

## Information Booklet

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### Peace of mind



### Sustainable Profitable Production







## A short overview ...

### Who are we ?

We're an experienced ag-bio company here to put the power back in farmers' hands by getting nature working for them. Our products work by getting the biological side of the 'wheel of life' spinning to complement the chemical side. This not only stimulates and encourages healthy growth but simultaneously tackles those pesky environmental issues so farmers can be the ones who control how they farm.

We've been developing and refining our products for over 20 years. They've all been tested, trialled and proven on New Zealand farms in local conditions and stringently evaluated to ensure they do what we say they do.

Magnify products are unique, containing organisms other products are missing or cannot stimulate. And we've designed them to be practical, economical and easy to use in conjunction with traditional inputs - creating a manageable way for farmers to step their way to change and establish sustainable practices.

*Judges comments : "Magnify NZ's unwavering commitment to sustainability and innovation defines them. Their standout factor is delivering farming solutions that not only meet, but exceed regulatory targets, curbing chemical use while enhancing soil, plant, and animal vitality. Notably, they're catalysts for greener farming."*



## How does it work ?

We use nature's toolbox to inoculate soil and digestive systems with specific groups of powerful, beneficial micro-organisms and bio-chemicals that work together to grow better feed and rear better stock. Some products are designed to give an instant growth boost, but what's better - because life breeds more life - given time and continued use, our products deliver compounding knock-on benefits that become more frequent and significant, season upon season.

## Benefits in brief ...

Costs, workload and environmental impact are reduced ... soil is revived and stimulated to a point it can sustain itself and produce quality feed with significantly less chemical input ... and improved feed quality and digestion in animals seriously reduces leaching.

You simply will not ever get these kinds of results from chemicals alone and the end results are priceless - staying ahead of government mandates and being able to better service debt + futureproof your legacy.





## Future proof

your legacy and achieve  
peace of mind for  
generations

## Balance profitability

and sustainability and  
control how you farm with  
Magnify bio-stimulants

### What the experts say ...

"I have a passion for animal health and you can't achieve good animal health without good grass. I know all too well what it's like to struggle to make ends meet in farming. Been there done that! My passion now is to guide as many farmers as will listen into a better future. I have seen the results of a number of Magnify products this last season -

Pastures growing an extra 20-30 kgDM/ha/day for 5 months, stock wanting to eat it as it tastes sweeter. Calves reared to great weights without issues. Lambs blooming with Magni-Lamb. Paddocks staying green through the dry. It's all been exceptionally positive and it's the way farming has to go. I only wish these products were available when I was younger."

*Dave, Landcare NZ Ltd*

### Order or discuss further :

Scott Hobson 0800-66-88-100  
info@magnifynz.co.nz  
www.magnifynz.co.nz

## .magni-Life

A fast-acting live product for immediate use to inoculate with the best microbes. Magni-Life is the first step in creating soil that is high-yielding, diseases suppressive, has strong roots, deep and warm, and has very high natural nitrogen fixation.

## .magni-Lamb

Brilliant for increasing both weight gain and stock health, for both young and old. Rumen development and digestion is enhanced with life-long benefits. Really simple to use. Ideal for people who want the best from their stock without high cost.

## .magni-Grow

A blend of enzymes and organic acids from soil microbes that promote plant growth and stronger regrowth. With consistent use of Magni-Grow, pastures regrow better and better to produce dense, sweet grass that stock love. The focus is growth first, then soil.

## .magni-N-Enviro

Tackles pesky environmental and carbon emission issues while enhancing grass growth and nitrogen utilisation. Stock love the sweetened grass and digestion is maximised. Production and animal health improve accordingly.

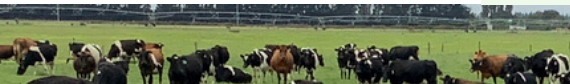




## Client Stories

### *John and Jacky Tanner are in the Selwyn red zone ...*

... and were running 4.5 cows/ha using 4 kg supplement/day and growing around 17,000 kgDM. The property was leaching 87 kg and the initial ECAN targets were 65 kg. A plan was formulated to reduce stock numbers a little and reduce supplementary inputs. The expanding use of Magni-Life and Magni-Grow is allowing for more and more supplement and fertiliser reductions. Net profit has skyrocketed by over \$1000 / ha (excluding payout changes). The leaching is now 35 kg and declining. Magni-Life has been applied to the whole farm for the last 2 years. Over that time, supplement use has declined by 3 kg/cow/day without loss of production. Urea use has declined from 250 kg to 90 kg and 63 units phosphorus as solid fertiliser replaced with 20 units of phosphorus from chicken litter.



### *'Witchcraft!' says farm consultant ....*

### *Tanners cont'd*

Measuring was done weekly and showed Magni-Grow increasing growth rates by over 20 kgDM/day in addition to what Magni-Life added. His former farm consultant threw his hands in the air crying 'witchcraft' as he walked away from a 600 kg growth advantage in May and after 3 grazings. Magni-Life had added that much to the Urea response. John has noticed the growth rates at the shoulders of the season are way ahead in Magnify-treated areas. The use of Magni-Grow in addition to Magni-Life is proving even more effective. In February 2022 John treated the whole farm with Magni-Life and Magni-Grow. Growth rates climbed, allowing for even more supplement reductions (4 kg/cow less in Autumn than Lincoln University for the same production). His production is great at 1650-1750 kgMS/ha, he makes a lot more money which keeps bankers happy, and he's well ahead of leaching requirements. If 15% stock reductions are enforced in 2030 John is not sweating the future. Well done John and Jacky - you're one of our champions!





## Client Stories

### *Maximising animal health was critical to net profit ...*

Hayden Ussher and Gillian Dalley farm a small North Canterbury dairy property, typical of a West Coast farm. Thirteen years ago they set strategic farm plans for a very low-cost operation. Maximising animal health was critical to their net profit goals. Prior to Magnify, the farm was producing the national average at the time – 900 kgMS/ha and they were applying 250 kg of Super and 90 kgN/ha – plus 2 applications of a high-analysis liquid fertiliser. Animal health expenses were approximately \$60/cow. After a field comparison showing a 400 kg/ha difference in just 28 days, they replaced the liquid fertiliser with Magni-Grow and Magni-Life. The growth advantages began to compound with time, so much so, that they were growing more grass with just 30 kg nitrogen/ha/year than the neighbours using over 200 kg nitrogen.

### *Still green on the outside but different on the inside ...*

### *story cont'd*

The quality of the grass transformed, it was still green on the outside but different on the inside. Animal health expenses dropped to just \$5-10/cow. Production increased over 3 years, peaking at 1200 kgMS/ha. Dry cow rates halved and lame cow rates reduced over 75%. Today they have minus 20 kg/ha nitrogen balance from their Fonterra environmental report, with the average farm for their production group being 100 kgN/ha. Both the accountant and banker say their clients are very good farmers from a net profit point of view. Their strategy has been to have a very low-cost operation with very good animal health. Magni-Life and Magni-Grow have been perfect products to help them achieve their goals.

### *A need for big change in North Canterbury ...*

Andrew and Julie Mehrtens – along with 9 other farmers in the Waimakariri district – have a real battle with ECAN setting what seems like impossible leaching targets – 90% reductions! While the battle for sensible targets goes on they are 'full steam ahead' to tackle the problem and Magnify provides a realistic solution. After a visit to John Tanner's, Andrew soon realised we were talking in a different league. Lysimeters are showing around 89.5% reductions in nitrates leached and we expect further reductions. Fertiliser expenditure has almost halved. Grass is growing 20 kgDM/day faster in treated areas versus untreated areas. Over 2 seasons the cows have increased from 440 to 510 kgMS/cow and empty rates halved. The cows clearly liked the grass more as they grazed treated paddocks significantly harder. From the first season, Matt (the manager at that time) noticed increased milk in the vat when cows grazed the Magnify pastures. Their future is brighter now – leaching targets have been achieved and profits are up significantly.





## More inspiring Stories

### *Dryland : from 600 bales to 1800 bales in 2 years*

Story behind ... Steve and Andrea Reardon bought a 70 ha dryland farm near Oxford. The fertility was low and droughts over the years had an impact on grass quality - typical dryland farm on light stoney soils with dry Summers. He decided to target production, soil health and profit first - then address any remaining fertility issues. Decent balage cuts were essential for a profit target of \$1000/ha to be achieved. The balage cut was critical. We started him on 2 applications of Magni-Grow per year and 1 application of Ammo 31 (15-21 kg nitrogen). In the first Spring - using Magnify products and recommendations - he cut 1200 bales and last Spring he got the equivalent of 1800 bales off the same area. That was around 24 x 200 kg bales/ha. This is an example of the compounding effect of Magnify. Nitrogen was needed until the ground begins to generate enough nitrogen to grow from. Well done Steve and Andrea for turning this property around! Doing the best for the environment was a high priority as the Ashley River (which now suffers from toxic algae in Summer) was only a few paddocks away from their property.

### *Cropping pioneers in Southland ...*

The Laughtons grow approximately 300 acres of wheat in Southland. Their goal was to improve their soil structure which they've done plus much, much more. Magnify products have been part of their inputs for 16 years, firstly allowing them to move to direct drilling which requires good soil structure. And then by assisting them in controlling 'Take All' and other diseases, plus helping them achieve what most people think is impossible - nitrogen gains without legumes. Their overall nitrogen inputs have reduced by 50% on crops - now 90 kg/ha. Some paddocks get a little more and some less.

One paddock has been cropped continually for 16 years with only one legume crop over that period. With just 120-150kg of N inputs, they still get wheat yields over 11 tons/ha. That's a 50% reduction in N inputs. A small amount of N is applied as liquid, but 80% is solid nitrogen. Previous grain and fertiliser consultants have told the Laughtons 20-25 kgN fertiliser is required for every 1 ton of wheat.

This would indicate their current system, which includes Magnify, has reduced N requirements by accounting for 110 kg N coming from the ground each year without a legume in sight - or nearly 100% of fertiliser N utilisation. 110 kg of nitrogen currently costs \$363/ha - three times as much as Magnify! This soil has completely transformed in spite of constant cropping. The highest wheat yield they have recorded is 17.2 tons/ha - 340 kgN came from the ground.



## Cropping Marlborough ... Lucerne, Barley, Red Clover, Balage, Lambs

Lucerne : These contractors lease 3000 acres of boldery riverbed land up the Wohopai Valley in Marlborough. About 12 years ago they started looking for better solutions to profit and sustainability. Selling 200 ha of lucerne balage was a big part of their business. Three applications of Magnify per year increased the yields from 30 bales to 50 bales/ha. A net gain of around \$1800/ha.

"The council doesn't like nitrogen on this light riverbed country so three years ago (2017) I made a decision to stop putting on 100 kg of Urea on grass for silage. Magnify was used instead. The cuts have gone from 10-15 bales/hectare to 20-25 bales/hectare. And the regrowth is much better", David says ... "it's not just about the first cut, it's what comes after that."

David did his own 100 ha trial on red clover seed production. Magnify yielded an extra 50 kg/ha which was valued at \$350/ha.

Barley : Barley yields have gone up by over 1.5-2 tons/ha and have further increased with the introduction of GrapeMarc. Magnify increases the efficiency of organic soil additives.

Magni-Life has been trialled for 3 years as a replacement for fungicide on barley and this has been successful.

"Lambs are fattening faster and there is more Winter growth. We had a mob of Merino lambs growing 150 gm/day through Winter which is pretty good for Merinos at that time of the year. The Winters are cold up here in the valley. We use Magni-Lamb with our drench when they arrive and I think it makes a difference."

"We just can't farm like we used to. We have to keep changing and we will keep using Magnify as we have seen the benefits financially across all aspects of our cropping business", says David Brydon.





*Magnify  
bio-stimulants  
get nature  
working for you*

Amplifying nitrogen transfer from the air to the plant is part of magnifying plant growth and allowing for reductions in nitrogen inputs. Different soil microbes do this job for you.

**A lot more trial data is available on our website. This is a representation.**

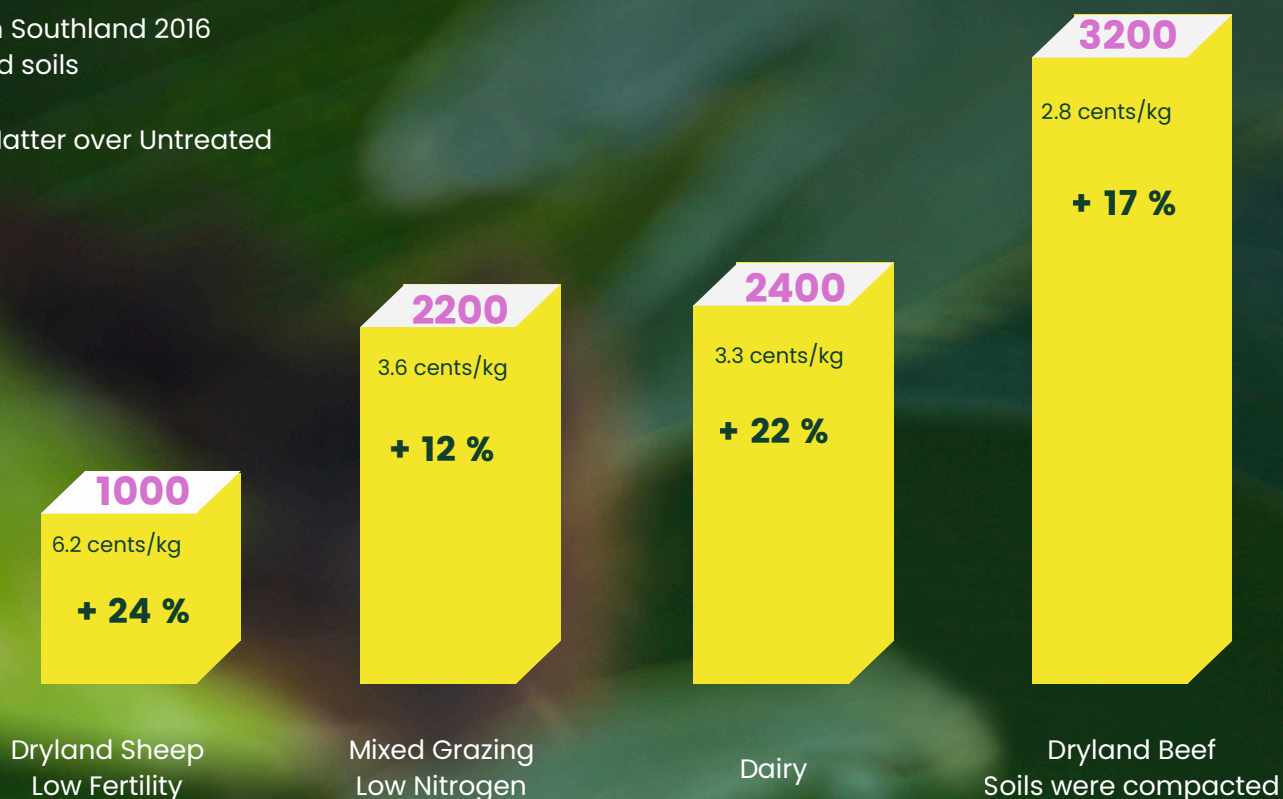
[www.magnifynz.co.nz](http://www.magnifynz.co.nz)

## Facts pay the bills

### STAN WINTERS – MEASUREMENT

Northern Southland 2016  
Semi and soils

Kg Dry Matter over Untreated



2016 : Mr Stan Winter – a fertiliser scientist with 50 years experience – independently measured 5 field trial sites in Northern Southland over 4 months. All were successful. Comparing even the smallest response in this study you would have to apply 220 kg Urea/ha costing \$180/ha to get an equivalent response. Based on a 10 : 1 response (\$850/ton).



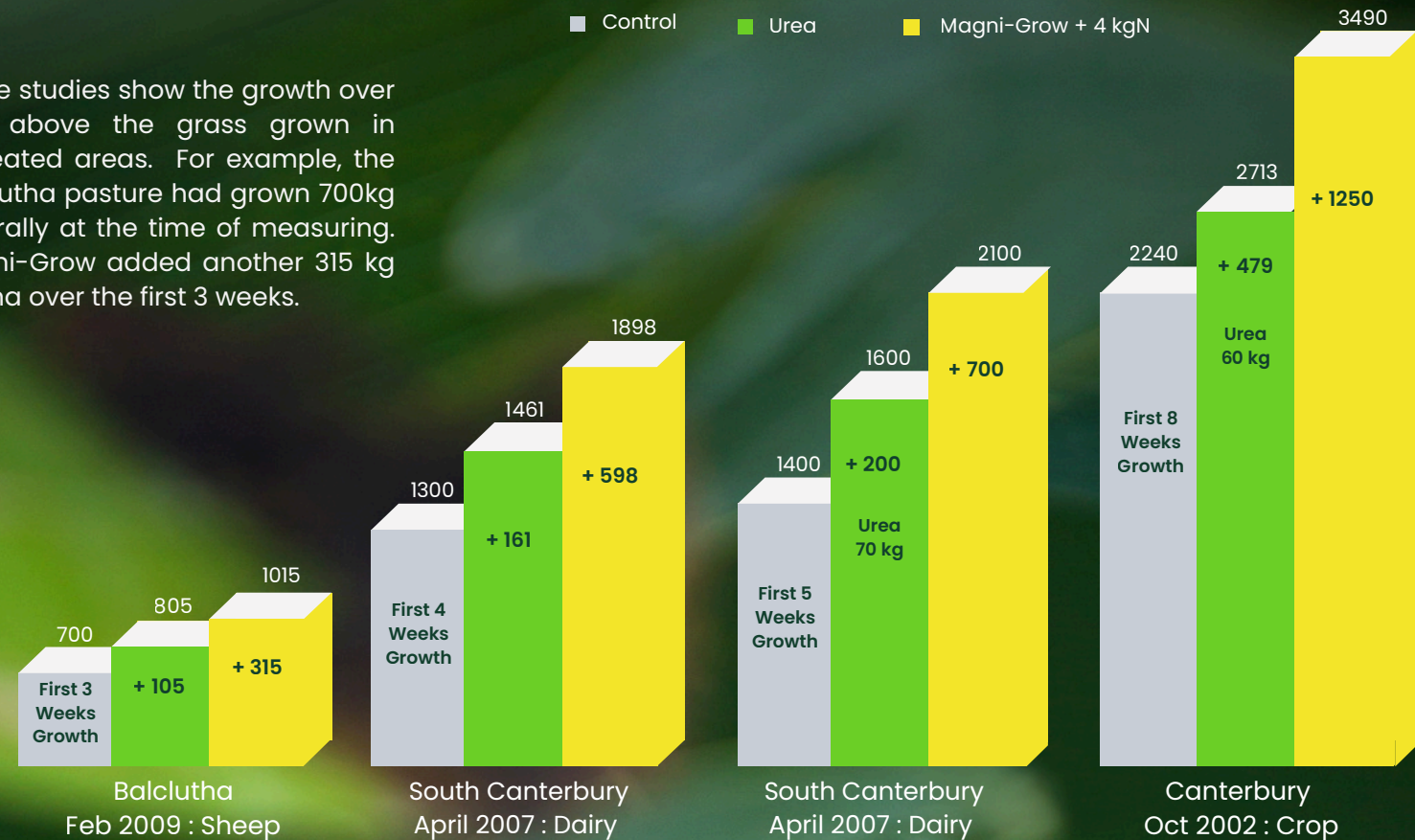
Magni-Grow's ancestral products - 'Pasture Grow' and 'CM3' - were reliable and effective as seen from these trials done years ago. Today, Magni-Grow is even better.

"Thick is the Trick"

Urea



Magni-Grow's ancestral products - nearly twice as much dry matter for half the cost



Urea has been the preferred growth stimulant for many farmers for decades, however change is required. Magni-Grow is more capable both short term and even better long term. Granular Urea at 60-80 kg/ha was used in these trials. These are typical examples when the weather is good and soils are relatively fertile. All bio-stimulants require an adequate nitrogen source from the soil. Some of these properties were marginal, so we added just 4 kgN/ha with the Magnify. The first 2 trials are against 2 different liquid fertilisers. Based on measured results of over 100 field comparisons, Magnify plus 4 kgN gave better results 95% of the time over 4-8 weeks and 99.5% of the time over 4 months - with an extra 10-20 kgDM/day 'regrowth advantage'. In our studies, Urea has typically yielded a 10 : 1 (range 7-12 : 1) response over 8 weeks for every kg of N applied when the weather and soil fertility are good. Half that when conditions are colder or drier. Note : with repeated application, the knock-on benefits of Magnify multiply and the soil's nitrogen fixation process increases dramatically.



An overall gain of 27%  
from one application  
of Magni-Grow

*Wheat trial*

*Balclutha 2017*

## Goal : Reduce nitrogen inputs without loss of yield

These clients applied just one application of Magni-Grow, leaving a boom-width unsprayed through the paddock. Magnify sampled 7 x 0.25 m<sup>2</sup> from the control and Magni-Grow treated areas. Sampling was done 4 metres apart to reduce the risk of soil variation. Samples were taken 3 weeks prior to harvesting when we had resources available to do it.

We didn't spend any more on the budget. The client dropped Urea from 400 kg to 300 kg/ha, replacing 100 kg Urea with Magni-Grow - ie it cost no extra.

This farm had never been able to better 10 tons/ha. The crop yielded 12.75 tons/ha. They are contractors and said that district grain yields were down that year.

Magni-Grow effectively added \$1500/ha. If the client had simply added Magni-Grow as an extra on top of the 400 kg of Urea, the breakeven would be a mere 130 kg/ha grain or an extra 1.3% in yield.

	Head numbers		Head weights	
	Control	Magni-Grow	Control	Magni-Grow
	168	214	370	590
	178	197	384	504
	160	214	390	541
	200	202	366	591
	172	205	454	415
	196	192	466	465
	179	196	417	516
Means	179	202	406	517
Difference		<b>+24</b> (+12%)		<b>+111</b> (+22%)
		P < 0.026		P < 0.027



*Independent  
study  
throughout  
a drought*

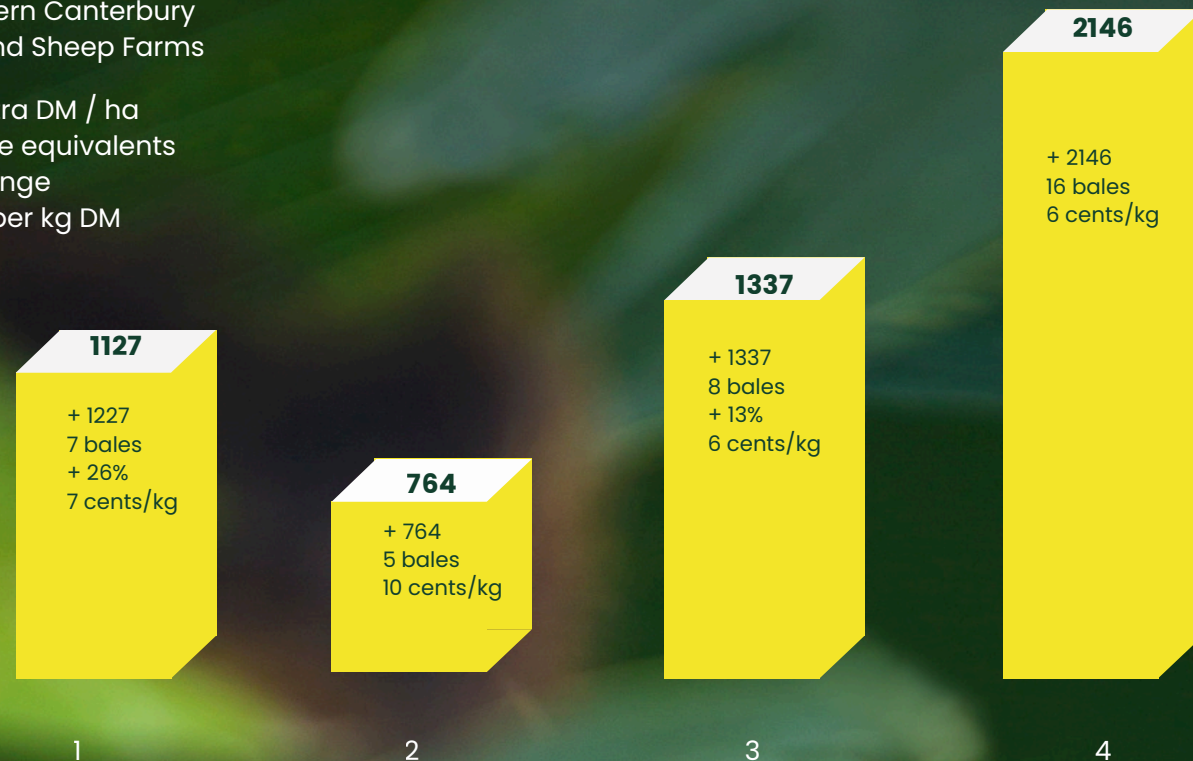
**"You can't stop dry weather  
but you can influence  
how much it hurts ..."**



## Dr J Field Dodgson – Field Studies

Northern Canterbury  
Dryland Sheep Farms

Kg extra DM / ha  
Balage equivalents  
% change  
Cost per kg DM



These trials were amazing. Just 4 inches of rain fell over 12 months in areas that normally get 40 inches. These 4 represent the 7 sites fairly. At times we had to wait 6-12 months after application to get enough rain to allow grass to grow. You can't stop dry weather but you can prepare your land better.



## Getting started for Dairying

*Magnify is for both conservative or apprehensive clients who want to use 190 kgN/ha and for those interested in reducing nitrogen inputs*



There are many different farming operations. For example some farmers want to retain fertiliser inputs and reduce supplement usage, others want to reduce nitrogen. Nearly all wish to reduce leaching. Magnify adds value to all of them. Applying 2-3 applications/yr of Magni-Grow plus 1-2 applications/yr of Magni-Life as part of your pasture growth programme can turn 10 : 1 nitrogen responses into 20-30 : 1 responses.

Overseer reports have shown that Urea reduces nitrogen fixation by 30-50 kgN/ha/yr, plus 50% or more of the nitrogen you purchase is wasted as leaching or volatilisation. The plant uses only about 80 kg (2000 x 4% N content) of that 200 kgN. Magnify encourages your grasses to utilise the remaining 120 kgN, plus it fixes more nitrogen. It's realistic to get 20-30 : 1 responses to your applied nitrogen, regardless of whether it's liquid or solid.

Supplement reductions, production and animal health can all improve. With time, the effects of Magnify continue to gain momentum, creating greater confidence to reduce nitrogen inputs as you feel comfortable.

Example : the Tanners' client story above represents an average high-input dairy farm in Canterbury. They have decreased supplements from 980 kg/cow - to last year 520 kg/cow - with the same per cow milk production. That's a net profit gain of around \$757/ha from the supplements alone. They have also reduced nitrogen use from 250 kg down to 96 kg/ha. A relatively small investment in Magnify results in a very large gain in profit.

Timings : September, December and March.

## Getting started for Cropping

Magnify's clients are typically motivated for many reasons including - increasing the efficiency of fertiliser, controlling disease, reducing sprays, increasing root mass, regenerating/maintaining soil structure to improve nutrient and water efficiency, faster ground preparation, less environmental impact. They all enjoy more yield, more profit, more time, less stress - and more flexibility on what crops can be planted in the same ground year after year. All of the above requires a suite of soil microbes like those found in Magni-Life. Over time, many clients have also embraced strategic use of different fertiliser sources eg liquid nitrogen, in addition to the traditional bases. All have been motivated for the environment, their family and 'the bank'.

Disease control is critical in cropping and horticulture. Post WW2 the concept of using chemicals was to wipe out the disease, however in reality disease prevalence keeps growing, as seen by the amount of chemicals used today compared to the past. Twenty years ago food quality was loosely defined as the amount of blemishes on food. However, today our international and local markets increasingly include the environmental footprint within the definition of food quality. Chemicals and nitrogen fertilisers are made from oil or natural gas and the application of them has a large carbon footprint, so biological solutions are needed.

Field trials commonly show gains over 2 years of >10-30% on grains, 10-20% on potatoes/onions, 10-30% on peas and beans, to name a few. Magni-Life has successfully controlled (amongst others) :

- Take All in wheat - 5 litres per hectare/yr for first 3 years, then 2-3 litres/yr
- Sclerotinia in sunflowers - 12 litres/ha/yr for 3 years to change 30% losses to zero losses
- Potato Scab - 3 litres/ha
- Fusarium - 6 litres/ha/yr
- Chocolate spot on broad beans - 3 litres in late August

The principle in disease control is competition by beneficial micro-organisms. It's about providing resistance to the disease developing. You need to apply Magnify products before the conditions favour the disease. As the beneficial soil organisms build in numbers, more disease suppression is created. If you see disease you're too late and you are then best to spray with chemicals.



## Getting started for Sheep and Beef

Magnify's first sheep client was a very typical intensive Southland sheep farmer. He had religiously followed the advice of the fertiliser company, but he had a problem – his body was worn out from dagging 95% of his lambs every time the drafter visited and his ewes suffered from bearings. He asked if we could help with these issues. Within 2 years he had 95% less dagging, far less bearing ewes, 50% less drenching, lambs 2-3 kg heavier, 30% increase in carrying capacity – and all at 1/3 of the cost. His soil tests were in the optimum range. Magnify was applied instead of fertiliser but at the same times of the year – prior to lambing and mating. The grass and clover were growing stronger in the shoulders of the season and fertiliser wasn't needed to boost growth. Magni-Lamb was used to assist stock digestion. We have observed that Magnify's products optimise the movement of nutrients from the soil to the plant, which enhances many aspects of stock health and a farmer's energy.

Some farmers have asked 'did his pigs start flying over the moon after 3 years'? We can categorically say 'no' but the rest is real and most of it is repeated on every property that allows Magnify's microbes to multiply.

Intensive farms start with 2 applications per year and less intensive farms with one application per year. The same product can boost Winter feed and be added to herbicides to increase their effectiveness. One sheep farm who needed grass quickly added 10 kgN + a half rate of gibberellin and increased grass growth 450% over September and October 2023. He plans to use it in early August and April to build feed cover at 1/4 of the price of feed supplements.

Magnify is a great product for sheep and beef farms. Talk to an agent to discuss your planned usage ideas.





## Sales FAQ

*Never heard of you –  
what do you do?*

The reason you might not have heard of us up until now is partially that we've simply flown under the radar. But also, timing – now more than ever there's an appetite amongst farmers for help balancing profitability and sustainability. That's what we specialise in so you're bound to see us around more.

We make a range of natural liquid products that kickstart, boost and enhance soil biology to grow fantastic grass animals 'can't get enough of' ... encourage good gut health for better-performing lambs and calves ... and simultaneously tackle those pesky agricultural environmental issues getting in the way of farming, so you can stay in control of how you farm.

*What do your  
products do?*

**They make things grow better. You've done good with the chemical side of the wheel of life. Our products can now help you get the biological side of the wheel rolling. This makes things grow better.**

Just like chemicals, it's all about the right blend – too much of one thing or not enough of another and you've got a wonky wheel that doesn't function well. We put the right balance of the right kinds of organisms into your soil, so it has exactly what it needs to create a nice round cycle that rolls along without issue ... and can even gather speed!

Our soil health products kickstart, boost and enhance soil microbes to grow magnificent grass animals 'can't get enough of'. They simultaneously tackle those pesky agricultural environmental issues getting in the way of farming by improving your soil to a point where you're not relying on chemicals as much. Our animal health products encourage good gut health in lambs and calves that maximise development.

Benefits of improved soil : consistently better yields, less disease, less impact from weather. And what's even better, as your soil develops the ability to 'self-perpetuate', you'll need less and less.



# Sales FAQ

## How do the products work?

We use nature's toolbox to improve soil, plant and animal health. There are millions of micro-organisms that can be good for us in one way or another. Penicillin was discovered in a type of mould, and plant endophytes are a type of fungus. You can't make good cheese or wine with the wrong organisms or not enough of the good ones.

That's how our products work too – we optimise specific groups of beneficial organisms that stimulate and encourage growth. Our products are proven to be effective because they contain key organisms your soil is missing or can't stimulate.

Our soil health products revive and stimulate soils to create a growing environment that is high-yielding and disease suppressive, holds moisture better, has high nutrient solubility and availability + high nitrogen-fixing capacity. Better feed means better animals.

Our animal health products encourage good gut bacteria in lambs and calves – by improving rumen and digestive systems you set the animals up for life-long better digestion and wellness. More efficient feeding means better overall health and performance.

Magnify products are not a one-off 'miracle' because that's not how nature works. 'Life breeds more life' and that takes a little time. One thing organisms do that chemicals can't is replicate, so while chemical inputs are set and finite (and now have to be reduced, giving less results), our products get things started and then support nature in doing its thing – one organism becomes two, two become four, four become 16 and so on. Given a couple of years, compounding knock-on benefits become more frequent and significant season-upon-season. Soil is revived and stimulated to a point it can sustain itself and produce quality feed with significantly less chemical input ... and improved digestion means better performance. Reducing leaching is also part of the benefits.

Structure & temperature



Root & shoot growth stimulant



Plant N



Different microbes bring different benefits, eg several species of bacteria can transform atmospheric nitrogen into plant-available forms and all are necessary to produce enough N to replace bagged N. Others excrete mucus that bind soil particles together to hold water better in Summer. There are many components to getting nature to work for you in a powerful way ...

## Sales FAQ

### *How do Magnify products reduce nitrogen?*



Soil micro-biologists know that over 80% of nutrient transfer from soil to plants involves soil microbes. With nitrogen, it's 100% bacteria-dependent. All life requires nitrogen to make amino acids and proteins. Increasing the natural processes is essential for replacing manufactured nitrogen and just makes sense to do economically.

Magnify products either contain these bacteria or stimulate/rebalance the bacteria involved in the 5 steps of the nitrogen cycle.

#### **Step 1: Nitrogen fixation -**

A small variety of bacteria can convert inert nitrogen gas ( $N_2$ ) into ammonia ( $NH_3^+$ ). Ammonia is positively charged and is held in the soil but is not plant-available. Ironically there's 78 tons of nitrogen gas above every hectare of earth's surface. Pseudomonas, Azotobacter, Rhizobium & Frankia are examples of N fixing bacteria.

#### **Step 2: Nitrification by bacteria -**

Convert ammonia into nitrites ( $NO_2^-$ ) and then nitrates ( $NO_3^-$ ) which are plant-available but are negatively charged and highly leachable. Even Urea (also known as carbamide  $CO(NH_2)_2$ ) and ammonium sulphate require nitrifying bacteria in the soil to convert them into plant-available nitrates (eg nitrobacter and nitrosomonas species).

#### **Step 3: Assimilation -**

by plants and animals with some nitrogen excreted in dung and urine.

#### **Step 4: Ammonification by decomposers -**

Converting the dead organic nitrogen back into ammonia. Pseudomonas, Bacillus and Streptomyces are examples of ammonifying bacteria.

#### **Step 5: Denitrification by bacteria -**

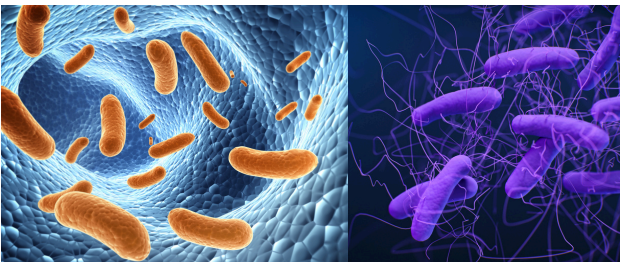
Converting water-soluble nitrites and nitrates back into gaseous nitrogen which returns to the atmosphere. Under anaerobic conditions this creates nitrous oxide, a potent greenhouse gas. Pseudomonas and Achromobacter are examples of denitrifying bacteria.

Different fertilisers impact the balance of the different groups of bacteria at each step. For example, Urea stimulates the nitrifying bacteria to multiply which - within days - convert Urea into water-soluble nitrates. Excessive nitrates build up in the soil and neither plants, stock or soil microbes like it. Pasture response time to applied N gets shorter. The excess nitrates are either leached or converted to nitrous oxide. Dark green, unpalatable urine patches (that stock only nibble at) occur. None of it is desirable going forwards. The more Urea you apply the worse the problem gets. A deficiency of nitrogen-fixing bacteria simply means you have to use more purchased nitrogen to achieve the same result but with a higher environmental footprint.

Magnify products correct these biological imbalances in natural and healthy ways.



## What do different micro-organisms do?



*"There are 10 million different bacteria and 1 million different fungi in NZ soils. There are 35 billion worldwide. These are examples of known beneficial species for agriculture."*

Aspergillus Oryzae – These are from the fungi family. Although plants make sugar during photosynthesis they sure do appreciate a free sugar source. Aspergillus is a mold and is better than most at breaking down complex carbohydrates (as are found in crop trash) and dung into sugar that plants can feed off. They are important in decay processes and recycling nutrients from plant material and dung. They grow quickly and help bind soil particles together. A known probiotic for human health, it exhibits a strong pancreatic tumour suppression effect. Asp. Oryzae has been used in the fermentation of rice, sweet potatoes and barley for thousands of years. It is the Asian equivalent of brewers yeast.

Psuedomonas – 199 species belong to this group of bacteria and only a few are desirable. For example, Ps. Putilda exudes substances that stimulate root and shoot development, allowing the plants to get at more nutrients and water in the soil. The plants grow better. It is also a good antagonist for root rot diseases like Fusarium and Pythium. These bacteria break down toxic substances and even oil.

Bacillus Subtillus – Since 1946 BS was used to combat rotovirus and shigellosis in humans. Some antibiotics are created using this bacteria's brilliant exudates. It also secretes enzymes to make sugar plus breakdown proteins from plant trash and dung, thus releasing the nitrogen for plant uptake. It is a broad spectrum immunostimulant. This helps stock health. It should naturally occur in the topsoil and be ingested by stock. It's a part of the beneficial gut microflora in both humans and stock.

Lactobacillus – Plant roots are subject to attack from various microbes all the time and as a result don't tend to live past 3 weeks unless they are protected by the films and defence mechanisms of bacteria like Lactobacillus Plantarium. Lactobacillus excrete lactic acid, which is a form of energy for plants and humans. These rod-shaped bacteria are very important in the human gut and saliva.

Nitrosomonas and Nitrobacter Sp – Nitrosomas Sp convert ammonium to nitrite and nitrobacteria convert nitrite to nitrate – the dominant form that plants absorb. Ammonium has a positive charge and is held on soil particles. Nitrate has a negative charge and isn't held by the soil, making it highly leachable. Fertiliser usually unbalances the numbers of these bacteria in the soil, creating uneven paddock grazing and taller grass response from urine patches. Magnify rebalances these groups, resulting in less nitrate leaching and more palatable urine patches – and grass growth is better.

Serratia Entomophylia – These bacteria parasitise grassgrub and occur in most NZ soils. Magnify supports and/or inoculates these bacteria so it is common to control/significantly reduce grass grub numbers.

## Sales FAQ

*How do you know if your products are making more nitrogen?*



Soil Nitrogen tests are the best way to determine if your soils are generating more natural nitrogen. A good natural level of pastoral soil N is about 400 kgN/ha in Autumn. We recommend soil nitrogen tests as they are a good indicator of overall soil microbial biomass and indicate how fast to reduce fertiliser nitrogen safely. Every bit of soil life from protozoa to bacteria contain nitrogen to different degrees. Some scientists use carbon (organic matter) as an indicator but after 20 years' experience in the field we have found soil nitrogen tests are more useful practically. We have seen many NZ farms with good organic matter but low available-nitrogen and plants can't grow without the nitrogen being adequate.

Soil N tests do change depending on the rainfall in Winter. A wet Winter will show about half the soil N levels in early Spring compared to a dry Winter. There should be a rapid increase over October/November as the natural decay cycles ramp up releasing nitrogen.

To get the natural soil N figure, you deduct the amount of nitrogen you have applied as bagged N and add back any extra nitrogen associated with more growth. For example, a paddock might test at 200 kgN/ha but you applied 180 kgN/ha as fertiliser. You only have a natural level of 20 kgN/ha. When doing trial comparisons, add any extra nitrogen associated with growth differences which required extra nitrogen from the soil. For example, if a trial paddock grew another 2400 kg drymatter then add 96 kgN/ha ( $2400 \times 0.04\% \text{ N}$ ) to the 20 kgN/ha soil level, the soil will have supplied another 116 kgN naturally. When natural nitrogen is below 60 kgN/ha it is risky reducing fertiliser nitrogen. Magnify products aim for an 80 kgN/ha increase in potentially-available soil nitrogen each year. After several years it stabilises at around 350-600 kgN/ha.

Chances are if you have been taught about nitrogen fixation then it would be limited to Rhizobium bacteria and legumes like clover. Legumes like clover can be strong in pasture but not contribute much to soil nitrogen levels for ryegrass to grow from. This shows up in soil nitrogen tests. Magnify products target a broader spectrum of nitrogen-fixing bacteria to allow for significant nitrogen gains, regardless of clovers.

Ironically, all nitrogen fixation by bacteria is an anaerobic process (no oxygen), yet ideally soil is aerobic between soil particles. All N fixing bacteria have developed ways to limit/remove their exposure to oxygen. What an amazing and ironic world we live in!

Plant biostimulants like Magnify, fish or seaweed all require adequate soil nitrogen levels to grow from. We recommend a minimum of 80 kgN/ha on a soil N test to get adequate results from any biostimulant.





## Sales FAQ

### Mobilising Phosphate



Phosphorus is essential for all life and plant growth but that doesn't mean we have to apply fertiliser to get it. Geologists tell us phosphate makes up about 1.5 % (0.5-4 % range) of the earth's crust which is 76 tons in the top 600 mm of soil. Based on NZ Greywacke analysis, the South Island has around 4-12 tons/P/metre of soil. Ten lambs per hectare going to the works at 40 kg/lamb is 2.2 kgP. 1500 kg milksolids per hectare removes 22 kgP.

Your Olsen P figure - multiplied by 1.5 - gives you the semi-available phosphorus for your pastures. Typically 30-50 kg/ha. To grow 15 ton dry matter/ha your plants will take up 45 kgP. Plants have to get this amount either through bagged fertiliser or from the soil's biological systems. NZ used to test soil phosphorus with a Truog test which included organic phosphorus but later moved to Olsen P which did not include organic phosphorus. Effectively this caused the amount of available phosphorus shown on a soil test to plummet.

Some soil microbes - Bacillus, Psuedomonas, Enterobacter, Aspergillus - produce enzymes that will unlock bound up phosphate. When supported, these bacteria can 'solubilise' upwards of 50 kgP/ha/yr. Fertiliser inputs can only be reduced safely by increasing the activity of phosphorus-solubilising bacteria. Magnify products target these essential bacteria and allow for fertiliser reductions safely. It is common for Olsen P to increase 2-6 points after 2-3 years, even if no fertiliser is applied in addition to Magnify's products.

### Mobilising Potassium



Potassium is required for sugar production, enzymes, the formation of starch in plants and is essential for animals. However excesses in animals creates metabolic problems and poorer lamb growth rates, milk production, increased bearing ewes and death rates with no known cause. Potassium in plants has to be regulated for animals to thrive and that role is largely done by soil microbes.

Potassium has huge reserves in the soil (30-50 tons/ha in top 150 mm) but very little is solubilised for plants at any one time. It leaves the farm at similar levels to phosphorus. Bacillus, Psuedomonas, Enterobacter and Aspergillus bacteria produce potassium-solubilising enzymes and acids. Magni-Life either directly and/or indirectly helps regulate the uptake of potassium by pastures. Excess uptake is reduced and low levels are generally increased. Magnify products target these essential bacteria and allow for fertiliser reductions safely.

### Mobilising Sulphur



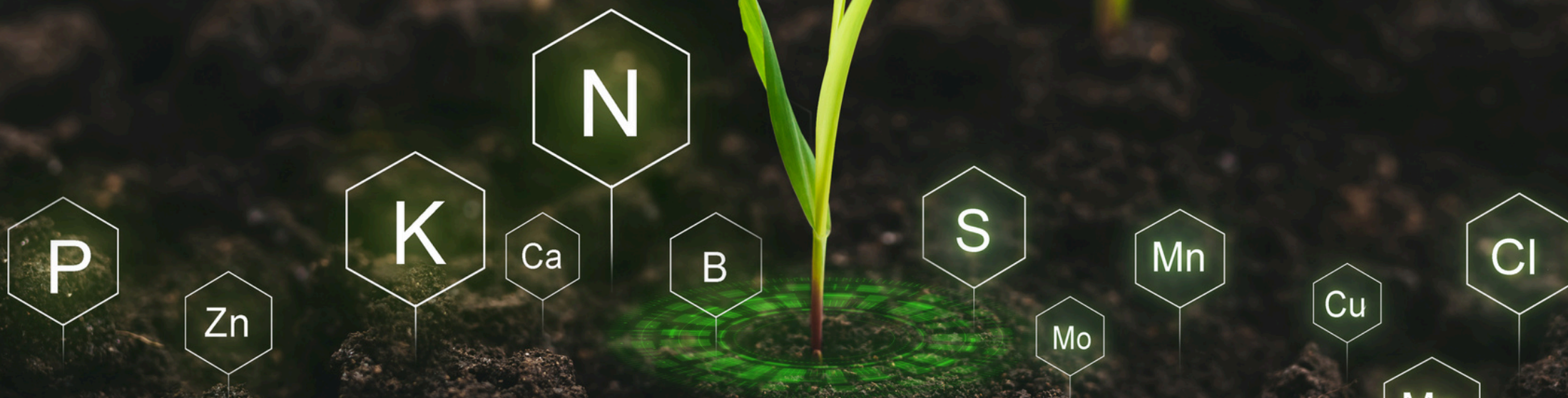
In terms of volume, sulphur is required (as much as phosphate) for plant/animal growth and health. In its natural form it is not soluble in water, does not leach and has to be converted into water-soluble forms plants can utilise. Water-soluble sulphates are what is measured on most soil tests and is highly leachable. In natural systems the conversion from insoluble sulphur to soluble sulphates is a just-in-time system. Leaching of sulphur would lead to the death of the ecosystem. In a natural system, water-soluble sulphates should be low in soil tests but adequate in the plant. Fertiliser companies and universities have mostly convinced the world otherwise. Magnify has dairying clients who have not applied any sulphur fertiliser for 20 years and production hasn't dropped at all. The natural systems are working properly. Most industrial sulphur comes from reducing waste from natural gas and oil production.



## Sales FAQ

### *Other minerals*

Some soil microbes – Bacillus, Psuedomonas, Enterobacter, Aspergillus – produce enzymes that will unlock bound minerals like calcium, magnesium and trace minerals. Over the years, we have commonly observed a balancing of trace elements in the pasture. There are about 800-1200 kg/ha of all the trace elements in soil reserves just waiting for soil microbes to solubilise them for plants. Losses through production are small eg 1600 kgMS/ha contains about 1-3 gm copper, 62 gm zinc, 1 gm manganese. Herbage tests indicate the levels of uptake.





## Sales FAQ

### *Plant growth-promoting bacteria*

As plant roots grow through the soil they collect bacteria and fungi on their roots in an area called the rhizosphere. Some soil microbes - Bacillus, Psuedomonas, Enterobacter, Aspergillus - produce substances that actually enhance plant growth. These biochemical substances are quite varied in nature and include hormones that influence the way cells multiply and grow - indole acetic acid, cytokynins, auxins, gibberellins, plus organic acids such as humic, fulvic, acetic, malic, propionic acid - and vitamins, to name a few. In addition, roots have very short lives unless they have the right kinds of soil microbes to help them resist pathogens and thrive. Soil microbes even influence the flavour of plants, plus the sugar and protein content. Recent science studies have shown that some psuedomonas species (that Magnify targets) increase the anti-cancer properties of the plants in the study. Magnify NZ is all for reducing cancer rates.

Magnify supports the growth-enhancing, root-protecting soil microbes giving stronger growth and more roots for better water and nutrient utilisation. Better stock health and huge reductions in Urine nitrogen/leaching are part of the benefits. Carbon emissions are reduced through lowering nitrous oxide emissions, most of which come from urine nitrogen outputs. Within 12 months these essential environmental advantages are taking effect.

After 2 seasons and in spite of 190 kgN fertiliser per hectare, lyimeters are showing 89% less nitrate in the water from Magnify treatment.







## Sales FAQ

### *How do I use them?*

You've done good with the chemical side of the 'wheel of life'. Our products can now help you get the biological side of the wheel spinning and give your current inputs a boost.

Because they're liquids, they're easy to use in conjunction with your current inputs and during other routine seasonal activities. Apply through irrigators, spray conventionally or – in the case of animal supplements – administer orally. This integrated approach makes change simpler and less stressful.

Timing and application are key for best performance – we can advise on that. We'll also help you measure and understand performance so you can be confident you're getting value out of them.

For better pastures and feed quality, we recommend first dosing with Magni-Life, a fast-acting live product that immediately inoculates soil with organisms that stimulate growth and gets things started. Then continue with Magni-Grow to promote sustained, strong regrowth of dense, sweet grass that stock find highly palatable.

Magni-Lamb can be used as an alternative or complementary to drenching as a comprehensive nutritional feed supplement that optimises digestive health and assists rumen performance.

Magni-Calf is a concentrated blend of microbes formulated to assist calf development, in particular rumen and digestive tracts in the first eight weeks.

*I already get great results from my current regime. Why do I need these if they're not a replacement?*

We've been developing and refining our products for over 20 years. They've all been tested, trialled and proven on New Zealand farms in local conditions and stringently evaluated to ensure they do what we say they do.

Some of our products offer an almost instant boost in performance when used with current inputs, but we've also seen incredible results from our long-term customers. Some even say the knock-on benefits are so widespread and significant that increases in yield have become an added bonus. We'd be happy to put you in touch with them, or you can read our case studies on the website.

Rather than replace your current regime, our products can work in conjunction with your chemical inputs to get enhanced results with almost no extra effort. But this is just a short-term gain and doesn't reflect the truly extraordinary performance you can achieve with long-term use. Given time, you'll notice soil becomes healthier and able to stimulate growth itself, reducing your chemical and irrigation needs and costs. Of course, you could choose to make the switch right from the outset – we can help you manage this process for best results.





## Sales FAQ

*If they're so good,  
why isn't everyone  
using them  
already?*

Because up until now chemical inputs have been doing the trick so there wasn't much appetite for doing it differently. Change takes time. Obviously now is a period of change as we know we can't go on using chemicals the same way forever. We're hearing from more and more farmers who want to know how else they can farm.

Also, people are 'creatures of habit' and farming is an industry tied together with a lot of relationships. Mates stick with mates; we tend to follow what everyone else does so we can be part of the pack. Add to that the relationships with various consultants and reps many of us have relied on to guide us in what products our farms needed. There's trust, friendship and money on the line in shifting away from that, so it's not easy.

However, we now know chemicals have got us into a sticky spot environmentally, and in the future they won't be the go-to 'fix all' they once were.

*Is it expensive?*

Is anything in farming cheap, really? In terms of price vs value, we are totally confident you get back far more than what you invest, if used correctly and for a reasonable length of time. Historic feedback from clients tells us a normal cropping farm and/or dairy farm has an extra \$500-1500/ha to be made from using Magnify either in place of – or in conjunction with – existing inputs.

As an example, Magni-Grow after three months of reasonable Spring or Autumn growth, the cost/returns are usually below 5 cents/kgDM.

The best thing about many of our products is the benefits compound over time. As soil becomes healthier, input costs and workloads are reduced ... feed becomes more abundant and nutritious, reducing reliance on other supplements and buying in feed.

*How does response to  
applied nutrients  
change ?*

There are many mechanisms behind this. Our products increase root mass which increases the surface area in which nutrients and water can be absorbed. A change of 0.5 ml in the thickness of the root lifts the surface area by 15%. Then add increases to the root branching of 30% and depth of 30-100% etc. That's one large transformation. Changes in soil temperatures begin to transform the growth in the shoulders of seasons. Early fertiliser works more efficiently, giving bigger responses than previously experienced. Then there is the growth-promoting bacteria to further enhance growth from applied nutrients and from growth promotants like gibberellic acid. We recently measured a Banks Peninsula sheep farm which got over 1600 kg extra growth in just 32 days starting in late August. Only 9 kg of nitrogen was applied. The extra feed paid for Magni-Grow in less than 3 days. Magnify is a 'game changer' – obliterating the 10 : 1 nitrogen response paradigm.





## Sales FAQ

*People must be skeptical for a reason though, right? Such-n-such reckons ...*

Let us stop you right there. Of course other people reckon our products are no good and they know better. In some cases, we're taking your money away from other businesses and they'll do anything to keep it. Other people just don't like change. They think you're mad for doing something different from them. Another thing, there's also a little bit of ego at play, because if you get it right it means they're wrong. They're probably a bit envious of your success too.

It takes 'balls' to break away from the pack and do something different, let alone try something new. But we're confident the brave will be rewarded with peace-of-mind for generations, thanks to land that regenerates and 'self-perpetuates'. Since Urea restrictions were proposed, acceptance of our products is rapidly changing. Even the big fert companies are recognising the benefits of soil fungi for reducing leaching and increasing growth. Truth eventually displaces the negativity and knockers. We've been leaders.

*Why are you called Magnify?*

Just like our name promises, given time our products offer compounding knock-on benefits that become more frequent and significant ... workload, inputs and costs are reduced ... and outcomes are boosted as pasture and animal health gets better and better (in many different ways) the longer you use our products.

*How can I balance profitability now and sustainability long term?*

We're not saying change is easy, but it can be simple. We've designed our products to be a practical and effective way to 'step-your-way-to-change' with minimal risk.

By getting the biological 'wheel of life' rolling in your soil, we can unlock nutrients already there and create a growing environment that needs less irrigation and chemical inputs, fixes nitrogen and leaches less - all while still remaining profitable.

Our products are economical and easy to use in conjunction with your current inputs to give them a healthy boost. And after more than 20 years of independent trials and farmer feedback, we're confident they'll help give you the short-term gains you need to invest in even better long-term improvements.







## Sales FAQ

*I'm sick of hearing about nitrate levels!*

The pressure for change is frustrating and maybe a bit scary, no doubt. But it's happening and choices will either be made by you – or for you. We put the power back in your hands. Water quality and carbon emissions are part of NZ's International Trade Commitments. The World Health Organisation has dropped the recommended nitrates in fresh water from 11.2 mgNO<sub>3</sub>N/L to 1 mgNO<sub>3</sub>N/L and pressure is building to reduce drinking water standards to this, due to cancer risk studies. This issue isn't going to resolve itself and disappear, regardless of what the current government does. NZ is/was proposing 2.4 mgNO<sub>3</sub>N/L.

In 2022, Magnify proved it could reduce nitrate leaching by 90% in spite of full Urea usage. The nitrates in drainage water beneath Magnify-treated lysimeters were 91% lower than without Magnify. Nitrates dropped from 45 kgN/ha (15 mgNO<sub>3</sub>N/L) to 3 kgN/ha (1.2 mgNO<sub>3</sub>N/L). A 'super DCD effect' was evident. Production increased from 440–510 kgMS/cow and empty rates dropped from 24% to 11%. Farmers must 'get this' or the only other way to reduce leaching to the same extent is reducing stock numbers 90%. Magnify products were created to solve these issues for you, future-proof your farm and give peace-of-mind for generations.

*I've seen paddocks that have used Magnify and it was hard to see the growth*

**We always say, when it comes to pasture, 'thick is the trick', and both our clients and our 1985 Lincoln Uni Technical Budget Manual (pages 9–22) completely agree with us.**

With so much info to process, how grass tastes and smells is understandably low on the list of priorities for farmers. But it's one of the very few cares and needs your stock have so it's worth considering.

Long grass is often full of water, lacking in quality nutrition, and animals don't like it unless they're hungry. Good pastures should be measured by density (ie more tillers and leaves) as this means there's less dead grass in the bottom of the sward. It's sweeter and stock eat it right down. In small trials the stock eat our Magnify pastures typically 300–600 kgDM/ha lower than untreated pastures. They save up their appetite for the sweetest pasture. This means you have to measure 'pre and post grazing' to get an accurate assessment in trial comparisons. Assuming there's a 1500 kg residual doesn't 'cut it'. DairyNZ says the goal of grazing to 1500 kgDM/ha is to do with adequate palatability and consumption. Lower grazing residuals are very positive for production. Pasture can regrow very quickly from lower grazing residuals.

Our products increase energy levels in plants as well as growth rates to get more protein production from dry matter. Better feed conversion = more production, healthier stock, less urine patches and uneaten grass.

People are hard-wired for assessing grass from height and colour. We simply can't see 16% versus 18% dry matter content nor a 5% change in pasture density, yet that represents an extra ~500 kg high quality feed per grazing. It takes about 3–4 months to adjust your eye/brain calibration to the kind of superior grass that Magni-Life and Magni-Grow produce.

For farmers unfamiliar with pasture growth rates, extra growth of 10kgDM/day equals roughly two bales/ha/per month. An average balage weight is 170–200 kg dry matter. So over 100 ha at \$120/bale – that's a potential saving of \$18,000/month.



## Sales FAQ

*Why go ag-bio? ...  
why did you create  
these products?*

In Scott Hobson's words : "There were several reasons ... even prior to 2001 the science was clear that animals eating grass flushed with extra nitrogen fertiliser would create water quality issues. Every other country in the world that followed the nitrogen fert path, eventually had severe restrictions enforced on them. Most people saw only a choice between economics or the environment. I saw we could have both but we had to change the way we looked at things. As it turns out, I've been right.

I was a Lincoln Uni Ag Sci graduate trained in traditional nutrient thinking. I had measured over 40 grass trials comparing fine particle application with traditional fertiliser. I promoted Albrechts base saturation theories. I supported limeflour and sulphur on hill country, trace element use for animal health etc. Understanding how soil micro-organisms could work for us was the next step in my career. Farmers had increasing issues with animal health, profitability, disease pressure and fertiliser/nitrogen use which were ultimately not sustainable for the environment. The minerals we apply on farm are all mined (except nitrogen) and one by one they become harder to get and more expensive. Future generations need them as well. They have been treated as commodities. Commodity-based companies only make more money by convincing you that it's all required. The environmental impact of excess fertiliser is a huge problem worldwide. Farmers rely on others to tell them what they need. The issue has been in the advice. I saw that ag-bio, if done well, could 'tick all the boxes' and make fertiliser use far more efficient, amongst other benefits."

1000 kg milk solids removes approximately 12-14 kg of phosphorus, potassium, sulphur calcium. 15 lambs at 40 kg liveweight removes 3.2 kg phosphorus. Please stop and work out how much is actually leaving your property versus what you are applying. When beneficial soil microbial processes are magnified we have seen that there is no loss of grass growth from reducing fertiliser back to what actually leaves the property (or less). When fertiliser is applied, the aim is to increase the plant's response to it ... we want gains in efficiency.





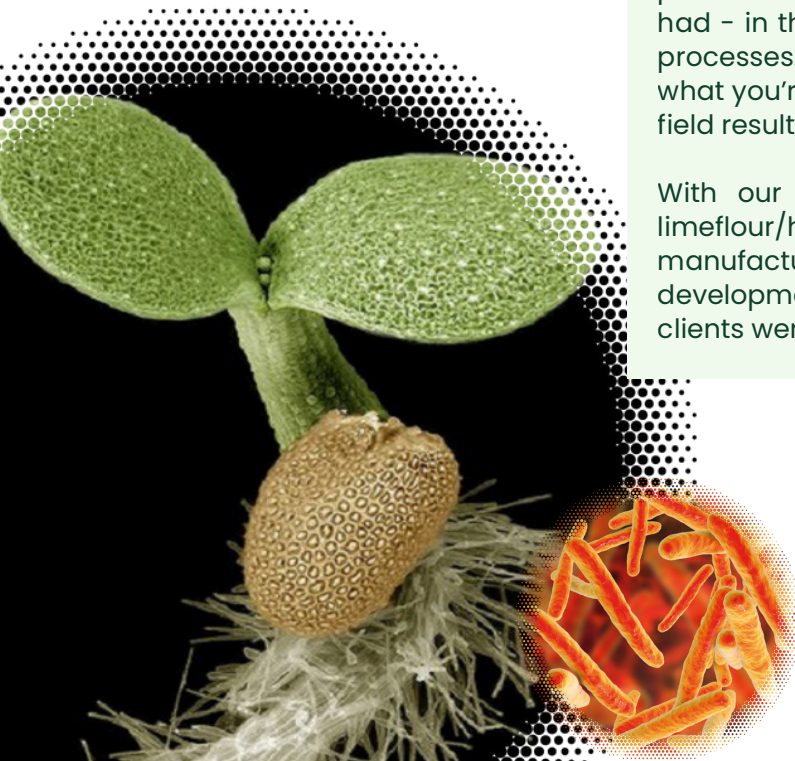
## Sales FAQ

*Why did you choose  
microbe-based  
products ... not fish,  
seaweed or humates?*

I used humates with limeflour extensively prior to 2001 and found sporadic results. The plants responded so much stronger to our developing bacteria/fungal bases and for so much longer than any fish, seaweed or humate I had seen. I had measured positive, neutral and even negative results from other ag-bio systems. Many of these positive results tended to be 'fluff' in the first 3-5 weeks, then nothing much after. My clients wanted the most profound benefits to develop stronger with time, in addition to short term gains. They wanted 'grass with guts', ahead of green fluff. Another huge advantage I saw was that with microbe-based products, we could apply every bacterial and fungal group needed to transform the whole soil system. It was clean and wouldn't block spray jets. We selected organisms and created processes to make them tough enough to survive nearly anything nature could throw at them - spray pressures, droughts etc - which was unique.

Before going to market, I trialled many different methods of manufacturing microbe-based products including compost processes, aerobic and anaerobic systems. I trialled anything being touted by a soil microbiology professor. Nearly all of them had done no scientific studies or even field trials in this country, yet all of them had - in their own view - 'superior theories'. Nothing much has changed. I settled on the best, most reliable processes. It's easy to make something bubble and add a bunch of marketing words that sound like you know what you're doing then sell it to folks lacking knowledge on the subject. Getting intense, consistent and reliable field results is very different - which is what we have achieved.

With our products, we observed more soil changes in 10 weeks than we had in 12 months using limeflour/humate mixes. So I worked hard to get our microbe-based products powerful and reliable ... altering manufacturing processes, lab testing, then field testing (with measuring along the way). A constant cycle of development, frustration and eventually exhilarating breakthroughs. We haven't stopped this process. Our clients were behind us all the way.



## Sales FAQ

*All this bio-stuff sounds similar to me ...*

Your point is valid. Soil and plant ecosystems are universal, so the broad descriptions are similar with a similar message – BUT products are very different.

The microbial world is complex. Many microbes produce quite different compounds depending on food type and environment. For example, brewers yeast can make really bad beer, great red wine, breads, proteins and medical products that are nothing alike.

A soil product may quote the benefits of one organism – such as *Pseudomonas* bacteria – on root development but there are 199 different species of *Pseudomonas*, many of which are very undesirable.

There can be cheap, nasty-tasting home brew – or great chemical-free red wine, and only one is good for health. The results are the most important thing because your livelihood depends on it.

Our clients want reliability and choose us because we've done the hard graft to sort through the b...s... and intense confusion that surrounds the industry.

*What distinguishes Magnify?*

**One of the things that distinguishes us from other bio-ag companies is Magnify products have 21 years of research, testing and development behind them for NZ soils and climate.**

We have always encouraged our clients to measure growth rates which includes measurements immediately post-grazing. We have done over 200 half-paddock field comparisons (independently set up) – with many under 'trying conditions' – to find the limits of Magnify products. Our in-house data was then supported by field trials measured by Mr Stan Winter across 5 different locations in Northern Southland. 900–3200 kgDM/ha for poor and good conditions respectively. The grass growth is fairly well spread which is better for grazing management. Some paddocks will keep growing extra for over 14 months from just one application. Dr John Field-Dodgson saw that even after 12 months, very significant regrowth was possible following drought conditions.

We have been committed to constant development and have had 4 significant breakthroughs in 21 years. Magni-Grow was created in 2020 and is proving more intense than its successive predecessor products. For example, in April 2022 we grew an extra 1200 and 700 kgDM/ha in just 5 weeks on new and older pastures respectively. The regrowth since grazing ended (mid July) has been 459 kg to end of August, with more to come. Another example – by adding 9 kg liquid N + a half rate of Gibberellins to Magni-Grow, a Banks Peninsula sheep farm grew an extra 1600 kgDM/ha within just 32 days (starting in late August). 3rd example – a Canterbury dairy farmer grew an extra 400 kgDM within 47 days starting in Mid June 2022. Have you ever measured better? That's what distinguishes Magnify!





## Sales FAQ

*I reckon I can fix it better ...*



Most men deny having 'I can fix it better' syndrome. But I hate to tell you, it's in our DNA! Just ask your wife or partner. So for all men who can't contain their 'I can fix it better' impulse, these tips might help you when things don't go as you expect. International markets have changed so much that the future of NZ's international agricultural trade is dependent on you reducing your environmental footprint successfully. We all need you to succeed. Magnify NZ also wants you to increase profits which typically means growing more grass for less cost. Increasing soil life is essential but it must be balanced. If you're going to mix different products together (which you will) then you've got to know what you're doing.

Magnify products are designed to reduce leaching and nitrous oxide by slowing down the transfer of ammonium to nitrates (like dcd's did), leaving very little excess that can be leached (while increasing pasture growth). There are only a few organisms that can make fertiliser nitrogen into plant-available nitrates and they determine the pace of daily transfer-of-nitrates which other micro-organisms and plant growth depend on. Soil microbes get first bite at the nutrients in the soil. As you increase the soil life, they absorb nitrogen that the plants could have utilised. The difference between 'poor soil life' and 'great soil life' is measured in tons per hectare. Even a small increase in soil biomass, eg 200 kg/ha, absorbs roughly 600gm of nitrogen from the plant-available pool. Bacterial growth is exponential so the nitrogen absorption can increase rapidly, eventually reducing pasture growth. A 'forwards and backwards' scenario occurs. The first 5-6 weeks can look fine, but after this plant growth can slow down below base line levels.

You might apply nitrogen on a monthly basis but it's important to understand that it's converted to plant-available nitrates on a daily basis - a little per day. For example, to grow 50 kgDM/ha requires around 2 kg nitrogen to be transferred per day. There is very little leaching in Spring because plants will absorb nearly all of that and more. There is little excess nitrogen on a daily basis. If you increase the overall soil microbial life faster than nitrogen transfer bacteria can keep up, you risk slowing pasture growth down because the microbial growth is taking nitrogen from the plant-available pool. In your enthusiasm to maximise soil life you unintentionally overstimulate the soil life beyond what the nitrogen transfer system can keep up with. 'I can fix it better than Magnify' may not work out how you hoped.

There is another issue that often arises with replacing solid nitrogen with liquid nitrogen. After sport 'where the food is, the people are'. So too with plants - roots go to food first and water second. If all the food is placed in the top of the soil then the plant roots may stay at the top, leading to compaction, poorer water utilisation, increased leaching and poorer growth. It typically takes 3 years for this issue to show up. So keep an eye on it if you've converted to liquid nitrogen.

Magnify products have 21 years of research, testing and development behind them for NZ soils and climate. We know what works safely. They're exceptional at increasing soil life in a balanced, progressive manner, but you can unintentionally interfere with that. Best to ask us first - phone 0800 66 88 100.



## Sales FAQ

*How do plants grow better with less nitrogen?*

Plants grow from photosynthesis creating sugars and carbohydrates. Some enzymes containing nitrogen are used in photosynthesis, but not all nitrogen compounds are used in photosynthesis. As long as there's an increase in photosynthesis then pasture can grow stronger with lower nitrogen levels. Sometimes scientists refer to differences in structural protein levels versus non-structural protein to explain increased growth with less nitrogen. Making protein is infinitely more energy-intensive than making carbohydrates.

*How do animals grow better with less protein in the diet?*

Milk and meat production is limited by energy. It takes a lot of energy to deal with excess protein in the diet. Low carb diets use this principle to burn more energy than is being consumed. That's energy that's not going into milk or meat production. Nutritionist Dr Lucy Waldron says that a ruminant can't process more than 16% protein (2.6% nitrogen), yet many NZ pastures have in excess of 25% protein. The consequences are lower weight gains and milk production, higher empty rates in dairy cows, higher lame rates etc. Lower dietary protein does not create lower protein content in the milk.

*Microbes freak me out!*

Understandably so. We mostly hear about the negative bacteria so this creates generic fear and scepticism. Humans have been benefiting for thousands of years from microbes in cheese, butter, yoghurt, sauerkraut, bread, fermented meat and blubber, vinegar, soy, beer, wine, whisky (and all other 'medicinal drinks') - and in recent times - vitamin C. The most powerful healing substances are antibiotics and they are mostly derived from soil fungi. So if you enjoy any of those, then let your land and water enjoy Magnify's beneficial soil micro-organisms ... it's a good thing. Your land will feel as grateful and relieved as you do after a long hard week in hot weather slurping down an ice-cold beer ... praise the yeasts!





## Sales FAQ

*Afraid of change?*

*Safely navigate change!*

WE ALL RESIST CHANGE. With respect to environmental issues, using well-established principles like riparian planting, fencing off water courses etc is a step in the right direction. Unfortunately, to meet international climate and local fresh water commitments, a lot more is required and Magnify is an easy solution. In 2025 NZ starts paying tax on nitrous oxide emissions (N<sub>2</sub>O) according to binding international climate commitments. In New Zealand, N<sub>2</sub>O emissions from animal excreta account for about 50% of the country's total N<sub>2</sub>O emissions (de Klein et al. 2001). Total N<sub>2</sub>O emissions make up about 20% of New Zealand's total greenhouse gas emissions inventory. Many studies have shown that reductions in nitrous oxide emissions are closely linked to reductions in nitrate leaching. For example, Di and Cameron (2006) found a 59% reduction in nitrates reduced nitrous oxide 82%. Magni-N-Enviro has reduced nitrate leaching by over 90%.

Embracing something new usually occurs at a natural pace. Studies have shown that traditionally it takes 20 years for sheep and beef farmers to accept new technology and 10 years for dairy farmers (about 10% of farmers are the exception). We no longer have that luxury. People have good reason to be cautious with new technology as it's possible to have detrimental long-term effects in an unrelated area. This is typically associated with new 'wonder chemicals' - like the nitrification inhibitor dicyandiamide (DCD) - which reduced leaching and nitrous oxide but was later banned due to increasing the risk of cancer. However Magnify's products are very different. Magnify concentrates beneficial soil bacteria and their natural gifts. These principles are hundreds of years old and are without issue. There has been only beneficial implications for animals and people.

The other major barrier to change is fear - something not working and risking the farm. Traditionally much of it is justified. That's why Magnify started extensively trialling its products in 1999 in many different locations and degrees of difficulty. We established the boundaries and consistencies. We were a bit OCD on this. To our knowledge, no other NZ company has challenged their products so extensively and been successful - not only in getting extra growth but in beating traditional fertiliser standards. No new products will be able to confidently do that fieldwork as it takes 10-15 years to see longer-term trends and risks which is beyond the time frame that NZ has to meet international climate commitments. Time's not on their side. Magnify is well-prepared to help you achieve what's truly required in the near future.





**Order or discuss further :**

**Scott Hobson B Agr Sc**

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**[www.magnifynz.co.nz](http://www.magnifynz.co.nz)**



# Potatoes

## Compatability Chart

**magni-Grow** **magni-Life**

Magni-Grow		Yes
Fertiliser	Yes	Yes
Chemical	Yes	No

Note : disease suppression and crop growth is accumulative – the more Magni-Life you apply to this crop the more subsequent crops benefit ... there is a flow-on compounding effect

emergence

flowering

sowing  
-2 0

Growth stage 3

moulding

tubering

harvest

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

**Magni-Life**  
**@2 L/ha**

**Magni-Life**  
**@2 L/ha**  
**Magni-Grow**  
**@7 L/ha**

**Magni-Life**  
**@2 L/ha**  
**Magni-Grow**  
**@7 L/ha**

This programme is to show where Magnify is best used and is not intended as a complete crop programme replacing fertiliser and chemicals.

Scott Hobbson

021 38 48 49

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## Compatibility Chart

	 Magni-Grow	 Magni-Life
Magni-Grow		Yes
Fertiliser	Yes	Yes
Chemical	Yes	No

This programme is to show where Magnify is best used and is not intended as a complete crop programme replacing fertiliser and chemicals.

emergence

sowing

20 days

40 days

flowering

pod forming

Magni-Life  
@2 L/ha

Magni-Life  
@2 L/ha  
Magni-Grow  
@5-7 L/ha

Magni-Life  
@2 L/ha

For beans  
Magni-Life  
@2 L/ha  
prior to pod  
forming



**.magni-Grow** 5-7 L/ha

Adding 4-10 kg of  
liquid nitrogen can  
also be beneficial

**.magni-Life** 2-3 L/ha

**.magni-Grow**

When plants  
are at about  
4 leaf stage

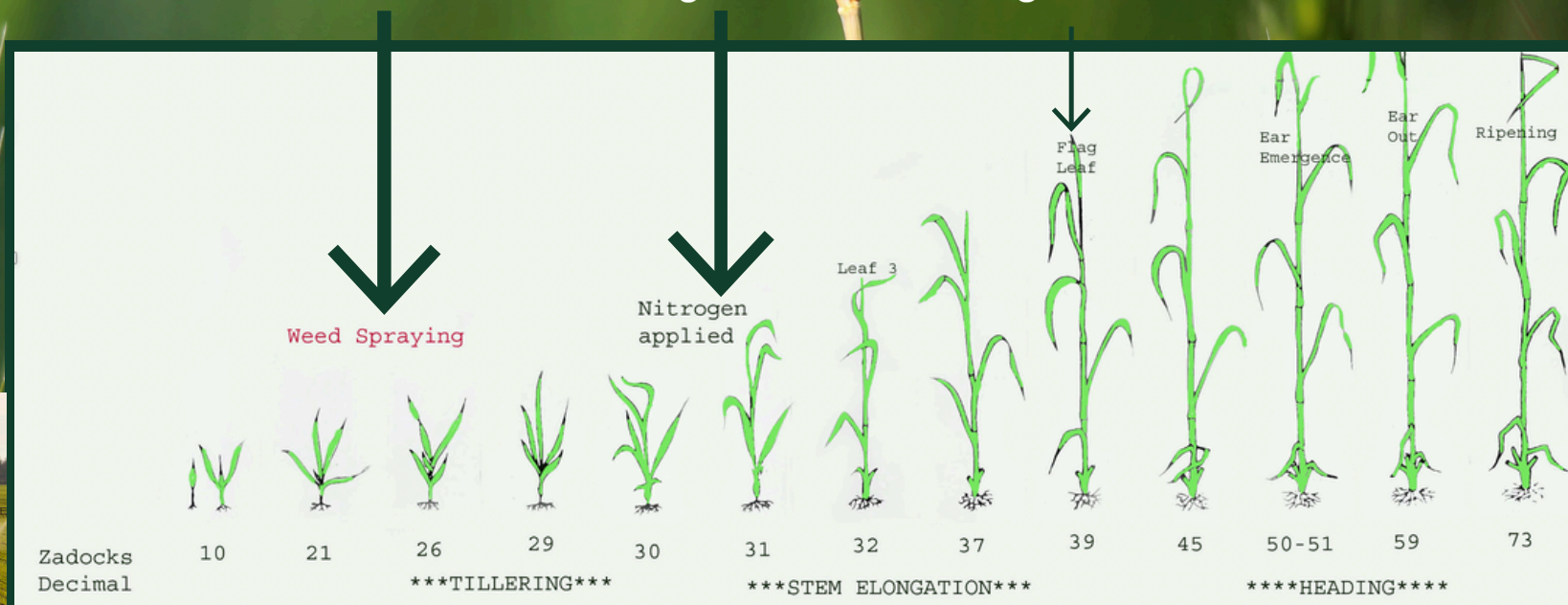
**.magni-Grow**

**.magni-Life**

**.magni-Life**

This programme is to show  
where Magnify is best used  
and is not intended as a  
complete crop programme  
replacing fertiliser and  
chemicals.

Add 2-3 L/ha of Magni-  
Grow when preparing for  
crop. Can be added to  
Roundup when spraying out  
previous pasture/crop  
- or used on its own.





... every application of Magnify  
also adds to the next crop

LIFE FOR SOIL  
SOIL FOR LIFE

## Investing for your future ...

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### .magni-Grow

With chemical gives a better kill and plants breakdown faster. This produces organic acids that stimulate the new plants to produce more roots.

Promotes root development and boosts plant growth. Builds soil health but not as strong as Magni-Life in building and maintaining soil health or suppressing disease.

### .magni-Life

Promotes root development and plant growth. Helps protect new plant from diseases. Can be applied many times throughout crop life to suppress disease.



The aim with our cereal crop programmes is to set up stronger roots and tillers.

This programme aims to give increased yield and perhaps, more importantly, starts to enhance free living nitrogen-fixing bacteria not associated with legumes. After 2-3 years, bagged nitrogen requirements go down significantly. Clients have shown it's possible to use 10-15 kgN/ton year after year without legumes. The amount of nitrogen fertiliser required is dependent on the amount available in the soil.

Magni-Life is our strongest disease fighter and soil sustainer/regenerator. At rates of 4-10 L/ha we use it for building resistance to - Take All, Sclerotinia, Fusarium, Phytophthora, Blight, Scab, Botrytis - all the common crop and root diseases. As 'life breeds life' - the more we apply, the more the diseases are out-competed.

Most of our clients apply 250-300 kg of 20% Pot Super as a base fertiliser for cereals.



# Brassicas & Fodder beet

## Compatibility Chart

Magni-Grow		Yes
Fertiliser	Yes	Yes
Chemical	Yes	No



Add 3 L/ha to glyphosate when spraying out paddock

Apply 7 L/ha when crop is 10 cm high and again when 80% canopy cover

Adding 4-10 kg of liquid nitrogen can also be beneficial



Apply 2 L/ha at 80% canopy cover for disease suppression

Brassicas are sensitive to chemicals. We recommend caution when adding Magnify to chemicals for brassicas. It is safest to do separately. Do not apply if you have used a herbicide with a soil residual.

This programme is to show where Magnify is best used and is not intended as a complete crop programme replacing fertiliser and chemicals.

## Swedes

Apply Magni-Grow when bulbs first start forming



## Compatibility Chart

	 Magni-Grow	 Magni-Life
Magni-Grow		Yes
Fertiliser	Yes	Yes
Chemical	Yes	No

This programme is to show where Magnify is best used and is not intended as a complete crop programme replacing fertiliser and chemicals.

Paddock shut  
fertiliser

Seed forming

Harvest

weeks 0 2 4 6 8 10 12 14 16 18 20

Note : Fertiliser  
100 kg Crop 15  
or something  
with NPKS.  
Important not  
to overfeed  
plant.

**Magni-Life**  
@2 L/ha  
**Magni-Grow**  
@7 L/ha

**If required**  
calcium  
ammonium  
nitrate or  
Urea/ammo  
60-80 kg/ha

**Magni-Life**  
@2 L/ha  
**Magni-Grow**  
@5 L/ha



For animal products go to  
[www.magnifynz.co.nz](http://www.magnifynz.co.nz)



## The logo for Magni-Lamb, featuring a stylized 'M' with a yellow dot and a pink-to-purple gradient, followed by the word 'magni-Lamb' in white lowercase letters.

Magnifies lamb and ewe health/growth

Many farmers successfully reduce worm drench use

## The logo for Magni-Calf, featuring a stylized 'M' with a yellow dot and a pink-to-purple gradient, followed by the word 'magni-Calf' in white lowercase letters.

The best probiotic for rumen development  
and calf health

Magnifies food digestion and growth rates

Makes rearing great calves an easier task  
(even for beginners)



# NOTES PAGES

## Please jot down questions/recommendations below

Communicating the technical aspects of soil microbiology is very challenging and we have sought the guidance of the best branding company in the country. This included advice/help on how to turn technical information into everyday language. But it's an ongoing process that will need modifying, depending on your feedback. Any comments or further questions you have from reading this booklet will help us refine our message to be more appropriate for other farmers.

We also have placed educational videos on our website which will expand your understanding of soil microbiology and how these products can enhance your farm's profit and sustainability goals. Thank you so much for your support.



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