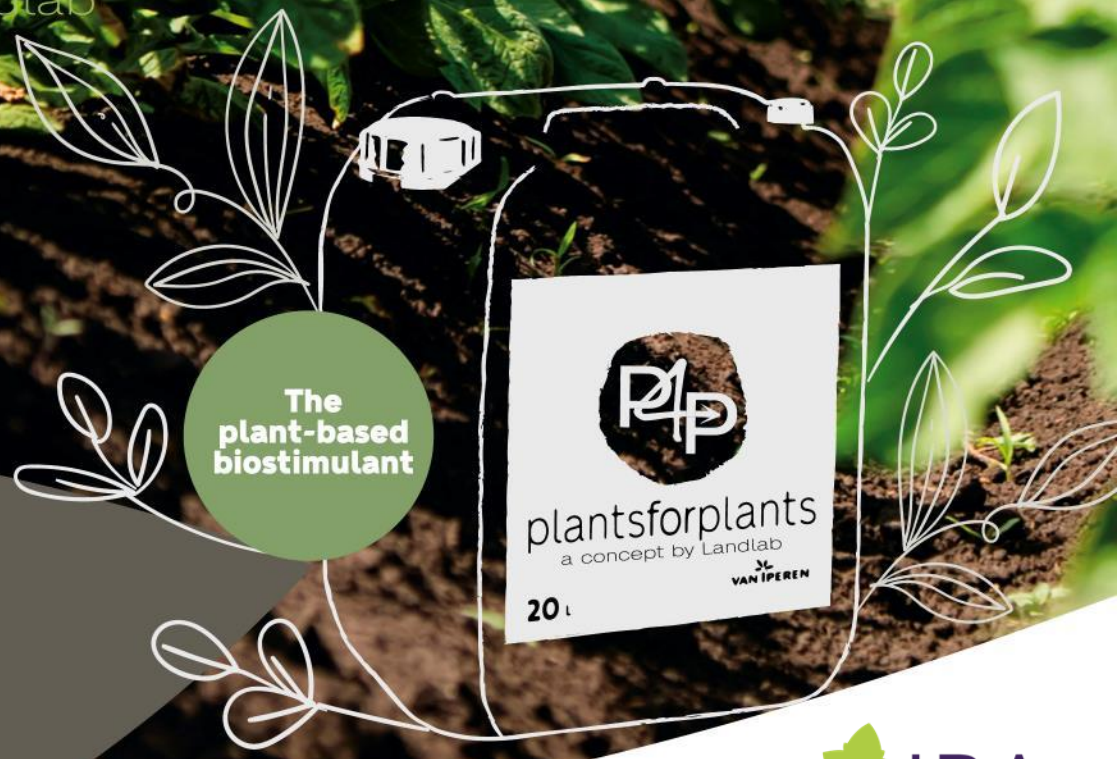
VAN IPEREN
LET'S MAKE THE GREEN SWITCH

plantsforplants®
a concept by Landlab



Plants for Plants

Plant extract based biostimulants
Renesse 11-06-2025

Zahi Zind – Martin Tolhoek

IBA
International Blackcurrant Association

Plants talk, we listen

https://youtu.be/BoMnYSpibY4

History of Plants for Plants®

The godfather of Plants for Plants

1st EU “Horizon 2020” project in 2016

Coordinating beneficiary Landlab, partnered by Van Iperen

Horizon 2020
European Union Funding
for Research & Innovation

2nd EU “Horizon 2020” project in 2017

Letter of excellence for Landlab, funding by Van Iperen

LIFE project since July 2019

Close to market project, stimulating final introduction

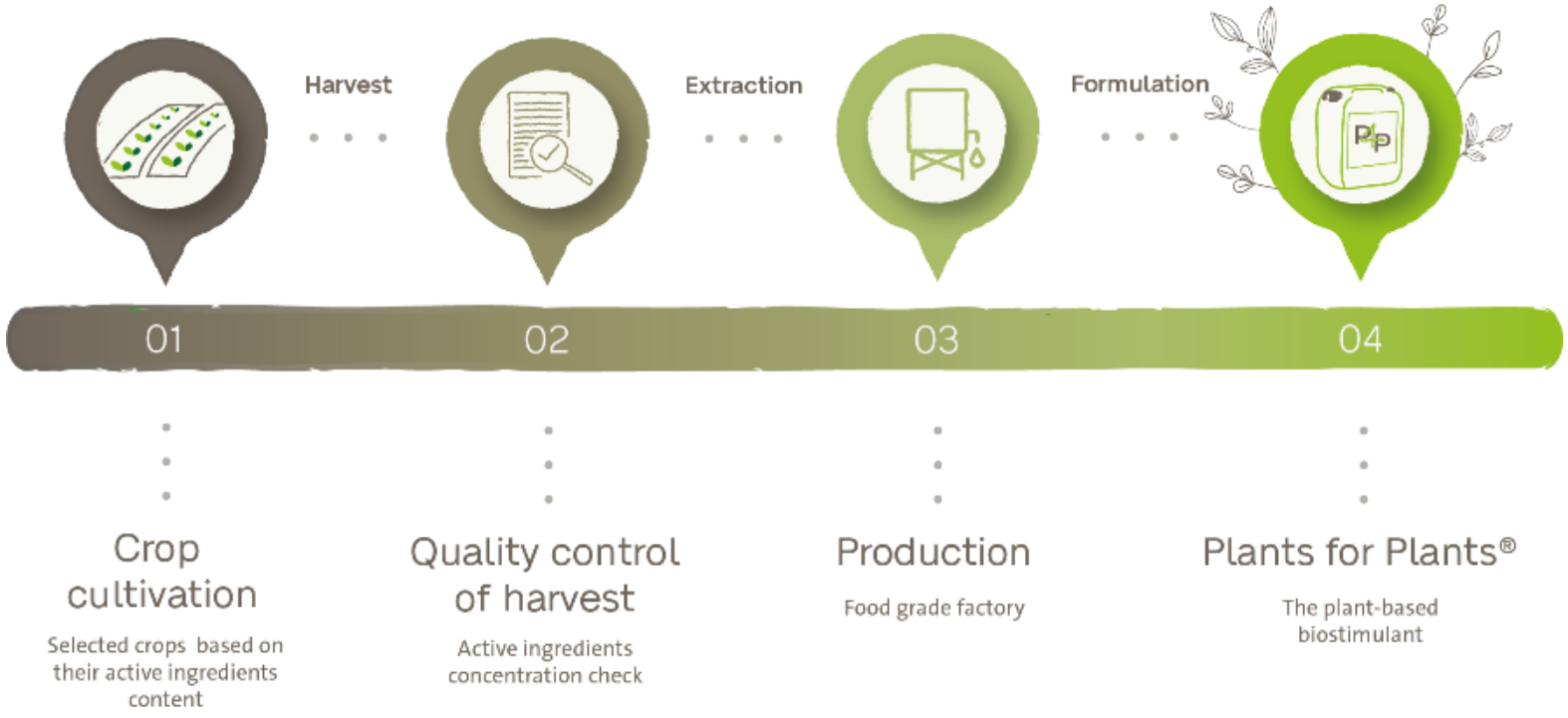
The stakeholders of Plants for Plants®

What makes Plants for Plants®

unique?

The first fully controlled plant-based Biostimulant

A fully controlled plant-based Biostimulant. What does it mean?

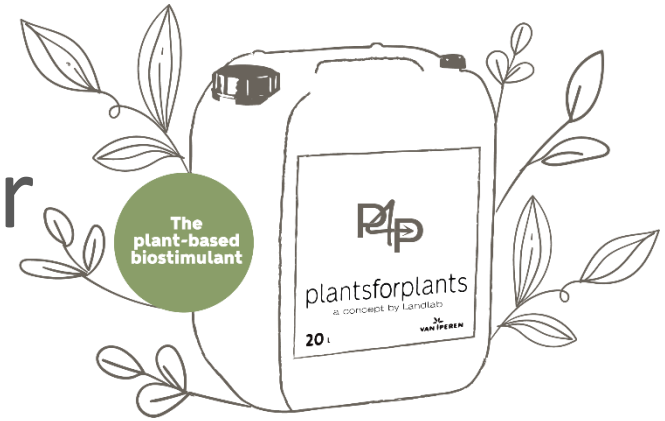


Proven and consistent Biostimulation effects

- >120 trials - nearly 600 ha
- 50 crops
- 6 climate zones - 21 countries

😐	🙂	🙂
Negative results	Similar yield less input (water or nutrient)	Increased yield Increased quality
6%	25%	69%

The new generation of biostimulants for organic and conventional agriculture



This project is co-funded by the European Union's LIFE Programme under Grant Agreement LIFE18 ENV/NL/000043

CE 2019 Biostimulant Law & Organic Certifications

CE FPR (EU) 2019/1009

Non Microbial Biostimulants		
Plants for Plants® 4-Terra	✓	
Plants for Plants® 4-Good	✓	
Plants for Plants® 4-Vita	✓	

Contrôlé par ECOCERT INTRANTS

FiBL

Approved for Organic Farming

- **Europe** (UE 2018/848) (UE 2021/1165)
- **USA/Canada** (NOP National Organic Program)
- **JAS** (Japanese Agriculture Standard)
- **Demeter International** (FiBL) – Biodynamic Agriculture

Plants for Plants ® product range

The first 3 products on the market

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The Field Experience

Martin Tolhoek – Van Iperen B.V

IBA International Blackcurrant Association

Plants talk, we listen

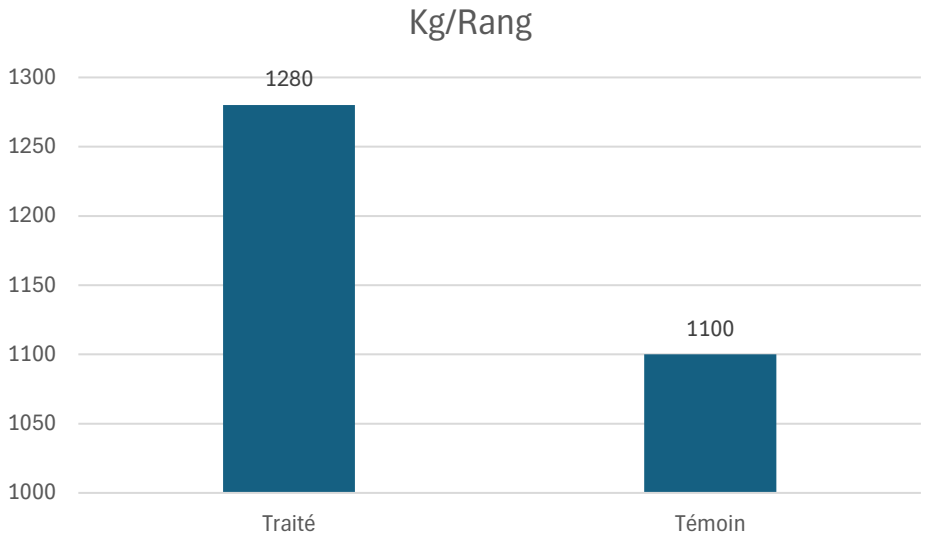
4-Terra – Pears NL 2021

- **Location: Wouw**
- **Producer: Bastianen**
- **Area: 0.015 Ha**
- **Season: August 2021**
- **Cultivar: Conference**

Untreated : Grower program

Treatment: 3 applications x 5.33 L/Ha of 4-Terra

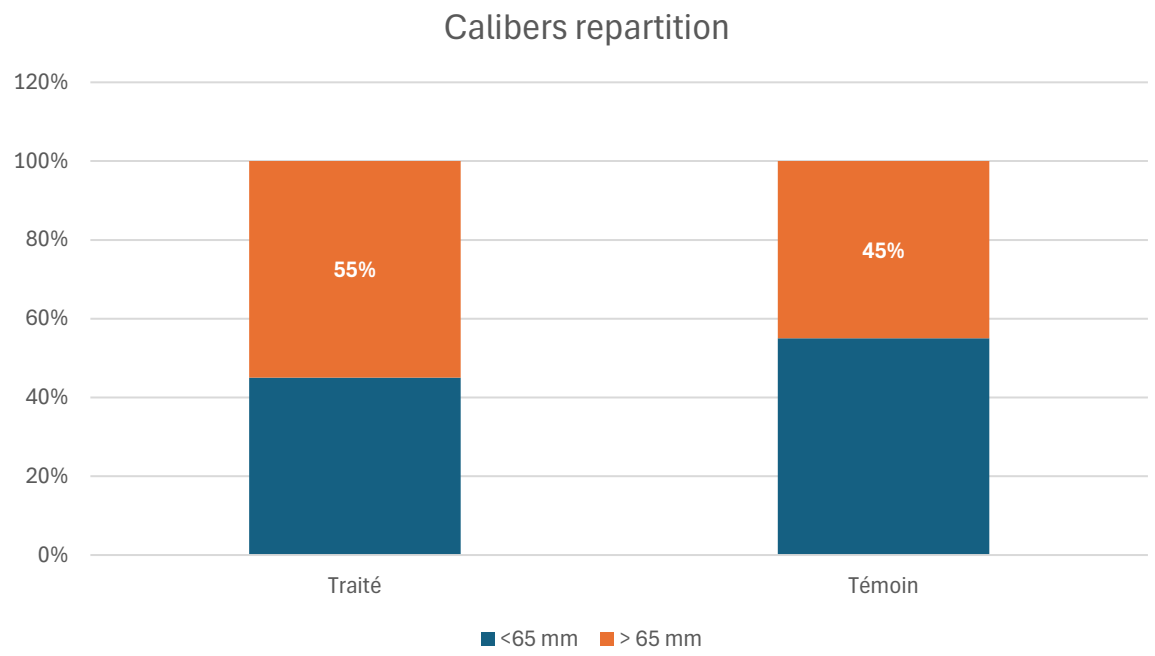
- 20 April 2021
- 30 April 2021
- 10 May 2021



4-Terra Pear Conference 2024 - Netherlands 2024

- 4-Terra (Fertigation)
  - 14 march 2024 – 4L/Ha
  - 21 march 2024 – 4L/Ha
  - 29 march 2024 – 4L/Ha
  - 5 april 2024 – 4L/Ha

- No effect on yield
- Clear improvement in the distribution of sizes
- Better vigor and N+1 potential clearly noted by the producer



4-Good – Potato

Gaakeer 2022 - Netherlands

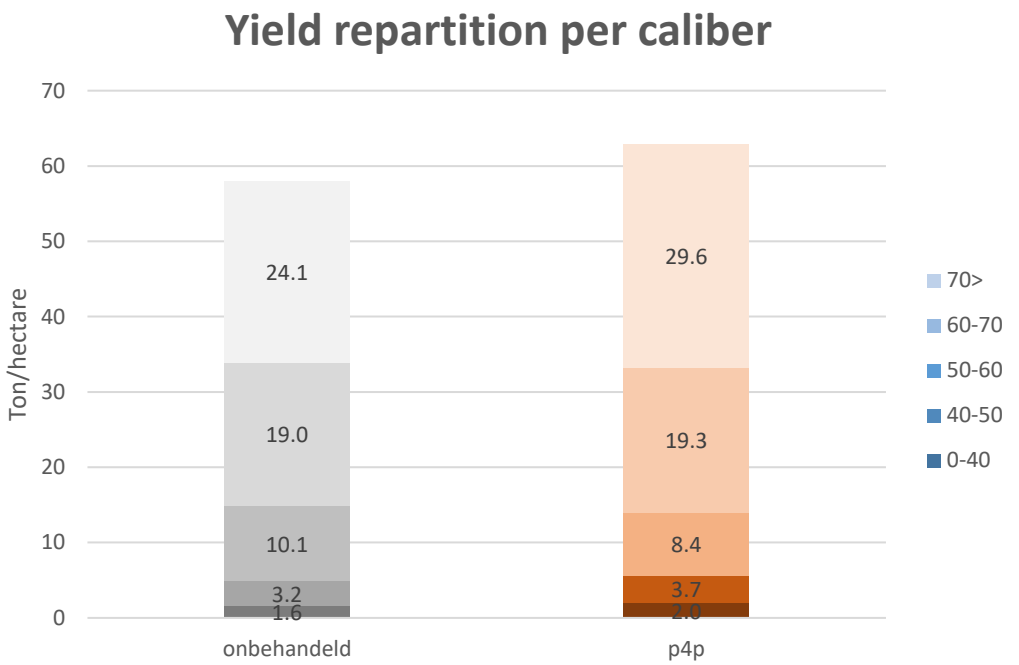
Trial Setup

- Aim: PUE – in comfort situation
- Location: Gaakeer
- Treated Area: 1 Ha
- Planting date April 2022
- Harvet date October 2022
- 58 T/Ha for untreated Vs 63 T/Ha for P4P

Control: Farmer Practice (FP)

Treated: FP + 3 applications x 2 L/Ha of 4-Good

Results



8.6% increase in yield in similar comfort P situation

Increase is in desired calibers

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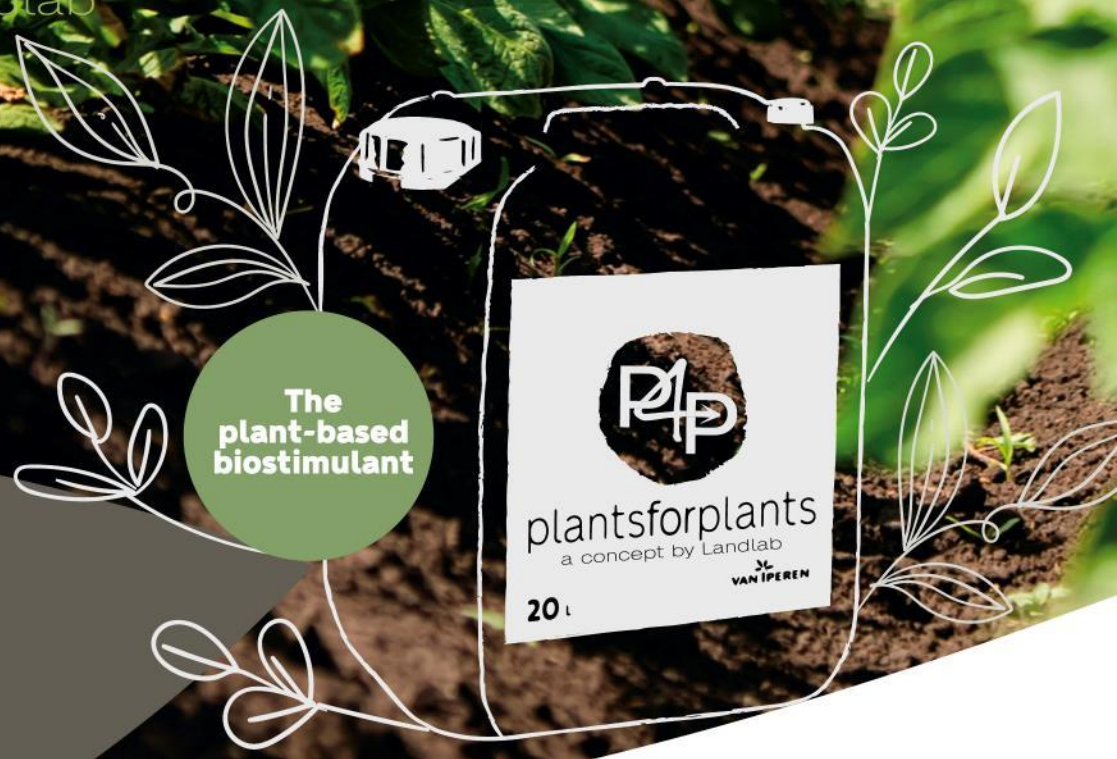


P4P Mode of Action

Plants talk, we listen

4-Vita/Good

Foliar applied extract

A revolutionary approach

Prevent rather than react…

- **Traditional Biostimulants** like Seaweed, Amino Acids, Glycine Betaine, etc… work on enhancing physiological **reactions of plants Vs stress**

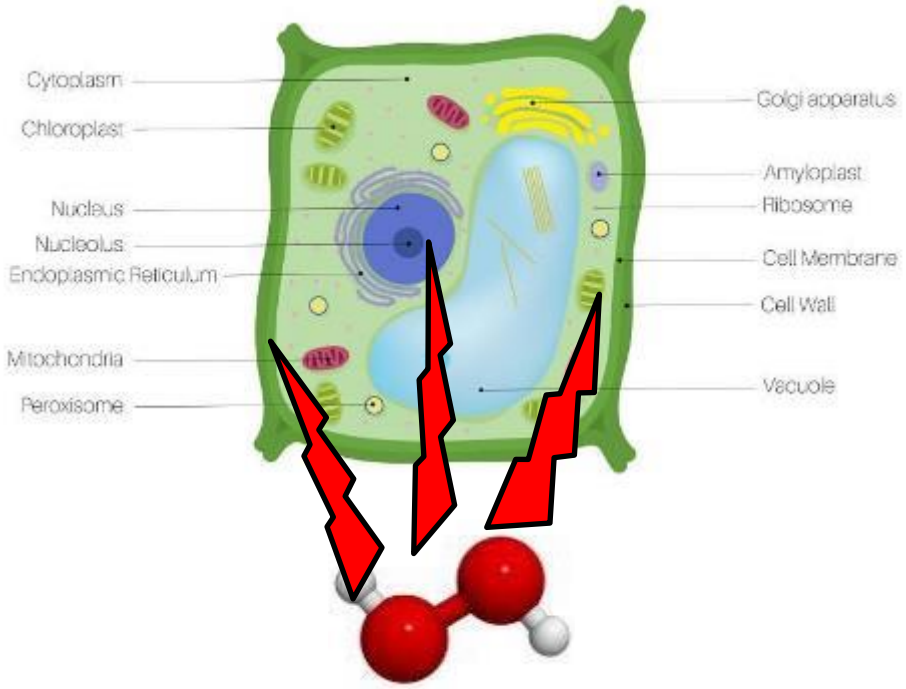
  - In other words – **Stress is almost a requirement** to see any results.

- **But what if we maintained the physiological chain reaction provoked by stress under control?**

Oxidative Phenomena: a natural occurring phenomena on all living organisms

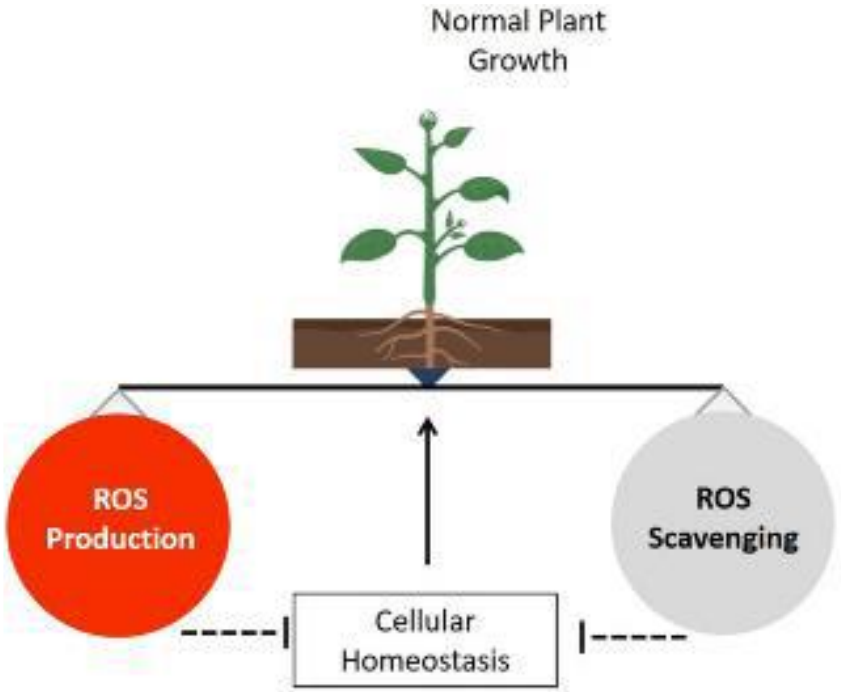
Any plant is exposed continuously to oxidative degradation – regardless of causes

- All living cells get degraded throughout time, simply by exposure to external factors such as Oxygen, Light, Wind, or natural internal succession of phenological stages such as Senescence, **even** in normal conditions…
- In **any** stressful condition (and not just abiotic one), the oxidation is greatly increased
- This type of reaction is therefore **ever going on** in plants with fluctuating intensity resulting in production of **ROS** (Reactive Oxygen Species) molecules *like peroxides, superoxide,…,*
- This causes degradation of cells and many of their components (proteins, lipids, DNA…)
- This greatly disrupts vital plant functions such as healthy nutrition and performance resulting in biomass, yield and quality decrease!



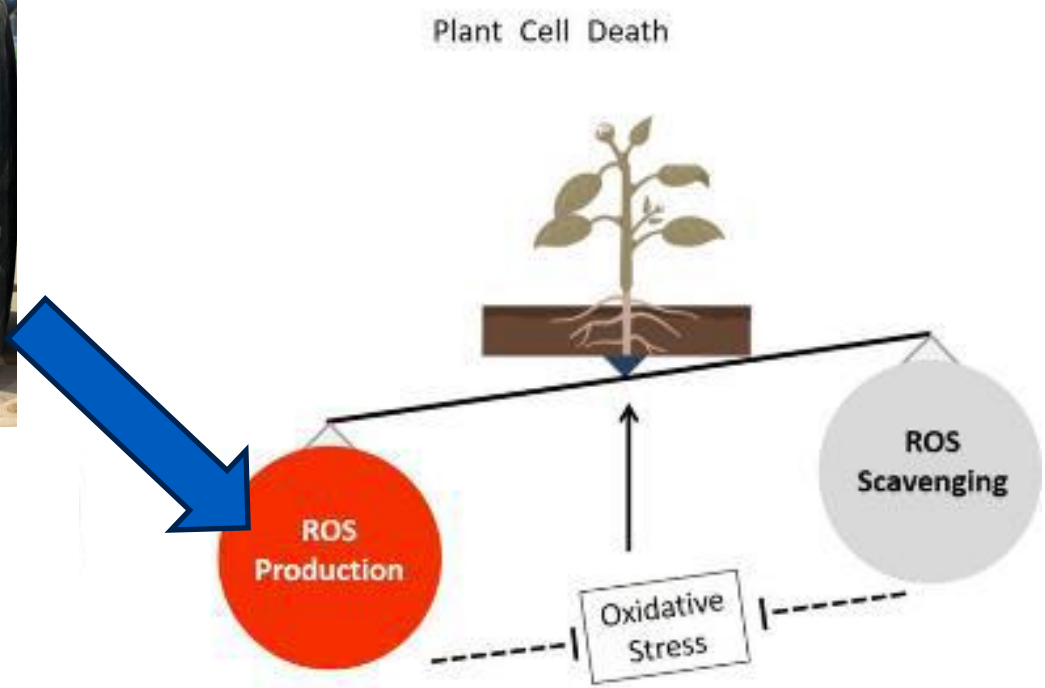
Oxidative phenomena becomes Oxidative stress

When ROS production exceeds the ROS-Scavenging activity in the plant



Oxidative phenomena becomes Oxidative stress

P4P 4-Good can block the ROS production at the source – Preventive approach



Less ROS, ok, but how?

1) The Chloroplast – Where everything is happening!

4-Vita/Good will alter the Fatty Acids configuration of the Chloroplast membrane making them tougher and more adapted to drought, light, heat and other stress factors!

Compounds	Sum Log FC	
	UTC, Drought	4-Vita, Drought
PG	11.30	36.33

PG lipid (phosphatidylglycerol) stabilizes the system in stress conditions!

4-Terra

Fertigation applied extracts

4-Terra is increasing PUE and improving P availability

How is it working?

Direct effect on plant (biostimulant)

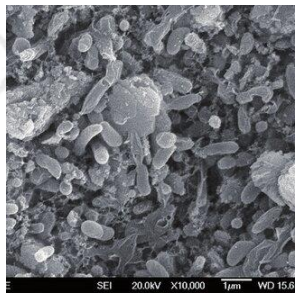
Effect on soil microbioma

4-Terra – Mode of Action summarized

x 4 Phosphate transporters in the plant (PHT2-1)

+70% Mycorrhization

Prebiotic effect on P and N involved bacterium



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Plants for Plants® 4-Terra

Advantages – Benefits - Application

- Plant-based Biostimulant targeting NUE ensuring higher yield and crop quality
- Developed for cash crops in comfort and stress conditions
- Applied at early stage and vegetative stage
- Improved crop establishment and nutrient uptake
- Developed for fertigated crops (vegetables, fruit trees, vineyard and soft fruits)

Plants for Plants® 4-Terra

MOA – How it works ?

Improved phosphate assimilation	• Improved Phosphate mobility and assimilation due to chloroplastic orthophosphate PHT2;1 gene activation, a Phosphate transporter
Increased microbial activity in the soil as well as nutrient availability	• Increase of microbial population allowing P solubilization in soil (Microbioma effect)