control™ 75 (slow release urea)	44.0	-	-	-	-	-
Calcium Ammonium Nitrate (CAN)	27.0	-	-	-	-	8.0
Entec® 26	26.0	-	-	13.0	-	-
Ureammopot	26.0	-	10.0	10.2	-	-
Ammo 31™	30.7	-	-	14.4	-	-
Ammo 36™	35.8	-	-	9.6	-	-
Flexi-N Lift	6.2	7.7	-	9.4	0.8	17.0
Flexi-N Komplete	6.6	6.4	6.5	7.8	0.8	14.2
Flexi-N High S	6.6	7.2	-	12.8	0.8	15.9
Flexi-N Replace	8.3	4.5	15.0	5.5	1.0	10.0
Flexi-N High N	12.0	6.4	-	7.8	1.5	14.2
Flexi-N Equal	7.6	7.3	-	9.0	1.0	16.3
Flexi-N Drive	10.1	6.8	-	8.3	1.3	15.1
Flexi-N - BULK ONLY	41.4	-	-	-	5.2	-
Lawn Fertiliser	14.9	2.3	-	20.6	-	5.0

Magnesium

PRODUCT	N	P	K	S	Mg	Ca
Magnesium Oxide	-	-	-	-	40.0	-
Esta® Kieserite (Granular) Bulk	-	-	-	20.0	15.0	-
15% Potash Serpentine Super	-	5.7	7.5	7.3	4.7	12.8
20% Potash Serpentine Super	-	5.4	10.0	6.9	4.4	12.0
30% Potash Serpentine Super	-	4.7	15.0	6.0	3.9	10.5
Super Mag N	6.9	5.7	-	7.3	4.7	12.8
15% Potash Super Mag N	5.9	4.8	7.5	6.2	4.0	10.8
20% Potash Super Mag N	5.5	4.6	10.0	5.8	3.7	10.2
Dolomite	-	-	-	-	11.0	23.0

Potassium

PRODUCT	N	P	K	S	Mg	Ca
Potassium Chloride	-	-	50.0	-	-	-
Potassium Sulphate Granular	-	-	41.5	18.0	-	-
10% Potash Super	-	8.1	5.0	9.9	-	18.0
15% Potash Super	-	7.7	7.5	9.4	-	17.0
20% Potash Super	-	7.2	10.0	8.8	-	16.0
30% Potash Super	-	6.3	15.0	7.7	-	14.0
40% Potash Super	-	5.4	20.0	6.6	-	12.0
50% Potash Super	-	4.5	25.0	5.5	-	10.0
15% Potash Sulphur Super	-	6.8	7.5	17.5	-	15.3
20% Potash Sulphur Super	-	6.4	10.0	16.4	-	14.4
30% Potash Sulphur Super	-	5.6	15.0	14.4	-	12.6
Potassium Sulphate Soluble 25kg	-	-	42.0	18.0	-	-

Phosphate

PRODUCT	N	P	K	S	Mg	Ca
Superphosphate	-	9.0	-	11.0	-	20.0
Serpentine Super / Drilling Super	-	6.7	-	8.6	5.5	15.0
Triple Super	-	20.5	-	1.0	-	16.0
Direct Application Phosphate Rock (DAPR)	-	13.0	-	-	-	33.5
DAPR 15S	-	10.0	-	15.5	-	24.8
Lime Reverted Super (North Island only)	-	6.8	-	8.3	-	24.0
Ravensdown Dicalcic Phosphate	-	4.1	-	5.1	-	28.6
Dicalcic High S	-	4.2	-	9.3	-	26.9
Cobalt Super 1kg (Cobalt Sulphate is 21% Co)	-	9.0	-	11.0	-	20.0
Molybdenum Super 250g	-	9.0	-	11.0	-	20.0
Molybdenum Super 500g	-	9.0	-	11.0	-	20.0
Selenium Super 2kg	-	9.0	-	11.0	-	20.0
Moly Sulphur Super 30 250g	-	7.0	-	30.1	-	16.0
Moly Sulphur Super 30 500g	-	7.0	-	30.1	-	16.0

Fertiliser

NPK Blends

PRODUCT	N	P	K	S	Mg	Ca
Dairy Pasture Boost 4	4.1	6.5	4.0	12.7	-	14.4
Dairy Pasture Boost 6	4.1	6.1	6.0	12.3	-	13.6
Dairy Pasture Boost 10	4.1	5.4	10.0	11.4	-	12.0
Dairy Pasture Boost 12	4.1	5.0	12.0	11.0	-	11.2
Ravensdown Pasture 6	5.6	5.5	6.0	13.2	-	12.1
Higro 7-5-7	6.4	5.0	6.5	13.6	-	11.2
Lucerne Mix + TE	-	5.5	14.7	13.2	-	12.4
Citrus 12-5-5	12.2	4.5	4.5	6.2	5.0	4.1
Citrus 19-2-0	18.9	2.0	-	4.1	3.0	7.2

Cropmaster® DAP Based

PRODUCT	N	P	K	S	Mg	Ca
Cropmaster® DAP	17.6	20.0	-	1.0	-	-
Cropmaster® DAP Boron Plus	16.4	18.6	-	0.9	0.5	-
DAP 13 S	10.6	14.8	-	12.6	-	6.4
Cropmaster® 11	10.6	12.0	20.0	0.6	-	-
Cropmaster® 13	12.3	14.0	15.0	0.7	-	-
Cropmaster® 15	15.0	10.0	10.0	7.7	-	-
Cropmaster® 16 High K Bulk	15.4	7.0	22.5	0.4	-	-
Cropmaster® 20	19.1	10.0	-	12.5	-	-
Cropmaster® Brassica mix	14.1	16.0	10.0	0.8	-	-
Cropmaster® Brassica + Boron Blend	13.6	15.4	9.5	0.8	-	-

Ammo-Phos® MAP Based

PRODUCT	N	P	K	S	Mg	Ca
Ammo-Phos® MAP	10.0	22.0	-	1.0	-	-
Ammo-Phos® / Hycrop 7-15-15	7.0	15.4	15.0	0.7	-	-
Ammo-Phos® / Hycrop 9-19-7	8.5	18.7	7.5	0.9	-	-

Sulphur Fortified

PRODUCT	N	P	K	S	Mg	Ca
Sulphur Super 15	-	8.6	-	14.8	-	19.2
Sulphur Super 20	-	8.0	-	20.6	-	18.0
Sulphur Super 30	-	7.0	-	30.1	-	16.0
Maxi Sulphur Super	-	5.1	-	47.0	-	11.0
Sulphur 90	-	-	-	90.0	-	-

Nitrophoska® and Compound Fertilisers

PRODUCT	N	P	K	S	Mg	Ca
Nitrophoska® *12-10-10*	12.0	8.8	10.0	0.4	1.2	4.6
Nitrophoska® Extra	12.0	5.2	14.0	8.0	1.2	5.0
Nitrophoska® Perfekt	15.0	2.2	16.6	8.0	1.2	1.8
Nitrophoska® Extra + Boron + Mg	10.5	4.6	12.3	9.0	2.6	4.4
Nitrophoska® Extra + Kieserite	9.2	4.0	10.8	10.8	4.4	3.9
Entec® Special	12.0	5.2	14.0	8.0	1.2	5.0
Avocado Regular Mix + TE	9.6	4.2	13.7	9.9	2.7	4.0
Avocado Young Mix + TE	12.3	4.4	11.9	9.8	1.4	4.3
Olive Tree Mix	10.0	4.3	14.1	9.5	2.3	4.0

Potash Gold

PRODUCT	N	P	K	S	Mg	Ca
Potash Gold 7-15-13	7.0	15.4	12.5	6.1	-	-
35% Potash Gold Super *0-6-15*	-	5.9	14.5	13.5	-	13.0
Potash Gold *15-10-10*	14.3	10.0	9.5	11.1	-	-
Potash Gold *14-7-14*	14.3	7.0	14.5	6.7	-	2.4

Other Products

PRODUCT	COMMENTS
Ferrous Sulphate 25kg	20.0% Iron, 11.5% Sulphur
Gypsum (Calcium Sulphate)	23.3% Calcium, 18.0% Sulphur
Manganese Sulphate	31.9% Manganese, 18.9% Sulphur

Essential nutrients

Nutrients are required in different ways by plants and animals. The following explains how plants and animals use each nutrient.

NUTRIENT	PLANTS	ANIMALS
Nitrogen (N)	Nitrogen is required for the synthesis of all proteins, enzymes and cell membranes in plants and also for making chlorophyll (the colouring matter in green plants which explains why your pasture goes greener when you apply N).	Nitrogen is required for the synthesis of all proteins, enzymes and cell membranes in animals.
Phosphorus (P)	Phosphorus is essential because it is involved in energy transfers. It is also required by cell nuclei and membranes in cell division (plant growth) and for photosynthesis and respiration.	P is required for bones and teeth as well as for cell membranes, nerve fibres and muscle function.
Potassium (K)	Potassium is used for carbohydrate (sugar) and N metabolism, protein synthesis, enzyme activity and the opening and closing of the stomata (little holes in leaf surfaces) that regulate water use by the plant. K also helps maintain cell turgor (keeps the plant standing up) and balances electric charge during uptake of anions (negative charged ions like P, S etc).	K is important for muscle contraction, nerve impulse transmission, kidney function, electrolyte and water balance.
Sulphur (S)	Plants use sulphur to produce S-containing amino acids, for proteolytic enzymes, in some vitamins and for oil production (in plants like mustard, onions, flax and soya beans).	S is used for the synthesis of all proteins including wool, is a component of B vitamins and is involved with enzymes that metabolise carbohydrates.
Calcium (Ca)	Calcium is used in cell membranes for enzyme activity, protein synthesis and ion uptake.	Ca is used in bone and teeth formation and along with P for nerve function, muscle contraction, blood clotting and enzyme activity.
Magnesium (Mg)	Magnesium is very important for plants as it is used in chlorophyll formation, protein synthesis and all energy transformations.	Mg is important in the metabolism of carbohydrates, lipids (fats), proteins, in nerve activity and muscle contraction.
Sodium (Na)	There is no known function for sodium, even though plants take up Na readily.	Na has a key role in the transmission of nerve impulses – which explains why Na helps relieve muscle cramps after vigorous exercise!

Trace elements

TRACE ELEMENTS	PLANTS	ANIMALS
Boron (B)	Boron is used for carbohydrates, sugar, metabolism and transport round the plant, inhibition of starch formation and for nucleic acid metabolism. Susceptible plants include brassicas and legumes.	There is no known function for B in animals.

Chloride (Cl)	Chloride is an element used for photosynthesis.	Cl is used for electrolyte balance, Na transport in the kidneys and Na, Mg and Ca transport through the rumen wall.
Copper (Cu)	Copper is a constituent of proteins and is used in photosynthesis, respiration and nitrogen fixation.	Cu is used to prevent ill-thrift, sway back, bone problems and poor reproduction.
TRACE ELEMENTS	**PLANTS**	**ANIMALS**
Cobalt (Co)	Cobalt has no known function in pasture or crop plants.	Required by rhizobia (micro-organisims in the soil and clover nodules) for N fixation and by other micro-organisims for making vitamin B12.
Iron (Fe)	Iron is important for chlorophyll production (sometimes plants go greener after Fe application) and is required for enzymes involved in photosynthesis and respiration.	Fe is an important constituent of blood (haemoglobin and myoglobin), respiration and enzyme function.
Manganese (Mn)	Plants use manganese for enzyme activity involved in carbohydrate metabolism, for making fatty acids and in energy transfers during photosynthesis.	Mn is used for the synthesis of bone and teeth, steroid hormones, glucose synthesis and utilisation.
Molybdenum (Mo)	Molybdenum is important for the rhizobia in clover nodules to assist in N fixation and for plants to use N. This is why a clover-only test for this element is recommended.	Mo is important for some enzyme activity and for Fe storage in tissues.
Selenium (Se)	There is no known function for selenium in plants even through they take up Se readily.	Se is used in enzymes that protect tissues from oxidation damage (anti-oxidant) and also for general cellular activity.
Zinc (Zn)	Zinc is important for enzyme activity associated with carbohydrate metabolism.	Important for enzyme activity associated with carbohydrate, metabolism and also for protein synthesis.

Guide to trace element mixing and application

COMMON NAME(S)	TRACE ELEMENT ADDITIVE	% OF THE ELEMENT IN THE ADDITIVE	STANDARD RATE OF THE ADDITION OF THE ADDITIVE PER TONNE OF FERTILISER	APPLICATION RATE OF THE FERTILISER AND ADDITIVE TO THE SOIL	APPLICATION RATE OF THE ADDITIVE TO THE SOIL	APPLICATION RATE OF THE ELEMENT TO THE SOIL
Cobalt	Cobalt Sulphate	21% Cobalt	1.5kg of Cobalt Sulphate	250kg/ha of the mixture	0.375kg/ha of Cobalt Sulphate	0.079kg/ha of Cobalt
Selenium Prill (Selprill Double)	Sodium Selenate	2% Selenium	2.0kg of Selenium Prills	250kg/ha of the mixture	0.5kg/ha of Selenium Prills	0.01kg/ha of Selenium
Molybdenum	Sodium Molybdate	38.8% Molybdenum	0.25kg of Sodium Molybdate	250kg/ha of the mixture	0.0625kg/ha of Sodium Molybdate	0.024kg/ha of Molybdenum
Copper	Copper Sulphate	25% Copper	25kg Copper Sulphate	250kg/ha of the mixture	6.25kg/ha of Copper Sulphate	1.56kg/ha of Copper
Boron Fertiliser, Borate 46	Sodium Borate	15% Boron	25kg of Sodium Borate	250kg/ha of the mixture	6.25kg/ha of Sodium Borate	0.94kg/ha of Boron

Talk to us about our trace elements for animals that can be added to drinking water, oral daily drenching or supplementary feed.

Fertiliser notes

Seasonal activity on a dairy farm

Spring

DAIRY

Calving: Lime Flour; Magnesium Oxide and Magnesium Chloride/ Sulphate; Starter Drench; Lift B_{12}; Sweetwater; Dairy Cow Minerals; DCM Gold; DCM Zero; Custom Mineral Blending

Calf rearing: Calf Milk Replacer; RavCalf 20,18,14

Herbage testing

Mating: Stock Iodine, Stock Selenium, Lift B_{12}

Internal/external parasite control: Abamectin Pour On (after calving); Combo Low Dose (for replacement stock)

Summer

DAIRY

Pregnancy testing

Facial eczema prevention: Zinc Sulphate Mono/Hepta; Zinc Oxide Plus; Sporeguard/Sporewet

Drench replacements: Combo Low Dose; Abamectin Pour On; Abamectin Injection

Autumn

DAIRY

Drying off cows: Abamectin Pour On; Abamectin Injection; Stock Copper; Combo Low dose; Lift B_{12}

Liver fluke: Normectin Plus Injection, Combo Low Dose

Drench replacements: Combo Low Dose; Abamectin Pour On; Abamectin Injection

Herbage/liver testing

Facial eczema prevention: Zinc Sulphate Mono/Hepta; Zinc Oxide Plus; Sporeguard/Sporewet

Pasture and faecal spore testing

Winter

DAIRY

Winter grazing: Lift B_{12}; Abamectin Pour On; Abamectin Injection; Combo Low Dose; Dairy Cow Minerals; DCM Gold; DCM Zero; Custom Mineral Blending; Stock Minerals

Rearing better replacements for the future of your herd

Ensuring the true value of your investment is realised involves good management from day one.

To thrive and grow, calves must have the following:

1. Colostrum
Calves must have access to at least 3 litres of good quality colostrum within the first 24 hours of life.

2. Water
Calves need unrestricted access to clean, fresh water, not only so they stay hydrated but also to ensure rumen development.

3. Milk
After the initial colostrum feed, use a quality Calf Milk Replacer to ensure consistency of diet, reducing digestive upsets (scours) and optimising growth and development.

4. Shelter
Calves should be reared in a sheltered, dry environment.

5. Feed
Calves should have access to a quality starter feed and finishing feeds for optimal rumen development and growth.

6. Fibre
Make sure calves always have access to a quality fibre source like hay or straw. This will ensure early rumen development and prepare the calves for eating pasture later in life.

7. Coccidosis prevention
Check that a coccidostat is in your solid feed to prevent gut infection (coccidosis) and improve weight gains in your calves. Coccidosis is most likely to occur at, or around weaning so ensure a coccidostat is fed during and after weaning.

8. Disinfect and clean
Make sure to disinfect and clean all calf pens and equipment prior to and throughout calf rearing to minimize any bacteria that may cause disease.

9. Growth
Monitor growth and development of your calves on a regular basis. This is ideally done through weighing calves monthly or using a weigh band. Keep records and track individual calf progress.

10. Health and wellbeing
Keeping calves healthy is the key as poor health can have long term implications on the performance of your calves.

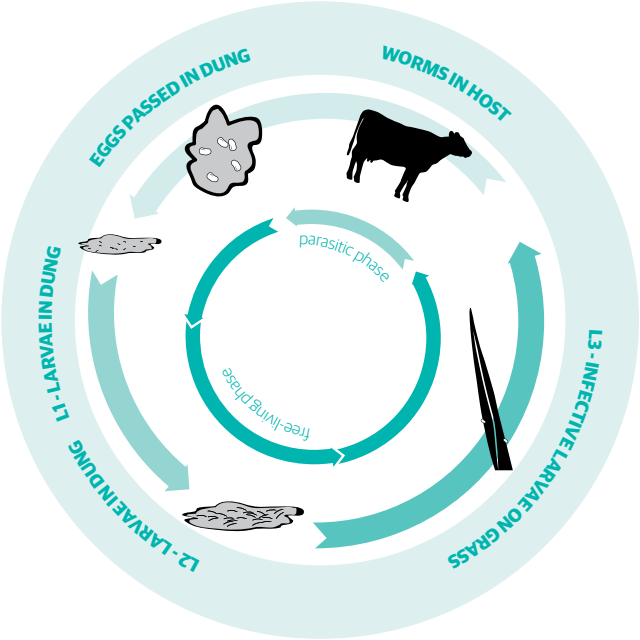
COMBO™ LOW DOSE- EFFECTIVE AGAINST ALL ROUNDWORMS, LUNGWORM, TAPEWORM AND ADULT LIVER FLUKE

RAVCALF 20 - STARTER FEED OPTION FOR CALVES

The thief in the background

Don't under estimate the impact of parasites on achieving your goals whether it be growing top heifers, or maximising your milk production.

Changes in farming systems and increasing levels of drench resistance require farmers to develop multipronged plans to reduce the impact of parasites.



LIFE CYCLE OF NEMATODES
General life cycle of common gastrointestinal nematodes of cattle

Developing your parasite management programme:

- **Provide good nutrition** – ensure animals are well fed. Well-conditioned animals require less drenching, saving costs and reducing selection for drench resistance.
- **Reduce worm challenge** – cross-graze young and old stock, avoid grazing young stock where pasture worm challenge is high, graze young stock on new grass/crop paddocks.
- **Use effective drenches** – some drench actives are more effective than others for certain worm types. Oral drenches may be a better option for young stock for delaying resistance, but may require more treatments.
- **Use drenches correctly** – using the correct dose rates, regularly calibrating the drench gun, dosing to the heaviest animal and good application technique are all important for ensuring high levels of treatment efficacy.
- **Slow the development of drench resistance** – drenching adult cattle only when necessary, aiming for a minimum 28-day drench interval in calves, using combination drenches in young stock.
- **Monitor drench performance** – although faecal egg counts have limited application in cattle, they can still provide valuable information on worm burdens in young stock and drench efficacy.

ABAMECTIN™ POUR ON - LOW DOSE INTERNAL AND EXTERNAL PARASITE CONTROL

COMBO™ LOW DOSE-EFFECTIVE AGAINST ALL ROUNDWORMS, LUNGWORM, TAPEWORM AND ADULT LIVER FLUKE

Worms preventing you achieving liveweight targets?

Worm infections in calves reduce their feed intake resulting in reduced growth rates. Calves that fail to meet key liveweight targets during the first 2 years will be less likely to get in calf and go on to produce less milk during lactation.

Regular treatment with effective anthelmintics is critical to ensuring calves are not limited by parasites and achieve their liveweight targets.

Benefits:

- **Reproduction** - Achieving the 15 month LW target will help minimise the incidence of non-cycling heifers at mating.
- **Production** - *At a $4 pay-out, each additional kg of LW at 22 months (between 80-90% of mature LW) will return around $1 in the first lactation.

*Source: dairynz.co.nz

Metabolics need not be a delicate balancing act

Transitioning cows through pre-calving and into lactation requires careful planning, but it doesn't have to be complicated.

To avoid the costly consequences of metabolic disease including; reduced milk production, delayed mating and stock deaths, you must be able to identify and understand the problem. Key signs are if you have more than 3% of your cows going down, or use more than 10 bags of metabolic treatments for every 100 cows. Don't forget that for every case of clinical disease you treat, there will be other cows suffering from sub-clinical disease in the herd. In all cases, correctly balancing the cow's mineral requirements will help minimise levels of metabolic disease.

STARTER DRENCH™ - CONVENIENT, READY-TO-USE, POST-CALVING ENERGY STARTER DRENCH

MAGNESIUM OXIDE FINE - HIGH QUALITY 200-MESH DUSTING-GRADE MAGNESIUM OXIDE

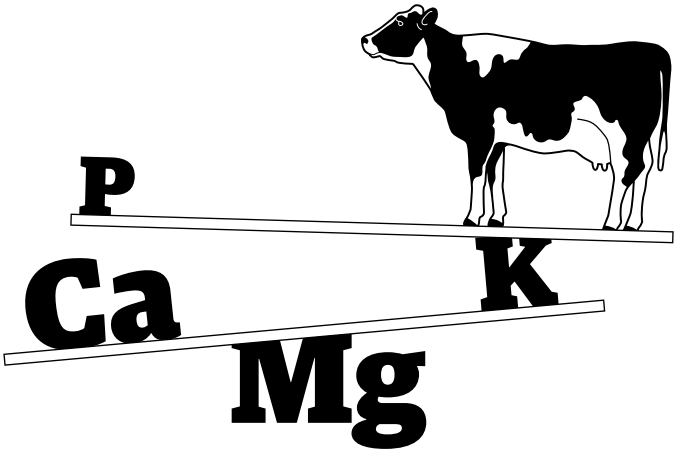
Understand the problem

To help with any diagnosis consider:

- When cows are going down - pre-calving, calving or post calving?
- Soil and pasture test results
- Cow diet during pre-calving - post-calving period
- Types, amounts and rates of minerals used pre and post-calving
- Blood test results for magnesium, calcium, phosphorus and energy
- Weather conditions
- Fertiliser and lime history.

Prevention is better than cure:

- Ensure stock are being adequately fed before, during and after calving
- Manage cow and heifer body condition pre-calving
- Use a quality magnesium supplement from 4-6 weeks pre-calving through to at least the end of mating
- Minimise pre-calving calcium supplementation including liming pastures
- Identify 'at-risk' animals early and manage them accordingly
- Avoid grazing effluent blocks with late pregnancy cows.
- Use a quality lime flour for post-calving calcium supplementation



Boosting trace elements

There are eighteen trace elements (also known as micro elements) needed by animals in tiny amounts that are essential for life. In New Zealand pasture-based systems, we need to watch out for deficiencies in cobalt, copper, iodine, and selenium.

How do we know when there is a problem?
Research specific to New Zealand has been carried out over many years so we know the signs of deficiency, the dietary requirements, the reference ranges and effective treatments for these trace elements.

How do we diagnose a deficiency? Animal testing is the most conclusive way to diagnose a deficiency. However, animal symptoms, farm history, soil type and farm location can also identify the probability that a mineral deficiency will be present. Additional testing of herbage and supplementary feeds can help provide valuable information in diagnosing a trace element deficiency.
Timing is important as trace element uptake by pasture will vary at different times of the year. Generally actively-growing grass in the spring gives the best indication of what is available to the animal.

ELEMENT	ANIMAL HEALTH	SUPPLEMENTATION
Cobalt (Co)	Critically important for vitamin B12 production. Loss of appetite and poor growth.	Cobalt sulphate in spring fertiliser application, Stock Cobalt, Dairy Cow Minerals by drench, water, feed medication and Lift B12 injection.
Copper (Cu)	Ill-thrift, sway back, bone problems and poor reproduction.	Copper sulphate in autumn fertiliser application, Stock Copper, Dairy Cow Minerals by drench, water, feed medication and foliar (plant leaf) application.
Iodine (I)	Goitre (enlarged thyroid gland), still births, small weak offspring.	Stock iodine, Dairy Cow Minerals by drench, water, feed medication and foliar application. Injectable iodine is also used.
Selenium (Se)	Ill-thrift, white muscle disease, reduced production and fertility.	Selprill Double in fertiliser (lasts for 12 months), Stock Selenium, Dairy Cow Minerals by drench, water and feed medication and Lift B12 Selenised injection.

DCM™ GOLD: A FREE-FLOW WATER-SOLUBLE MULTI-MINERAL TRACE ELEMENT MIX, CONTAINING COPPER, COBALT, SELENIUM, IODINE AND ZINC.

Worm control – drenches

Abamectin™ Pour On

Low dose internal and external parasite control

- Endectocide (ML) pour on anthelmintic containing abamectin
- Low dose formulation at 1ml/20kg live-weight
- Effective against all abamectin-susceptible roundworms (including inhibited *Ostertagia* larvae) and lungworm
- Highly effective against external parasites (biting and sucking lice)

ACTIVE INGREDIENT: 10g/L **abamectin**
DOSE RATE: 1ml/20kg live-weight
WITHHOLDING PERIODS:
Meat: 35 days; **Milk:** nil
PACK SIZES: 5L backpack & 20L drum

Registered pursuant to the ACVM Act 1997, No A9445.

Abamectin™ Injection

Suitable for cattle over 100kg live-weight

- Injectable endectocide (ML) anthelmintic with the potent active ingredient abamectin
- Effective against all abamectin-susceptible roundworms (including inhibited *Ostertagia* larvae) and lungworm
- Effective against sucking lice on cattle
- In cattle: up to 21 days persistent activity against *Dictyocaulus viviparus*; 14 days persistent activity against *Ostertagia* spp, *Cooperia* spp (ML susceptible) and *Trichostrongylus axei;* and 7 days persistent activity against *Oesophagostomum radiatum*

ACTIVE INGREDIENT: 10g/L **abamectin**
DOSE RATE: 1ml/50kg live-weight
WITHHOLDING PERIODS:
Cattle: Meat (49 days); Milk (49 days)
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9446.

Noromectin® Plus Injection

Controls liver fluke, roundworms and lice

- Injectable combination anthelmintic containing ivermectin and clorsulon
- Effective against all ivermectin-susceptible roundworms and lungworm, as well as sucking lice and mites
- Clorsulon is specifically effective against adult liver fluke
- Up to 21 days persistent activity against *Dictyocaulus viviparus* and *Oesophagostomum radiatum*; 14 days against O*stertagia* spp (including inhibited immatures); and 7 days against ML-susceptible *Cooperia* spp

ACTIVE INGREDIENTS: 10g/L **ivermectin** (endectocide); 100g/L **clorsulon** (specific flukicide)
DOSE RATE: 1ml/50kg live-weight
WITHHOLDING PERIODS:
Meat: 28 days; Milk: 14 days
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9938.

Combo™ Low Dose

Registered combination for cattle

- Mineralised double combination (white and clear) oral drench
- Effective against all roundworms (including inhibited *Ostertagia* larvae and strains that are resistant to either the benzimidazole family or levamisole), lungworm, tapeworm and adult liver fluke
- Ideal for the treatment of *Cooperia* in young cattle

ACTIVE INGREDIENTS: 45.3g/L **oxfendazole;** 80g/L **levamisole;** 0.9g/L selenium; 0.2g/L cobalt; 2g/L copper; 0.9g/L iodine; 0.6g/L zinc
DOSE RATE: 1ml/10kg live-weight
WITHHOLDING PERIODS: Meat: 10 days; **Milk:** 35 days (cattle)
PACK SIZES: 5L backpack & 20L drum

Registered pursuant to the ACVM Act 1997, No A10784.

Vitamins

Lift® B_{12} Plain

Injectable B_{12} in a pillowpack

- Double strength, injectable vitamin B_{12} for the treatment and prevention of cobalt deficiency and vitamin B_{12}-responsive conditions
- Each treatment lasts 4-6 weeks

ACTIVE INGREDIENT: 2g/L **vitamin B_{12}** (hydroxocobalamin)
DOSE RATE: 2-6ml (See label for more detail)
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9783.

Lift® B_{12} Selenised

Injectable B_{12} and selenium in a pillowpack

- Double strength, injectable vitamin B_{12} with selenium, for the treatment and prevention of cobalt deficiency, vitamin B_{12}– responsive and selenium-responsive conditions
- Each treatment lasts 4-6 weeks

ACTIVE INGREDIENTS: 2g/L **vitamin B_{12}** (hydroxocobalamin) plus 4mg/ml **selenium** (as sodium selenate)
DOSE RATE: 2-6ml (See label for more detail)
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9783.

Vita-Mineral®

An extra boost with iodine, selenium and vitamins

- Stable, water-soluble multi-mineral and vitamin powder for supplementation of sheep and cattle by oral drenching at strategic times (e.g. prior to mating, late pregnancy or during periods of stress)
- The drench solution is made by dissolving 1kg powder (1 sachet) in water to make up to 5 litres solution

ACTIVE INGREDIENTS: Each 10ml dose contains 280mg **iodine**, 2mg **selenium,** 2.5mg **cobalt**, 6mg **zinc**, 20,000 IU **vitamin A**, 10,000 IU **vitamin D** and 200 IU **vitamin E**.
DOSE RATE: 50ml drench solution (10 grams powder) per adult cattle
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 4kg polyethylene bucket (containing 4 x 1kg sachets)

Nutrition

Calf Milk Replacer (CMR)

Premium based whey powder

- 8 x more vitamins than whole milk.
- Achieves better growth rates than whole milk
- Non-curdling

TYPICAL ANALYSIS: Protein 23%, **fat** 20%, **lactose** 38%, **minerals** 9.5%, **crude fibre** <0.2%, **moisture** 4%
DOSE RATE: See label for more detail
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 20kg polypropylene bag

RavCalf (14,16,20)

Pelletised supplement for young stock from birth

- Contains a coccidiostat
- Highly palatable
- Different protein options for calves requirements

ACTIVE INGREDIENTS: See pack for details
DOSE RATE: See label for more detail
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 25kg polypropylene bag

Magnesium and other minerals

Magnesium Oxide Fine

90% MgO

- High-quality 200-mesh dusting-grade magnesium oxide (MgO)
- Suitable for pasture dusting, pasture spraying or addition to supplementary feed
- Can also be used for oral drenching

ACTIVE INGREDIENT: 54% elemental **magnesium** (90% magnesium oxide)
DOSE RATE: 30-70g per cow per day
Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium Oxide Drenching

Stable in suspension for easy drenching

- High-quality 325-mesh drenching-grade magnesium oxide (MgO) for daily oral drenching of dairy cows in the cow shed
- Uniform particle size means that it readily stays in suspension
- Can be used for pasture dusting or spraying, or addition to supplementary feed at higher rates

ACTIVE INGREDIENT: 54% elemental **magnesium** (90% magnesium oxide)
DOSE RATE: 20-30g per cow per day depending on magnesium status
PACK SIZE: 20kg lined polypropylene bag

Magnesium Chloride Natural

Water soluble magnesium supplement

- High-quality natural (unbleached) magnesium chloride ($MgCl_2.6H_2O$) that is highly soluble in water
- Suitable for addition to the drinking water or supplementary feed, or for daily oral drenching
- May contain a very small amount of harmless insoluble organic residue

ACTIVE INGREDIENT: 12% elemental **magnesium**
DOSE RATE: 60-100g per cow per day
Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium Sulphate

Water soluble magnesium supplement

- High-quality magnesium sulphate (Epsom Salts or $MgSO_4.7H_2O$)
- Suitable for addition to the drinking water or supplementary feed, or for daily oral drenching

ACTIVE INGREDIENT: 10% elemental **magnesium**
DOSE RATE: Cattle: 60-120g per cow per day; Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium and other minerals

Lime Flour

Calcium supplement

- Ultra-fine high-quality calcium supplement ($CaCO_3$)
- Use for dairy cows after calving to aid in the prevention of milk fever
- Can be used by pasture dusting, daily oral drenching or addition to supplementary feed
- Suitable as a calcium supplement for adding to low calcium-feeds such as maize silage
- To avoid the risk of inducing milk fever, do not administer during the last 1-2 months of pregnancy unless on veterinary advice

ACTIVE INGREDIENT:
39% elemental **calcium**
DOSE RATE: 50-300g per cow per day depending on calcium requirements and method of administration
Alternatively add to maize silage at a rate of 60-120g/kg wet feed or 20-40g/kg dry feed
PACK SIZE: 25kg lined polypropylene bag

Salt

Sodium supplement

- Coarse grade 22 salt (NaCl) suitable for oral drenching, licks, addition to drinking water or addition to supplementary feed
- Aids in the prevention and treatment of salt (sodium) deficiency
- Fine salt also available from some stores

ACTIVE INGREDIENT:
39% elemental **sodium**
DOSE RATE: 20-30g per cow per day
Actual rate depends on sodium requirements and method of administration
PACK SIZE: 25kg polypropylene bag
(also available in 1 tonne bulk bag from selected stores)

Maize Triple Mix™

Maize silage balancer

- Convenient ready-mixed calcium, magnesium and sodium supplement for addition to maize silage at the time of feeding out
- Aids in the prevention of hypocalcaemia (milk fever), hypomagnesaemia (grass staggers) and sodium deficiency
- Do not administer during the last 1-2 months of pregnancy unless on veterinary advice to avoid the risk of inducing milk fever

ACTIVE INGREDIENTS: 21% elemental **calcium** (as lime flour); 14% elemental **magnesium** (as magnesium oxide); 8% elemental **sodium** (as salt)
DOSE RATE: 150g per cow per day
PACK SIZE: 25kg lined polypropylene bag

Starter Drench™

Free flow formulation for easier drenching

- Convenient, ready-to-use, post-calving energy starter drench to provide energy and aid in the prevention of metabolic conditions (milk fever, grass staggers and ketosis)
- Flowable formulation means that it does not settle out or require stirring, making it easy to drench
- Do not administer pre-calving unless on veterinary advice, to avoid the risk of inducing milk fever

ACTIVE INGREDIENTS: 200g/L **monopropylene glycol** (MPG); 150g/L **molasses**; 100g/L **soya oil**; 12.5g/L **magnesium** (as magnesium oxide); 60g/L **calcium** (as precipitated calcium carbonate)
DOSE RATE: 1L per cow as soon as practical after calving; additional doses of ½ -1L for up to four days may be given
PACK SIZES: 20L and 200L drums

Trace elements

Dairy Cow Minerals™

Proven trace elements – giving you the essentials

- Free-flow water-soluble multi-mineral trace element mix
- Contains all five trace elements that are essential for animal health
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed
- Contains aniseed flavouring for improved palatability
- Do not administer while dosing with zinc for facial eczema prevention

ACTIVE INGREDIENTS: 250mg **copper** (167mg as sulphate plus 83mg as EDTA chelate), 5mg **cobalt** (as sulphate), 3mg **selenium** (as sodium selenate), 10mg **iodine** (as EDDI chelate) and 400mg **zinc** (as zinc sulphate monohydrate) per 5 g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

DCM™ Gold

All chelated copper

- Free-flow water-soluble multi-mineral trace element mix containing copper, cobalt, selenium, iodine and zinc
- Contains aniseed flavouring for improved palatability
- Suitable where chelated copper is required or where it is desirable to avoid the use of copper sulphate
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed

ACTIVE INGREDIENTS: 150mg **copper** (as amino acid chelate), 10mg **cobalt** (as sulphate), 5mg **selenium** (as sodium selenate), 20mg **iodine** (as EDDI) and 600mg **zinc** (as zinc sulphate monohydrate) per 5g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

DCM™ Zero

No copper

- Free-flow water-soluble multi-mineral trace element mix, with cobalt, selenium, iodine and zinc
- Contains aniseed flavouring for improved palatability
- Designed to be administered during the facial eczema season or where herd copper levels are already adequate (e.g. when feeding significant amounts of PKE)
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed

ACTIVE INGREDIENTS: 7.5mg **cobalt** (as sulphate), 5mg **selenium** (as sodium selenate), 15mg **iodine** (as EDDI) and 500mg **zinc** (as zinc sulphate monohydrate) per 5g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

Custom Mineral Blend

Tailored to suit

- A service that provides a customised mineral blend tailor-made for an individual farm
- Ingredients can include trace elements, minerals, vitamins and many other additives that may be required (subject to compatibility)
- Product is manufactured according to farmers' individual requirements (Ravensdown can assist in determining this if required) and is delivered direct to farm within 10-15 working days in 25kg lined polypropylene bags, in half or one tonne lots
- An optional extra is the inclusion of convenient 'day packs' inside each 25kg bag that provide the whole herd's requirements for one day

Trace elements

Stock Selenium™

Convenient ready to use liquid selenium supplement

- Prevention and treatment of selenium deficiency
- Use by medication of the drinking water, oral drenching (daily or strategic) or addition to supplementary feed

ACTIVE INGREDIENT: 0.5% (5g/L) elemental **selenium** (as sodium selenate) as a colourless solution
DOSE RATE: Strategic oral drenching: 1ml/50kg live-weight no more frequently than every 3 weeks
Daily dosing: 0.1ml/50kg live-weight per day; by drenching, water or feed medication
PACK SIZES: 20L & 200L drums

Selprill Double®

Up to 12 months supplementation for the whole farm with our patented prill

- A slow-release 2% selenium prill for use as a fertiliser additive to raise soil and herbage selenium levels
- Treatment and prevention of selenium deficiency in grazing animals

ACTIVE INGREDIENT: 2% elemental **selenium**
DOSE RATE: ½ kg per hectare per year (10g elemental selenium per hectare per year)
PACK SIZE: 25kg polypropylene bag

Stock Iodine™

Convenient ready to use iodine supplement

- Prevention and treatment of iodine deficiency
- Use by addition to the drinking water, oral drenching (daily or strategic), addition to supplementary feed or foliar application (preferably with a suitable sticking agent)

ACTIVE INGREDIENT: 5% elemental **iodine** (as potassium iodide) as a colourless to light brown solution
DOSE RATE: Daily dosing: 0.1-0.8ml per cow per day by drenching, water or feed medication
Foliar application: 1.25L/ha (pasture); 2.5L/ha (brassicas) up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Stock Copper™

Convenient ready to use copper supplement

- Prevention and treatment of copper deficiency
- Use by addition to the drinking water, oral daily drenching, addition to supplementary feed or foliar application (preferably with a suitable sticking agent)
- Do not administer to animals while dosing with zinc for facial eczema prevention

ACTIVE INGREDIENT: 5% elemental **copper** (as copper sulphate) as a clear blue solution
DOSE RATE: Daily dosing: 1-5ml per cow per day by drenching, water or feed medication
Foliar application: 10L/ha up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Copper Sulphate

For fertiliser or animal health use

- Copper supplement ($CuSO_4.5H_2O$) for the prevention and treatment of copper deficiency
- Suitable for oral daily drenching, addition to the drinking water, addition to supplementary feed, foliar application (preferably with a suitable sticking agent) or application with fertiliser

ACTIVE INGREDIENT: 25% elemental **copper**
USAGE RATES: Daily dosing: typically 1-2g/cow/day by drenching, water or addition to feed
Fertiliser: 5-6kg/ha ideally in the autumn
Foliar application: 2kg/ha 1-2 weeks pre-grazing will give up to 6 weeks supplementation to grazing stock
PACK SIZES: 25kg polypropylene bag (non-branded)

Trace elements

Stock Cobalt™

Convenient ready to use cobalt supplement

- Prevention and treatment of cobalt deficiency
- Use by addition to the drinking water, oral daily drenching, addition to supplementary feed or foliar application (preferably with a suitable sticking agent)

ACTIVE INGREDIENT: 1% elemental **cobalt** (as cobalt sulphate) as a clear red solution
DOSE RATE: Daily dosing: 1-2ml per cow per day by drenching, water or feed medication
Foliar application: 1.25-2.5L/ha up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Cobalt Sulphate

For fertiliser or animal health use

- Cobalt supplement ($CoSO_4.7H_2O$) for the prevention and treatment of cobalt deficiency
- Suitable for oral daily drenching, addition to the drinking water, addition to supplementary feed, foliar application (preferably with a suitable sticking agent) or application with fertiliser

ACTIVE INGREDIENT: 21% elemental **cobalt**
USAGE RATES: Fertiliser: Capital: 350g/ha; Maintenance: 175g/ha; ideally in the spring
Foliar application: 60-240g/ha 1-2 weeks pre-grazing will give up to 6 weeks supplementation to grazing stock
PACK SIZES: 20kg or 25kg bag or cardboard box (non-branded)

Flavouring agent

Sweetwater®

Makes the water taste better

- Caramel flavouring used to mask the taste and smell of zinc, magnesium, trace elements, bloat remedies and other additives, particularly in stock drinking water but also in drench mixtures or solid feeds
- Encourages water consumption and aids in the effective administration of these additives

ACTIVE INGREDIENTS: Caramel flavours and sugars
DOSE RATE: Drinking water: 0.5-2ml per litre water or 25-50ml per kg of dissolved additive
Solid feeds: 1-2L per tonne of feed
PACK SIZE: 20L drum

Zinc / facial eczema

Zinc Sulphate Hepta

Water soluble multi-purpose zinc

- Prevention of facial eczema
- Treatment and prevention of foot-rot and scald
- Treatment and prevention of dermatophilosis (mycotic dermatitis or lumpy wool)
- Use as a dietary zinc supplement

ACTIVE INGREDIENT: 22% elemental **zinc** (as zinc sulphate heptahydrate, $ZnSO_4.7H_2O$)
DOSE RATE: Facial eczema: 8g/100kg live-weight/day by addition to the drinking water only (do not orally drench at the facial eczema prevention dose rate)
Foot-bath or hoof-mat: 10% solution (1kg into 10L water)
Dermatophilosis: prevention 0.75% solution; treatment 1.5% solution; by spray or dip
Dietary supplement: 1-3g per cow per day; by oral drenching in feed or water
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9256.

Zinc Sulphate Mono

Water soluble multi-purpose zinc

- Prevention of facial eczema
- Treatment and prevention of foot-rot and scald
- Treatment and prevention of dermatophilosis (mycotic dermatitis or lumpy wool)
- Use as a dietary zinc supplement

ACTIVE INGREDIENT: 35% elemental **zinc** (as zinc sulphate monohydrate $ZnSO_4.H_2O$)
DOSE RATE: Facial eczema: 5.5g/100kg live-weight/day by addition to the drinking water only (do not orally drench at the facial eczema prevention dose rate)
Foot-bath or hoof-mat: 6.5% solution (650g into 10 L water)
Dermatophilosis: prevention 0.5% solution; treatment 1% solution; by spray or dip
Dietary supplement: 0.5-2.0g per cow per day; by oral drenching in feed or water
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9257.

Zinc Oxide Plus™

Pre-stabilised to make oral drenching easier

- Pre-stabilised zinc oxide powder (ZnO) for the prevention of facial eczema in cattle by oral drenching or addition to supplementary feed
- Drenching can either be at long-term rates (ranging from daily to weekly) or crisis rates (daily depending on spore count)
- Can also be used as a dietary zinc supplement

ACTIVE INGREDIENT: 80% elemental **zinc**
DOSE RATE: Facial eczema: Long-term rates: from 2.5g/100kg live-weight per day; to 11g/100kg live-weight twice weekly; to 27g/100kg live-weight per week (see label or website for more details)
Dietary supplement: 0.2-1.0g per cow per day; by oral drenching or addition to feed
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9412.

Facial eczema / fungicide

Sporeguard®

Prevent facial eczema without zinc

- Systemic fungicide used to control the facial eczema fungus Pithomyces chartarum
- Should always be used with the surfactant Sporewet®
- Sporeguard® and Sporewet® are effective in keeping facial eczema spore counts on pasture below dangerous levels for up to 40 days, hence animals do not ingest harmful numbers of spores and should not require the administration of zinc

ACTIVE INGREDIENT: 500g/L **carbendazim**
APPLICATION RATE: 300ml/ha (with 100ml/ha Sporewet®) in 100-200L water per ha
WITHHOLDING PERIOD: Nil
PACK SIZE: 10L drum

Registered pursuant to the ACVM Act 1997, No P8308.

Sporewet®

Get the best from Sporeguard®

- Surfactant for use with Sporeguard® in the control of facial eczema
- Allows the water rate to be lowered to as low as 100L/ha, ensuring better coverage and quicker rain fastness

ACTIVE INGREDIENT: Alcohol ethoxylate surfactant
APPLICATION RATE: 100ml/ha (with 300ml/ha Sporeguard®) in 100-200L water per ha
WITHHOLDING PERIOD: Nil
PACK SIZE: 5L container

Seasonal activity on a sheep and beef farm

Spring

SHEEP

Herbage testing

Pre lamb drench: Trio Sheep, Lift B_{12}, Vita-Mineral

Tailing/docking: Flysafe Spray On, Fleeceguard, Trio Sheep, Lift B_{12}

Replacement animal parasite control: Combo Low Dose, Trio Sheep, Abamectin

BEEF

Precalving: Abamectin Pour On, Abamectin Injection, Moximax Pour On, Magnesium, Lift B_{12}, Noromectin Plus Injection

Drench R1's & R2's: Abamectin Pour On, Abamectin Injection, Combo Low Dose, Noromectin Plus Injection

Summer

SHEEP

Fly and lice: Saturate Gold/Classic, Fleeceguard, Flysafe

Barber's Pole (NI): Moximax Sheep

Lamb weaning: Lift B_{12}, Combo Plus, Tape, Abamectin Plus Tape, Combo Sheep, Trio Sheep

Sheep facial eczema prevention: Zinc Oxide Plus, Sporeguard

Treatment of footrot: Zinc Sulphate Mono/Hepta

BEEF

Cattle facial eczema prevention: Sporeguard, Zinc Oxide Plus

Autumn

SHEEP

Herbage/feed quality testing

Pre tup management: Trio Sheep, Lift B_{12}, Stock Iodine, Vita Mineral, FEC testing

Fly and lice prevention: Fleeceguard, Flysafe, Saturate Gold/Classic

Barber's Pole (NI only): Moximax Sheep

Replacement animal parasite control: Combo Low Dose, Trio Sheep, Combo Sheep

Sheep facial eczema prevention: Zinc Oxide Plus, Sporeguard

Treatment of footrot: Zinc Sulphate Mono/Hepta

BEEF

Calf weaning: Combo Low Dose, Lift B_{12}, Abamectin Pour On, Abamectin Injection, Moximax Pour On

Liver fluke: Noromectin Plus Injection, Combo Low Dose

Cattle facial eczema prevention: Sporeguard, Zinc Oxide Plus

Winter

SHEEP

Ewe scanning (pregnancy test): Stock Iodine, Lift B_{12}, Vita-Mineral, monitor/test supplementary feed

Sheep drench: Trio Sheep

Pre lamb shear or crutch: Saturate Classic, Fleeceguard

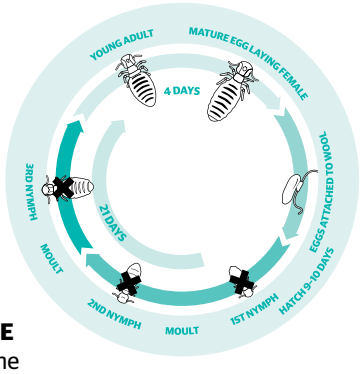
Pre lamb ewe drenching: Trio Sheep, Vita Mineral

BEEF

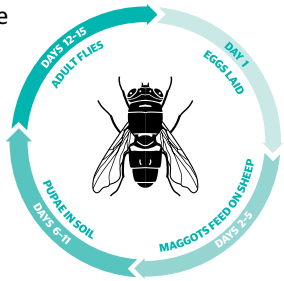
Drenching and lice control: Abamectin Pour On, Moximax Pour On

Strike against fly & lice

Changing environmental conditions and more intensive farming has meant a real surge in fly strike. The best form of control is prevention – removing the food source and attractants through good management practices such as shearing, crutching and an effective worm drench program. Louse infestation continues to be a problem in the sheep industry leading to poor quality wool and pelt defects. Dipping is no longer compulsory, but it is still a regular feature of sheep farming and requires careful consideration.



LIFE CYCLE OF SHEEP BODY LICE
IGRs interfere at the 1st to 3rd nymph stage causing death



Best practice for prevention of flies & lice

Plunge, Shower and Jetting Applications

1. Always read the product label before using, the label contains vital information on the use, storage, disposal and safety of the product.

2. Understand how the chemical works. Fly only or fly and lice control? Will it have immediate knock down or take time to be effective? Will treatment be short acting or persistent?

3. Application is the key, getting the correct chemical at the correct concentration, correctly applied for optimum results.

4. Follow guidelines for wool length. If wool is too long then the treatment may fail.

5. Dip sheep 3-6 weeks after shearing to achieve optimum protection. This allows time for cuts to heal and wool to grow, resulting in effective chemical application.

6. Check animals immediately after treatment to confirm full saturation has been achieved. Saturate dipping is the gold-standard fly and lice protection. The more chemical that gets to the skin surface, the more effective the treatment.

7. Jetting devices are primarily used for the application of dip for fly control. The success and length of protection is relative to the amount of dipwash applied to skin level.

For maximum fly control, use **Saturate Gold** dip concentrate for up to 12 weeks prevention of flystrike. Saturate Gold is Ravensdown's premier, unique, non-stripping fly and lice combination dip concentrate. Saturate Classic dip concentrate can also be used to control fly and lice. **NOTE:** Saturate Gold and Saturate Classic are Insect Growth Regulators, they will not control live strike.

Pour-on Applications

1. Ensure the product label is thoroughly read as it has vital instructions on application.

2. Understand how the chemical works. Fly only or fly and lice control? Will it have immediate knock down or take time to be effective? Will treatment be short acting or persistent?

3. Apply chemical at the best time, which is immediately off-shears. The outpour of grease and lanolin immediately after shearing is critical to ensuring the chemical is moved around the body of the animal.

4. Apply chemical correctly to achieve an effective treatment. Pour-on products should be applied from the top of the head to the tail.

Fleeceguard Pour On is our unique combination fly and lice product. Fleeceguard Pour On is water based, the actives Diflubenzuron and Deltamethrin combine to give rapid knockdown of lice and persistent control for 5 months. Fleeceguard Pour On will also prevent flystrike for up to 14 weeks. Whatever your preferred method is for lice and fly control, contact your Ravensdown Animal Health Technical Manager for further product information.

SATURATE® GOLD: THE ONLY COMBINATION IGR DIP CONCENTRATE FOR FLY AND LICE CONTROL

FLEECEGUARD®: COMBINATION POUR ON LICE AND FLY CONTROL

Getting the most from a parasite plan

No matter how well fed your stock are, worms can eat into an animal's production – and your farm's profitability.
The use of drenches has greatly reduced the impact of parasites, but with increasing levels of drench resistance, a multi-pronged plan of attack is necessary so you can maximise your investment in a good drench. A well planned parasite management programme is essential to minimise the impact of worms on animal performance and slow the development of drench-resistant worms.

Develop your own parasite management plan

1. Provide good nutrition – well-fed animals will better manage worm infections. Higher pasture cover reduces worm intakes allowing for higher growth rates to be achieved. Well-conditioned animals require less drenching, saving costs and reducing selection for drench-resistant parasites.

2. Reduce worm challenge – cross graze with sheep and cattle, use adult stock to clean up pastures grazed by young stock and sow crops and new grasses.

3. Use the correct product – use the correct drench active for the parasite you want to control e.g. moxidectin for barber's pole, praziquantel for tapeworm, clorsulon for liver fluke in cattle, levamisole for Cooperia in cattle.

4. Use effective drenches – use correct dose rates, calibrate the drench gun, dose to the heaviest weight.

5. Slow the development of drench resistance – use combination drenches, drench at 28 day intervals, drench only when necessary, avoid using long-acting products, leave part of the mob untreated, quarantine drench new stock onto farm, avoid routine drenching of adult animals.

6. Monitor drench performance – complete regular post-drench faecal egg counts to check the drench is working. Use faecal egg count reduction tests to confirm the drench status of your farm.

If you want help to develop a sustainable worm management plan talk to your Ravensdown Animal Health Technical Manager.

How do triple drenches make a difference?

If you're serious about slowing the development of drench resistant parasites, then your best bet is to use triple and double combinations such as **Combo Low Dose** and **Trio Sheep** in your parasite management programme. Combining the actions of 2-3 drench actives in one treatment lessens the chance for worms to survive, including those that are already resistant to 1 or 2 of the actives. Effective single actives will still have a place, but should only be used for one-off treatments or to target specific parasites e.g. moxidectin for barber's pole control.

CHANCES OF A WORM SURVIVING?

TWO DRENCH ACTIVES
1 in a million

THREE DRENCH ACTIVES
1 in a billion

COMBO™ LOW DOSE: REGISTERED FOR SHEEP AND CATTLE

TRIO SHEEP®: USE TRIPLE COMBINATIONS TO SLOW RESISTANCE

Test to know

Having good information is critical when determining where to invest on-farm. Sound, scientific interpretation of collected data can lead to increased productivity for your farm.

Faecal Testing
Faecal Egg Count (FEC) – determine animal worm burdens, the need to drench or check how well a drench has worked. Composite (Mob) or Individual (FEC) options available.
Larval Culture – identify which roundworm species are causing problems in stock.
Liver Fluke – fluke egg count to confirm and/or monitor liver fluke infections in stock.
Lungworm – larval extraction to monitor stock for lungworm, especially cattle and deer.

Drench Resistance Testing
Faecal Egg Count Reduction Testing or FECRT – a comprehensive test farmers can use to assess the effectiveness of drenches on their farm. It is recommended a FECRT is undertaken every 2-5 years, or when there is suspicion a drench treatment has been ineffective, or when there is a positive drench check. Testing is available for one specific drench or a range of drench products. FECRT includes all FEC, larval cultures, equipment and reporting.

Facial Eczema Testing
Pasture Spore Counting – determine the FE risk by measuring the number of spores on pastures.
Faecal Spore Counting – determine the FE risk by measuring the number of spores passing through animals. Faecal spore counting avoids the variability seen with pasture spore counting.

Herbage Testing – determine if the pasture can provide animals with the required amounts of dietary minerals, including important trace elements.

Feed Quality Testing – use the nutritional value of pasture and supplementary feeds to assist in determining nutritional requirements and feed budgeting.

ravensdown

Flavouring agent

Sweetwater®

Makes the water taste better

- Caramel flavouring used to mask the taste and smell of zinc, magnesium, trace elements, bloat remedies and other additives, particularly in stock drinking water but also in drench mixtures or solid feeds
- Encourages water consumption and aids in the effective administration of these additives

ACTIVE INGREDIENTS: Caramel flavours and sugars
DOSE RATE: Drinking water: 0.5-2ml per litre water or 25-50ml per kg of dissolved additive
Solid feeds: 1-2L per tonne of feed
PACK SIZE: 20L drum

Facial eczema

Sporeguard®

Prevent facial eczema without zinc

- Systemic fungicide used to control the facial eczema fungus Pithomyces chartarum
- Should always be used with the surfactant Sporewet®
- Sporeguard® and Sporewet® are effective in keeping facial eczema spore counts on pasture below dangerous levels for up to 40 days, hence animals do not ingest harmful numbers of spores and should not require the administration of zinc

ACTIVE INGREDIENT: 500g/L **carbendazim**
APPLICATION RATE: 300ml/ha (with 100ml/ha Sporewet®) in 100-200L water per ha
WITHHOLDING PERIOD: Nil
PACK SIZE: 10L drum

Registered pursuant to the ACVM Act 1997, No P8308.

Sporewet®

Get the best from Sporeguard®

- Surfactant for use with Sporeguard® in the control of facial eczema
- Allows the water rate to be lowered to as low as 100L/ha, ensuring better coverage and quicker rain fastness

ACTIVE INGREDIENT: Alcohol ethoxylate surfactant
APPLICATION RATE: 100ml/ha (with 300ml/ha Sporeguard®) in 100-200L water per ha
WITHHOLDING PERIOD: Nil
PACK SIZE: 5L container

Worm control – drenches

Moximax® Pour On

Long lasting parasite control for cattle and deer

- Endectocide (ML) pour on containing moxidectin
- Effective against all moxidectin-susceptible round worms (including inhibited *Ostertagia* larvae) and lice in cattle
- Effective against all moxidectin-susceptible round worms, including lung worm in deer
- In cattle prevents reinfection of *Dictyocaulus viviparous* (lungworm), *Oesophagostomum radiatum*, and *Bunostomum phlebotomum* for 42 days, *Ostertagia Ostertagi* for 35 days, and *Haemonchus spp* and *Trichostrongylus axei* for 28 days
- In deer prevents reinfection of *Dictylocaulus ekerti* (*viviparous*), *Ostertagia-like spp, Oesophagostomum venulosum* and *Chabertia ovina* for 42 days

ACTIVE INGREDIENT: 5g/L **moxidectin**
DOSE RATE: 1ml/10kg live-weight
WITHHOLDING PERIODS:
Meat: nil; **Milk:** nil
PACK SIZES: 5L backpack

Registered pursuant to the ACVM Act 1997, No A11326

RAINFAST: The efficacy of **MOXIDECTIN POUR-ON** is not adversely affected if applied when the hide is wet, or if rain occurs shortly after the application. However treatment of animals under these circumstances is not recommended practice.

Abamectin™ Pour On

Low dose internal and external parasite control

- Endectocide (ML) pour on anthelmintic containing abamectin
- Low dose formulation at 1ml/20kg live-weight
- Effective against all abamectin-susceptible roundworms (including inhibited *Ostertagia* larvae) and lungworm
- Highly effective against external parasites (biting and sucking lice)

ACTIVE INGREDIENT: 10g/L **abamectin**
DOSE RATE: 1ml/20kg live-weight.
Do not use in cattle under 100kgs or 16 weeks of age
WITHHOLDING PERIODS:
Meat: 35 days; **Milk:** nil
PACK SIZES: 5L backpack & 20L drum

Registered pursuant to the ACVM Act 1997, No A9445.

Combo™ Low Dose

Registered combination for sheep and cattle

- Mineralised double combination (white and clear) oral drench
- Effective against all roundworms (including inhibited *Ostertagia* larvae and strains that are resistant to either the benzimidazole family or levamisole), lungworm, tapeworm and adult liver fluke
- Ideal for the treatment of *Cooperia* in young cattle

ACTIVE INGREDIENTS: 45.3g/L **oxfendazole;** 80g/L **levamisole;** 0.9g/L selenium; 0.2g/L cobalt; 2g/L copper; 0.9g/L iodine; 0.6g/L zinc
DOSE RATE: 1ml/10kg live-weight
WITHHOLDING PERIODS: Meat: 10 days; **Milk:** 35 days (sheep and cattle)
PACK SIZES: 5L backpack & 20L drum

Registered pursuant to the ACVM Act 1997, No A10784.

Abamectin™ Injection

Registered for sheep and cattle

- Injectable endectocide (ML) anthelmintic with the potent active ingredient abamectin
- Effective against all abamectin-susceptible roundworms (including inhibited *Ostertagia* larvae) and lungworm
- Effective against sucking lice on cattle
- In cattle: up to 21 days persistent activity against *Dictyocaulus viviparus*; 14 days persistent activity against *Ostertagia* spp, *Cooperia* spp (ML susceptible) and *Trichostrongylus axei;* and 7 days persistent activity against *Oesophagostomum radiatum*

- Suitable for cattle over 100kg live-weight (and 16 weeks of age) and sheep over 20kg live-weight

ACTIVE INGREDIENT: 10g/L **abamectin**
DOSE RATE: 1ml/50kg live-weight
WITHHOLDING PERIODS:
Cattle: Meat (49 days); Milk (49 days)
Sheep: Meat (28 days); Milk (35 days)
PACK SIZE: 500ml injection pack
Registered pursuant to the ACVM Act 1997, No A9446.

Noromectin® Plus Injection

Controls liver fluke, roundworms and lice

- Injectable combination anthelmintic containing ivermectin and clorsulon
- Effective against all ivermectin-susceptible roundworms and lungworm, as well as sucking lice and mites
- Clorsulon is specifically effective against adult liver fluke
- Up to 21 days persistent activity against *Dictyocaulus viviparus* and *Oesophagostomum radiatum*; 14 days against *Ostertagia* spp (including inhibited immatures); and 7 days against ML-susceptible *Cooperia* spp

ACTIVE INGREDIENTS: 10g/L **ivermectin** (endectocide); 100g/L **clorsulon** (specific flukicide)
DOSE RATE: 1ml/50kg live-weight
WITHHOLDING PERIODS:
Meat: 28 days; Milk: 14 days
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9938.

Worm control – drenches

Trio Sheep®

Use triple combinations to slow resistance

- Mineralised triple combination (white, clear and endectocide/ML) oral drench
- Ideal as part of a routine parasite control programme and for use as a quarantine drench
- Effective against all adult and immature roundworms (including strains with single or dual resistance to macrocyclic lactones, benzimidazoles, levamisole or closantel), lungworm, tapeworm, adult liver fluke, nasal bot and itch mite

ACTIVE INGREDIENTS: 1g/L **abamectin**; 25g/L **albendazole;** 40g/L **levamisole;** 0.5g/L selenium; 0.2g/L cobalt; 2.1g/L copper; 1g/L iodine; 0.6g/L zinc
WITHHOLDING PERIODS:
Meat: 14 days; **Milk:** 35 days
DOSE RATE: 1ml/5kg live-weight
PACK SIZE: 20L drum

Registered pursuant to the ACVM Act 1997, No A10662.

Moximax® Sheep

Barber's Pole protection

- Mineralised moxidectin oral drench
- Effective against adult and immature roundworms (including strains resistant to benzimidazoles and levamisole) and lungworm
- 28 days persistent activity against *Haemonchus contortus* (Barber's Pole)
- 21 days persistent activity against *Ostertagia*

ACTIVE INGREDIENTS: 1g/L **moxidectin**; 0.5g/L selenium; 0.2g/L cobalt; 2g/L copper; 1g/L iodine; 0.6g/L zinc
WITHHOLDING PERIODS:
Meat: 7 days; **Milk:** 35 days
DOSE RATE: 1ml/5kg live-weight
PACK SIZE: 20L drum

Registered pursuant to the ACVM Act 1997, No A10724.

Combo™ Sheep

Use combinations to slow resistance

- Mineralised double combination (white and clear) oral drench
- Effective against all adult and immature roundworms (including strains that are resistant to either the benzimidazole family or levamisole), lungworm, tapeworm and adult liver fluke

ACTIVE INGREDIENTS: 24g/L **albendazole**; 37.5g/L **levamisole**; 0.5g/L selenium; 0.25g/L cobalt; 2.1g/L copper; 0.55g/L zinc
WITHHOLDING PERIODS:
Meat: 10 days; **Milk:** 10 days
DOSE RATE: 1ml/5kg live-weight
PACK SIZE: 20L drum

Registered pursuant to the ACVM Act 1997, No A9444.

Combo™ Plus Tape

The preferred choice for lambs from docking to weaning

- Mineralised double combination (white and clear) oral drench
- Also contains praziquantel for specific tapeworm control
- Effective against all adult and immature roundworms (including strains that are resistant to either the benzimidazole family or levamisole), lungworm, tapeworm and adult liver fluke

ACTIVE INGREDIENTS: 25g/L **albendazole**; 37.5g/L **levamisole**; 18.8g/L **praziquantel**; 0.5g/L selenium; 0.2g/L cobalt; 2g/L copper; 1g/L iodine; 0.6g/L zinc
DOSE RATE: 1ml/5kg live-weight
WITHHOLDING PERIODS:
Meat: 10 days; **Milk:** 35 days
PACK SIZE: 15L drum

Registered pursuant to the ACVM Act 1997, No A9789.

Abamectin™ Plus Tape

Control roundworms and tapeworms in one dose

- Mineralised endectocide (ML) oral drench containing the highly potent abamectin
- Also contains praziquantel for specific tapeworm control
- Effective against all abamectin-susceptible adult and immature roundworms (including benzimidazole and levamisole resistant strains), lungworm and tapeworm

ACTIVE INGREDIENTS: 1g/L **abamectin**; 18.8g/L **praziquantel**; 0.5g/L selenium; 0.2g/L cobalt; 2.1g/L copper; 1g/L iodine; 0.6g/L zinc
DOSE RATE: 1ml/5kg live-weight
WITHHOLDING PERIODS:
Meat: 14 days; **Milk:** 35 days
PACK SIZE: 15L drum

Registered pursuant to the ACVM Act 1997, No A9448.

Abamectin™ Sheep

Contains potent, short-acting abamectin

- Mineralised endectocide (ML) oral drench
- Effective against all abamectin-susceptible adult and immature roundworms (including benzimidazole and levamisole resistant strains) and lungworm

ACTIVE INGREDIENTS: 1g/L **abamectin**; 0.5g/L selenium; 0.2g/L cobalt; 2.1g/L copper; 1g/L iodine; 0.6g/L zinc
DOSE RATE: 1ml/5kg live-weight
WITHHOLDING PERIODS:
Meat: 14 days; **Milk:** 35 days
PACK SIZE: 20L drum

Registered pursuant to the ACVM Act 1997, No A9447.

Lift® B_{12} Plain

Injectable B_{12} in a pillowpack

- Double strength, injectable vitamin B_{12} for the treatment and prevention of cobalt deficiency and vitamin B_{12}-responsive conditions
- Each treatment lasts 4-6 weeks

ACTIVE INGREDIENT: 2g/L **vitamin B_{12}** (hydroxocobalamin)
DOSE RATE: Sheep 0.5-1ml; Cattle 2-6ml (See label for more detail)
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9783.

Lift® B_{12} Selenised

Injectable B_{12} and selenium in a pillowpack

- Double strength, injectable vitamin B_{12} with selenium, for the treatment and prevention of cobalt deficiency, vitamin B_{12}– responsive and selenium-responsive conditions
- Each treatment lasts 4-6 weeks

ACTIVE INGREDIENTS: 2g/L **vitamin B_{12}** (hydroxocobalamin) plus 4mg/ml **selenium** (as sodium selenate)
DOSE RATE: Sheep 0.5-1ml; Cattle 2-6ml (See label for more detail)
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 500ml injection pack

Registered pursuant to the ACVM Act 1997, No A9783.

Vita-Mineral®

An extra boost with iodine, selenium and vitamins

- Stable, water-soluble multi-mineral and vitamin powder for supplementation of sheep and cattle by oral drenching at strategic times (e.g. prior to mating, late pregnancy or during periods of stress)
- The drench solution is made by dissolving 1kg powder (1 sachet) in water to make up to 5 litres solution

ACTIVE INGREDIENTS: Each 10ml dose contains 280mg **iodine**, 2mg **selenium,** 2.5mg **cobalt**, 6mg **zinc**, 20,000 IU **vitamin A**, 10,000 IU **vitamin D** and 200 IU **vitamin E**.
DOSE RATE: Sheep: 10ml drench solution (2 grams powder) per adult sheep
Cattle: 50ml drench solution (10 grams powder) per adult cattle
WITHHOLDING PERIODS:
Meat: Nil; **Milk:** Nil
PACK SIZE: 4kg polyethylene bucket (containing 4 x 1kg sachets)

Fly & lice control

Fleeceguard®

Combination Pour On lice and fly control

- Unique water-based combination SP/IGR pour on for use off-shears and up to 6 weeks wool
- Rapid knockdown of lice and sustained control (including SP-resistant lice)
- Prevention of flystrike for up to 14 weeks
- Not a treatment for live flystrike

ACTIVE INGREDIENTS: 20 g/L **diflubenzuron** (IGR) and 10 g/L **deltamethrin** (SP)
DOSE RATE: Use a standard drench gun with a T-bar nozzle. For more information see the product label. **Lice:** 18–39ml depending on live-weight. **Flystrike:** 11ml for docking; 33–51ml for body and crutch strike
WITHHOLDING PERIODS:
Meat: 7 days; **Milk:** 35 days; **Wool:** 2 months
PACK SIZES: 5L backpack & 20L drum

Registered pursuant to the ACVM Act 1997, No 10577.

Saturate® Gold

The only combination IGR dip concentrate for fly and lice control

- Unique non-stripping combination IGR saturation dip concentrate
- Prevention of flystrike for up to 12 weeks via saturation dipping or jetting (including triflumuron and diflubenzuron resistant fly strains)
- Control of lice via saturation dipping (optimum time for treatment is 14-35 days post-shearing)
- Not a treatment for live flystrike

ACTIVE INGREDIENTS: 100g/L **diflubenzuron** and 250g/L **cyromazine** (both IGR)
DOSE RATE: Apply by jetting or saturation dipping (as above), ensuring the sheep are fully wet
Lice: Dilute 2L Saturate® Gold per 1,000 litres of dipwash
Flystrike: Dilute 4L Saturate® Gold per 1,000 litres of dipwash
WITHHOLDING PERIODS:
Meat: 10 days; **Milk:** 35 days; **Wool:** 2 months
PACK SIZE: 10L drum

Registered pursuant to the ACVM Act 1997, No A10950.

Saturate® Classic

IGR dip concentrate for lice and fly control

- Non-stripping IGR saturation dip concentrate
- Control of lice via saturation dipping (optimum time for treatment is 14-35 days post-shearing)
- Prevention of flystrike for up to 12 weeks via jetting or saturation dipping
- Not a treatment for live flystrike

ACTIVE INGREDIENT: 250g/L **diflubenzuron**
DOSE RATE: Apply by jetting or saturation dipping (as above), ensuring the sheep are fully wet
Lice: 14-35 days' wool, dilute 600ml Saturate® Classic per 1,000 litres of dipwash. >35 days' wool: dilute 1.5L Saturate® Classic per 1,000 litres of dipwash
Flystrike: Jetting (all sheep) and saturation (lambs long-term control); dilute 2.5L Saturate® Classic per 1,000 litres of dipwash. Saturation: (lambs medium-term control and all other classes); dilute 1.5L Saturate® Classic per 1,000 litres of dipwash
WITHHOLDING PERIODS:
Meat: 7 days; **Milk:** 35 days; **Wool:** 2 months
PACK SIZE: 10L drum

Registered pursuant to the ACVM Act 1997, No A10906. Saturate® is a registered trademark.

Flysafe® Liquid

Up to 12 weeks protection against flystrike

- Non-stripping saturation dip (for jetting, plunge or shower)
- For up to 12 week's protection against blowfly strike caused by common strike flies such as the Australian blowfly (*Lucilia cuprina*), including organophosphate resistant strains

ACTIVE INGREDIENT: 500g/L **cyromazine**
DOSE RATE: 12 weeks protection: dilute 2ml Flysafe® Liquid per litre of water, i.e. 2L per 1000L of dipwash
6 weeks protection: dilute 1ml Flysafe® Liquid per litre of water, i.e. 1L per 1000L of dipwash
Apply by jetting or saturation dipping, ensuring the sheep is fully wet
WITHHOLDING PERIODS:
Meat: 7 days; **Milk:** 35 days: **Wool:** 2 months
PACK SIZE: 5L drum

Registered pursuant to the ACVM Act 1997, No A10486.

Flysafe® Spray-On

Flystrike prevention as a convenient spray-on

- Ready to use spray-on for the protection of commonly struck areas of sheep
- For up to six week's protection against blowfly strike caused by common blowflies including the Australian blowfly *(Lucilia cuprina)*, including organophosphate resistant strains

ACTIVE INGREDIENT: 60g/L **cyromazine**
DOSE RATE: Docking: 5-10ml over the crutch, ensuring sufficient product is applied to the area to be protected
For preventing poll strike: At least 5ml Flysafe® Spray-On around the poll and horns
For the protection of all commonly struck areas: 15-70ml depending on live weight. Use a standard drench gun with a spray-on nozzle. For more information see the product label
WITHHOLDING PERIODS:
Meat: 7 days; **Milk:** 35 days: **Wool:** 2 months
PACK SIZE: 10L drum with a draw-off tube for administration without decanting into a backpack

Registered pursuant to the ACVM Act 1997, No A10481. Flysafe® is a registered trademark.

Magnesium and other minerals

Magnesium Oxide Fine

Minimum 90% MgO

- High-quality 200-mesh dusting-grade magnesium oxide (MgO)
- Suitable for pasture dusting, pasture spraying or addition to supplementary feed
- Can also be used for oral drenching

ACTIVE INGREDIENT: 54% elemental **magnesium** (90% magnesium oxide)
DOSE RATE:
Cattle: 30-70g per cow per day;
Sheep: 6-8g per ewe per day
Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium Oxide Drenching

Stable in suspension for easy drenching

- High-quality 325-mesh drenching-grade magnesium oxide (MgO) for daily oral drenching of dairy cows in the cow shed
- Uniform particle size means that it readily stays in suspension
- Can be used for pasture dusting or spraying, or addition to supplementary feed at higher rates

ACTIVE INGREDIENT: 54% elemental **magnesium** (90% magnesium oxide)
DOSE RATE: 20-30g per cow per day depending on magnesium status
PACK SIZE: 20kg lined polypropylene bag

Magnesium Chloride Natural

Water soluble magnesium supplement

- High-quality natural (unbleached) magnesium chloride ($MgCl_2.6H_2O$) that is highly soluble in water
- Suitable for addition to the drinking water or supplementary feed, or for daily oral drenching
- May contain a very small amount of harmless insoluble organic residue

ACTIVE INGREDIENT: 12% elemental **magnesium**
DOSE RATE: Cattle: 60-100g per cow per day; **Sheep:** 8-12g per ewe per day
Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium Sulphate

Water soluble magnesium supplement

- High-quality magnesium sulphate (Epsom Salts or $MgSO_4.7H_2O$)
- Suitable for addition to the drinking water or supplementary feed, or for daily oral drenching

ACTIVE INGREDIENT: 10% elemental **magnesium**
DOSE RATE: Cattle: 60-120g per cow per day; **Sheep:** 10-15g per ewe per day
Actual rate depends on magnesium requirements and method of administration
PACK SIZE: 25kg lined polypropylene bag

Magnesium and other minerals

Lime Flour

Calcium supplement

- Ultra-fine high-quality calcium supplement ($CaCO_3$)
- Use for dairy cows after calving to aid in the prevention of milk fever
- Can be used by pasture dusting, daily oral drenching or addition to supplementary feed
- Suitable as a calcium supplement for adding to low calcium-feeds such as maize silage
- To avoid the risk of inducing milk fever, do not administer during the last 1-2 months of pregnancy unless on veterinary advice

ACTIVE INGREDIENT:
39% elemental **calcium**
DOSE RATE: 50-300g per cow per day depending on calcium requirements and method of administration
Alternatively add to maize silage at a rate of 60-120g/kg wet feed or 20-40g/kg dry feed
PACK SIZE: 25kg lined polypropylene bag

Salt (sodium chloride)

Sodium supplement

- Coarse grade 22 salt (NaCl) suitable for oral drenching, licks, addition to drinking water or addition to supplementary feed
- Aids in the prevention and treatment of salt (sodium) deficiency
- Fine salt also available from some stores

ACTIVE INGREDIENT:
39% elemental **sodium**
DOSE RATE:
Cattle: 20-30g per cow per day;
Sheep: 1-3g per adult sheep per day
Actual rate depends on sodium requirements and method of administration
PACK SIZE: 25kg polypropylene bag (also available in 1 tonne bulk bag from selected stores)

Maize Triple Mix™

Maize silage balancer

- Convenient ready-mixed calcium, magnesium and sodium supplement for addition to maize silage at the time of feeding out
- Aids in the prevention of hypocalcaemia (milk fever), hypomagnesaemia (grass staggers) and sodium deficiency
- Do not administer during the last 1-2 months of pregnancy unless on veterinary advice to avoid the risk of inducing milk fever

ACTIVE INGREDIENTS: 21% elemental **calcium** (as lime flour); 14% elemental **magnesium** (as magnesium oxide); 8% elemental **sodium** (as salt)
DOSE RATE: 150g per cow per day
PACK SIZE: 25kg lined polypropylene bag

Starter Drench™

Free flow formulation for easier drenching

- Convenient, ready-to-use, post-calving energy starter drench to provide energy and aid in the prevention of metabolic conditions (milk fever, grass staggers and ketosis)
- Flowable formulation means that it does not settle out or require stirring, making it easy to drench
- Do not administer pre-calving unless on veterinary advice, to avoid the risk of inducing milk fever

ACTIVE INGREDIENTS: 200g/L **monopropylene glycol** (MPG); 150g/L **molasses**; 100g/L **soya oil**; 12.5g/L **magnesium** (as magnesium oxide); 60g/L **calcium** (as precipitated calcium carbonate)
DOSE RATE: 1L per cow as soon as practical after calving; additional doses of ½ -1L for up to four days may be given
PACK SIZES: 20L and 200L drums

Trace elements

Dairy Cow Minerals

Proven trace elements – giving you the essentials

- Free-flow water-soluble multi-mineral trace element mix
- Contains all five trace elements that are essential for animal health
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed
- Contains aniseed flavouring for improved palatability
- Do not administer while dosing with zinc for facial eczema prevention

ACTIVE INGREDIENTS: 250mg **copper** (167mg as sulphate plus 83mg as EDTA chelate), 5mg **cobalt** (as sulphate), 3mg **selenium** (as sodium selenate), 10mg **iodine** (as EDDI chelate) and 400mg **zinc** (as zinc sulphate monohydrate) per 5 g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

DCM Gold

All chelated copper

- Free-flow water-soluble multi-mineral trace element mix containing copper, cobalt, selenium, iodine and zinc
- Contains aniseed flavouring for improved palatability
- Suitable where chelated copper is required or where it is desirable to avoid the use of copper sulphate
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed

ACTIVE INGREDIENTS: 150mg **copper** (as amino acid chelate), 10mg **cobalt** (as sulphate), 5mg **selenium** (as sodium selenate), 20mg **iodine** (as EDDI) and 600mg **zinc** (as zinc sulphate monohydrate) per 5g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

DCM Zero

No Copper

- Free-flow water-soluble multi-mineral trace element mix, with cobalt, selenium, iodine and zinc
- Contains aniseed flavouring for improved palatability
- Designed to be administered during the facial eczema season to ensure copper does not reduce the effectiveness of zinc treatments or where herd copper levels are already adequate (e.g. when feeding significant amounts of PKE)
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed

ACTIVE INGREDIENTS: 7.5mg **cobalt** (as sulphate), 5mg **selenium** (as sodium selenate), 15mg **iodine** (as EDDI) and 500mg **zinc** (as zinc sulphate monohydrate) per 5g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

Dairy Cow Minerals Hi Se + Co

Trace elements with extra Selenium and Cobalt

- Free-flow water-soluble multi-mineral trace element mix, with extra selenium and cobalt.
- Contains aniseed flavouring for improved palatability
- Easily dissolved, so is suitable for the supplementation of dairy cows via addition to the drinking water, oral daily drenching, or addition to supplementary feed
- Do not administer while dosing with zinc for facial eczema prevention

ACTIVE INGREDIENTS: 250mg **copper** (167mg as sulphate plus 83mg as EDTA chelate), 10mg **cobalt** (as sulphate), 5mg **selenium** (as sodium selenate), 10mg **iodine** (as EDDI chelate) and 400mg **zinc** (as zinc sulphate monohydrate) per 5 g dose
DOSE RATE: 5g per cow per day
PACK SIZE: 25kg lined polypropylene bag

Custom Mineral Blend

To give you exactly what you require

- A service that provides a customised mineral blend tailor-made
- Ingredients can include trace elements, minerals, vitamins and many other additives that may be required (subject to compatibility)
- Product is manufactured according to farmers' individual requirements and is delivered direct to farm within 10-15 working days in 25kg lined polypropylene bags, in half or one tonne lots
- An optional extra is the inclusion of convenient 'day packs' inside each 25kg bag that provide the whole herd's requirements for one day

Trace elements

Stock Selenium™

Convenient ready to use liquid selenium supplement

- Prevention and treatment of selenium deficiency
- Use by medication of the drinking water, oral drenching (daily or strategic) or addition to supplementary feed

ACTIVE INGREDIENT: 0.5% (5g/L) elemental **selenium** (as sodium selenate) as a colourless solution
DOSE RATE: Strategic oral drenching: 1ml/50kg live-weight no more frequently than every 3 weeks
Daily dosing: 0.1ml/50kg live-weight per day; by drenching, water or feed medication
PACK SIZES: 20L & 200L drums

Selprill Double®

Up to 12 months supplementation for the whole farm with our patented prill

- A slow-release 2% selenium prill for use as a fertiliser additive to raise soil and herbage selenium levels
- Treatment and prevention of selenium deficiency in grazing animals

ACTIVE INGREDIENT: 2% elemental **selenium**
DOSE RATE: ½ kg per hectare per year (10g elemental selenium per hectare per year)
PACK SIZE: 25kg polypropylene bag

Selprill Double® is a registered trademark. NZ Patent number 534753.

Stock Iodine™

Convenient ready to use iodine supplement

- Prevention and treatment of iodine deficiency
- Use by addition to the drinking water, oral drenching (daily or strategic), addition to supplementary feed or foliar application (preferably with a suitable sticking agent)

ACTIVE INGREDIENT: 5% elemental **iodine** (as potassium iodide) as a colourless to light brown solution
DOSE RATE: Strategic oral drenching: ewes 4-5ml monthly as required.
Daily dosing: 0.1-0.8ml per cow per day; 1-4ml per 100 adult sheep per day;
by drenching, water or feed medication
Foliar application: 1.25L/ha (pasture); 2.5L/ha (brassicas) up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Stock Copper™

Convenient ready to use copper supplement

- Prevention and treatment of copper deficiency
- Use by addition to the drinking water, oral daily drenching, addition to supplementary feed or foliar application (preferably with a suitable sticking agent)
- Do not administer to animals while dosing with zinc for facial eczema prevention

ACTIVE INGREDIENT: 5% elemental **copper** (as copper sulphate) as a clear blue solution
DOSE RATE: Daily dosing: 1-5ml per cow per day; 1-2ml per adult deer per day; 0.1-0.3ml per adult sheep per day; by drenching, water or feed medication
Foliar application: 10L/ha up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Copper Sulphate

For fertiliser or animal health use

- Copper supplement ($CuSO_4.5H_2O$) for the prevention and treatment of copper deficiency
- Suitable for oral daily drenching, addition to the drinking water, addition to supplementary feed, foliar application (preferably with a suitable sticking agent) or application with fertiliser

ACTIVE INGREDIENT: 25% elemental **copper**
USAGE RATES: Daily dosing: typically 1-2g/cow/day by drenching, water or addition to feed
Fertiliser: 5-6kg/ha (sheep and cattle); 12kg/ha (deer); ideally in the autumn
Foliar application: 2kg/ha 1-2 weeks pre-grazing will give up to 6 weeks supplementation to grazing stock
PACK SIZES: 25kg polypropylene bag (non-branded)

Trace elements

Stock Cobalt™

Convenient ready to use cobalt supplement

- Prevention and treatment of cobalt deficiency
- Use by addition to the drinking water, oral daily drenching, addition to supplementary feed or foliar application (preferably with a suitable sticking agent)

ACTIVE INGREDIENT: 1% elemental **cobalt** (as cobalt sulphate) as a clear red solution
DOSE RATE: Daily dosing: 1-2ml per cow per day; 1-2ml per 100 adult sheep per day: by drenching, water or feed medication
Foliar application: 1.25-2.5 L/ha up to 1-2 weeks pre-grazing
PACK SIZES: 20L & 200L drums

Cobalt Sulphate

For fertiliser or animal health use

- Cobalt supplement ($CoSO_4.7H_2O$) for the prevention and treatment of cobalt deficiency
- Suitable for oral daily drenching, addition to the drinking water, addition to supplementary feed, foliar application (preferably with a suitable sticking agent) or application with fertiliser

ACTIVE INGREDIENT: 21% elemental **cobalt**
USAGE RATES: Fertiliser: Capital: 350g/ha; Maintenance: 175g/ha; ideally in the spring
Foliar application: 60-240g/ha 1-2 weeks pre-grazing will give up to 6 weeks supplementation to grazing stock
PACK SIZES: 20kg or 25kg bag or cardboard box (non-branded)

Zinc Sulphate Hepta

Water soluble multi-purpose zinc

- Prevention of facial eczema
- Treatment and prevention of foot-rot and scald
- Treatment and prevention of dermatophilosis (mycotic dermatitis or lumpy wool)
- Use as a dietary zinc supplement

ACTIVE INGREDIENT: 22% elemental **zinc** (as zinc sulphate heptahydrate, $ZnSO_4.7H_2O$)
DOSE RATE: Facial eczema: 8g/100kg live-weight/day by addition to the drinking water only (do not orally drench at the facial eczema prevention dose rate)
Foot-bath or hoof-mat: 10% solution (1kg into 10L water)
Dermatophilosis: prevention 0.75% solution; treatment 1.5% solution; by spray or dip
Dietary supplement: 1-3g per cow per day; by oral drenching in feed or water
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9256.

Zinc Sulphate Mono

Water soluble multi-purpose zinc

- Prevention of facial eczema
- Treatment and prevention of foot-rot and scald
- Treatment and prevention of dermatophilosis (mycotic dermatitis or lumpy wool)
- Use as a dietary zinc supplement

ACTIVE INGREDIENT: 35% elemental **zinc** (as zinc sulphate monohydrate $ZnSO_4.H_2O$)
DOSE RATE: Facial eczema: 5.5g/100kg live-weight/day by addition to the drinking water only (do not orally drench at the facial eczema prevention dose rate)
Foot-bath or hoof-mat: 6.5% solution (650g into 10 L water)
Dermatophilosis: prevention 0.5% solution; treatment 1% solution; by spray or dip
Dietary supplement: 0.5-2.0g per cow per day; by oral drenching in feed or water
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9257.

Zinc Oxide Plus™

Pre-stabilised to make oral drenching easier

- Pre-stabilised zinc oxide powder (ZnO) for the prevention of facial eczema in cattle and sheep by oral drenching or addition to supplementary feed
- Drenching can either be at long-term rates (ranging from daily to weekly) or crisis rates (daily depending on spore count)
- Can also be used as a dietary zinc supplement

ACTIVE INGREDIENT: 80% elemental **zinc**
DOSE RATE: Facial eczema: Long-term rates: from 2.5g/100kg live-weight per day; to 11g/100kg live-weight twice weekly; to 27g/100kg live-weight per week (see label or website for more details)
Dietary supplement: 0.2-1.0g per cow per day; by oral drenching or addition to feed
PACK SIZE: 25kg lined polypropylene bag

Registered pursuant to the ACVM Act 1997, No A9412.

Here to help

You want what is best for your livestock yet sometimes nature seems to have other ideas. Keeping on top of it all can seem overwhelming, but assistance is at hand. Call your Animal Health Technical Manager or Agri Manager.

Julie Wagner BVSc (Dist)

Animal Health Veterinarian Product Manager

P: 021 900 339
E: julie.wagner@ravensdown.co.nz

Julie has over 30 years' experience in agriculture primarily as a rural veterinarian focusing on production animals and more recently in the commercial veterinary industry.

Ian Jenkins

Animal Health Technical Manager Upper North Island

P: 021 900 752
E: ian.jenkins@ravensdown.co.nz

Ian has 20 years experience in agriculture, including time as a dairy and beef farmer, crop and seed field technician, animal feeds advisor, and Ravensdown Agri Manager.
He enjoys working with farmers to maximise farm operational profit through tailored nutrition and animal health advice and products.

Dave McIntyre BAgSc

Animal Health Technical Manager Western North Island

P: 021 193 0278
E: david.mcintyre@ravensdown.co.nz

Dave joined Ravensdown in 2013 as an Agri Manager. His experience in dairy and sheep and beef systems has given him a broad oversight of the agricultural industry and the differing needs of herd health.

Paul McKee BSc (Tech)

Animal Health Technical Manager Eastern North Island

P: 021 900 521
E: paul.mckee@ravensdown.co.nz

Paul has over 25 years' experience in animal health, including ruminant parasite research programs for drench resistance and animal immunity at AgResearch, implementation and management of disease surveillance and eradication programmes for bovine tuberculosis and other exotic diseases/pests with AgriQuality.

Graham Payne

Animal Health Technical Manager Upper South Island

P: 021 900 520
E: graham.payne@ravensdown.co.nz

Graham has over 25 years experience in the New Zealand agricultural sector. His early experience began in farm merchandise, from there progressing to training, service, brand management, R & D and product management for a major animal health organisation.

Brent Chamberlain

Animal Health Technical Manager Central South Island

P: 021 900 354
E: brent.chamberlain @ravensdown.co.nz

Brent has over 25 years' experience in agriculture, including 22 years in a variety of roles in animal health in the South Island. Brent has considerable knowledge in external and internal parasite management, animal health planning and product development trials, as well as numerous farmer and industry contacts..

ravensdown

Animal Health - notes

Animal Health - notes

Where do I start?

With so many different environmental regulations and requirements, it can be hard to figure out the best solution for your farming needs.

The experienced team at Ravensdown Environmental have a strong and reliable network of collaborators. With our experience and this network at your disposal, you can access a range of environmental services tailored to suit your needs. These include the following, but please get in touch if you can't see what you need there.

PERCENT
93
TRUST ADVICE
from Ravensdown

- Nutrient Budgeting with OVERSEER® (all assessed by Certified Nutrient Management Advisors)
- Farm Environment Plans (FEP; FEMP; SMP)
- Resource Consent Applications
- Environmental Risk Assessment
- Water Quality Monitoring and Laboratory Testing (including for N and P, at shareholders request)
- Water Quantity Footprinting
- Wastewater and Effluent Testing and application modelling
- GIS Mapping
- Compliance Management

Because we work for Ravensdown, we can leverage the other services and skills Ravensdown has available and utilise them for your environmental work. This includes the use of our IT systems such as Smart Maps, our Research and Development expertise (OVERSEER® and soil scientists) as well as ARL, your soil, plant, feed and water testing laboratory (IANZ Accredited).

ARL
analytical research laboratories

OUR SIX-STEP OPTIMISER™ PROCESS

optimiser™

1 DISCUSSION

We talk through your goals face-to-face and scope out the work.

2 DETAILED ANALYSIS

We examine the current farm system and identify environmental risks and opportunities for your farm. This happens through the early stages of Farm Environment Planning and/or completion of OVERSEER® nutrient budget scenarios which 'test' options to mitigate risks and maximise opportunities. We look for solutions that meet or exceed your goals within the bounds of regulatory and environmental limitations.

3 OPTION ASSESSMENT

We run through the pros and cons of each option and advise you in line with your goals and objectives.

4 DETAILED ANALYSIS

We present the agreed plan so it can be used as an on-farm management tool. This can take many forms and have many labels including Farm Environment Plan, Farm Environmental Management Plan or, for Dairy farmers, Sustainable Milk Plan. This is then used in the process of obtaining resource consent or demonstrating compliance.

5 REGULATOR INTERACTION

We can work with you in engaging with your regulator. We can facilitate or lead these interactions and negotiations if required, or take more of a back seat and support you as and when you require.

6 KEEP CONNECTED

The development of the plan is the first step on a longer journey. We can stay with you through the journey, continuing to re-visit the plan as and when you want to evolve or change the way you farm.

Getting to grips with rules and regulations

These days, regulatory bodies want compliance with often complex rules. The worry for farmers is the potential for significant limitations on farming operations and the value of your farm.

In some regions, the rules, or the way in which they are applied, is constantly changing. Staying abreast of these changes and how they may or may not impact your farming operation, is the job of Ravensdown Environmental.

Managing P loss

Whether operating at a higher stocking rate or putting stock on sloped paddocks, there are still ways to manage the risks.

- By putting younger lighter stock on sloped paddocks
- Choose flat paddocks away from waterways for heavier classes of stock
- Have a stand-off zone during the higher risk rainfall times
- Create a riparian stock exclusion zone along waterways.

Applying phosphate fertilisers outside the winter months is also a good option to give it time to absorb into the soil, reducing the risk of runoff.

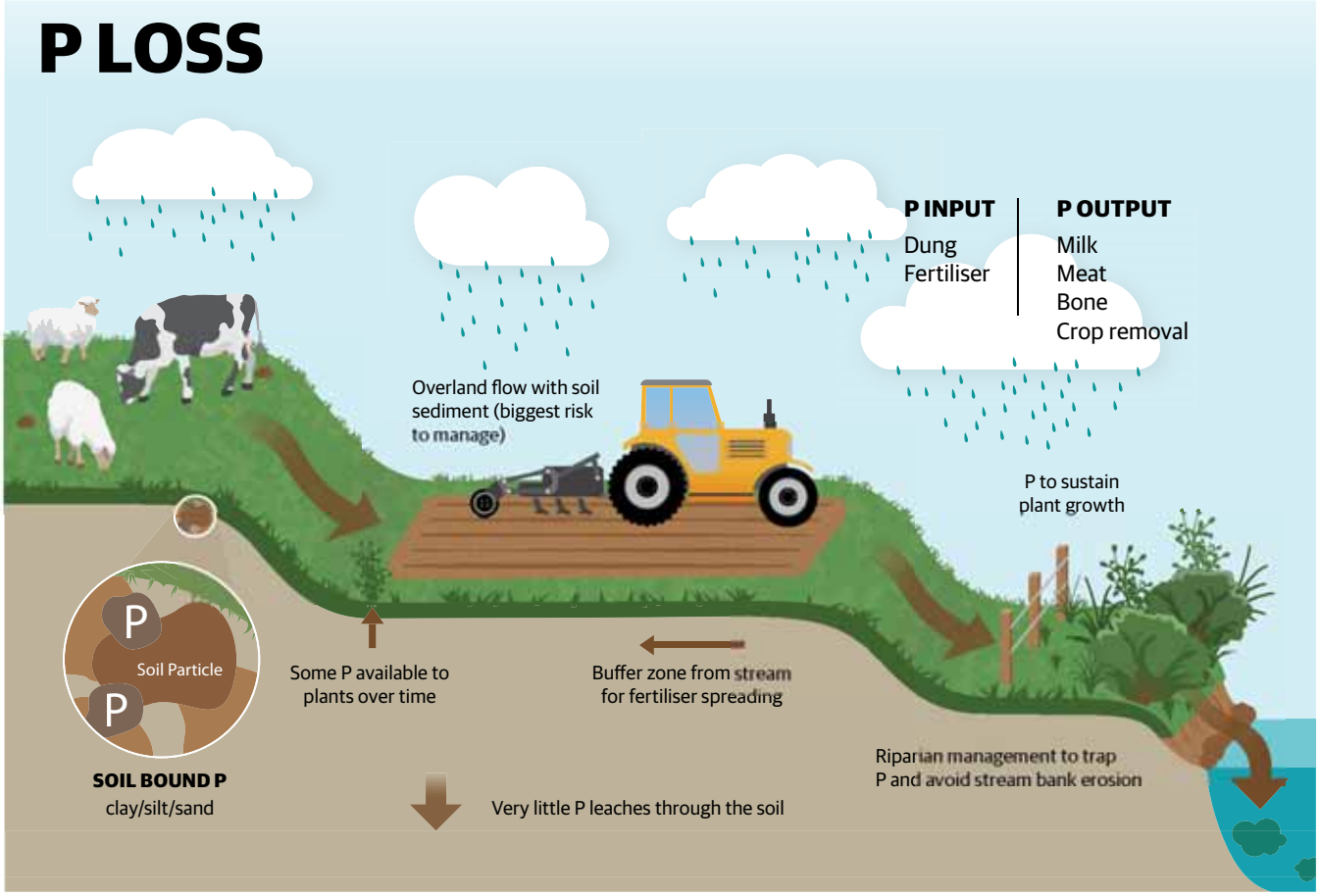
Managing N loss

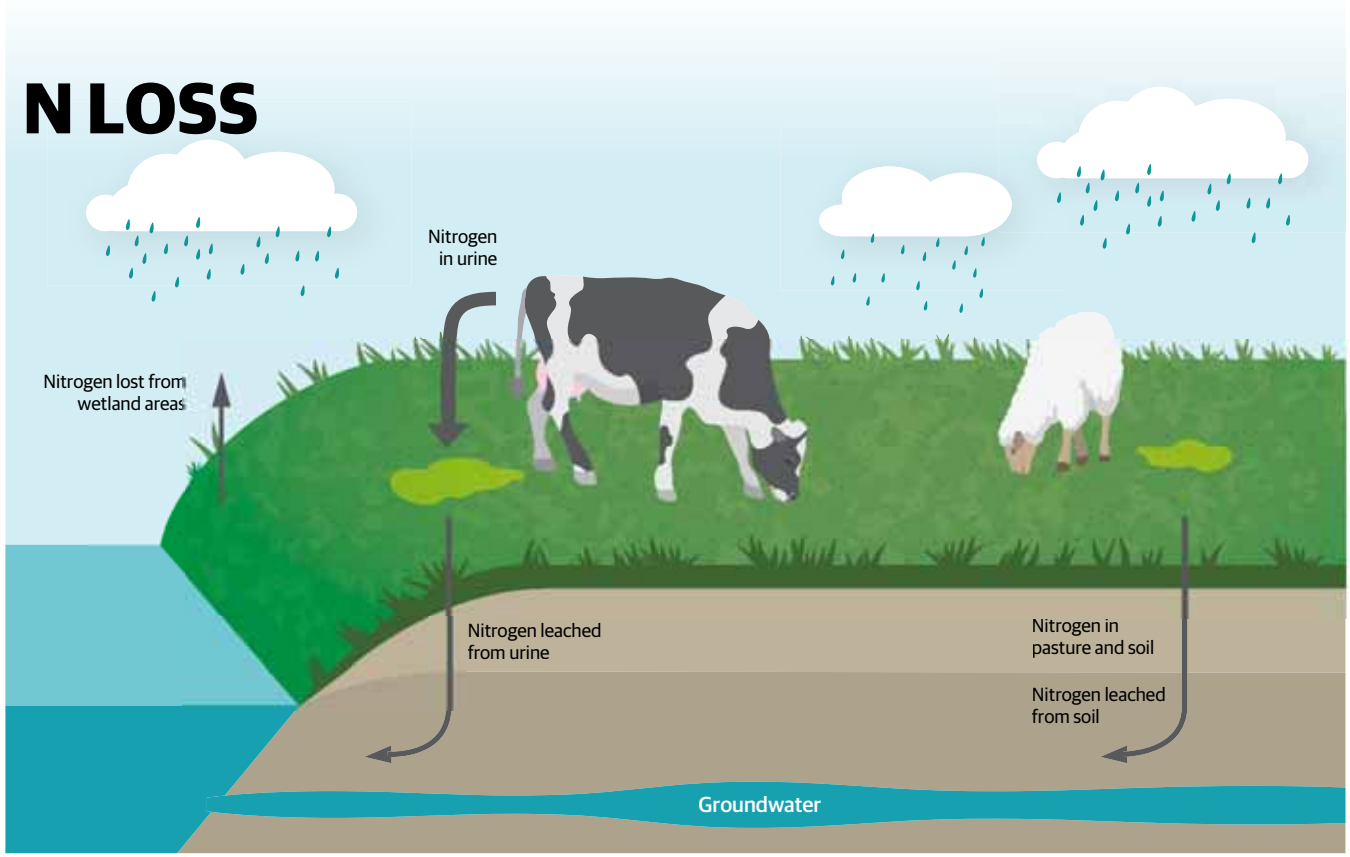
The biggest risk of nitrogen loss is from the unused N that sits in the soil solution, due to the inability of the crops or pastures to use it during slow-growing conditions.

Animal urine is by far the biggest contributor to nitrogen in pastoral soils, followed by crop residue and finally, fertiliser, which has a minimal impact.

There are ways to minimise risks when it comes to winter crops and urine:

- Reduce your autumn stocking rate
- Use your heavier soils prone to pugging earlier in the winter
- Plant cover crops to reduce mineralisation
- Break feed crop at the bottom of the hill last (a critical source area) for when it's drier and warmer.


P LOSS
P INPUT
Dung
Fertiliser
P OUTPUT
Milk
Meat
Bone
Crop removal
Overland flow with soil sediment (biggest risk to manage)
P to sustain plant growth
P
Soil Particle
P
SOIL BOUND P
clay/silt/sand
Some P available to plants over time
Buffer zone from stream for fertiliser spreading
Riparian management to trap P and avoid stream bank erosion
Very little P leaches through the soil


N LOSS
Nitrogen in urine
Nitrogen lost from wetland areas
Nitrogen leached from urine
Nitrogen in pasture and soil
Nitrogen leached from soil
Groundwater

Here to help

To talk to your region's environmental consultant phone us on 0800 100 123 or email environmental@ravensdown.co.nz

Arron Hutton B Agr Sci (Hon), Certified NMA
Principal Consultant
P: 021 900 242
E: arron.hutton@ravensdown.co.nz

Chris Dickson B Appl Sci (Ag), Certified NMA
Principal Consultant
P: 021 913 705
E: chris.dickson@ravensdown.co.nz

Kelly Morris B Appl Sci (Ag) (Hon), Certified NMA
Senior Consultant
P: 021 900 428
E: kelly.morris@ravensdown.co.nz

Mark Crawford B Ag Sci, Certified NMA
Senior Consultant
P: 021 900 407
E: mark.crawford@ravensdown.co.nz

Tim Lissaman BB Ag Sci, Certified NMA
Senior Consultant
P: 021 705 157
E: tim.lissaman@ravensdown.co.nz

Andree Callaghan B For Sci (Hon), Certified NMA
Consultant
P: 021 900 249
E: andree.callaghan@ravensdown.co.nz

Chris Tidey B Sc (Ag Sci), PG Dip Agri Com, Certified NMA
Consultant
P: 021 874 236
E: chris.tidey@ravensdown.co.nz

John Holmes B Com Ag (VFM)
Consultant
P: 021 900 446
E: john.holmes@ravensdown.co.nz

Nicole Wheadon Bsc Animal Sci. (Hons), PhD.
Consultant
P: 021 824 969
E: nicole.wheadon@ravensdown.co.nz

Noumann Kyamanawa Msc (Animal Science)
Consultant
P: 021 831 505
E: noumann.kyamanawa@ravensdown.co.nz

ravensdown

Environmental notes

Environmental notes

ravensdown

0800 100 123
ravensdown.co.nz

V0116