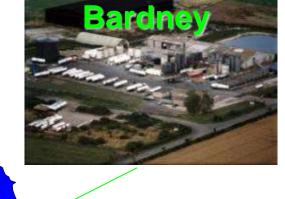


Liquid Fertiliser Production and Distribution

> 200 road tankers

> 500 analyses



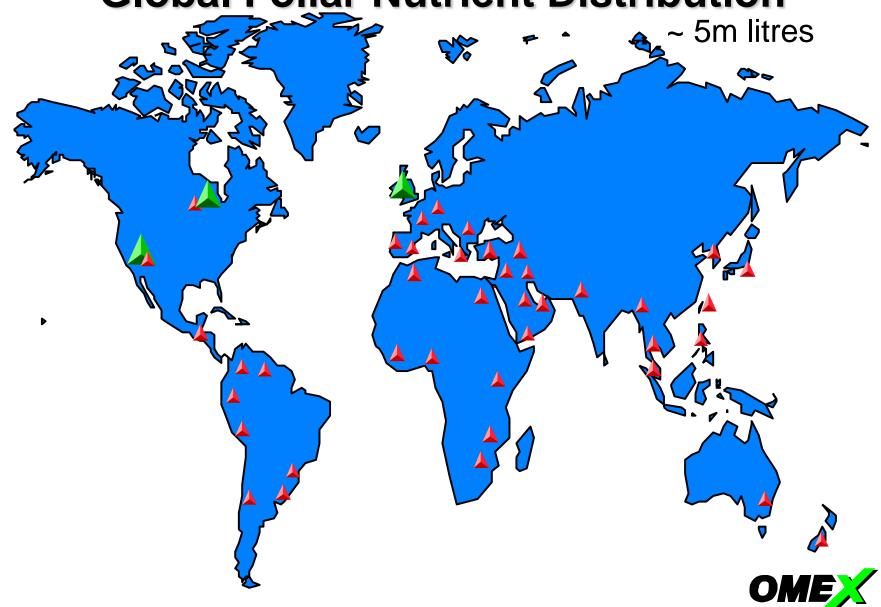








Global Foliar Nutrient Distribution



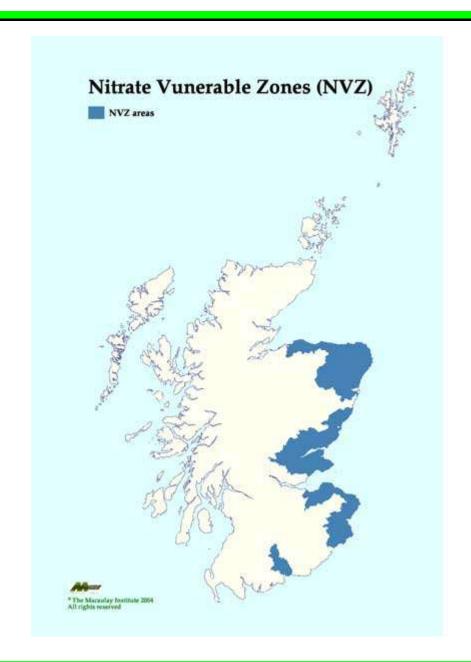
The Threats



Nitrogen Production









Phosphate Mining





Phosphate Pollution





Opportunities to improve efficiency (and sustainability)

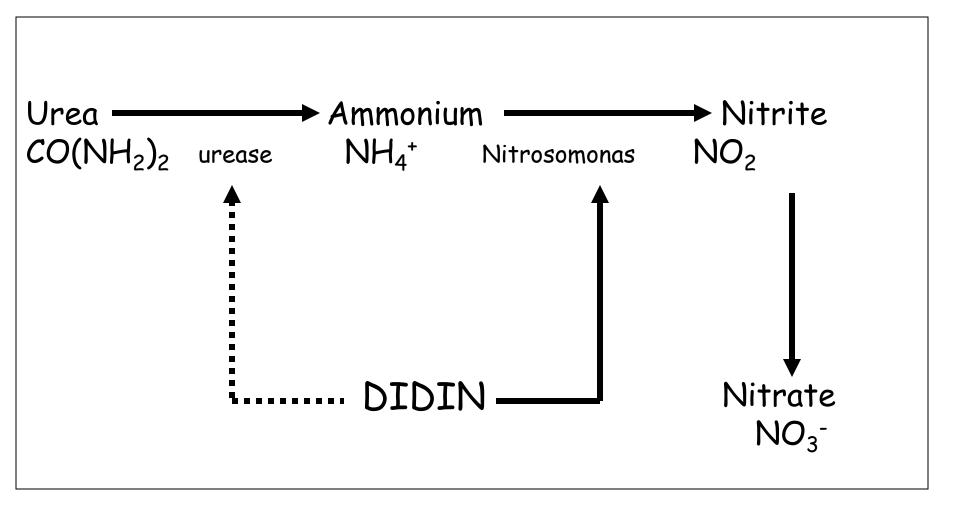
- Additives
- Novel Formulations
- Microbes
- Biostimulants
- Biofortification
- Future R&D



Additives

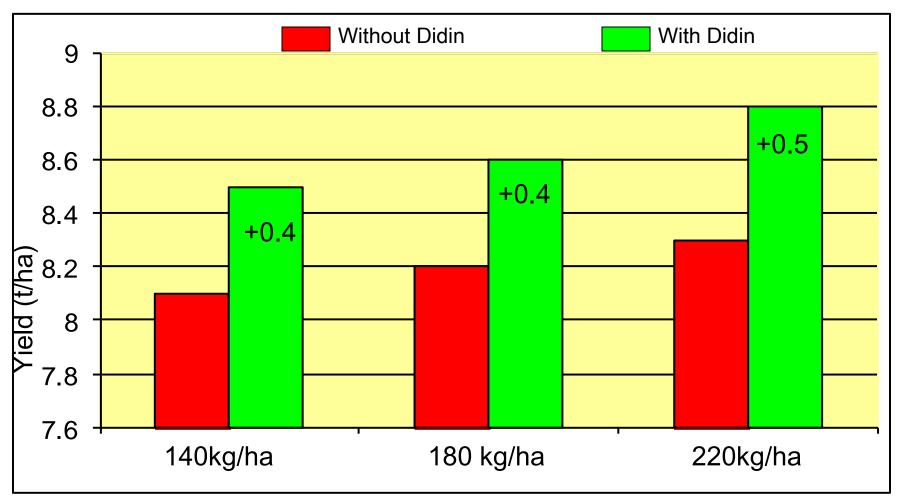


Nitrification Inhibitors





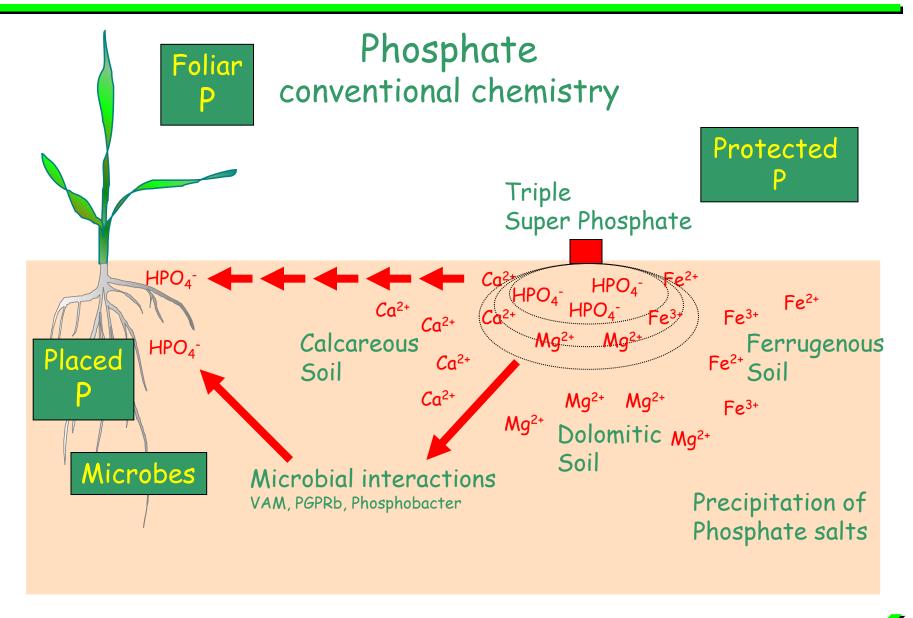
Didin on Wheat



ARC and Thames Valley Agritrials

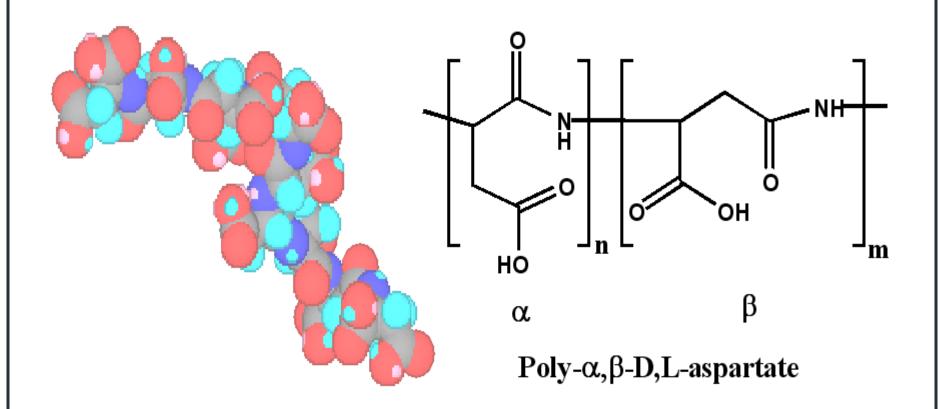
Average of 5 varieties over 2 year period







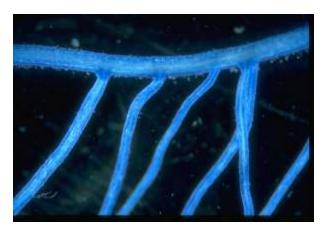
TPA Structure



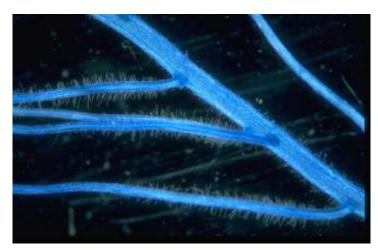


Effect of TPA on wheat root hair growth

Increased nutrient availability from TPA encourages roots to generate many more root hairs.



Normal Nutrient Level



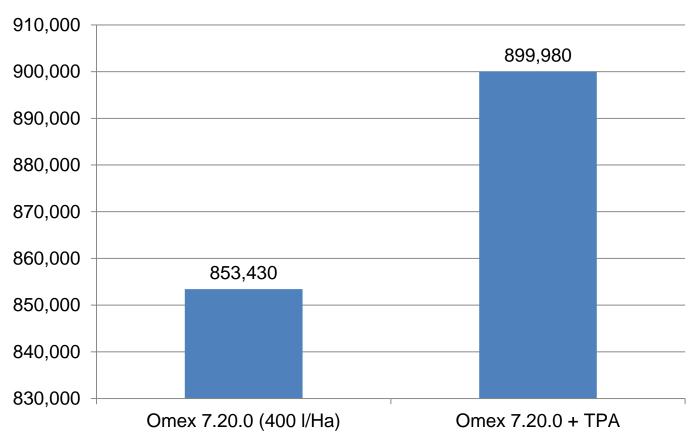
Normal Nutrient Level plus TPA

Root hairs are responsible for up to 90% or more of nutrient uptake.



Maris Peer (Salad) Potatoes, Suffolk 2011

Tuber Numbers





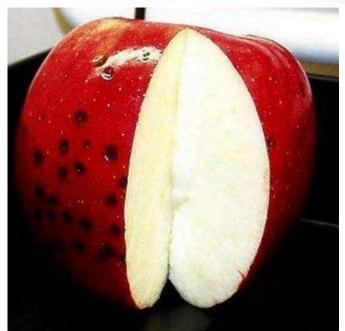


Novel Formulations











Bitterpit trial, USA

Oregon USA 2011



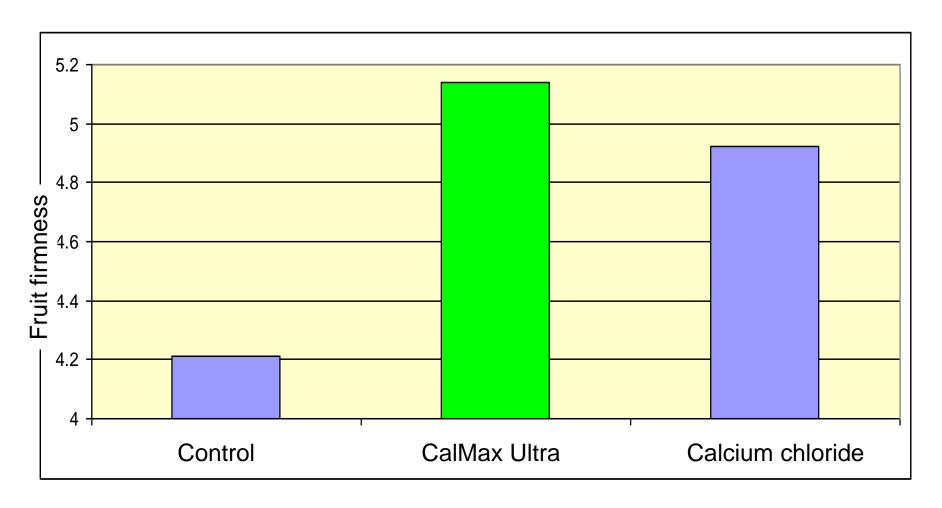
Calcium standard



CalMax Ultra



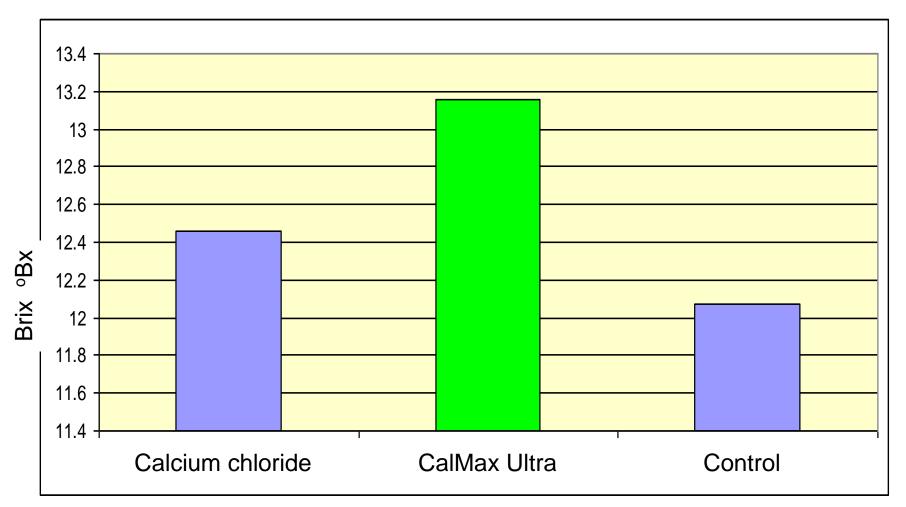
Enhanced Calcium: Fruit firmness



Location: Kent, UK
Variety Cox
Application rate 3.5 litres/Ha



Sweetness



Location: Kent, UK Variety Cox Application rate 3.5 litres/Ha



Microbes



Biomex= Bacillus amyloliquefaciens FZB42®

Bacillus amyloliquefaciens, a natural, unmodified rhizobacteria, selected because of the broad spectrum of activity and used for stimulating plant growth.

- Improved germination
- Improved rooting of plants
- Improved yields
- Earlier yield
- Higher vitality of plants (reduced disease intensity and frequency



Bio-Fertilisation – feeding and protecting

Biomex Plus...

Promotes:

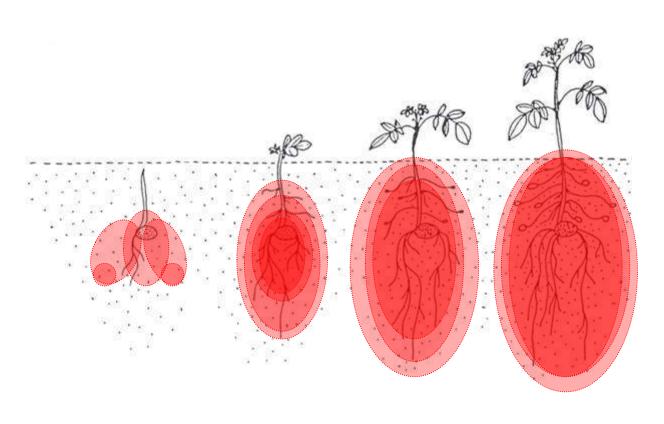
- plant growth,
- root development
- defence

Forms an active envelope around root mass.

Actively releases nutrients from soil sources.

Competes with other microbes for root exudates

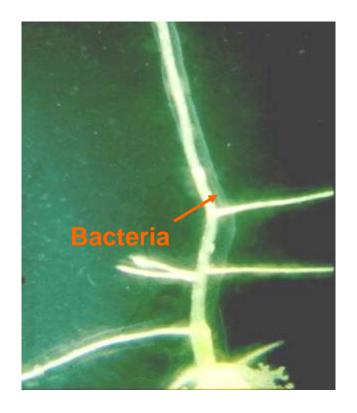
Produces physical, biochemical barrier to suppress pathogens

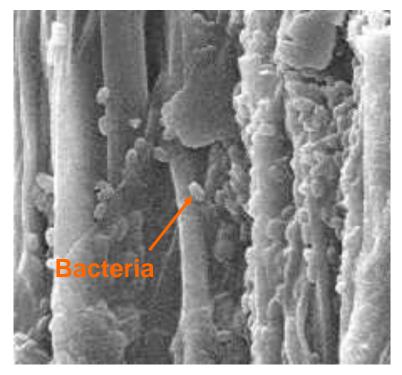




Mode of action:

 After use (e.g by coating or soil drenching) and germination of spores the roots will be colonised





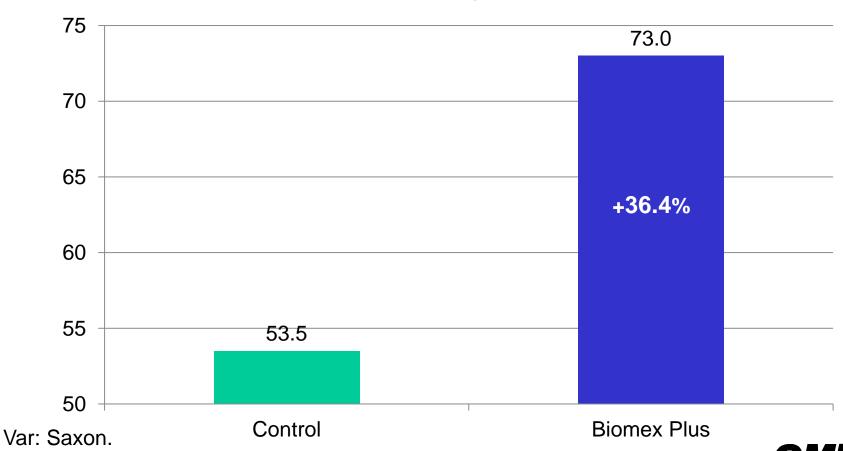






Potatoes: 2011

tonnes/ha



Suffolk UK

Strawberries, Kent, 2011



Untreated

Market Weight

BIOMEX	459.6	(41.6)	D=0.044
CONTROL	421.3	(30.2)	P=0.044

Biomex

"The effect of treatment on the total weight of fruit including marketable, non-marketable and waste was significant with the Biomix treatment causing an increase in weight of fruit produced"

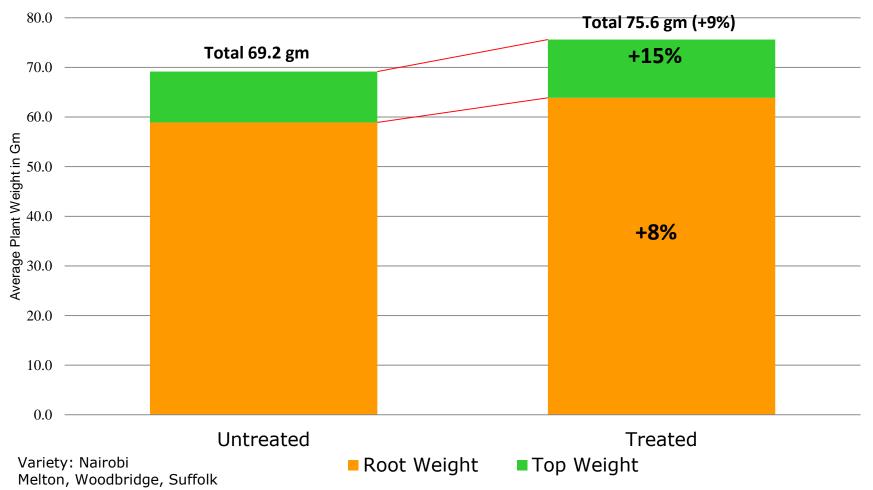




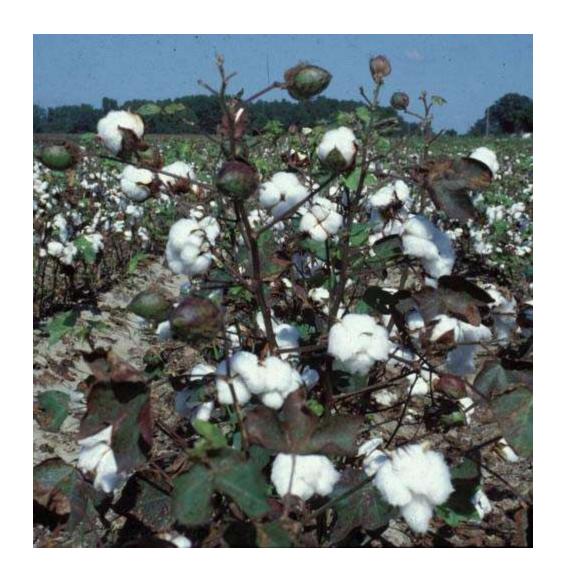


Carrots: Biomex Seed Treatment

Average Plant Weight (gm) 30 Plants assessed 08 Oct 2010

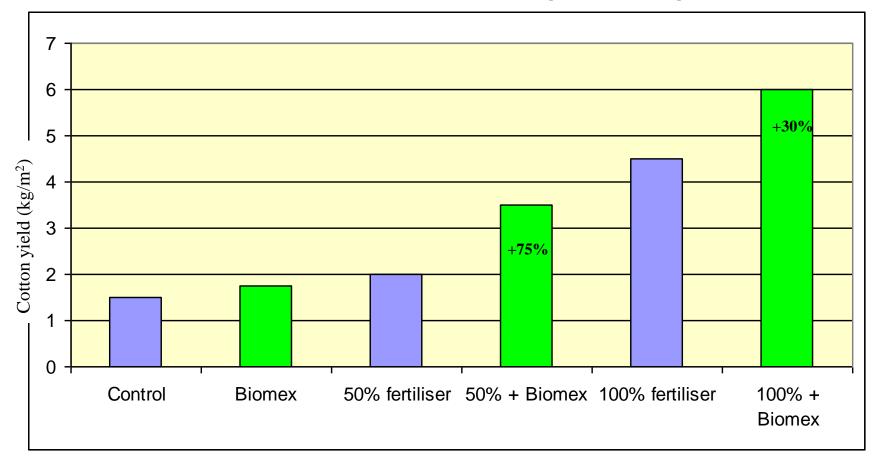








Biomex: Cotton Yield, Egypt (kg/20m²)



University of Cairo

- Cotton variety Giza 90
- Sowing rate/Ha 60kg
- Biomex seed dressing 240 ml/Ha
- Fertiliser (NH₄NO₃) recommended rate 79kgN/Ha



Biostimulants





Resources on the European Biostimulants Industry, our role in improving agricultural sustainability and innovative economic growth.

HOME BENEFITS OF BIO	STIMULANTS	ABOUT	NEWS	CONTACT				
WHAT ARE BIOSTIMULANTS	WHO WE ARE	HOWV	VE WORK	MEMBERS	JOIN EBIC	BOARD	SECRETARIAT	IN THE NEWS

WHAT ARE BIOSTIMULANTS



SEARCH



Agricultural biostimulants include diverse formulations of compounds, substances and other products that are applied to plants or soils to regulate and enhance the crop's physiological processes, thus making them more efficient. Biostimulants act on plant physiology through different pathways than nutrients to improve crop vigour, yields, quality and post-harvest shelf life/conservation.

Biostimulants foster plant growth and development throughout the crop life cycle from seed germination to plant maturity in a number of demonstrated ways, including but not limited to:

- Improving the efficiency of the plant's metabolism to induce yield increases and enhanced crop quality;
- Increasing plant tolerance to and recovery from abiotic stresses;
- · Facilitating nutrient assimilation, translocation and use;
- Enhancing quality attributes of produce, including sugar content, colour, fruit seeding, etc;
- · Regulating and improving plant water balance;
- Enhancing certain physicochemical properties of the soil and fostering the development of complementary soil micro-organisms.

What distinguishes biostimulants from traditional crop inputs?

 Biostimulants operate through different mechanisms than fertilisers, regardless of the presence of nutrients in the products.

HIGHLIGHTS

Economic overview of the European biostimulants sector

Driven by consumer demands for more sustainable food production and technological innovation, the biostimulant industry is rapidly growing. The profile of the biostimulants sector differs from many traditional agricultural industries.

Continue reading -

Fragmented regulations for biostimulants impede more sustainable agriculture

The European biostimulants industry calls on policymakers to

www.biostimulants.eu



Revised EBIC definition of biostimulants

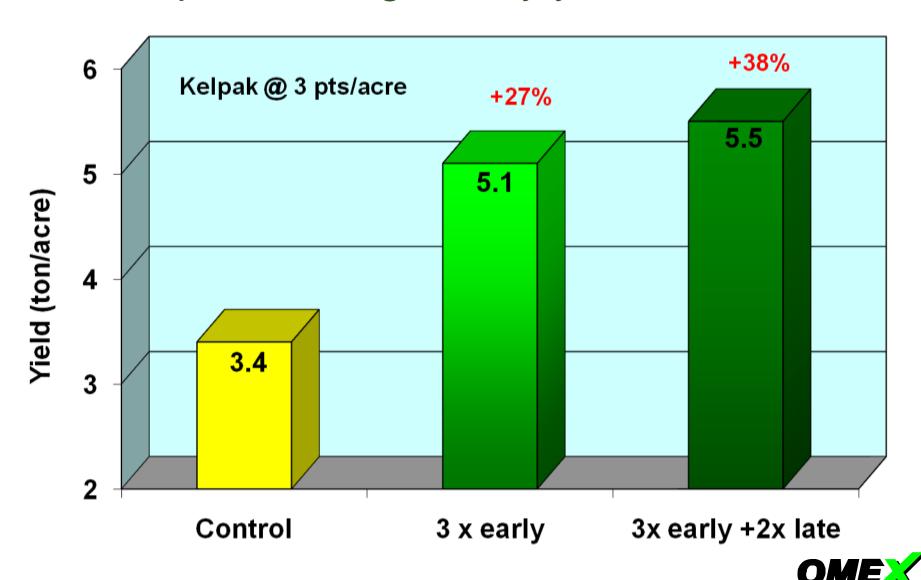
"Plant biostimulants, regardless of their nutrient content, contain substance(s), compound(s), and/or micro-organisms whose functional use, when applied to plants or the rhizosphere, is to improve crop development, vigor, yield and/or quality by stimulating natural processes that benefit growth and responses to abiotic stresses."







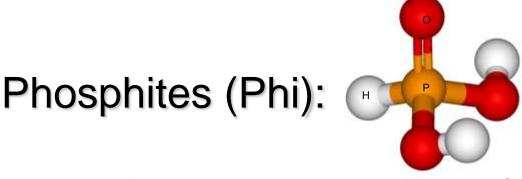
Kelpak on Bing Cherry yield - California



Phosphites

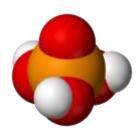
- What are they?
- What do they do?
- How can they be used?





salts of phosphorous acid (H₃PO₃)

Phosphates (Pi):



salts of phosphoric acid (H₃PO₄)



What they do really depends on the dose

Low Dose (<1 litre/Ha)

- Excellent foliar absorption
- Aid cation transport
- Quickly systemic
- Stimulate root production and nutrient uptake
- Stimulate Plant Health
- Synergy with phosphates

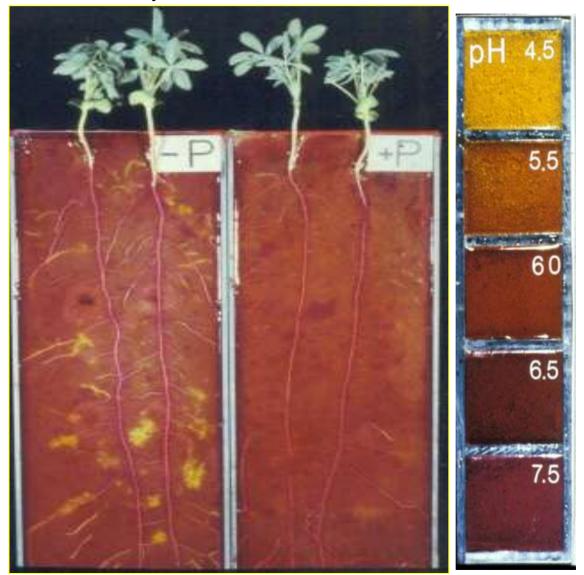
High Dose

Act as fungicide



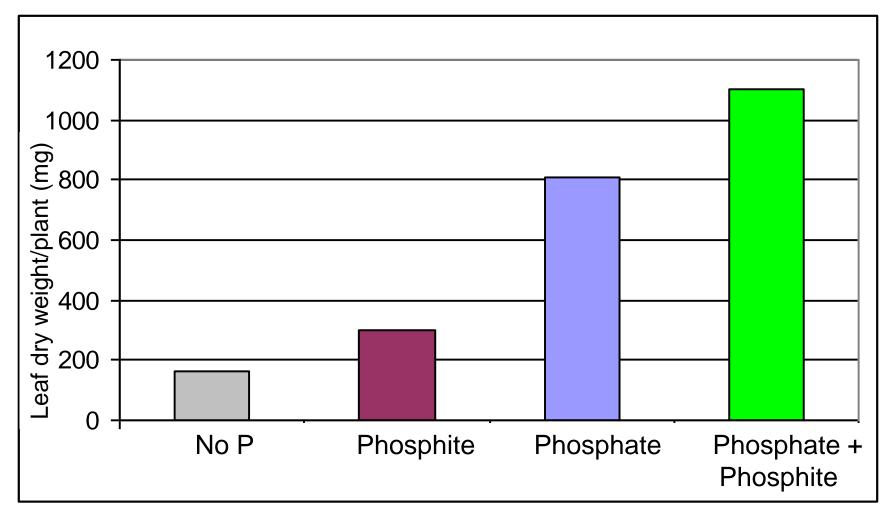
Exudation of organic acids

P deficiency induced citrate release



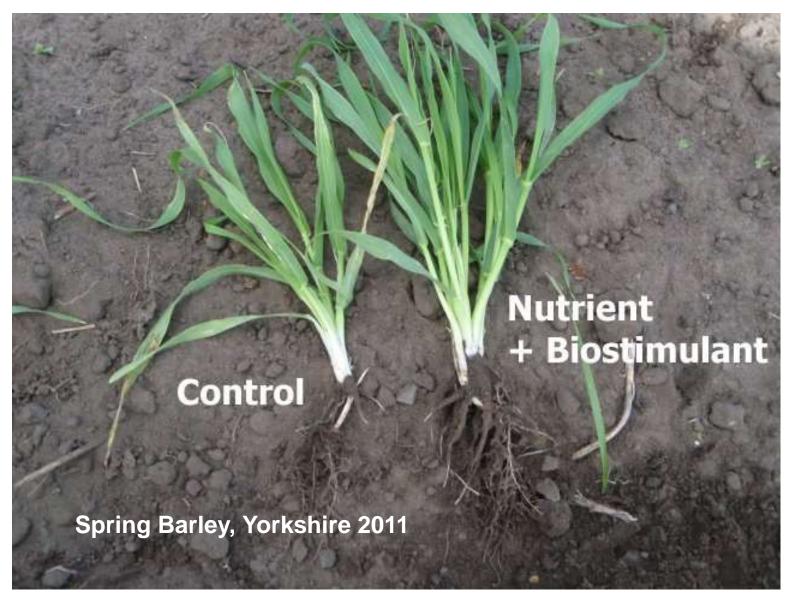
Romheld 2005

Phosphite/phosphate synergy



Hydroponic tomato plants









Biofortification



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Blackcurrants are the berry best fruit for you

Last updated at 22:41 18 June 2007



It may not be as fashionable as its more exotic cousins but the humble blackcurrant is the healthiest fruit of all.

Research shows that the common or garden blackcurrant is more nutritious than other fruits, from home-grown apples and strawberries to tropical mangoes and bananas.

Blackcurrants also contain the highest levels of health-boosting antioxidants - natural compounds credited with the ability to stave off a range of illnesses from heart disease to cancer.

Scroll down for more...



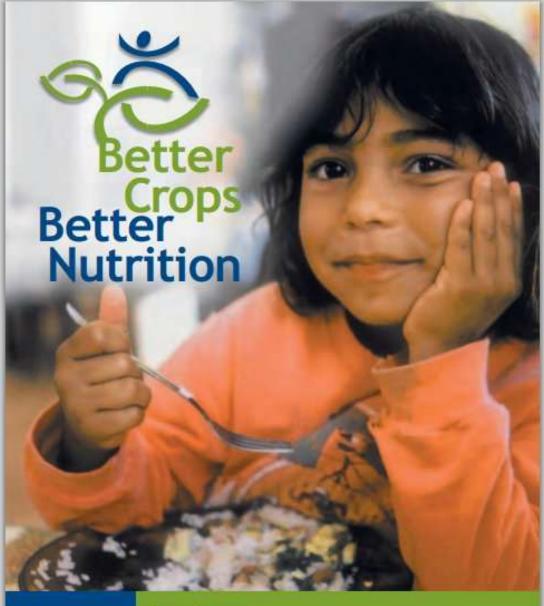




FEMAIL TODAY

Dannii Minogue puts on a brave face as she makes first appearance after Simon Cowell romance claims at the



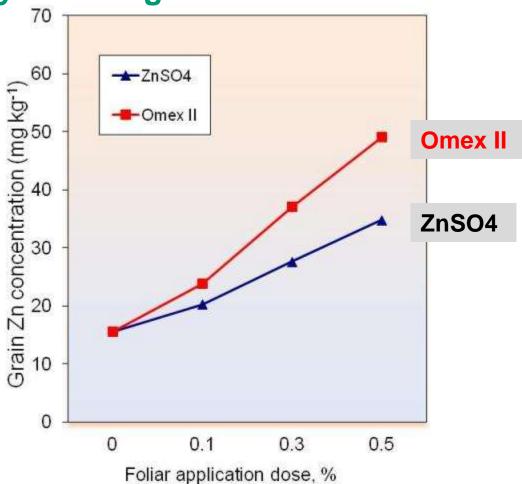




Imagine...

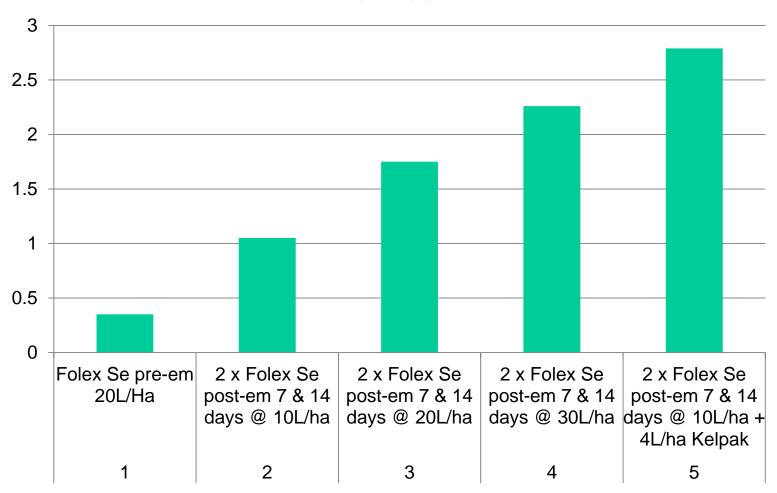
new varieties of nourishing crops rich in essential nutrients that can be grown and eaten by poor farming communities in the developing world to improve both their nutrition and their health.

Effectiveness of OMEX-II and ZnSO4 on grain Zn accumulation when sprayed at different rates during the early milk stage





Leafy Salad: DM Selenium mg/Kg at harvest





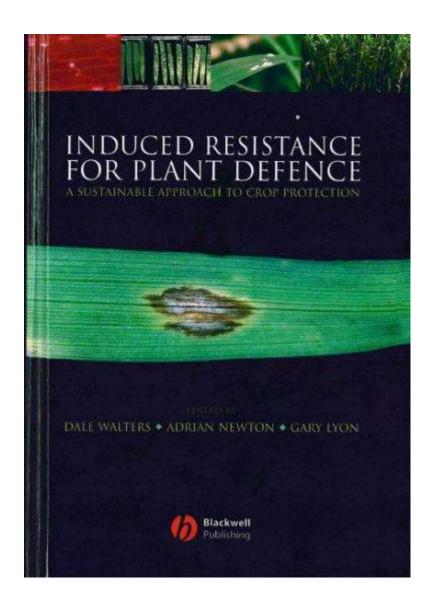
Future R&D

- Elicitors
- Beneficial nutrients
- Microbes



Elicitors







- Fungal and Bacterial PGPRS
- Antibiotics
- Chitin
- Ergosterol
- Glucans
- Lipopolysaccharides
- Proteins and Peptides
- Salicylic Acid
- Sphingolipids
- Bacterial metabolites
- Brassinolide
- Jasmonates
- Oligogalacturonide

- Oxalate
- Plant extracts
- Salicylic acid
- Spermine
- Ethylene
- Chitosan
- Saccharin
- BABA
- Lipids
- Nitric oxide
- Vitamins
- Silicon
- MANY OTHERS?



Future R&D

Help Wanted!

