



Catalogue

**Experts in complex  
biostimulants for  
sustainable plant health**







STATEMENTS

*We are experts in complex biostimulants for sustainable agriculture.*

*The combination of Maxstim's innovative bioflavonoid technology with our extensive field data gives you a world leading solution.*

*All our products, treatment protocols and advice are designed to increase your profits.*

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## Who is Maxstim?

Maxstim is a scientifically-driven, innovative organisation responsible for developing a powerful range of complex biostimulants. We are trusted around the world by progressive agricultural growers through to leading sports venues.

Each of our products improve plant and crop performance helping increase yields in the presence of diminishing Plant Protection Products (PPP) availability.

Maxstim's innovative research and development programme is driven by CEO Richard Salvage and Chief Scientific Officer Dr. Colin Fleming.

## Maxstim Products

**Our products are multi-sourced complex biostimulants that create a synergistic response from a wide variety of bioactive components.**

Each product is the result of innovative research and include plant based amino acids, carbohydrates, organic acids, ascophyllum nodosum, trace elements and our own technology based on specific polyphenols and bioflavonoids. This wide range of bioactive compounds have been engineered precisely to work synergistically for the most beneficial results.



## Maxstim Agriculture+

**Maxstim Agriculture+** is designed to help farmers make more profit. Our specialist, complex biostimulant maximises the yield and quality of the crop whilst minimising the inputs and labour required to generate that yield. The complex nature of **Maxstim Agriculture+** means we can positively influence a whole range of crops and has enabled us to create a formula which helps plants become robust and healthy with improved root development. Early application of **Maxstim Agriculture+** stimulates a variety of metabolic processes making the plant more efficient and better placed to defend against and recover from the effects of abiotic and biotic stresses.



### Use Maxstim Agriculture+ on crops to see:

- Better establishment and earlier development of crops
- Roots that quickly develop more mass and depth
- Higher and better quality yields
- Increase in plant's resistance and recovery from disease, pests and stress
- Reduction in other inputs including fertilisers & pesticides
- Increase in frequency of crop cycle

## Maxstim Organic Agriculture+



- Better establishment and earlier development of crops
- Roots that quickly develop more mass and depth
- Plants that grow bigger faster
- Boost the plant's resistance to, and recovery from, disease, pests and stress
- Reduction in other inputs including fertilisers & pesticides
- Designed and manufactured to meet strict organic protocols to aid sustainable agriculture

# Maxstim Cynosa

**Cynosa** has been developed to impact germination and strengthen crops, particularly cereals. Our latest research led us to create a product designed to strengthen plants and help protect them against fungal stresses. It is a perfect companion product to use alongside Maxstim's other biostimulants to support crop development and growth throughout the plant's life cycle. **Cynosa** combines available orthosilicic acid with specific bioflavonoids to stimulate the plants metabolic processes. Overwhelmingly we're being presented with evidence that **Cynosa**, used in conjunction with Maxstim biostimulants, is supporting the plant's natural defences against these otherwise difficult to control stressors.



## When Cynosa is used in conjunction with Maxstim Agriculture+, crops have shown:

- Significantly higher yields
- Better resistance to disease & abiotic stress
- Stronger leaf and stem structure
- More homogeneous germination

# Maxstim Berries

**Maxstim Berries** is designed to increase quality and yield helping farmers make a more profitable return. Our focus is to increase Brix levels and firmness to improve taste, quality and shelf life. When developing **Maxstim Berries** we measured a number of phenotypes to demonstrate establishment, root development, number of new flowers and new branches.



## Maxstim Berries is effective by:

- Maximising marketable yields
- Improving the quality and value of crops
- Increasing hardiness and reducing wastage
- Increasing Brix levels
- Earlier harvesting





## Maxstim Phenosa

### Biofertiliser

#### Combining new technologies

Innovative liquid biostimulants combined with highly effective microbials



# Maxstim Phenosa

## Winter & Spring Wheat

### Rhizobacteria

Data gathered over 4 years:

- A 6.7% yield increase on a 9.0t/ha crop produces an **extra 600kg of wheat**
- Based on a price of £180/t this **increases income by £108/ha**
- After deducting the cost of the **Phenosa treatment this is an increase of £62/ha**
- Producing the same yield increase with **20% less nitrogen** applied the **increase in income increases to £88/ha** (34.5% N based on £660/ton)

**INCREASING**  
**Yields +6.7%**  
**Margins +£62/ha**

Phenosa Wheat	Nitrogen fixing	Phytohormone production	P solubilising	K solubilising	Zn solubilising	Iron chelation – siderophores production	ACC deaminase (stress reduction)	Antimicrobial	Induction of plant stress resistance
Bacillus amyloliquefaciens	•	•	•	•		•		•	•
Gluconacetobacter diazotrophicus	•	•	•		•	•	•		
Dexia lacustris	•	•				•	•		
Agrobacterium strain	•	•				•	•		

# Maxstim Phenosa

## Sugar Beet

### Rhizobacteria

Data gathered over 4 years:

- The trials have shown a range of yield increases from 4% up to 30%, **a mean increase of 9%**
- Using an average control yield of 75t/ha, clean beet delivered **increase in yield is 7t/ha**
- The price of Sugar Beet based at £40/t the **increase in income is £280/ha**
- Deducting the cost of Phenosa this **increases the margin by £234/ha**

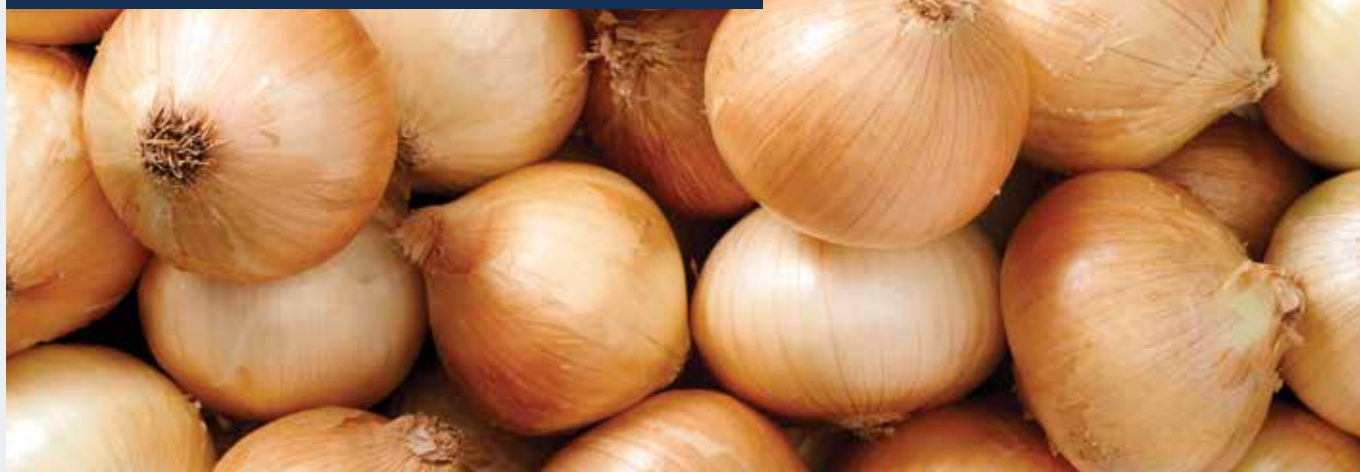
**INCREASING**  
**Yields +9%**  
**Margins +£234/ha**

Phenosa Sugar Beet	Nitrogen fixing	Phytohormone production	P solubilising	K solubilising	Zn solubilising	Iron chelation – siderophores production	ACC deaminase (stress reduction)	Antimicrobial	Induction of plant stress resistance
Bacillus amyloliquefaciens	•	•	•	•		•		•	•
Azospirillum brasilense	•	•			•		•	•	
Rhizobium laguerreae	•	•	•			•			
Phyllobacterium myrsinacearum	•		•			•			

Crop	Water Volume Lit/Ha	Droplet Size: Select nozzle and low pressure for maximum soil coverage	Application Timing
Winter Wheat	200	Medium to coarse	Late tillering early stem elongation, GS25-31. Preferably before rain with soil temperatures >8 Degree C
Spring Wheat	200	Medium to coarse	Late tillering early stem elongation, GS25-31. Preferably before rain with soil temperatures >8 Degree C
Sugar Beet	200	Medium to coarse	Late tillering early stem elongation, GS25-31. Preferably before rain with soil temperatures >8 Degree C

# Crop Data Analysis

## Onions



**Crop:** Red & Brown Onions

**Variety:** Red Baron and Julia

**Location:** UK

**Date:** 2022

### Products recommended



**Agriculture+** is a complex biostimulant with a wide range of bioactive components including our unique bioflavonoids and polyphenols. This creates better root development and early growth.

**Cynosa™** contains ortho silicic acid enabling plants to assimilate silicon to strengthen plant structures and increase resistance to disease.

### Application details

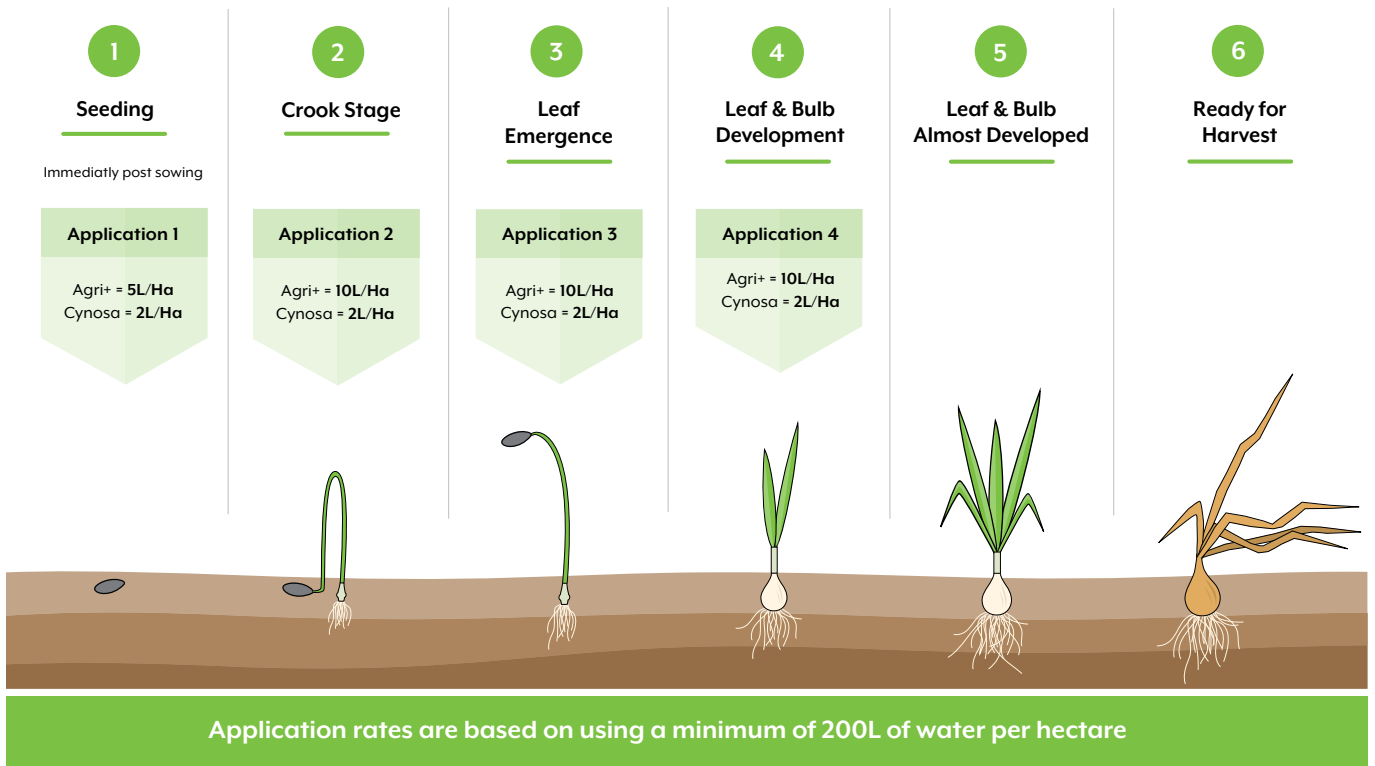
- ✓ 2.5 litres of Agriculture + and 2 litres of Cynosa per hectare were applied in starter fertiliser 200 lit/ha during sowing.
- ✓ 3 further applications of Maxstim product applied. 10 litres of Agriculture + and 2 litres of Cynosa were applied at crook stage with first leaf emergence, when 4-7 leaves had formed at the start of bulb initiation, and finally 14-20 days after the third application.

Application	Product	Proposed Rate
1	Agriculture +	2.5 L/Ha
	Cynosa	2 L/Ha
2	Agriculture +	10 L/Ha
	Cynosa	2 L/Ha
3	Agriculture +	10 L/Ha
4	Cynosa	2 L/Ha
	Agriculture +	10 L/Ha

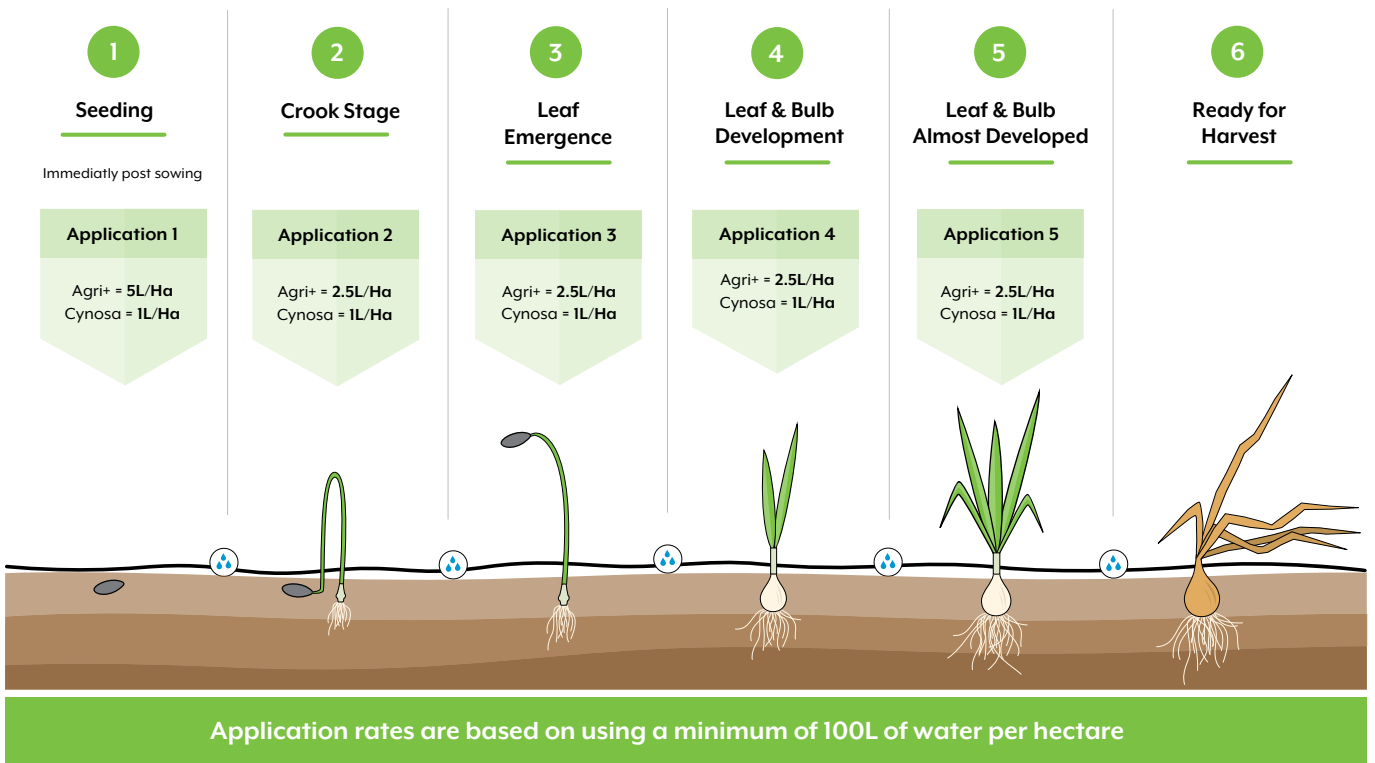
- ✓ 6 pairs of treated & untreated 3.66m<sup>2</sup> plots were harvested and assessed.
- ✓ Onion plants were measured for height, number of leaves, length of bulb, diameter of bulb, root length and weight.

# Onion application process diagrams

## 1. Conventional spray application

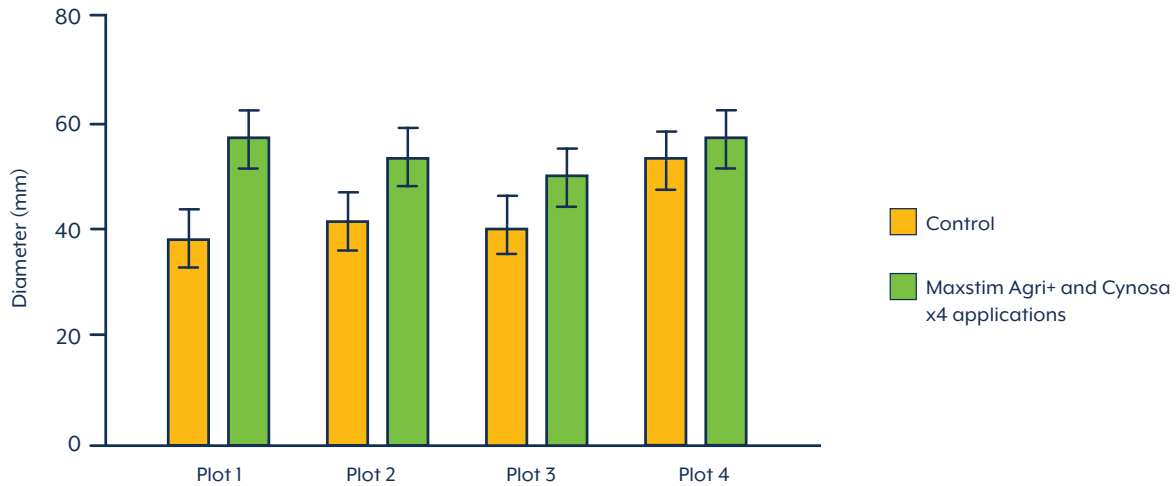


## 2. Application protocol for drip/dribble/tape irrigation





## Chart showing diameter size of bulbs



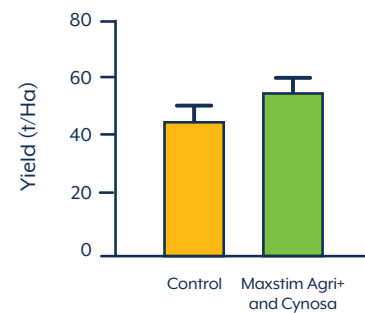
### Plot Weights for Brown Onions

#### (In Furrow Application)

Harvest results for brown onions treated with Maxstim in the furrow and a full treatment thereafter recorded as t/ha. There was an **18% increase in marketable yield** in the crops treated with Maxstim products compared to untreated crops.

Average yield for control plots = 43.49 t/Ha

**Average yield for Maxstim treated plots = 51.18 t/Ha**



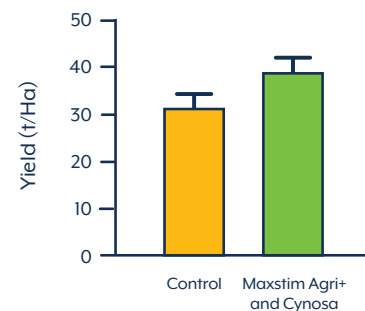
### Plot Weights for Red Onions

#### (20% Reduced Fungicide)

Harvest results for red onions with a 20% reduction in fungicide showing a **26% increase in marketable yield** in the crops treated with Maxstim products compared to control crops.

Average yield for control plots = 29.94 t/Ha

**Average yield for Maxstim treated plots = 37.69 t/Ha**



### The Result

Adverse weather events during the growing time took a severe toll on this harvest.

#### Nevertheless:

- ✓ Plots treated with Maxstim products showed significant growth from control plots
- ✓ Treated onions showed a greater homogeneity
- ✓ Root length in treated plants was significantly longer
- ✓ Plant resilience to detrimental weather conditions was hugely improved in treated crops
- ✓ An observable increase in marketable yield was recorded from plots using Maxstim products

### Conclusion

*The use of Maxstim Agriculture+ together with Cynosa™ is proven to protect crops from environmental stress, dramatically increase crop yield, aid in the production of a more uniform crop and significantly improve profitability per hectare.*

# Crop Data Analysis

## Peppers



**Crop:** Peppers

**Variety:** Palermo & Red California

**Location:** Almería, Spain

**Month:** August

### Products recommended



**Agriculture+** is a complex biostimulant with a wide range of bioactive components including our unique bioflavonoids and polyphenols. This creates better root development and early growth.

**Cynosa™** contains ortho silicic acid enabling plants to assimilate silicon to strengthen plant structures and increase resistance to disease.

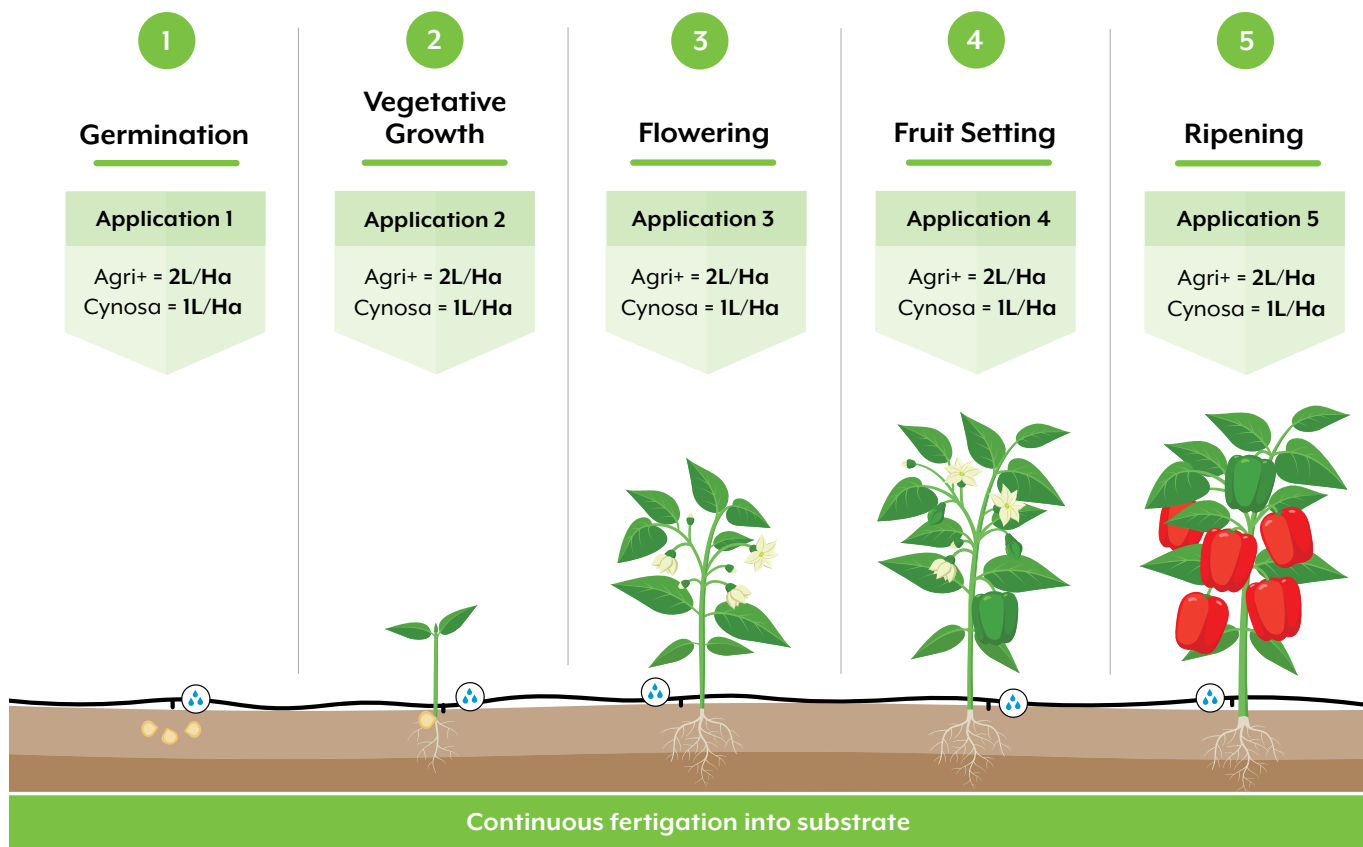
### Details of trial

The pepper crops were being grown in a hydroponic system.

### Application rates:

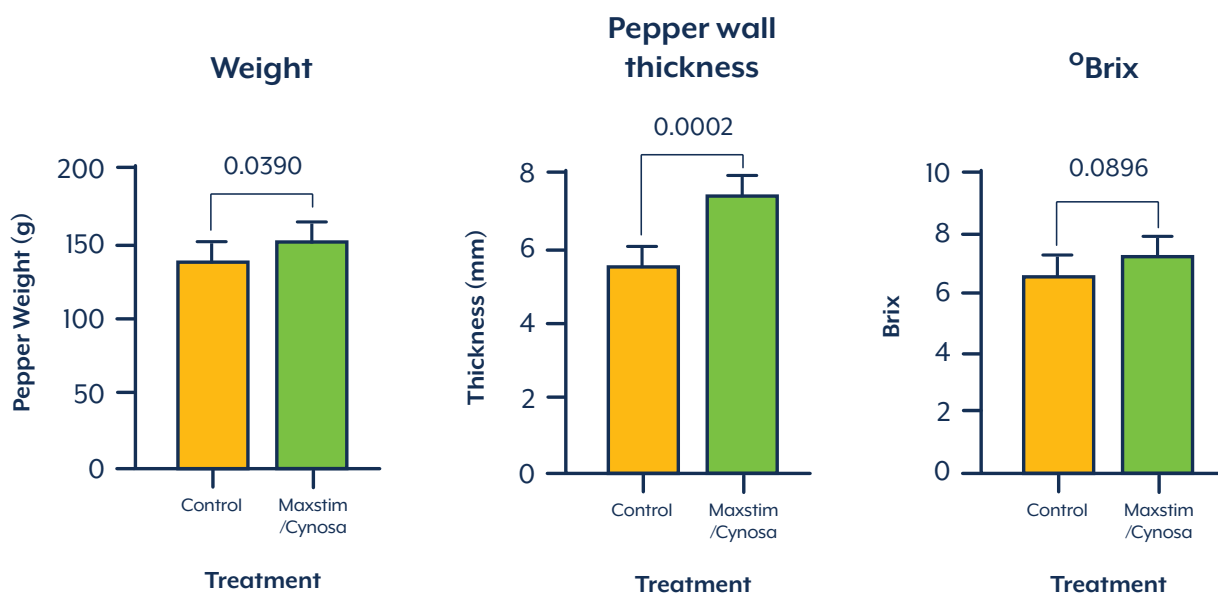
Trial	Product	Proposed Rate
1	Organic Agriculture +	2.85 L/Ha every 10 days
2	Agriculture +	2 L/Ha every 15 days
	Cynosa	1 L/Ha every 15 days

# Peppers growth cycle diagram



## Trial 2 - Data Results

Comparing untreated and Maxstim treated crops





## Results

- ✓ A greater density of leaf colour was measured, through SPAD readings, in crops treated with Maxstim products throughout the trial
- ✓ Significantly larger leaves were observed on the treated pepper plants
- ✓ An observable increase of crop weight and diameter in treated plants
- ✓ A significant difference between the control and treated pepper wall thickness
- ✓ A greater intensity of colour is observable in treated peppers
- ✓ An improvement in the Brix of treated peppers
- ✓ Treated peppers showed a greater uniformity
- ✓ Disease presence was lower in crops treated with Maxstim products
- ✓ Post harvest weight loss was lower in peppers grown in treated areas compared to control



### Conclusion

*The combined use of Maxstim Agriculture+ and Cynosa enabled a higher level of production compared to control growing areas, with a superior quality of crop.*

# Crop Data Analysis

## Lettuce



**Crop:** Iceberg Lettuce

**Variety:** Mascherano

**Location:** Norfolk, UK

**Date:** September 2022

### Products recommended



**Agriculture+** is a complex biostimulant with a wide range of bioactive components including our unique bioflavonoids and polyphenols. This creates better root development and early growth.

**Cynosa™** contains ortho silicic acid enabling plants to assimilate silicon to strengthen plant structures and increase resistance to disease.

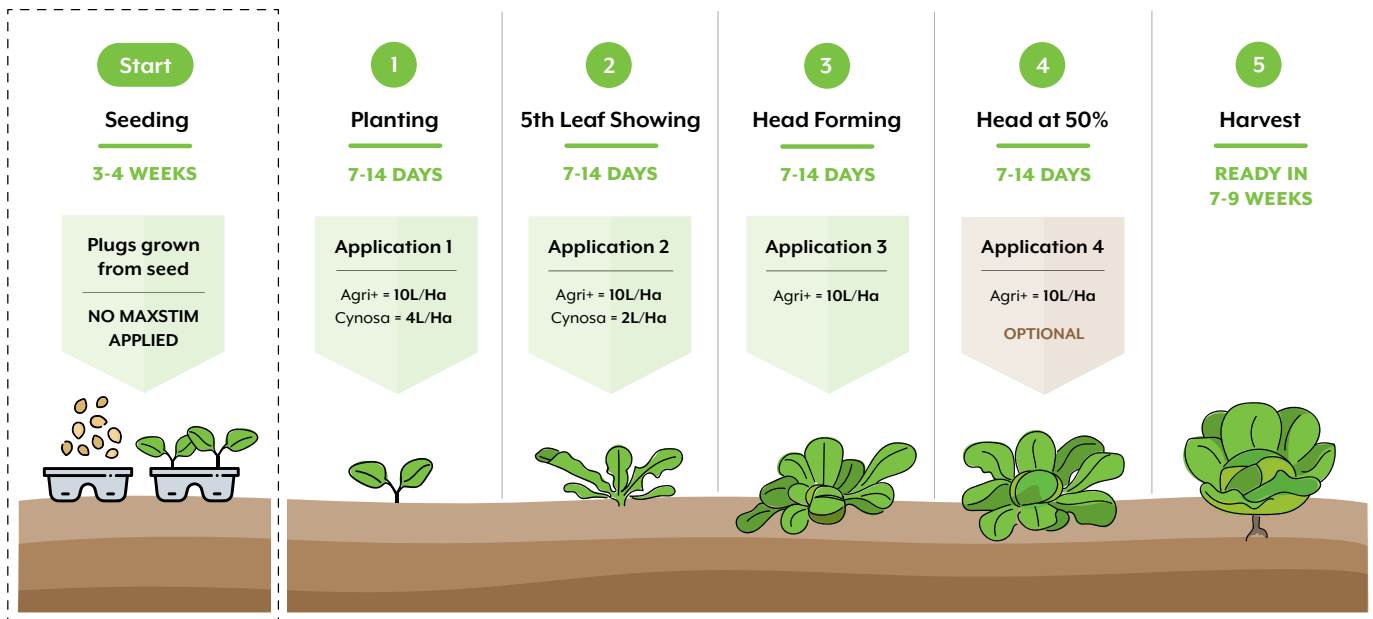
### Application details

- ✓ 10 litres of Agriculture + and 4 litres of Cynosa per hectare were applied at planting as a root drench.
- ✓ 2 further applications of Maxstim product were sprayed as a foliar application. 10 litres of Agriculture + and 2 litres of Cynosa were applied 14 days later and 10 litres of Agriculture + 28 days after the first application.

Application	Product	Proposed Rate	Proposed Water Rate
1	Agriculture +	10 L/Ha	350 L/Ha
	Cynosa	4 L/Ha	
2	Agriculture +	10 L/Ha	300 L/Ha
	Cynosa	2 L/Ha	
3	Agriculture +	10 L/Ha	300 L/Ha

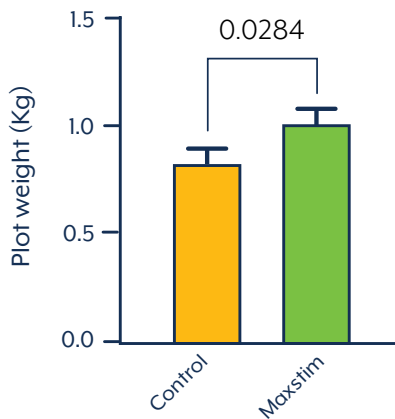
- ✓ 180 heads of lettuce were harvested and measured from 6 randomly chosen plots of both treated and untreated crop.
- ✓ The lettuce heads were measured for diameter using an adapted Vernier scale and weighed.

# Lettuce growth cycle and Maxstim application plan

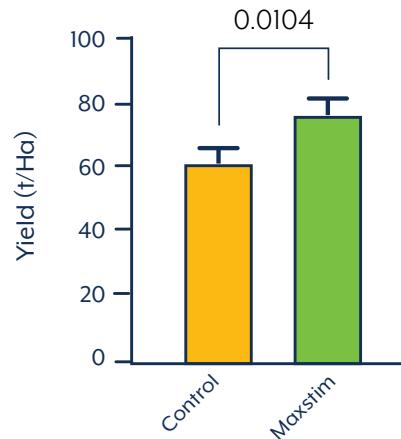


To achieve best results we advise following the above application recommendations when using Maxstim products on Lettuce. Maxstim can also reduce the amount of time required to produce lettuce plugs/modules, please contact your Maxstim representative to discuss this if of interest.

Average Plot Weights



Crop Yield (t/Ha)



## The Result

Yield Increase

**14 tonnes per hectare**

Saleable Yield

**22% Increase**

## Conclusion

*The use of Maxstim Agriculture + together with Cynosa™ is proven to dramatically increase crop yield and significantly improve profitability by several thousand pounds per hectare.*



# Crop Data Analysis

## Cherry Tomatoes



**Crop:** Cherry Tomatoes

**Variety:** Delisher & Piccolo

**Location:** Almería, Spain

**Month:** September

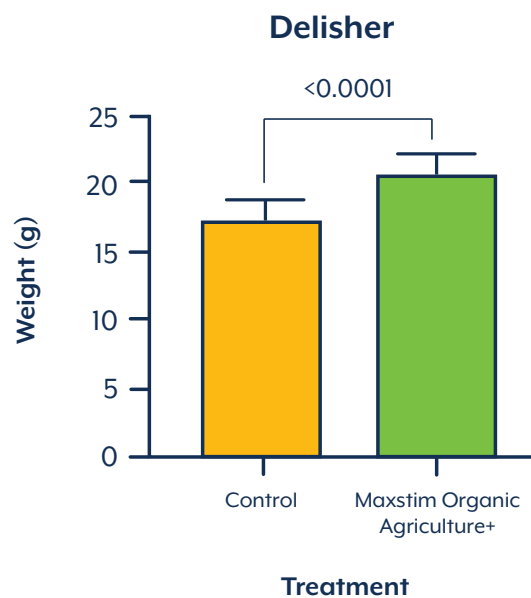
### Products recommended



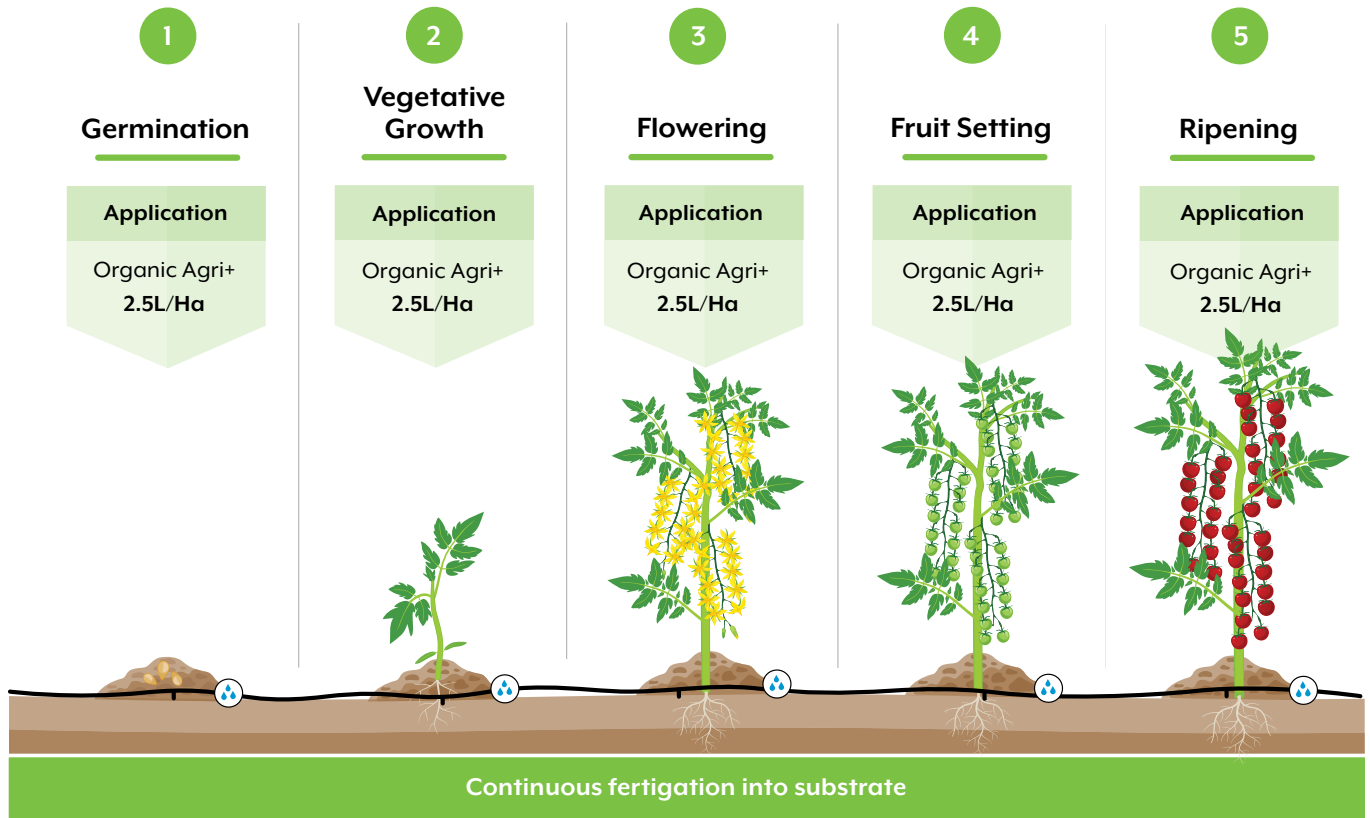
**Organic Agriculture+** is a complex biostimulant with a wide range of bioactive components including our unique bioflavonoids and polyphenols. This creates better root development and early growth.

### Details of trial

Tomato crops were being grown in a hydroponic system, with 2.5 L/ha of Organic Agriculture + being applied every 10 days until harvest is completed.



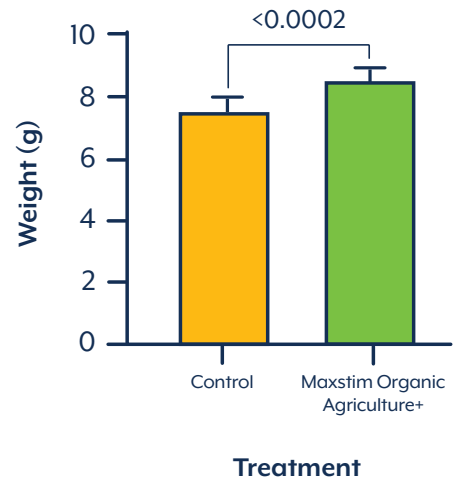
# Cherry Tomatoes growth stages diagram



## Results

- ✓ A greater density of leaf colour was measured through SPAD readings in treated crops
- ✓ Greater stem diameter of the plants was observed in treated plants
- ✓ A significant increase of crop weight, length and diameter in treated tomato plants
- ✓ A greater intensity of colour is observable in treated tomatoes
- ✓ Significantly higher brix count measured in treated crops
- ✓ Fewer cracked tomato fruits were counted in sectors treated with Maxstim products compared to the control areas

## Brix Delisher



## Conclusion

*The use of Maxstim Agriculture+ is proven to significantly improve the size and quality of your crop.*

# Crop Data Analysis

## Potatoes



**Crop:** Potatoes

**Variety:** Maris Piper

**Location:** Cambridgeshire, UK

**Date:** March to September

### Products recommended



**Agriculture+** is a complex biostimulant with a wide range of bioactive components including our unique bioflavonoids and polyphenols. This creates better root development and early growth.

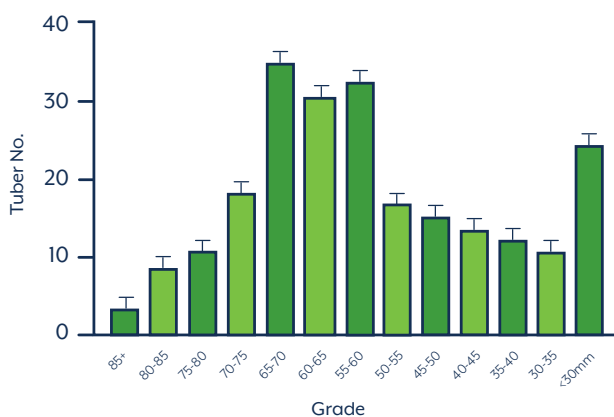
### Details of 2022 potato trials

Maxstim has undertaken numerous trials with potato crops that, when our products are applied as directed, demonstrate:

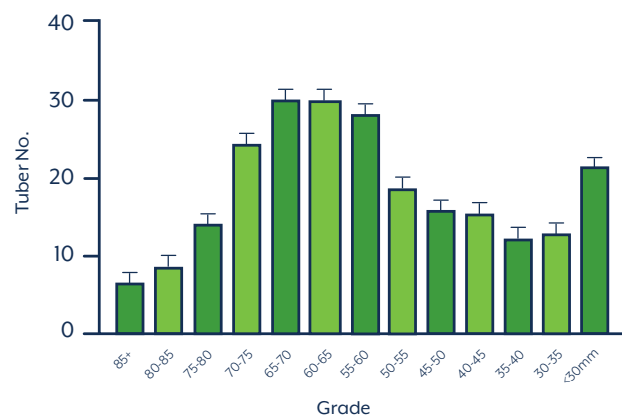
- ✓ Increased marketable yield
- ✓ A higher number of tubers reaching larger grades
- ✓ Unchitted and chitted potatoes grow equally as successfully

Trial number	Marketable yield increase
1	3.63 t/ha
2	2.19 t/ha
3	3.75 t/ha
4	2.09t/ha
5	6.69 t/ha
6	4.84 t/ha

### Control Tuber number by grade



### Treated Tuber number by grade

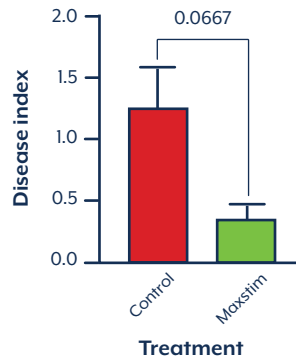


*Maxstim Agriculture+ has significantly increased the number of saleable tubers in the size range of 40 – 80mm*

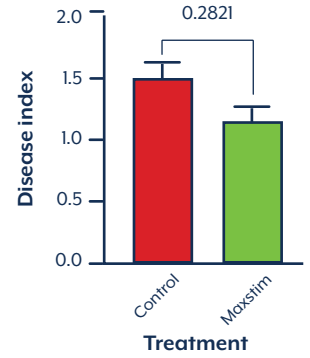


# Maxstim Agriculture+ helps produce healthier crops

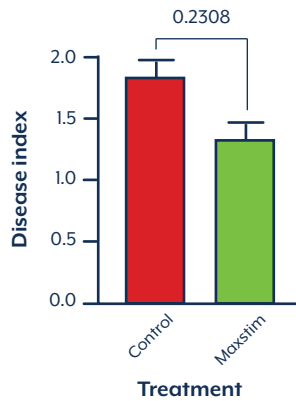
## Hollow Heart



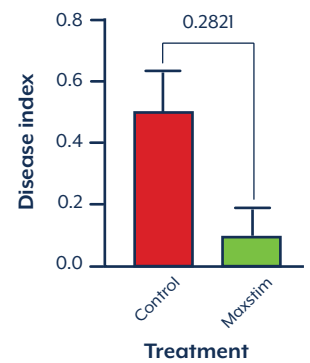
## Common Scab



## Black Dot

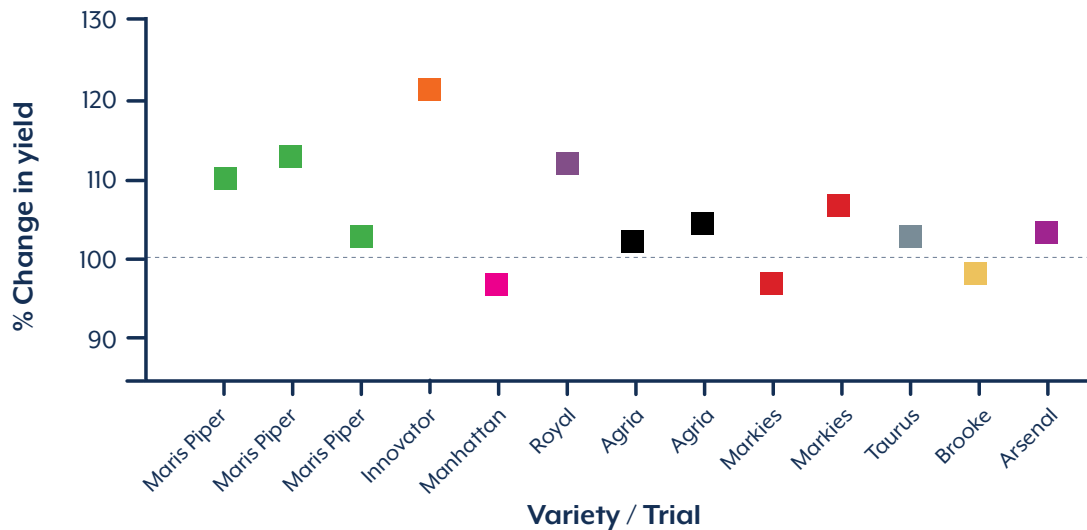


## Black Scurf



## Details of 2023 potato trials

Maxstim carried out 13 more trials in Suffolk and Cambridgeshire during the 2023 season on a wider variety of potatoes. The varieties included Maris Piper, Innovator, Manhattan, Royal, Agria, Markies, Taurus, Brooke and Arsenal.

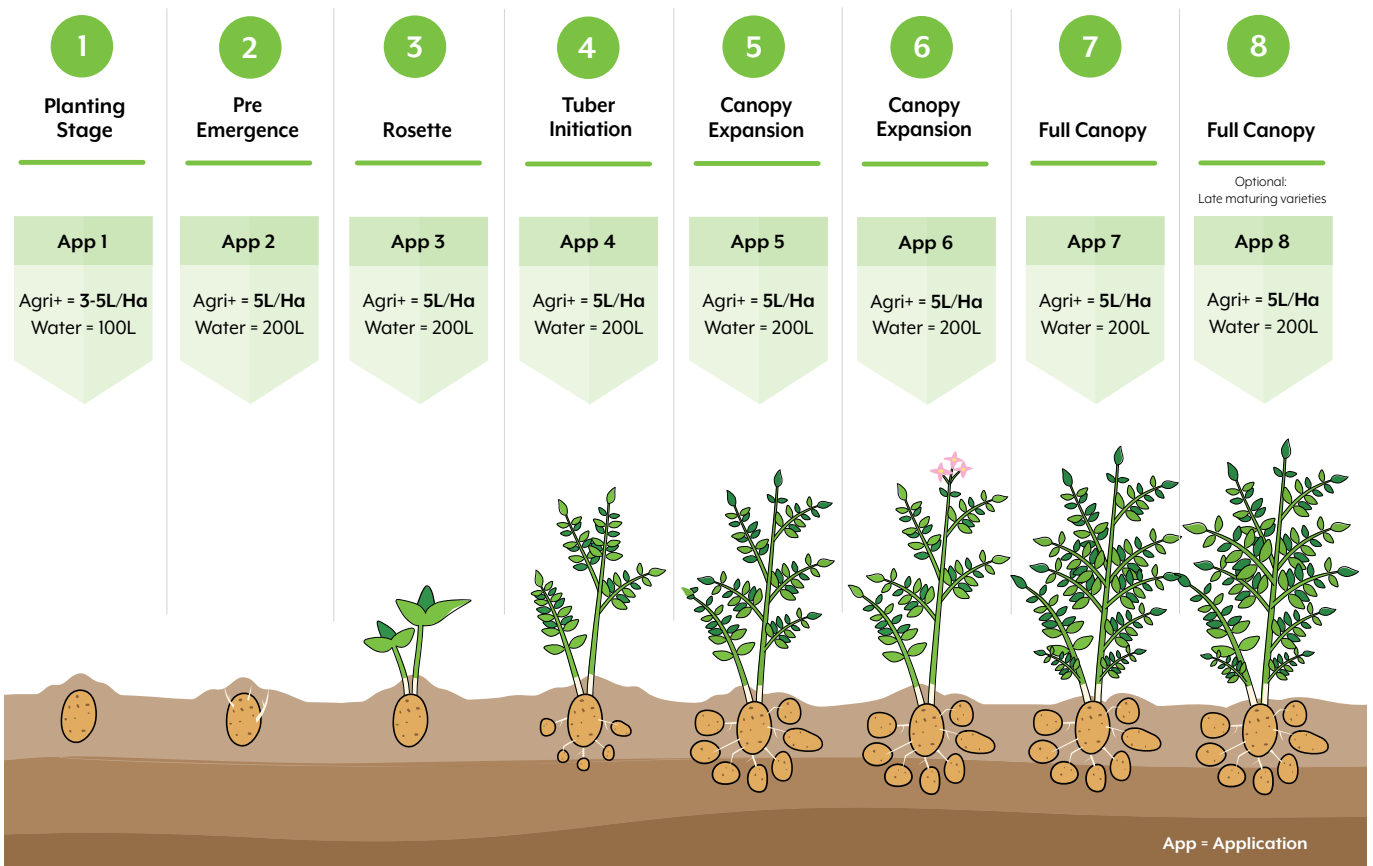


The average increase in yield across all 13 trials was 3.11 tonnes producing an average increase of £500 per hectare after the cost of the treatment. Maxstim has demonstrated significant increases in potato crop yield year on year.



• Image showing the improved skin condition achieved when treated with Maxstim Agriculture+.

### Potatoes growth cycle diagram with recommended rates and timings





## Potato Trials

# Phil Kingsmill

I have been involved in growing commercial potato crops for over 30 years; I am a former chairman of CUPGRA (Cambridge University Potato Growers Research Association) and operated at various levels including being on the board of directors of a prestigious commercial grower. My aim was always to produce the best quality crops, sustainably and profitably.

In 2022 I was invited by Maxstim Ltd to advise and supervise biostimulant trials on potatoes in Suffolk. To be involved, as part of the field-scale crop trials team, and getting to understand and experience the benefits of the range of Maxstim's bio-stimulants and bio-fertilisers and then being able to demonstrate the economic benefit from their application to other farmers and growers is very exciting.



**6%  
Yield  
Increase**

Working with Tim Cannon, Maxstim's senior agronomist, we compared potato crops treated with Maxstim Agriculture+ and crops with no treatment. We felt it was important that the plots were of sufficient number and size, so we opted for 6 plots of 5.5m<sup>2</sup> in each treatment - a lot of digging! It was also important to us that crop was graded in 5mm size bands, all tubers counted, and dry matter content measured.

It was a very impressive set of results with the plots treated with Maxstim Agriculture+ showing an increase in both tuber number and size, giving an overall yield of 74 tonnes/ha compared with 70 tonnes/ha for the untreated plots; **a yield increase of nearly 6%**. The trials also indicated an **improvement in skin finish** if one of the Maxstim Agriculture+ treatments was sprayed in furrow.

These results speak for themselves, and I believe there is opportunity to optimise the use and application of Maxstim's products; to make **reductions in the use of traditional fertilisers and crop protection products**, to optimise the potential of the plant's own production mechanisms, in the UK and across the world. Further trials are being conducted in 2023 to increase our understanding of these improvements in crop performance and uniformity.

*Over the years I have come across a wide range of biostimulant products making all sorts of claims. I have been growing potatoes a long time and this is the only complex biostimulant that has impressed me.*



Insight

## Root Development Claim



### A major benefit of using Maxstim products is significant root mass increase.

Better root development has a big impact on the plants ability to seek nutrients, moisture and withstand abiotic stress.

We are not just looking for primary root development to improve anchorage. We want to fundamentally change the plant's root architecture by promoting the initiation of a larger number of new white roots significantly increasing the total root surface area.

Not only does this give better access to all the key inputs but will greatly improve the interaction with the soil microbiome. Changing the way a plant develops its root system can fundamentally affect the whole rhizosphere.



Untreated - Rye Grass



Treated - Rye Grass

#### How Maxstim affects root development

Maxstim bioactive components greatly influences root architecture by promoting lateral growth. This has been measured quantitatively by our research team, using fractal analysis, where significant root length, number of tips and the number of forks present were significantly increased compared to untreated plants.



The same significant improvements can be observed in a range of plants, from those used in amenities and in crops, from numerous field trials:

Where	What	Observations
Le Golf National, France	Sports Turf	After 9 weeks the average root increase throughout the course was 36%
Dunmurry Golf Club	Sports Turf	More root growth with no sign of stress or disease
France Galop, Chantilly Race Course	Sports Turf	After two treatments there was significant new white root development
Portugal	Raspberries	Significant root increase, and a 10.3% increase in harvest

### Raspberry Trial - Portugal



**CONTROL**



**MAXSTIM**

Plants treated with **Maxstim** had a significant increase in their root systems, you can see clearly how strong and dense they are growing compared to the control plants.

### The benefits of improved root development are:

- ✓ Superior overall plant health
- ✓ Improved nutrient use efficiency
- ✓ Better resistance to stress and disease
- ✓ More foliage
- ✓ Increased crop yield



**Maxstim provides a significant increase in root mass**

*Maxstim complex biostimulants improve root development for a large variety of plants, encouraging quick development of new and denser roots and improving plant health.*

Amphenox

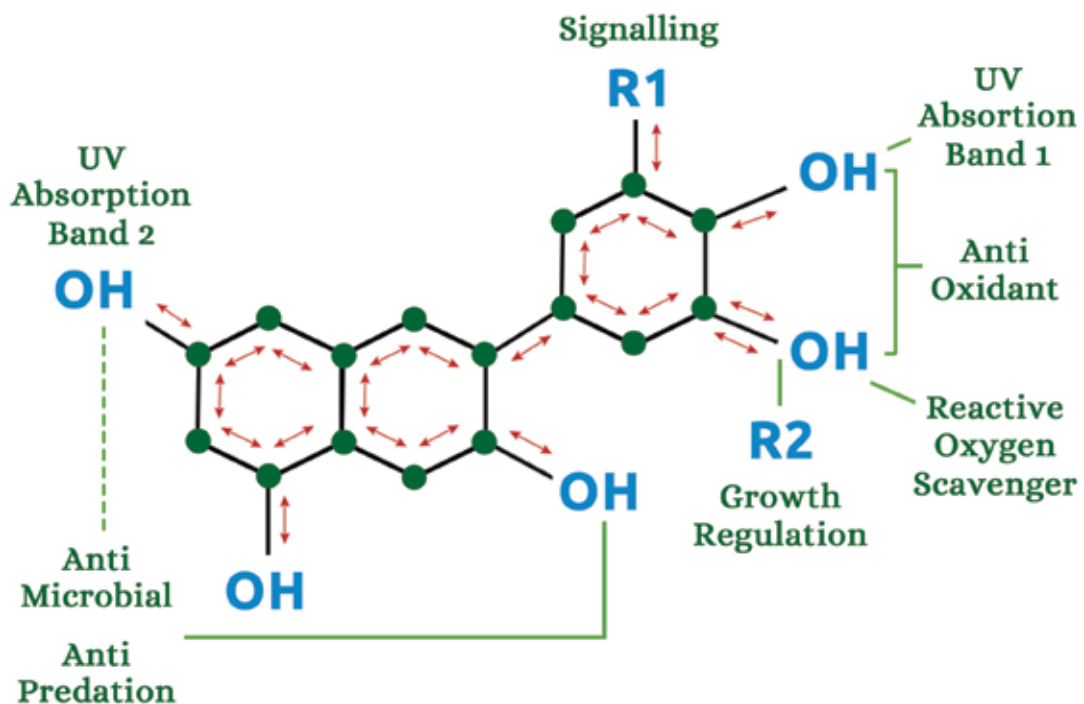
# Research & Development

powered by  
**Ampheno**™

Maxstim has developed production techniques that create abundant bioactive compounds:

- ✓ Bioflavonoids
- ✓ Polyphenols
- ✓ Glycosides
- ✓ Antioxidants

## Bioflavonoid chemical structure



## Amphenox bioflavonoids are highly bioactive molecules.

They influence:

- ✓ Defence mechanisms
- ✓ Cell growth
- ✓ Plant growth
- ✓ Abiotic stress
- ✓ Hormone signalling
- ✓ Stress management
- ✓ Protein metabolism

*RNA Sequencing enables us to identify the key gene pathways that **Amphenox** influences.*



For more information on how you can incorporate Maxstim complex biostimulants into your yearly growing programme please contact a member of our team on:

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