

### WHY SANBIO?

»We help you to **rescue** your **harvest**, to make more profit and to Save costs.«

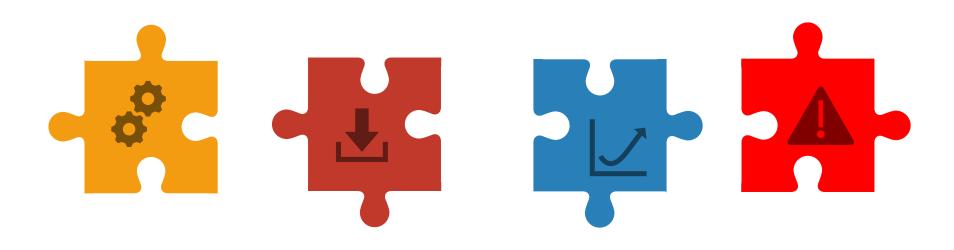


Jörg MEYER Founder and CEO

## THE NOVEL STRATEGY

#### THE MARKET PROVIDES

individual standard products of each category with a single purpose only.



**Fertilizers** 

**Soil improver Stimulators** 

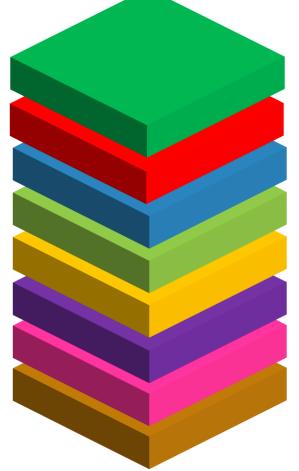
**Pesticides** 

#### **SANBIO COMBINES TO MULTI-FUNCTIONAL**

Sanbio® combines **core functions** from each category. It works systemically, preventively and curatively with associated natural mechanisms.



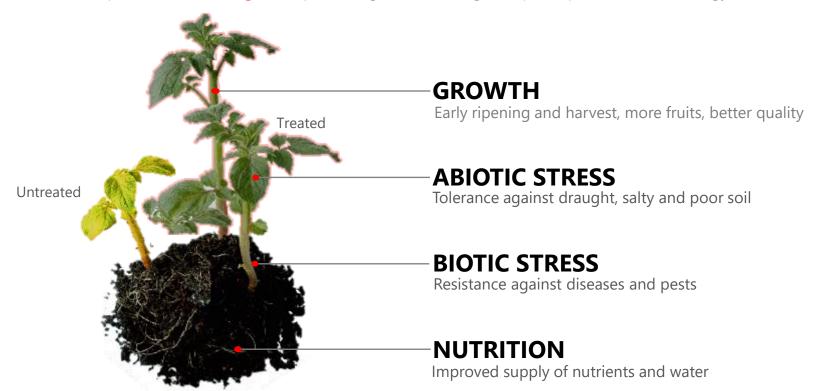
#### **MULTI-LEVEL APPROACH**



- 8. GROWTH CONTROL
- 7. INTEGRATED CROP & PEST PROTECTION
- 6. RESPIRATION & TRANSPIRATION
- **5. CONTROL OF PHOTOSYNTHESIS**
- 4. ENHANCED POLLINATION
- 3. ADJUSTMENT OF RHIZOPLANE MICROBIOM
- 2. MODELING OF ROOT ARCHITECTURE
- 1. NUTRITION & SOIL FERTILITY

#### **GET THE FULL CONTROL**

Sanbio® provides strong **protection** against soil borne, fungal diseases, pathogens and provides control of **growth** promoting factors through its special production technology.



## PRODUCT LINE

### **SANBIO PRODUCT LINE**









## YOUR BENEFIT



## FARMER APPROVED



## AWARD WINNER

#### **AWARD WINNER**







"CROP POWER 85" AWARD GERMAYN 2008

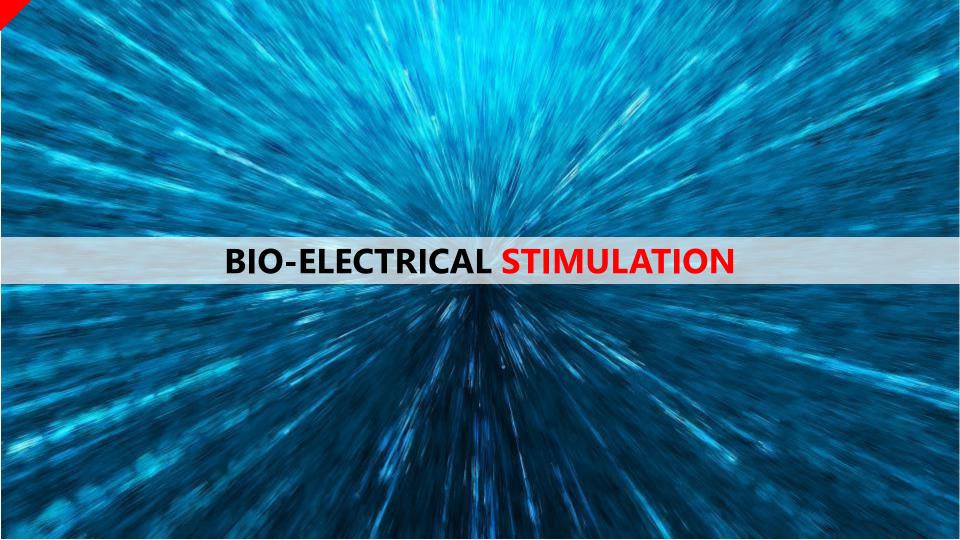


"INNOVATIVE THROUGH RESEARCH" AWARD GERMANY 2020-2021

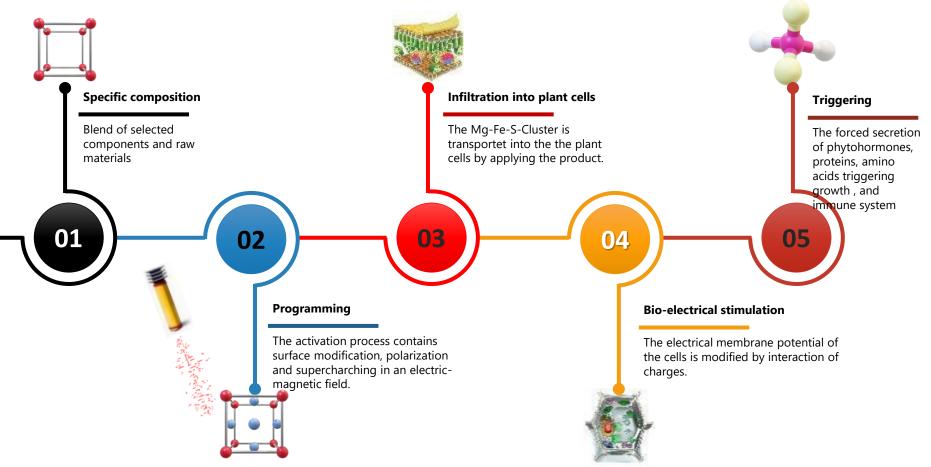


PRESTIGE AWARD
"BIOTECH COMPANY OF
THE YEAR"
UK-GERMANY 2020

# OUR TECHNOLOGY

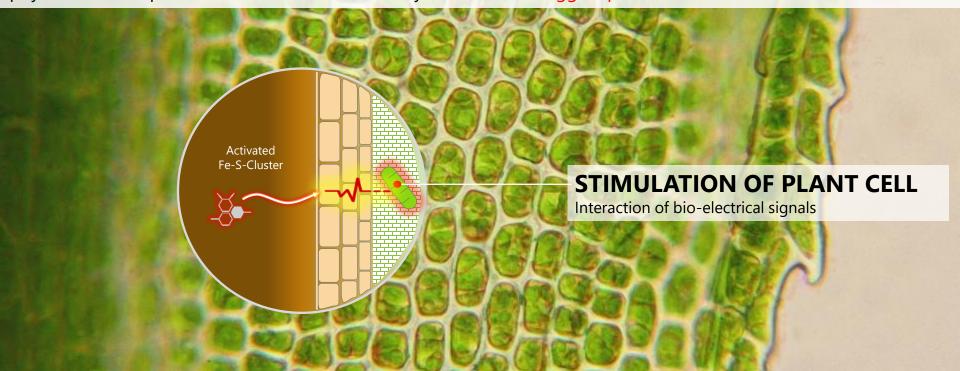


#### INNOVATIVE PROGRAMMING MAKES THE DIFFERENCE

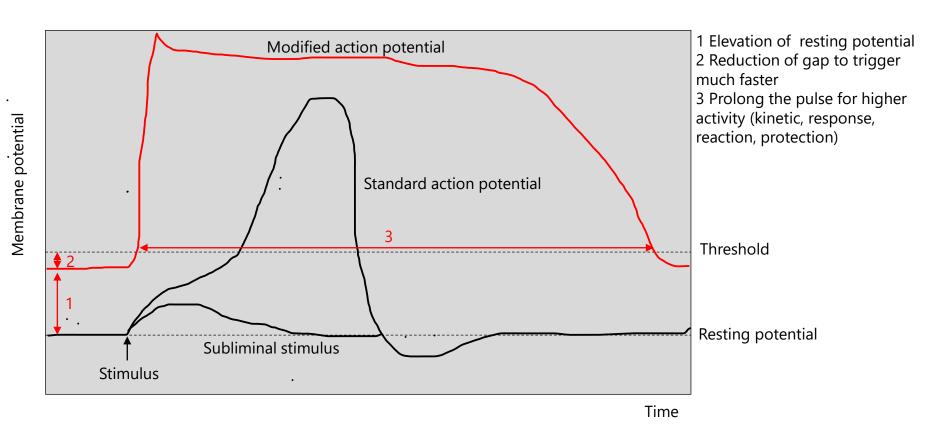


#### **UTILIZE YOUR FULL POTENTIAL**

The raw material is activated in a special process: bio-catalytic stimulation by surface modification. The contained Magnesium-Iron-Sulphur-Clusters are encoded in an electromagnetic field. In the plant cell, the frequency-coded signals are transmitted from the clusters to the plant cell. This electromagnetic stimulation can affect specific phytohormones, proteins, amino acids, immune system and can trigger specific functions.

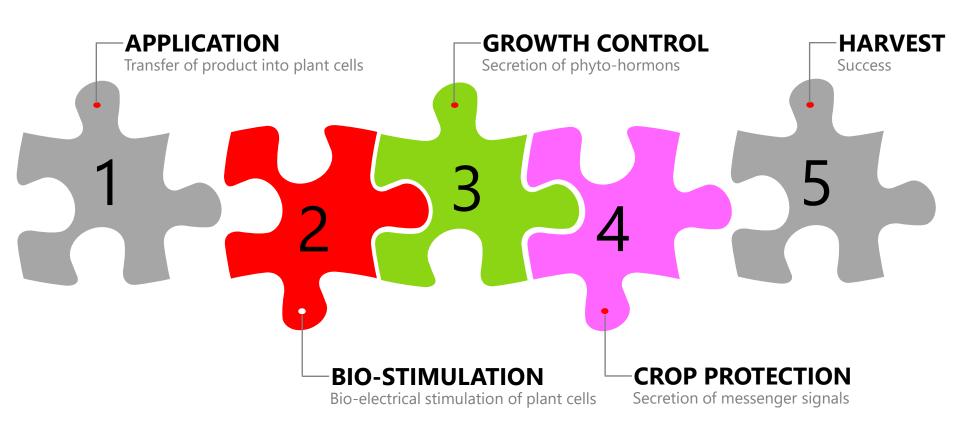


#### **MODIFICATION OF MEMBRANE POTENTIAL**



## MODE OF ACTION

#### **SCIENCE AT WORK**



#### **MULTI-FUNCTIONAL SYSTEM**

Control of	EPSOMIT	TITAN	PLANTA	VITAL
Root architecture				
Photosynthesis				
Nutrition				
Abiotic tolerance				
Biotic resistance				
Growth control				
Transpiration, Respiration				
Pollination				
Adjustment of rhizoplane microbiom				
Root recovery (bio-nematicide effects)				





The full soluble products **EPSOMIT** and **TITAN** are applied foliar. They can be mixed with most fertilizers and agrochemicals and can be applied in one step. This saves time and effort. The foliar application ensures fast protection and accelerates the growth.



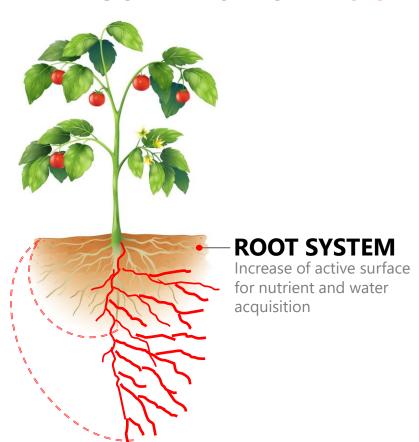


#### WITH LARGE ROOTS COMES FULL ACCESS

The activation of proteins which contribute to root elongation regulates the asymmetric cell division and cell proliferation in the root meristem. The significantly enlarged root mass can absorbs much more water and nutrients and anchors the plant better in the soil.



#### **CONTROL OF ROOT ARCHITECTURE**



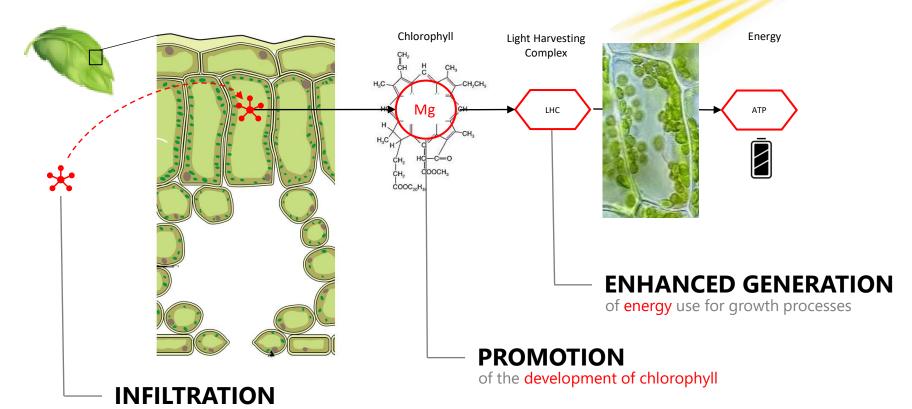






#### **CONTROL OF PHOTOSYNTHESIS**

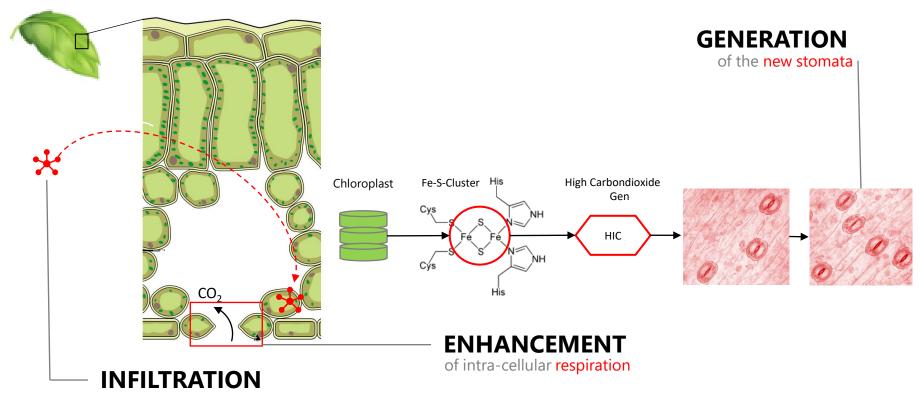




of activated supercharged Mg-Fe-S-Cluster into plant cell

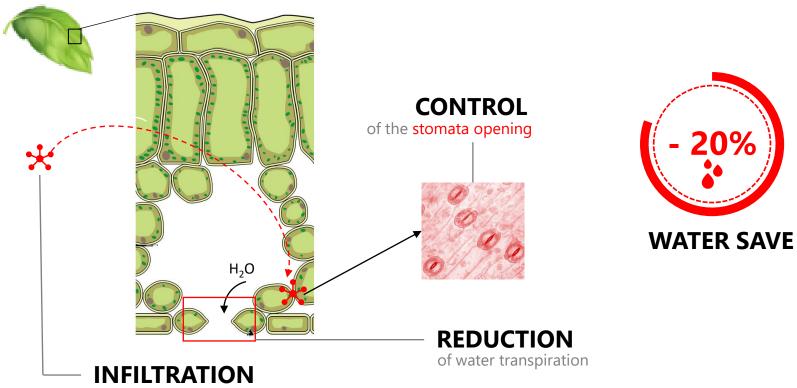


#### **CONTROL OF INTRA-CELLULAR RESPIRATION**



of activated supercharged Mg-Fe-S-Cluster into plant cell

#### **CONTROL OF WATER TRANSPIRATION**



of activated supercharged Titanium into plant cell



#### **MORE FRUITS BY ENHANCED POLLINATION**



#### **IMPROVED POLLINATION**

- Increased number of seeds
- Improved adhesion to stigma
- Better pollen germination on stigma
- Higher number of pollen tubes growing through pistil style and reaching the ovary
- More effective fertilization and seed formation

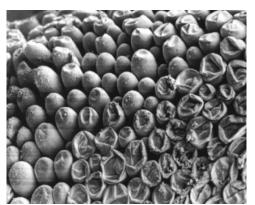
+20%



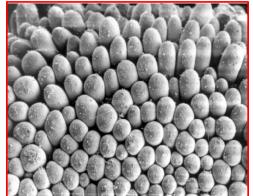
## **ENHANCED POLLINATION**



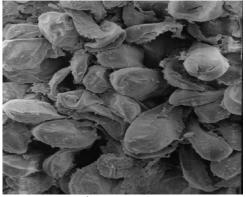
Sanbio TITAN improves receptivity of stigma, what positively affects pollination process through increased number of germinating pollen grains on stigma.



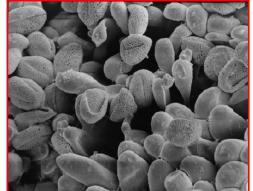
1: untreated



3: treated



2: untreated



4: treated

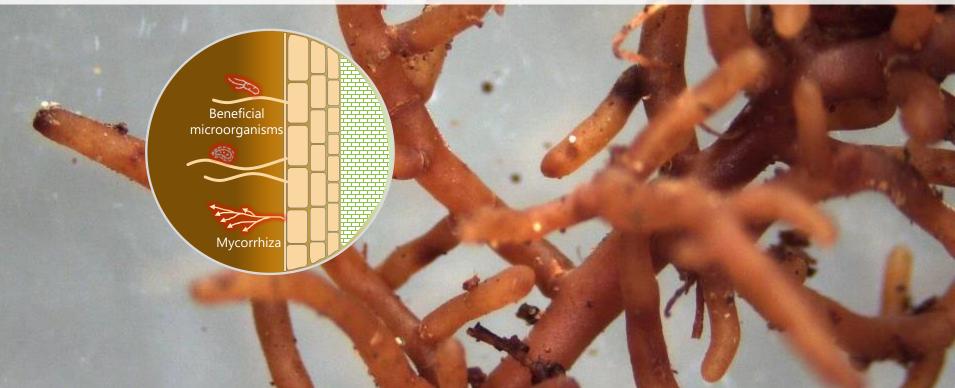
- Weak receptivity of stima and
   low number of
- 2: low number of germinating pollen grains on untreated blossom.

- 3: huge receptivity of stima and
- 4: high number of germinating pollen grains on treated blossom with Sanbio TITAN.

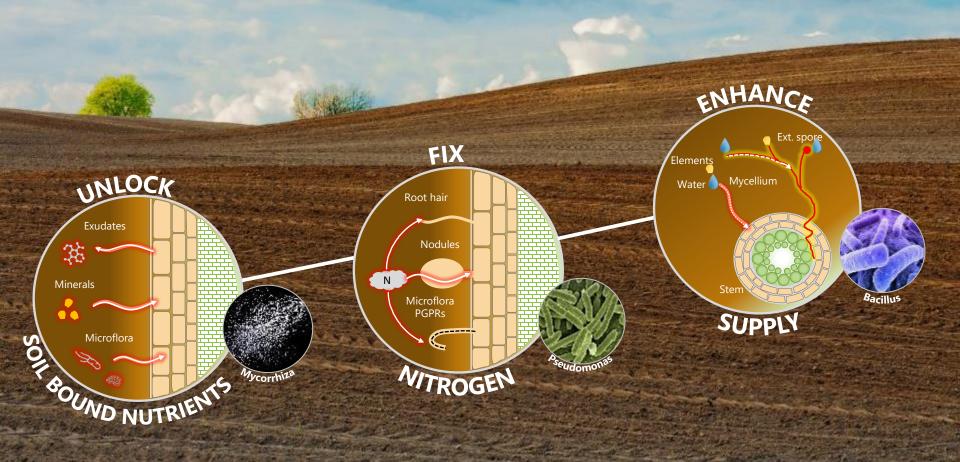


## **SUPPORT BY ENHANCED MICROBIOM**

The product contains a blend of selected natural microorganisms and mycorrhiza fungi. Shortly after inoculation they colonialize the enlarged root mass for symbiotic interactions. This augmentation results in improved access to essential nutrients and support of biocontrol ability.



## THE PERFECT NUTRITION

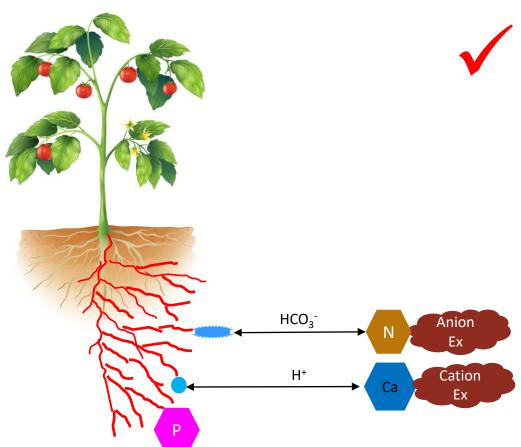








## **CONTROL OF NUTRITION**



### Colonisation

with beneficial microorganisms

- N fixing bacteria
- PGPR Rhizobacteria
- Mycorrhize

### **Displacement**

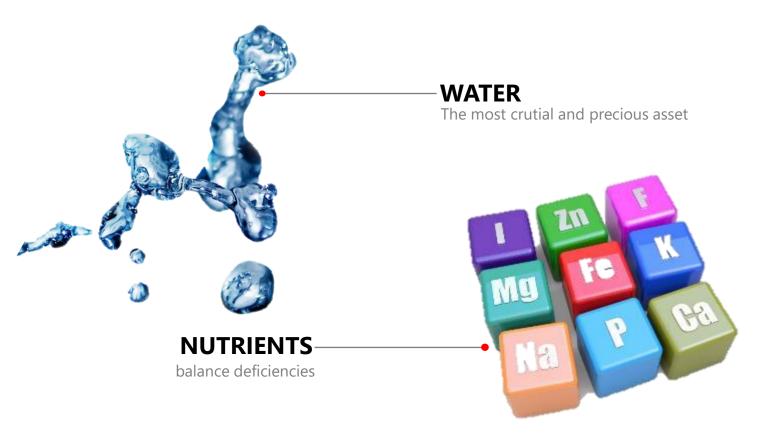
of antagonists and pathogens

#### **Enhanced nutrition**

- intensified respiration
- increased ion exchange
- improved assimilation of plant available nutrients

## DON'T ABDICATE THE ESSENSTIALS

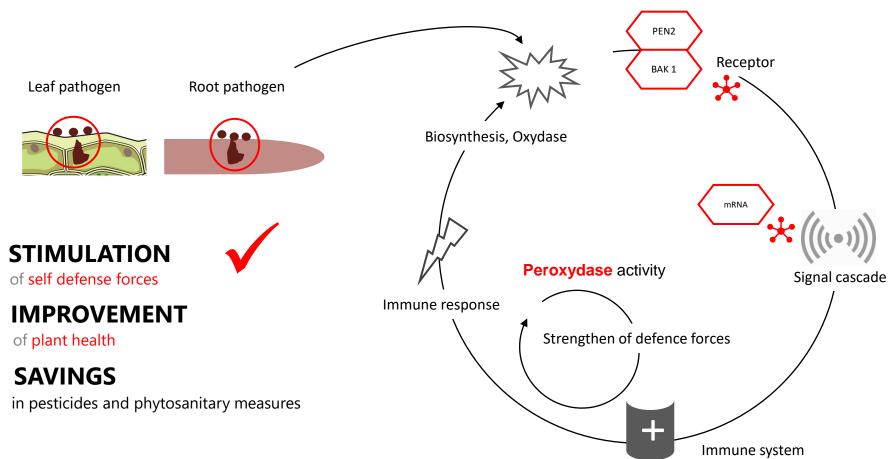
Optimized utilization of water and nutrients helps you to save valuable irrigation and expensive fertilizer.







## **ACCELERATION OF IMMUNE RESPONSE**



## **ACCELERATION OF IMMUNE RESPONSE**

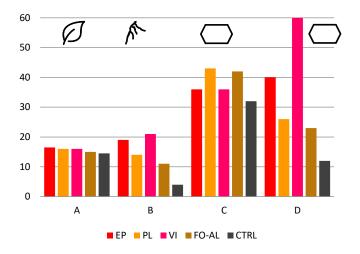


D 0 Start D+2 Application of products D +7 Inoculation with Botrytis Inoculation with Fusarium ox. D + 9Immune response

D +15 ▼ Evaluation of kinetic

ΕP PLVΙ **CTRL** FO-AL

et al. Prof. W. Hamada, Laboratory of Genetics and Plant Breeding, INAT, Molecular Plant Microbe Interactions Institut, Tunis, 2015

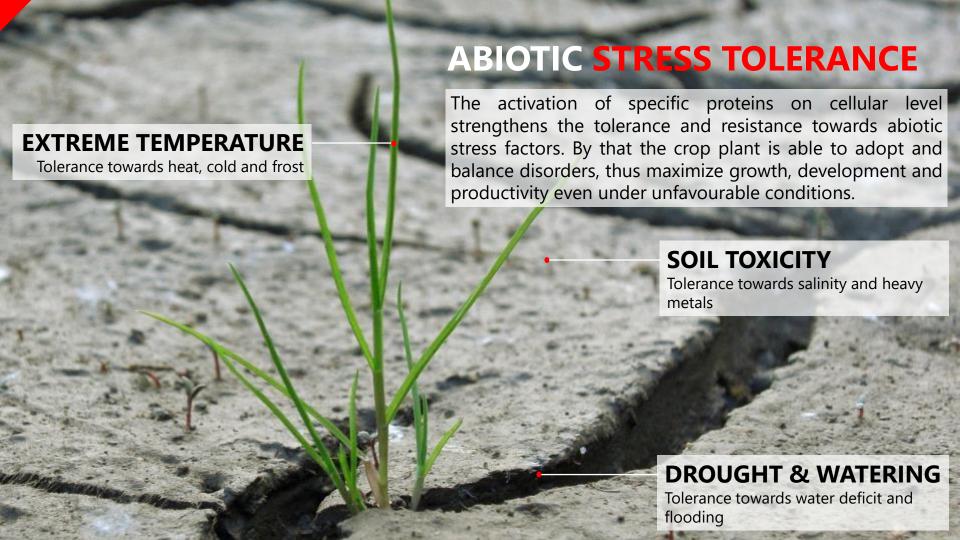


Growth of leaves Α В Growth of roots Peroxydase activity D

Phenolic compounds release

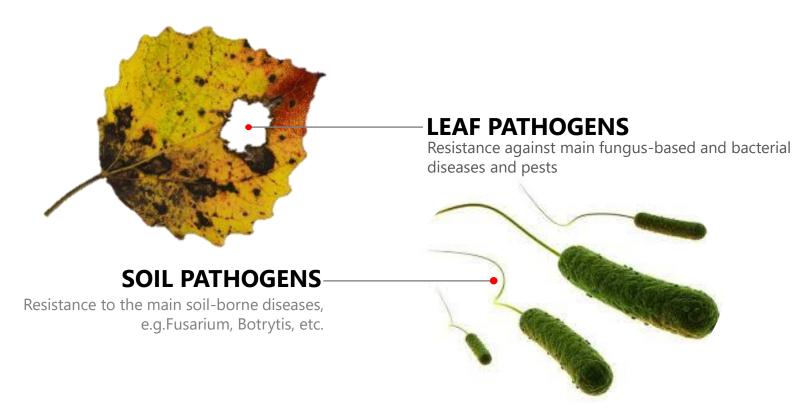
Sanbio EPSOMIT ΕP PL Sanbio PLANTA VI Sanbio VITAL Fosetyl-Al, Bayer Crop Science

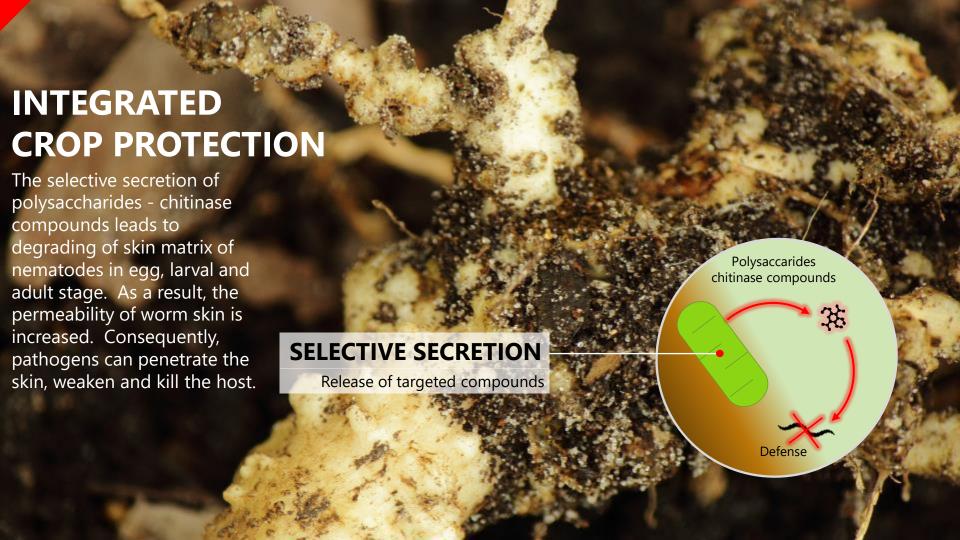
CTRL Control

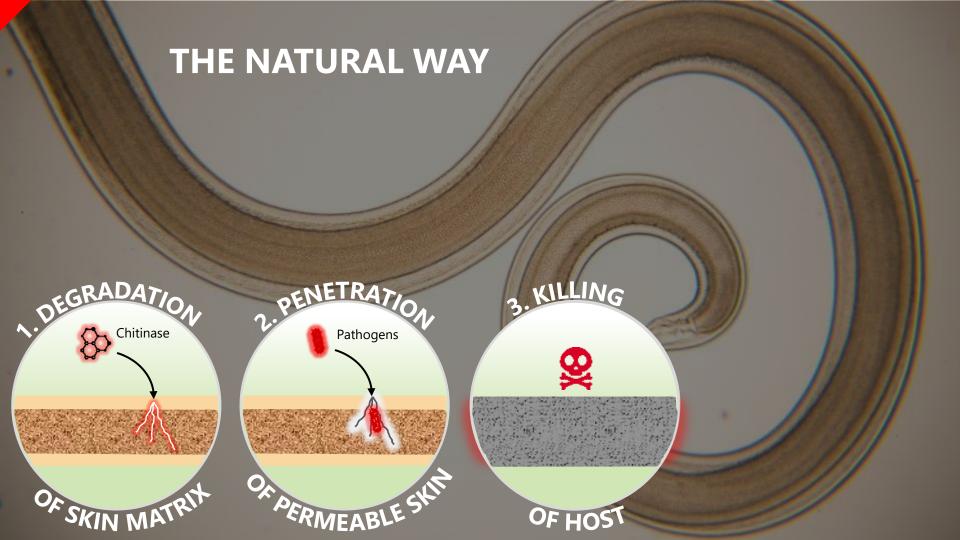


## **BIOTIC STRESS RESISTANCE**

The activated systemic immune system predisposes plants to become more resistant to subsequent pathogen attacks.



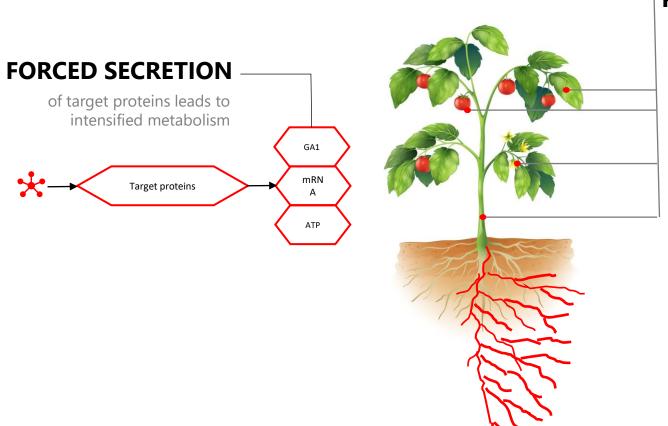






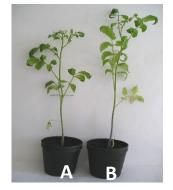


## **GROWTH CONTROL**

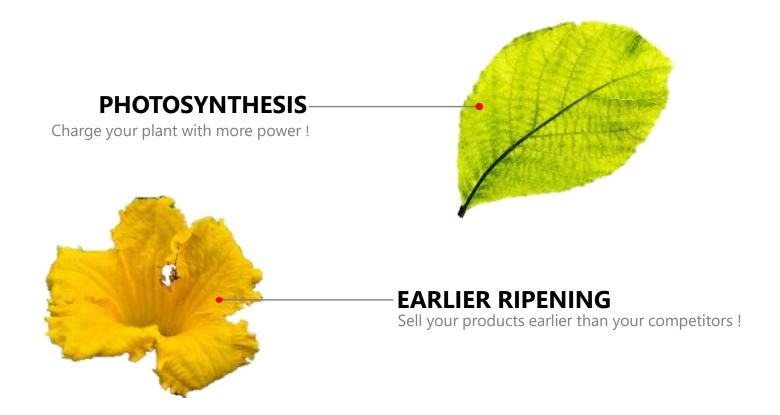


## **PROMOTING** of growth-related factors:

- Roots
- Shoots
- Leaves
- Fruits
- Ripening
- Vigor
- Yield
- Size
- Weight
- Taste
- Quality



## **QUICKER. UPPER. BETTER.**



## **STAND OUT FROM THE CROWD**



# **EPSOMIT**

## **EPSOMIT FACTSHEET**

#### **DESCRIPTION**

EPSOMIT is a premium advanced immunity activator and growth stimulant for stress control and increase of productivity on all crops.

Topseller. Best price-performance-ratio.

#### **FEATURES**



Growth enhancement



Abiotic stress tolerance



Biotic stress resistance



Organic farming

#### **COMPOSITION**



■ Magnesium sulphate hepta hydrate MgSO4·7H2O

#### **ELEMENTS**



Magnesium oxide (MgO)...18.2 % w/w Sulphur trioxide (SO<sub>3</sub>)......35.0 % w/w

#### **USE**



All crops



Foliar spray (recommended), fertigation, root soak, soil drench, seed priming



Standard dosage 1 kg/hectare 1-2 applications per period First application 3-5 leave stage

#### APPLICATION



500 Liter

1 kg

Agitate

Apply 1ha

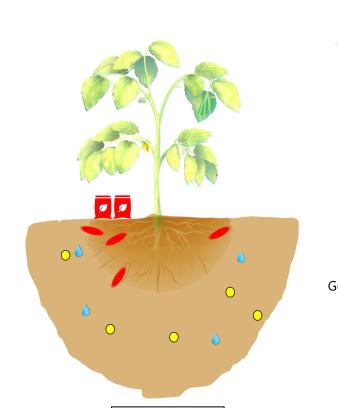
Mixing with most fertilizers and plant protection chemicals is possible.

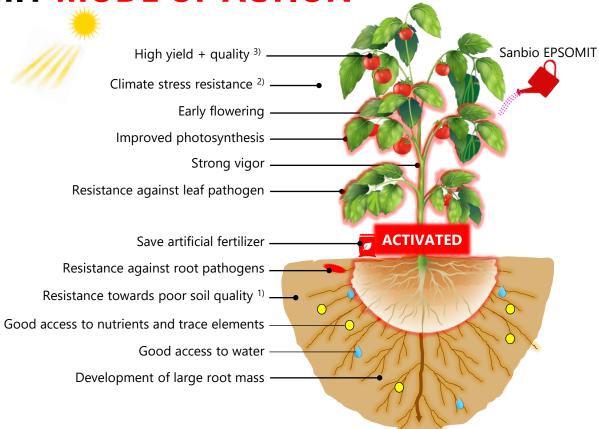
#### **PACKING**



1 / 5 /25 /500 kg

**EPSOMIT MODE OF ACTION** 



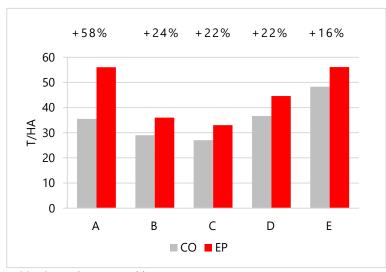


**UNTREATED** 

## **EPSOMIT USED ON WHEAT**



Using EPSOMIT results in in growth and yield improvement over the leading synthetic standards



CO=Control (untreated lot) EP=EPSOMIT (treated lot)

A=Variety "Maali", Jendouba, TN, 2016, 1kg/ha, dry season

B=Variety "Nasr", Medjes El Baab , TN, 2016, dry season

C=Variety "Maali", Qued Zarga, TN, 2017

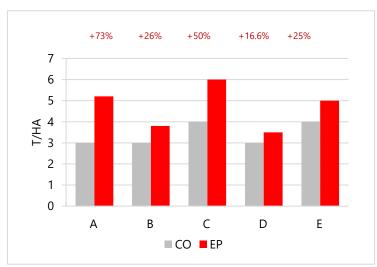
C=Variety "Maali", Bizerte, TN, 2018, 2kg/ha

D=Variety "Monastir", Beja, TN, 2018, 2kg/ha

## **EPSOMIT USED ON VEGETABLES**

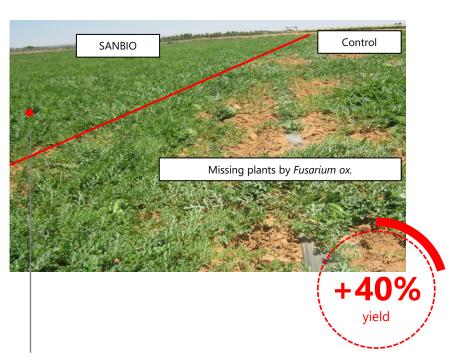


Using EPSOMIT results in in growth and yield improvement over the leading synthetic standards.



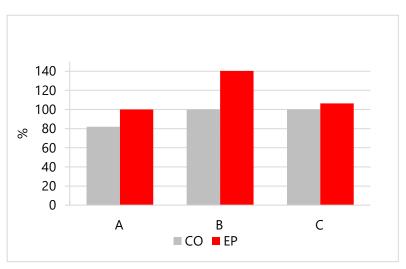
CO=Control (untreated lot)
EP=EPSOMIT (treated lot)
A=Tomato, Bekalta, Tunisia, 2015, 1kg/ha
B=Tomato, Bekalta, Tunisia, 2016, 1kg/ha
C=Pepper, Tunsia, 2016, 1kg/ha
D=Eggplant, Teboulba, TN, 2016, 1kg/ha
E=Zucchini, Teboulby, TN, 2016, 1kg/ha

## **EPSOMIT ON FUSARIUM INFESTED MELONS**



#### IMPROVED HEALTH AND PRODUCTIVITY

Using EPSOMIT results in 2% infested plants on the treated plot only compared to 20% infested plants on the control plot. The yield and sugar content was increased on treated plot.



CO=Control (untreated lot) EP=EPSOMIT (treated lot)

Watermelon: Efficacy of EPSOMIT on major pathogen Fusarium oxy.

A=Percentage of healthy non-infested melon plants after infestion of plot by Fusarium oxy. infestion evaluated two days after treatment

B=Yield of watermelon "Cariston", 1.5kg Planta + 1kg Epsomit

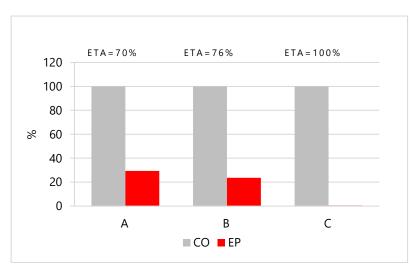
C=Sugar content melon, 1.5kg Planta + 1kg Espomit

Centre de Recherches Agricoles à Sidi Bouzid, TN, 2015

## EFFICACY OF EPSOMIT ON INFESTED OLIVES



Product efficacy of EPSOMIT on major pathogens causing root rot and wilt diseases wiltering (Fusarium solani, F. oxysporum, Pythium sp, Rhizoctonia solani verticillium dahliae)



CO=Control (untreated lot)

EP=EPSOMIT (treated lot)

Product efficacy of EPSOMIT on major pathogens causing root rot and wilt diseases

wiltering (Fusarium solani, F. oxysporum, Pythium sp, Rhizoctonia solani verticillium dahliae)

A=Disease incidence, treatment one week after inoculation

B=Disease incidence, treatment and inoculation at the same time

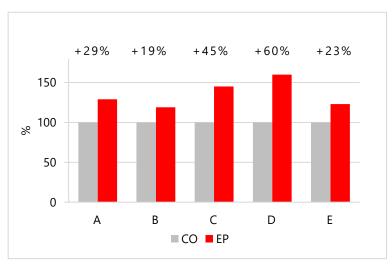
C=Disease incidence, treatment one week before inoculation

Centre de Recherches Agricoles à Sidi Bouzid, TN, 2015

## **EPSOMIT ON FRUITS**



Using EPSOMIT results in in growth and yield improvement over the leading synthetic standards.



CO=Control (untreated lot)
EP=EPSOMIT (treated lot)
A=Citrus "Thomson Navel", B=Meksi Ansli, C=Washington Navel",
Bou Argoub, TN, 2015, 2.5kg/ha EP + 2.5kg/ha PL
D=Table grapes "Muskat Italia", Mornag, TN, 2015, 1kg/ha EP + 1kg/ha
PL + 2.5L/ha VI

E=Strawberry "Camarosa", Tazerka, TN, 1kg/ha EP + 1kg/ha PL

# TITAN

## **TITAN FACTSHEET**

#### **DESCRIPTION**

TITAN is a premium advanced immunity activator and growth stimulant for stress control and increase of productivity additionally water transpiration control on all crops.

Special product.

#### **FEATURES**



Growth enhancement



Abiotic stress tolerance



Biotic stress resistance



Water transpiration control

#### **COMPOSITION**

Magnesium sulphate heptahydrate water of crystallisation Titanium Water Citric acid

#### **ELEMENTS**



MgO, SO<sub>3</sub>, Ti

#### **USE**



Palm trees

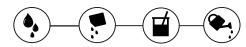


Foliar spray



Standard dosage for palm trees: 0.5 L per tree 1-2 applications per pollination period

#### **APPLICATION**



500 Liter Water 0.5 L Titan Agitate

Spray 1 ha

#### **PACKING**



1/10/200/1000 L

## PLANTA

## PLANTA FACTSHEET

#### **DESCRIPTION**

PLANTA is a premium advanced immunity activator and growth stimulant for stress control, increase of soil fertility and productivity on all crops.

Premium product.

#### **FEATURES**



Growth enhancement



Abiotic stress tolerance



Biotic stress resistance

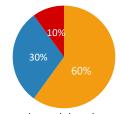


Soil fertility



Organic farming

#### COMPOSITION



■ Magnesium sulphate hepta hydrate MgSO4·7H2O

■ Algae extract

■ Blend of microorganisms

#### **USE**



All crops



Fertigation, root soak, soil drench, seed priming



Standard dosage 1.5 kg/hectare 1-2 applications per period First application at early growth period

#### **APPLICATION**



500 Liter 1.5 kg lukewarm PLANTA water Agitate Maturi

gitate Maturing Agitate 15 min

Apply

1 ha

Mixing with most fertilizers is possible. Do NOT apply SANBIO® PLANTA with plant protection agents at the same time. Wait 14 days to use SANBIO® PLANTA in that case.

### ELEMENTS



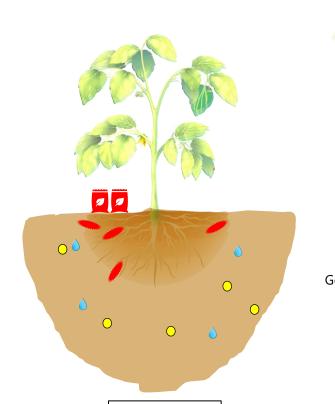
MgO, SO<sub>3</sub>, K<sub>2</sub>O, Fe, B, Mn, P<sub>2</sub>O<sub>5</sub>

#### **PACKING**

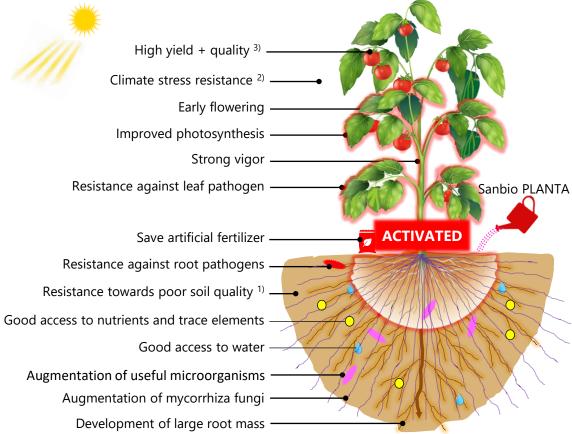


1 kg

PLANTA MODE OF ACTION



**UNTREATED** 



1) Heavy metals, drought, salt

2) Heat, cold, sun

<sup>3)</sup> Taste, Sugar, shelf time

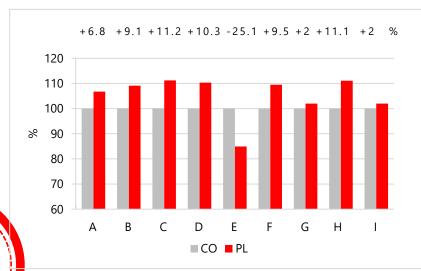
**TREATED** 

## PLANTA USED ON SUGAR BEET, MAIZE, WHEAT



IMPROVED PRODUCTIVITY & QUALITY

Using PLANTA results in yield improvement and quality.



CO=Control (untreated lot) PL=PLANTA (treated lot)

2016: Sugar beet "Annika", Tröglitz, DE, 1.5kg/ha PLANTA
A=Yield B=Sugar yield C=Potassium D=Natrium E=AminoN

2017: Maize "Ricardo", Tröglitz, DE, 1.5kg/ha PLANTA F=Yield G=TS Protein

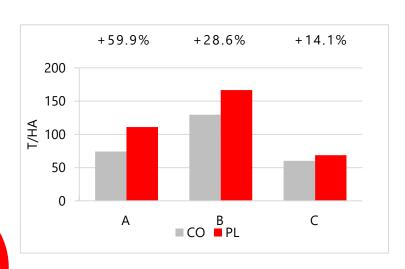
2018: Winter wheat, Tröglitz, DE, 2x1.5kg/ha PLANTA H=Yield, I=Protein

# EFFECTS OF PLANTA ON PATHOGENS (FUSARIUM, MILDEW, FIRE BLIGHT) INFESTED PEPPER, TOMATO AND PEAR



#### **IMPROVED RESISTENCE & PRODUCTIVITY**

Using PLANTA results in high resistance against the pathogens and yield improvement.



CO=Control (untreated lot) PL=PLANTA (treated lot)

A=Sweet pepper, Bekalta, TN, 2016, 3.7 kg/ha EPSOMIT + 3.7 kg/ha PLANTA, no impact of Fusarium oxy. infection was observed

B=Tomato "Sahel", Bekalta, TN, 2016, 4 kg/ha EPSOMIT + 4 kg/ha PLANTA, no impact of Mildew infection was observed

C=Pear "William", Bekalta, TN, 2018, 3x 1.5 kg/ha PLANTA, reduced impact of Fire Blight infection was observed

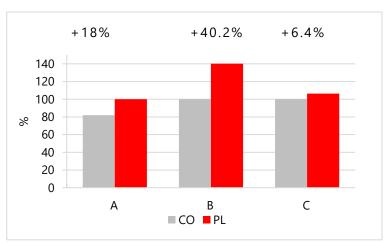
INRAT, Laboratoire de Biotechnologie Appliquée à l'Agriculture, Tunisia

# EFFICACY OF PLANTA ON MAJOR PATHOGEN FUSARIUM OX. ON WATERMELONS



## **IMPROVED RESISTENCE & PRODUCTIVITY**

Using PLANTA results in high resistance against the pathogens and yield improvement.



CO=Control (untreated lot)
PL=PLANTA (treated lot)

Watermelon: Efficacy of PLANTA on major pathogen Fusarium oxy.

A=Percentage of healthy non-infested melon plants after infestion of plot by Fusarium oxy. infestion evaluated two days after treatment

B=Yield of watermelon "Cariston", 1.5kg Planta + 1kg Epsomit

C=Sugar content melon, 1.5kg Planta + 1kg Epsomit

# VITAL

## VITAL FACTSHEET

#### **DESCRIPTION**

VITAL is a advanced immunity activator and growth stimulant for root recovery used in fertigation of all crops.

Special product.

#### **FEATURES**



Growth enhancement



Abiotic stress tolerance

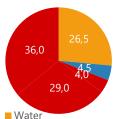


Biotic stress resistance



Root recovery

#### **COMPOSITION**



- Nitrogen
- Magnesium Sulphate Heptahydrate
- Algae extract

#### **ELEMENTS**



CaO, Fe, K<sub>2</sub>O, MgO, Mn, SO<sub>3</sub>, P<sub>2</sub>O<sub>5</sub>

## **USE**



All crops

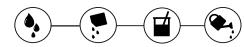


Fertigation, root soak, soil drench, seed priming



Standard dosage 5-10 L/hectare 1-2 applications per period First application at early growth period or on demand

#### **APPLICATION**



500 Liter Water

5-10L Vital

Agitate

Spray 1 ha

#### **PACKING**



1/10 L

# ROOT RECOVERY OF CUCUMBER DAMAGED BY ROOT-KNOT-NEMATODES



Weakened plants due to heavy infection by root-knot nematodes, before treatment



Heavy infected roots, before treatment



Preparation of working solution



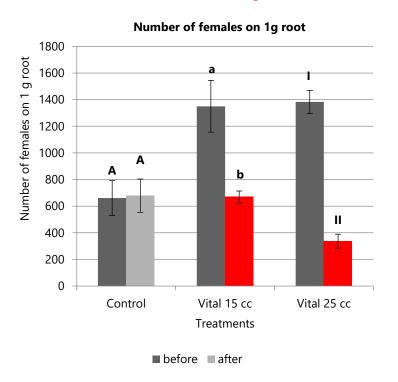
Development of new roots two weeks after first treatment

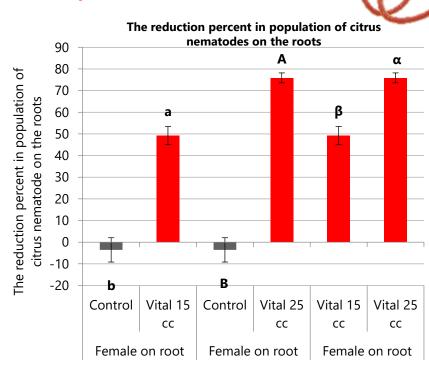


Total recovery of large root mass eight weeks after first treatment

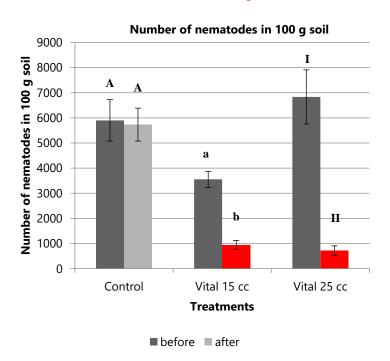
Amman, Jordan, 2018

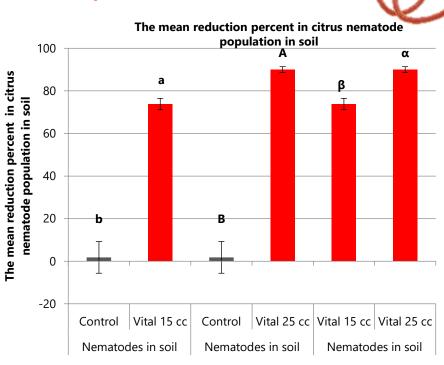
Tylenchulus semipenetrans



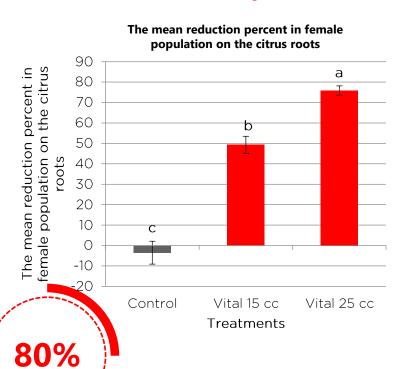


Tylenchulus semipenetrans





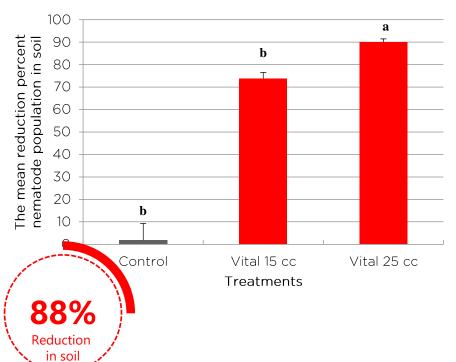
Tylenchulus semipenetrans



Reduction

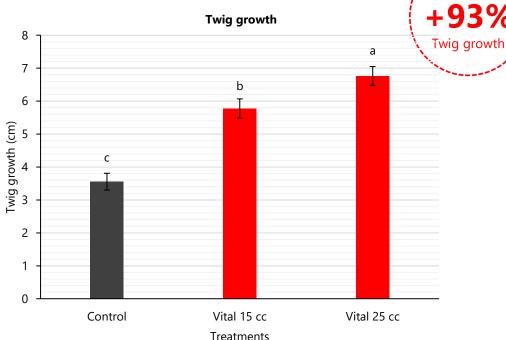
on roots

The mean reduction percent in female population in soil



Tylenchulus semipenetrans





# ROOT RECOVERY OF PEPPER DAMAGED BY ROOT-KNOT-NEMATODES



-33.3% -16.6%

4
3
4
2
1
0
■CO1 ■CO2 ■VI

CO1=Non-infected greenhouse, untreated CO2=Infected greenhouse, untreated VI=Infected greenhouse, treated with VITAL Bekalta, TN, 2015

Using VITAL results in fast recovery roots were damaged of root-knot-nematodes. The yield was increased by 25%.

# ROOT RECOVERY OF TOMATO & PEPPER DAMAGED BY ROOT-KNOT-NEMATODES



5 4 3 1 0 A B

+43.3%

+50%

CO=Control (untreated lot)
VI=VITAL (treated lot)

A=Tomato "Sahel", 2 applications VITAL, Bekalta, TN, 2016 B=Sweet pepper, 2 applications VITAL, Bekalta, TN, 2016

Using VITAL results in fast recovery roots were damaged of root-knot-nematodes. The yield was increased by 46% av.

# JUST DO IT. APPLY NOW!

# GET IN TOUCH WITH US

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