

# STIMULATES PLANTS to THRIVE

Organic biostimulant seed treatment for cereals and pulses



## BUILDING RESILIENCE

starts with the seed



### **BUILDING RESILIENCE** with Newton®

One of the recent biostimulants to the market - demonstrating proven benefits in the field - is Nichino's biostimulant seed treatment Newton.

Managing the balance of growth promoting hormones versus growth inhibiting hormones, Newton not only stimulates faster germination, it also signals exceptional root and shoot growth and the defense systems of plants.





#### **OPTIMISED ESTABLISHMENT**

Achieve faster, more consistent seedling emergence and vigorous early growth.



#### **ENHANCED RESILIENCE**

Arm your crops against winter stresses, drought, pests, and diseases.



#### SUSTAINABLE SUCCESS

Promote soil health and reduce your reliance on synthetic inputs.

#### WHY FARMERS GROWING WITH NEWTON®, HARVEST WITH CONFIDENCE

#### STIMULATES PLANTS TO THRIVE NATURALLY

Based on plant-sourced signalling peptides – a type of plant hormone – Newton is the natural eco-friendly alternative to chemical seed treatment that stimulates plants to thrive naturally.

#### **HEALTHIER PLANTS** FROM SEED TO HARVEST

Newton nurtures crops from their earliest stages, ensuring robust growth, improved resilience and maximum yields come harvest.

#### TRANSFORM YOUR SEEDS TRANSFORM YOUR SUCCESS

Imagine a season where every seed counts. With Newton, you give your seeds the best start possible.

#### **FASTER GERMINATION**

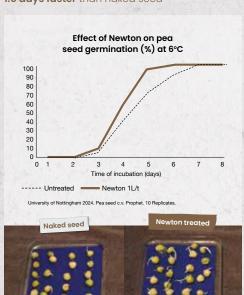
Newton speeds up germination, leading to faster emergence over naked seed and chemical dressings.

Replicated germination studies carried out at the University of Nottingham in 2019, showed Newton brings forward wheat seed germination by two days in comparison with naked (untreated) seed, and by 1.5. days when compared to the chemical dressing Vibrance Duo (fludioxonil + sedaxane).

Further germination studies at the university in January 2024, also confirmed benefits in pulses, with Newton providing enhanced seed germination in both peas and beans at 6°C.

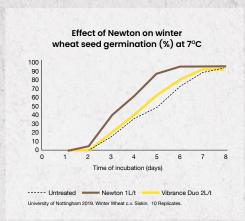
For peas, the time taken to achieve 90% germination was improved by around 1.5 days and for beans by two days.

### Faster germination – peas 1.5 days faster than naked seed



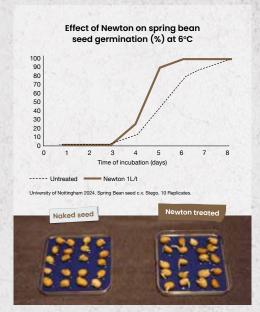
#### Faster germination – wheat

2 days faster than naked seed1.5 days faster than Vibrance Duo



#### Faster germination – beans

2 days faster than naked seed



#### **FASTER EMERGENCE**

Farmers regularly experience healthier, faster to emerge crops compared to naked seed and chemical dressings.





"Newton treated winter oats emerged 2.5 days faster than naked seed."

**Matt Waldie,** Farm Manager, Fife





"Newton puts our crops streets ahead on emergence and rooting. Newton treated seed emerged two days faster than naked seed and four to five days faster than Beret Gold plus Latitude."

**Simon Bayliss,** Farm Manager, Staffordshire

#### CONSISTENT EMERGENCE

Newton Increases the number of plants establishing per sqm.

#### **Versus Beret Gold**



#### 9% more plants per sqm

This was seen in UK 2019 replicated field trials looking at the effects of Newton on Beret Gold (fludioxonil) treated wheat established at various seed rates and drill widths. Newton increased the number of plants per sqm by 9% which was statistically significant.

#### In late drilled wheat



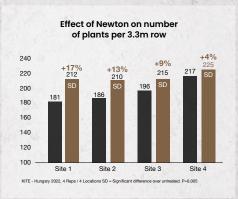
#### 12% more plants per sqm

Agrii field trials in 2019 looked at the effect of Newton in October and November drilled wheat. There were benefits to plant establishment at both timings with increases of 7% and 12%, respectively.

#### Different conditions - 4 sites



#### 4-17% more plants per sqm



#### **EXTRAORDINARY ROOTING BENEFITS**

Newton stimulates exceptional root growth, superior to many other biostimulant seed treatments on the market.

Newton helps plants access water and nutrients more effectively. Building an expansive root system from day one, is crucial for optimising nutrient use efficiency and withstanding drought and other environmental stresses later in the life of the crop.

#### More root mass



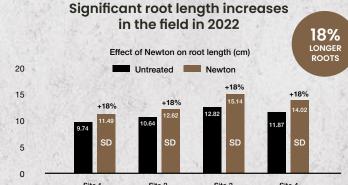
Up to 64% more over naked seed 20% more than Vibrance Duo

Trials at Nottingham University have demonstrated an average 43% increase in root mass in wheat and barley compared with naked seed - see graph (below) - and a significant increase of 20% over Vibrance Duo. Newton is equally impressive in pulses with increases of 28% in peas and 64% in beans versus naked seed.

#### Longer roots

#### 18% longer in replicated field trials

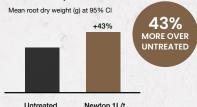
Newton continues to perform well in field trials with significantly longer roots over untreated seed, achieved at all four trial sites conducted in Hungary in autumn 2022.



KITE - Hungary 2022. 4 Reps / 4 Locations. SD= Significant difference over untreated. P=0.005

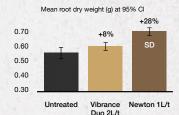
#### Significant root mass increases - cereals

#### Effect of Newton on early root growth in wheat & barley



University of Nottingham 2018 & 2019. Above: N=4 . 3x Winter Wheat cv Siskin; 1x Spring Barley cv Concerto

#### Effect of seed treatment on early root growth in winter wheat



University of Nottingham 2019 Winter Wheat c.v. Siskin. 10 replicates SD = Significant difference over untreated and Vibrance Duo

#### **Exceptional rooting in farm trials**

The extraordinary rooting benefits of Newton come through time and time again on farm.





Farm Manager Shropshire, & founding member and director of The Green Farm Collective



Wheat



S. Oats

MORE OVER



"Though to the naked eye there doesn't seem to be much difference between the untreated and Newton treated seed, the story underground is totally different. I dug up plants from each half and the roots were a good inch longer on the Newton treated wheat, taking more from the soil rather than rely on a synthetic source."

#### VIGOROUS FARLY GROWTH

Stimulating more shoot mass compared to naked seed, Newton increases crop vigour, giving plants a competitive edge in suboptimal growing conditions.

#### More shoot mass



#### 22% more than naked seed

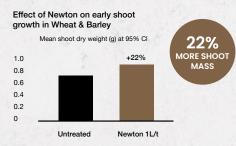
Replicated research at the university has shown an average increase in shoot mass of 22% in both wheat and barley, as well as a 15% increase in shoot mass compared with Vibrance Duo on winter wheat.

#### Improved tillering

#### More tillers when suboptimal

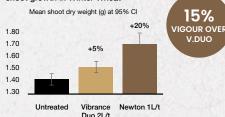
In replicated field trials, significant tillering increases of 13-23% have been achieved compared to naked seed in suboptimal growing conditions - see bottom graph below.

#### Improved vigour in cereals compared to naked seed & Vibrance Duo



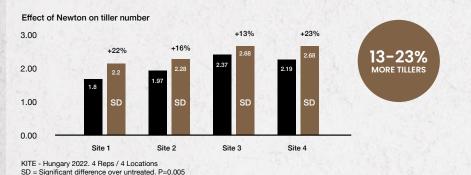
University of Nottingham 2018 & 2019. Above: N=4 . 3x Winter Wheat cv Siskin 1x Spring Barley cv Concerto

#### Effect of seed treatment on early shoot growth in Winter Wheat



University of Nottingham 2019. Winter Wheat c.v. Siskin, 10 replicates SD = Significant difference over untreated and Vibrance Duo

#### Significant tillering increases in the field 2022



#### Primes pulses to thrive



27% bigger pea plants



#### 57% bigger bean plants

With no chemical seed treatments currently available in pulses, Newton is a natural alternative to help optimise the health of these crops from day one.

As well as significant root growth increases of 28% in peas and 64% in beans, Nottingham University research has also shown significant shoot growth increases of 27% in peas and 57% in beans, when compared to naked seed.



#### Vigorous early growth and healthier plants on-farm

Whether it's to help replace chemical seed dressings or help overcome suboptimal growing conditions, the benefits of Newton continue to be experienced on farm.



David Fuller-Shapcott, Farm Manager, Scottish Borders

spring - Newton does it all."

#### HEALTHIER PLANTS FROM SEED TO YIELD

Newton grows healthier plants, helping to maximise your yields.

#### Yield gains in cereals

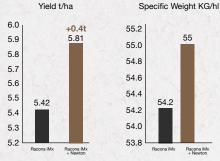
Treating seed is the best time in the growing cycle to protect yield potential, with Newton yield increases of up to 10% seen in trials/on-farm.

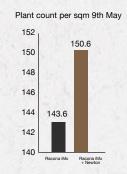
#### Effect of Newton on winter wheat establishment and yield Plants per 3.3m row Root length (cm) Av. no of tillers Yield t/ha 3.70 220 13.0 2.35 3.64 3.65 2.30 2.28 12.62 12.5 220 2.25 3.60 2.20 12.0 3.55 200 2.15 11.5 3.50 2.10 190 2.05 3.45 11.0 10.69 2.00 180 3.40 10.5 1.95 3.35 170 1.90 10.0

1.85

ungary 2022. 4 Reps. Winter Wheat cv Gabrio sown 5th October. PGP assessments 11th November 2021. SD = Significant difference over untreater

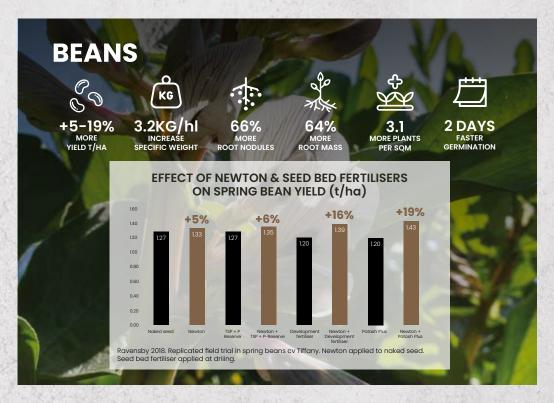
#### Newton benefits in spring barley 2023





3.30 3.25

23118. Spring Barley cv Laureate. Throws farm. Speed of emergence and vigour - no difference. NSDs





#### **ENHANCED RESILIENCE**

#### NATURAL RESILIENCE

Newton contains crucial amino acids that boost your plants' ability to withstand winter stresses, drought, pests and diseases.

#### Drought resilience researched

Improved rooting has huge implications when it comes to drought resilience, with further studies at the university demonstrating what happens when water is withdrawn. The aim of the experiment was to investigate the effect of Newton on early root and shoot growth in spring barley in a drought situation.

Nottingham's Dr Steve Rossall concluded that Newton enhanced both root and shoot development in the spring barley and that these effects were seen in unstressed and drought-stressed plants. Statistically, this was represented as a 35% increase in root growth and a 47% improvement in shoot mass under drought conditions.

The greatest effects were seen on root development, and this allowed better survival in field soil when water was withdrawn – image right.

Trial terminated at 25 days after transplanting. SD = significant difference to untreated.



#### 

#### **BOOSTING RESILIENCE ON-FARM**

With increasing climate stress on farmers and their crops, the resilience benefits of Newton are being felt more and more on-farm.







#### A proactive approach to managing stress

Keith Challen makes no secret that biostimulants are now an integral part of his crop management at Belvoir Fruit Farms in Nottingham. He's seen the value of foliar biostimulants on the farm's heavy clay soils for a number of years, so it made sense to him to trial Newton seed treatment.

Keith describes the farm as 'stressy', not just for him but for the crops as well, he says.

"In some years everything is good but it's often too wet, too cold or too dry compared with other farms I've managed over the past 30 years."

It's the forth year the farm has had access to Newton so already Keith is building up experience under different growing conditions:

"The year that we don't get

## A YIELD BENEFIT FROM NEWTON®

will be when weather conditions are perfect, and then that won't really matter"

Keith Challen

Farm Director, Belvoir Farming Company Ltd, Nottingham



#### 2018, Newton increased spring barley yield by +0.6 t/ha

- > Faster emergence
- > Increased rooting by approximately 30%
- > Increased uptake of all trace elements except P
- > Helped the crop chase moisture in the dry spring



2019, Newton increased winter barley yield by +0.49 t/ha

- > Faster establishment ahead of winter
- > Increased vigour into spring



2019, Newton increased winter wheat yield by +0.28 t/ha 2020, Newton increased spring barley yield by +0.56 t/ha

- > Approximately 30% more roots
- > Higher access to moisture in the dry conditions

In 2018 the Newton treated seed came through the ground quicker than the control. In 2020 we used it on spring barley seed, and this wasn't the case. But even though emergence hadn't been quicker, on inspection the treated plants developed an estimated 30% bigger root mass which meant roots could forage moisture better. This was a huge benefit under the dry conditions we were experiencing," he says.

"In my view, farming is all about managing risk and that's difficult at planting when you have no idea what sort of season is in front of you, especially as weather patterns seem to be getting stuck in extremes on a more regular basis.

"Applying a seed treatment that can help the plant deal with future stress is a proactive approach to coping with these extremes. Newton is a natural product that's able to support a diminishing pool of chemistry and it's reassuring that it's been scrutinised for use in an organic situation."

#### **SUSTAINABLE FARMING**

## SUPPORTS SOIL HEALTH & REDUCES DEPENDENCY ON CHEMICAL INPUTS

Newton is part of the jigsaw to help you farm more sustainably.

#### Supports microbial activity

By improving the structure and size of roots for microbes to inhabit and feed, Newton fosters beneficial microbial interactions in the rhizosphere, crucial to plant health.

## Higher nutrient uptake & nitrogen use efficiency

#### 66% more N-fixing bacteria

As well as farm trials showing increased macro and micronutrient uptake with Newton in cereals, Nottingham University research has shown significant benefits to nitrogen use efficiency in beans - by increasing the number of nitrogen fixing bacteria called rhizobium.

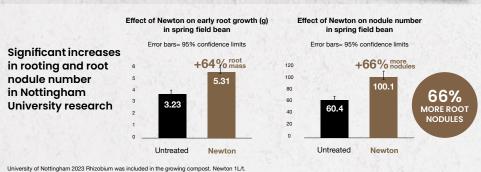
These bacteria colonise the roots of leguminous plants which in response, produce a swelling on the roots called nodules. It is inside these nodules that the bacteria fix nitrogen and convert it to ammonia, which is crucial for plant growth and development.

Newton significantly increased the number of root nodules – by 66% – meaning Newton increases nitrogen use efficiency in beans.

#### Reduces reliance on synthetics

Newton produces more resourceful plants better able to scavenge the soil for the nutrients they need. This not only has economic advantages – reducing your dependency on costly inputs – it also supports more sustainable farming by reducing reliance on synthetic fertilisers. Optimising nutrition and avoiding deficiencies to key to improving resilience against pests and diseases.





## HELPING FARMERS NURTURE THEIR FIELDS NATURALLY

By working with nature, we help your plants flourish with vitality and resilience.



Rory Lay, Managing Partner, JR Lay & Son, Shropshire

## "Getting the seed growing well is key to reducing relignce on chemicals

Our goal is simple – to create a business and a farm which will be here for future generations. But to get there, it requires careful planning, cautious decision-making and utilising every tool available to minimise risk and maximise returns – both financial and in terms of crop and soil health.

"Starting with good, healthy seed is crucial and being able to lean on the benefits of Newton helps us ensure that, regardless of whatever else happens that season, we've primed crops from the get-go to perform to their full potential."

#### "Newton is helping us secure a future without chemicals which is where we want to be

"Long-term, I want to be in a position where we are – or fairly close to being – net zero and we're recognised for that. I think that's a key part of this, being recognised that what we can do as farmers makes us part of the solution and not the problem.

"Biologicals will be a key component in achieving this – they're absolutely part of the IPM approach to how we grow crops. We're losing chemicals, either regulatory or efficacy wise, at an alarming rate and we've got to get on the front foot and understand what we can do to improve the way we're growing crops. Newton is a piece of the jigsaw, with a number of tabs on that piece, which fit into a lot of other aspects of crop production – which is where we need to be if we're aiming to achieve true resilience."



David Fuller-Shapcott, Farm Manager, Scottish Borders



October, the winter oats on one Scottish farm in Fife look the best crop of oats the farmer has ever grown, and he puts it down to Newton.

#### **How Newton is helping:**

- > Faster germination and emergence over naked seed
- > Amazing rooting the best the farm has ever seen
- > Thriving winter oats out of a hellish winter
- > Thriving spring barley out of a challenging spring
- > Valuable yield insurance

**SCAN FOR** ANDY'S **JOURNEY** 



Regenerative farmer Gerry Mee has been no-till for five years in a quest to improve the farm's soils and turned to Newton to reduce his reliance on single purpose dressings and optimise crop establishment.

#### **How Newton is helping:**

- > Faster germination and emergence over SPD and phosphate-
- > Significant rooting benefits into February
- > Increased tiller retention
- > Fitter healthier plants
- > Yield benefit +0.3 t/ha



Rory Lay,

Managing Partner, JR Lay & Son, Shropshire



Safeguarding the environment and maximising efficiencies is key for the long-term sustainability of one Shropshire farming business - with getting crops off to the best start with help from Newton, being a key part of the strategy.

#### **How Newton is helping:**

- > Chemical-free alternative
- > Stronger crops with significant rooting increases
- > Enhanced rooting aids bacteria and the soil
- > Improved nutrient acquisition from the soil
- > Primes crops from the get-go to perform to their potential

**SCAN FOR** RORY'S **JOURNEY** 



**SCAN FOR** 

**GERRY'S** 

**JOURNEY** 

A move to Newton has helped Borders grower, David Fuller-Shapcott, move away from chemical alternatives in a bid to help secure long-term business sustainability and improve soil health.

#### **How Newton is helping:**

- > Chemical-free alternative to fungicide + Kick-Off ST with zero loss in crop establishment and yield
- > Reduced seed treatment costs
- > Significant rooting benefits
- > Improved nutrient-use-efficiency
- > Drought resilience in spring barley
- > Part of an IPM approach
- > Piece of the puzzle towards long-term resilience

SCAN FOR DAVID'S JOURNEY

SIMON'S

**JOURNEY** 







With resilience front and centre of Simon's ambition for self-sufficiency and a desire to do better by the environment, raising soil organic matter and establishing fit, well tillered plants quick out of the blocks has come sharp into focus in recent years. Not afraid to try something new, Simon has been using all-organic Newton to help crops emerge faster and put deeper roots down

David Fuller-Shapcott

Farm Manager, Scottish Borders

"Newton" is helping

**SUSTAINABLE** 

us secure a more

**FUTURE** 

**WITHOUT** 

which is where

we want to be"

**CHEMICALS** 

## How Newton is helping:

ahead of winter.

- > Four to five days faster emergence over chemical seed treatment, two days faster over naked seed
- > Big improvement in size and structure of rooting over chemical treated and naked seed
- > Higher nutrient uptake
- > Faster crop establishment
- > Higher green area index into spring
- > Higher wheat and barley yields

Matt Waldie Farm Manager, Fife



Fourth generation arable farmer Matt Waldie is farm manager at 4 Front Farming Co Ltd in Fife, Scotland. Farming across four farms from sea level up to 700 ft, Matt's on the front line of climate change and utilising the benefits of Newton as part of a regenerative farming approach, to help secure winter wheat, winter oat and spring barley establishment under increasingly challenging growing conditions.

#### **How Newton is helping:**

- > 2.5 days faster emergence
- > Significant root growth and tillering increases
- > Increases nutrient uptake
- > Improves winter wheat, winter oat and spring barley establishment
- > Improves frost heave resistance over winter
- > Higher yield potential

SCAN FOR MATT'S JOURNEY



#### THE NEWTON ADVANTAGE

#### **INCREASED YIELD STABILITY**

Achieve greater, more consistent yields under challenging growing conditions.

#### **ECO-FRIENDLY**

Embrace sustainable farming practices that protect your land.

#### PEACE OF MIND

Trust in a product that delivers consistent results for your farm.

#### **FUTURE-READY FARMING**

Adapt to climate challenges and secure your farm's future.

#### **FLEXIBLE**

Can be applied to naked seed or co-applied with other dressing.

#### PRACTICAL

Non-microbial and will last on the seed if you need to over year – no risk of decay like a microbial treatment would do.

## HOW TO INCORPORATE NEWTON INTO YOUR CROP MANAGEMENT APPROACH?

Newton is recommended in winter and spring cereals, peas and beans and can be applied to your home saved seed by a mobile seed treater or request Newton seed treatment when ordering your new seed. It can be applied to naked seed or can be easily co-applied with your standard seed dressing. Don't forget to leave an untreated area of the field so you can see (by digging plants) what difference Newton makes to your crops.

#### **HOW TO ORDER NEWTON**

#### SEED MERCHANT OR MOBILE TREATER

Newton treated seed can be ordered through any of the following merchants. You can also ask your mobile seed treater to apply it for you in the same way they would a traditional dressing. Newton can be supplied in 5 litre cans, 200 litre drums or 1,000 litre IBC.











Frontier Agriculture Ltd

McCreath Simpson & Prentice

Messrs Alex Brewster

Wynnstay











Agrii

Alexander Harley

Cope

Dods of Haddington

CYO Seeds

## NEWTON PROFILE & HOW TO APPLY

Classification:	Biostimulant seed treatment
Composition:	Vegetal derived peptides
Recommended crops:	Cereals and pulses
Organic certification:	Newton is fully approved by OF&G for use in organic crops and is registered with the Soil Association
Application rate per tonne:	1.0 litre per tonne of seed
Application to seed:	<ul> <li>Apply Newton through a conventional seed treater suitable for handling liquids.</li> <li>Seed should be of good quality and moisture content.</li> <li>Do not apply Newton to cracked, split or sprouted seed.</li> <li>If required, Newton may be watered down to aid application.</li> </ul>
Compatibility	Newton is compatible with a wide range of chemical seed treatments and nutritional dressings.
Pack size	5 litres, 200 litre drum or 1,000 litre IBC

## **NEWTON® AT A GLANCE**

Naked seed

STIMULATES CEREAL AND PULSE CROPS TO THRIVE

Newton is the natural, eco-friendly alternative to chemical seed treatment – or the perfect addition to – for growers looking for a sustainable alternative to synthetic inputs and healthier plants from seed to harvest.

## Newton gets crops resilient and ready to yield

> Faster germination and emergence

Up to 2 days faster over naked seed; 4–5 days over SPD (farmer feedback).

Exceptional root growth increases

Average +43% in cereals; +28% in peas; +64% in beans.

- Significant increases in nitrogen-fixing bacteria
   66% more root nodules.
- > Higher nutrient uptake Has economic advantages and reduces reliance on synthetic fertiliser.
- > More vigorous competitive plants

Up to 12% higher emergence in late drilled crops; up to 17% higher emergence in stressful conditions.

> Improves resilience to stress Frost heave resistance; resilience over winter; grows drought resilient plants.

## Natural eco-friendly

- > Chemical free.
- Contains unique plant sourced stimulating peptides.
- Approved for use in organic systems by OF&G and registered with the Soil Association.

## Flexible and practical approach

Non-microbial and will last on the seed if you need to over year - no risk of decay like a microbial treatment would do.

Newton treated

Can be applied to naked seed or co-applied with other dressing.

#### **GET IN TOUCH**

For more information visit www.nichino.uk

**GENERAL ENQUIRIES:** 

Nichino UK info@nichino.uk

### TRY IT TODAY

And seed to yield see the difference. Ask your seed supplier for Newton.

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