Inspiring change...

agrovista

New ways of thinking

Bioscience products

*growing through **innovation***

Part of the

Agrovista Innovation Range

Demonstrating **return on investment**

It's long been understood that the future of traditional crop protection products is uncertain. The regulatory landscape has a huge influence on what we, as an industry, can achieve in effective food production.

But it could also be a need to protect our environment, avoid exceeding maximum residue levels (MRLs), or the desire to try something new, that drives us to think outside of the box and step into the world of bioscience.

Whilst we want to be creative and smart with our product choices, we also need to be able to demonstrate a return on investment from using these innovations. With abundance in the market-place, bioscience products must prove their efficacy to really make a difference.

Through our network of global innovators, Agrovista brings the latest in scientific developments to you, the grower. Whether that's maximising chlorophyll production, or mitigating plant stress, we are proud to provide products that are supported by both academic research and field trials.

With so many bioscience products available to growers, it can be very confusing to understand what each does, posing the question: 'but how does that benefit me?' We want to help growers to answer that question, by breaking each product down to provide a tangible yield-based result.

"As a customer-driven company, we also understand the importance of transparency. We are happy to discuss the formulations of our products, so growers know exactly what they are applying onto their crops."

Craig Morgan,
Head of Research and Development, Agrovista

Targeted **solutions**

Through truly understanding the science behind innovation, Agrovista can help you to select the correct bioscience products.

Whether that's meeting a crops' specific resource requirements, or overcoming a physiological problem, we know that choosing the right product for the right timing is key.

Effective use of bioscience in three steps

For cereal crops, this can be demonstrated through the following:

1

Water and nutrient uptake: root development, establishment and survival

2

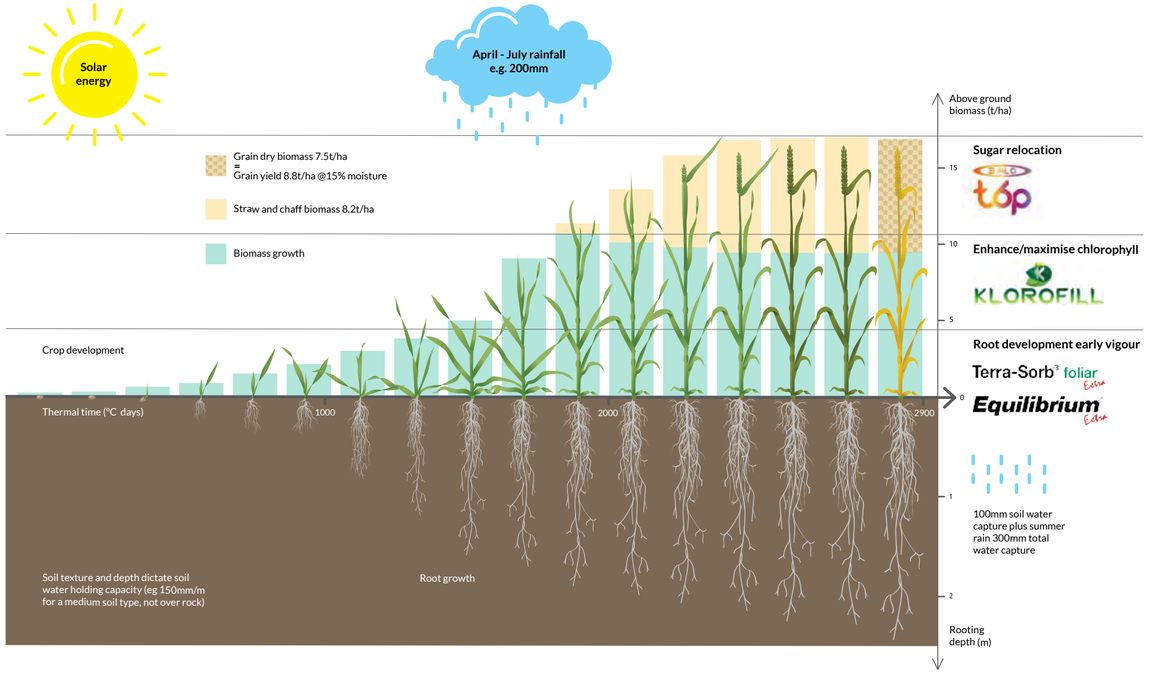
Solar conversion: maximising chlorophyll production

3

Relocating sugars: seed and grain filling

With specific products for each of these steps, Agrovista can successfully guide you through effective bioscience application to help you achieve maximum results.

Maximising cereals with biostimulants



Terra-Sorb® foliar Extra

Terra-Sorb Foliar Extra is a biostimulant product for cereals and oilseeds that provides ready-made amino acids to aid rapid stress recovery, and boost crop establishment and survival.

Relieving the stresses of life

How it works

Terra-Sorb® Foliar Extra contains a blend of plant-based amino acids and trace elements. By providing a plant with readily available amino acids, known as the building blocks of protein, it can improve the use of its existing resources, and be more energy efficient. This is a key factor when it comes to mitigating stress and overcoming high demand periods such as establishment and biomass building.

Amino acids don't all serve the same purpose, and can be active at different levels, so play critical roles in many components of plant physiology. This includes stress reduction, cell wall stabilisation, nutrient transfer, flower stimulation and improving grain quality.

By utilising a unique Enzyneer® extraction process based on enzymatic hydrolysis, Terra-Sorb Foliar Extra provides plants with all 18 essential L-amino acids in the naturally biologically active L form. This results in higher protein quality and a greater diversity of available amino acids.

And because plants treated with biostimulants often display a significant increase in root mass and length, the absorptive surface area for nutrients is also increased, resulting in improved uptake.

Benefits

Terra-Sorb Foliar Extra offers the following benefits:

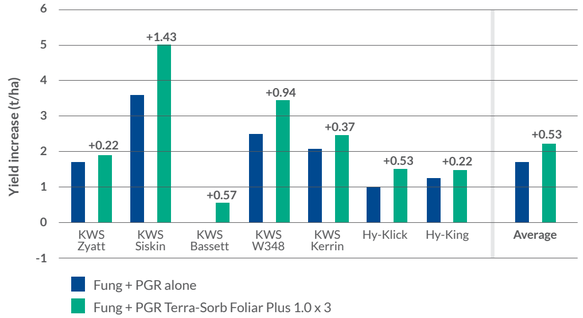
- ***Improved energy usage and stress tolerance***
- ***Supports establishment and plant development***
- ***Increased root and shoot biomass***
- ***Improved nutrient and water utilisation***

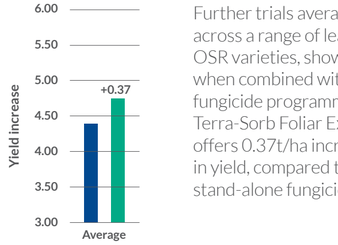
Terra-Sorb Foliar Extra provides ready-made amino acids to ***aid stress recovery, and boost crop establishment.***

Results

Trials at Stoughton have shown that applications of Terra-Sorb Foliar Extra result in consistent improvements in yield across a range of leading wheat seed varieties, with an average of +0.53t/ha.

Yield response in wheat across varieties





17-301, Stoughton, 1.5 l/ha applied twice - in autumn and at flowering

Further trials averaged across a range of leading OSR varieties, show that when combined with a fungicide programme, Terra-Sorb Foliar Extra offers 0.37t/ha increase in yield, compared to a stand-alone fungicide.

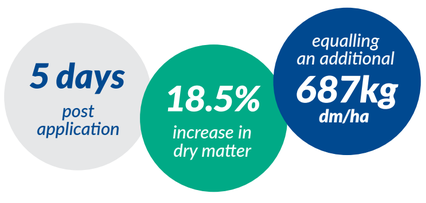
Through our network of global innovators, Agrovista brings the latest in scientific developments to you, the grower.

What this means for you

In early season cereal crop development, Terra-Sorb Foliar Extra elongates leaves and roots, resulting in stronger and more robust plants compared to untreated.

Agrovista farm trials have also shown that an application of Terra-Sorb Foliar Extra up to GS31 can reduce screening levels in spring barley grown for distilling, helping to mitigate screening deductions. It has also been shown to increase uptake of manganese, zinc and copper when applied alongside suitable trace elements, particularly when the crop is under stress. This boosts yield potential, even more critical when nitrogen applications are restricted to achieve the low grain nitrogen required for distilling.

In grassland, trials showed that just five days post application of Terra-Sorb Foliar Extra, an 18.5% increase in dry matter kg/ha was shown – which equates to an additional 687kg dm/ha.



Application

Crop	Rate	Application timing range
Winter cereals	1-2.0l/ha	GS13-45
Malting barley (winter and spring)	1-2.0l/ha	Up to GS31
Oilseed rape	1-2.0l/ha	Up to end of flowering
Sugar and fodder beet	2 x 1.5l/ha	Expanded cotyledon to row closure
Grassland	2.0l/ha	Early spring growth (+20g Smartgrass) Aftermath grazing (can be mixed with herbicide)

***Suggested timings, for label information, speak to your BASIS-qualified advisor**

Other features

- Tank mixable
- Vegetable source
- Various pack sizes to suit grower needs

Equilibrium® Extra

For when **consistency is key**

How it works

Equilibrium® Extra combines the same readily-available amino acids as Terra-Sorb Foliar Extra, but combines them with oligosaccharide seaweed extracts as a tailored product for high-value crops such as potatoes.

Oligosaccharides are complex sugars that stimulate a plant to enhance its nutrient flow from the soil and translocation through the plant, whilst promoting rooting and shooting. This improves a plant's ability to access nutrition, as well as its overall health.

Because seaweed extracts have a positive effect on plant physiology including reproduction physiology, this leads to an increase in uniformity, particularly useful in optimising marketable yield.

Benefits

Equilibrium Extra offers the following benefits:

- ***Improved energy usage and stress tolerance***
- ***Support for establishment and plant development***
- ***Improved nutrient and water utilisation***
- ***Improved marketable yield and quality***

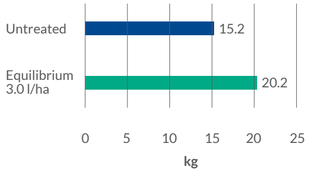
Equilibrium Extra is a dual purpose biostimulant that ***improves overall quality and marketable yield.***

33% yield increase

Results

Equilibrium Extra grower trials on potato demonstrate a 33% yield increase compared to untreated*

Yield (kg/m row length)



*Average of 3x 1m row length test digs per plot

What this means for you

For potato growers, application of Equilbrium Extra results in an increase in optimum tuber size (65-85mm), improving the overall marketability of the crop and reducing under or over-sized tubers. This is demonstrated through the following grower trial in North Norfolk in 2019*:

Yield (kg/m row) and tuber size distribution

	<45mm	45-65mm	65-85mm	>85mm
% change in tuber size distribution using Equilibrium, vs untreated	-22%	3%	16%	-69%

*Mean of 4x 1m row length test digs per plot

Application

Crop	Rate	Application timing range
Potato	3.0l/ha	From rosette to prior to senescence

*Suggested timings, for label information, speak to your BASIS-qualified advisor

Other features

- Tank mixable
- Vegetable source
- Various pack sizes to suit grower needs

KLOROFILL

A unique crop enhancer for cereals that improves chlorophyll production and maximises green leaf area.

Boost your plants' **solar panels**

How it works

Klorofill® contains pentanoate - an organic keto acid-based compound that is a unique biological precursor to chlorophyll synthesis. Pentanoate reverses the chlorophyll suppression that a plant may experience during rapid growth, for example, at flag leaf stage.

By increasing chlorophyll production, Klorofill maximises green leaf area and plant biomass, boosting crop growth and therefore yield.

Benefits

Klorofill offers the following benefits:

- ***Increased photosynthetic rate and chlorophyll production***
- ***Maximised green leaf area***
- ***Enhanced plant biomass***
- ***Improved nutrient efficiency***

Klorofill is a unique crop enhancer that ***improves chlorophyll production and maximises green leaf area.***

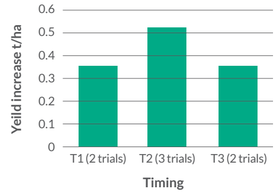
Untreated

Klorofill*

19% *increase in chlorophyll* *compared to competitor product*

By selecting a targeted approach to Klorofill application, growers can maximise the impact of the product. A series of winter wheat trials by Envirofield in 2018 demonstrate the effectiveness of using Klorofill at T2 timing.

Comparison of application timings in winter wheat



Results

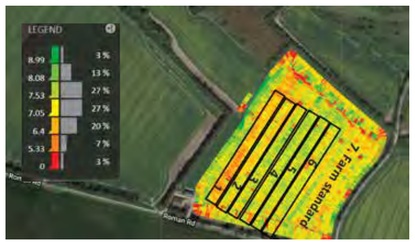
Boosting chlorophyll content

Compared to a competitor amino acid product, Klorofill at 1.0l/ha offers an additional 19% increase in Mg/cm² of chlorophyll.

Product	Mg/cm² chlorophyll	% change
Competitor product (2l/ha)	0.0367	
KLOROFILL	0.0435	19%

A trial from 2019 demonstrates a visible improvement in green leaf area.

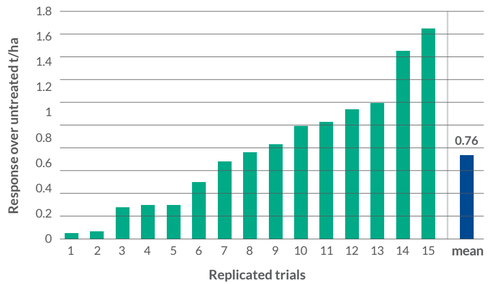
This is also shown in the following yield map of spring barley, captured from an independent trial. Plots 4 and 5 were treated with Klorofill at 1.0l/ha, with the same nitrogen regime as farm standard plot 7.



What this means for you

Replicated manufacturer trials conducted 2018/19 in Suffolk demonstrated that Klorofill can increase winter wheat yield by 0.76t/ha, compared to untreated.

Yield response in winter wheat



Application

Crop	Rate	Application timing range
Winter cereals (excluding malting barley)	1.0l/ha	GS 21-45
Spring cereals (excluding malting barley)	2 x 1.0l/ha	GS 21-59
Malting barley	1.0l/ha	Up to GS 31
Oilseed rape	1.0l/ha	Up to final pod set

*Suggested timings, for label information, speak to your BASIS-qualified advisor

Other features

- Liquid formulation
- Tank mixable
- 10L pack size

Get a hold of **grain management**

How it works

3 ALO t6p contains a precursor of the sugar Trehalose-6-Phosphate (T6P), which regulates important metabolic and developmental processes within plants. This includes carbon fixation and balancing the concentration of carbohydrates, particularly sucrose. As the main fuel generated by photosynthesis, sucrose is key to the development of cereal grains.

By relocating carbohydrates into grain within the kernel or seed and providing more T6P, this has a positive effect on crop yield, whilst improving the response to environmental stresses such as drought.

This product is not currently available for malting barley

Benefits

3 ALO t6p offers the following benefits:

- ***Increased yield through improved grain management***
- ***Improved management of stresses, particularly drought***

3 ALO t6p is a unique foliar treatment that ***maximises seed and grain filling to optimise yield potential.***

Results

Proof of concept study

A proof of concept study by Rothamsted Research and Oxford University further supports the use of t6p in cereal crops.

When t6p precursor molecules were applied to wheat, a 'pulse' was created. This resulted in sucrose being drawn into the grain to make starch, which increased grain size and yield by 20 per cent.

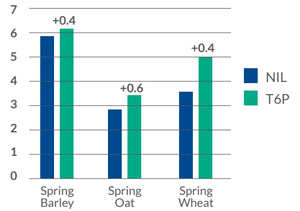
The study also demonstrated that t6p can enhance a plant's drought recovery, helping farmers to overcome difficult seasons more easily in the future.

Untreated **Treated with t6p**

Grower trials

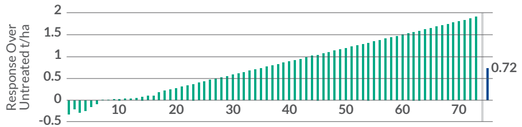
Trials conducted by Agrovista in Northamptonshire show a measurable increase in yield (t/ha) following the application of 3 ALO t6p to spring cereals.

Yield (t/ha)



Further results for winter wheat, collated from a range of trials 2018/19 (response compared to untreated):

Yield response over untreated



Application

Crop	Rate	Application timing range
Cereals*	1.0 l/ha	GS 30-69

***Excluding malting barley varieties**
****Suggested timings, for label information, speak to your BASIS-qualified advisor**

Other features

- Tank mixable
- 10L pack size
- Must be applied to manganese and boron sufficient crops only

Contact your local Agrovista agronomist today, to discuss our Innovation Range and how these exciting new products can support you.

Agrovista UK Limited

Rutherford House
Nottingham Science
& Technology Park
University Boulevard
Nottingham
NG7 2PZ

T: 0115 939 0202
F: 0115 939 8031
E: enquiries@agrovista.co.uk

Follow us on social media:

@AgrovistaUK

www.agrovista.co.uk

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