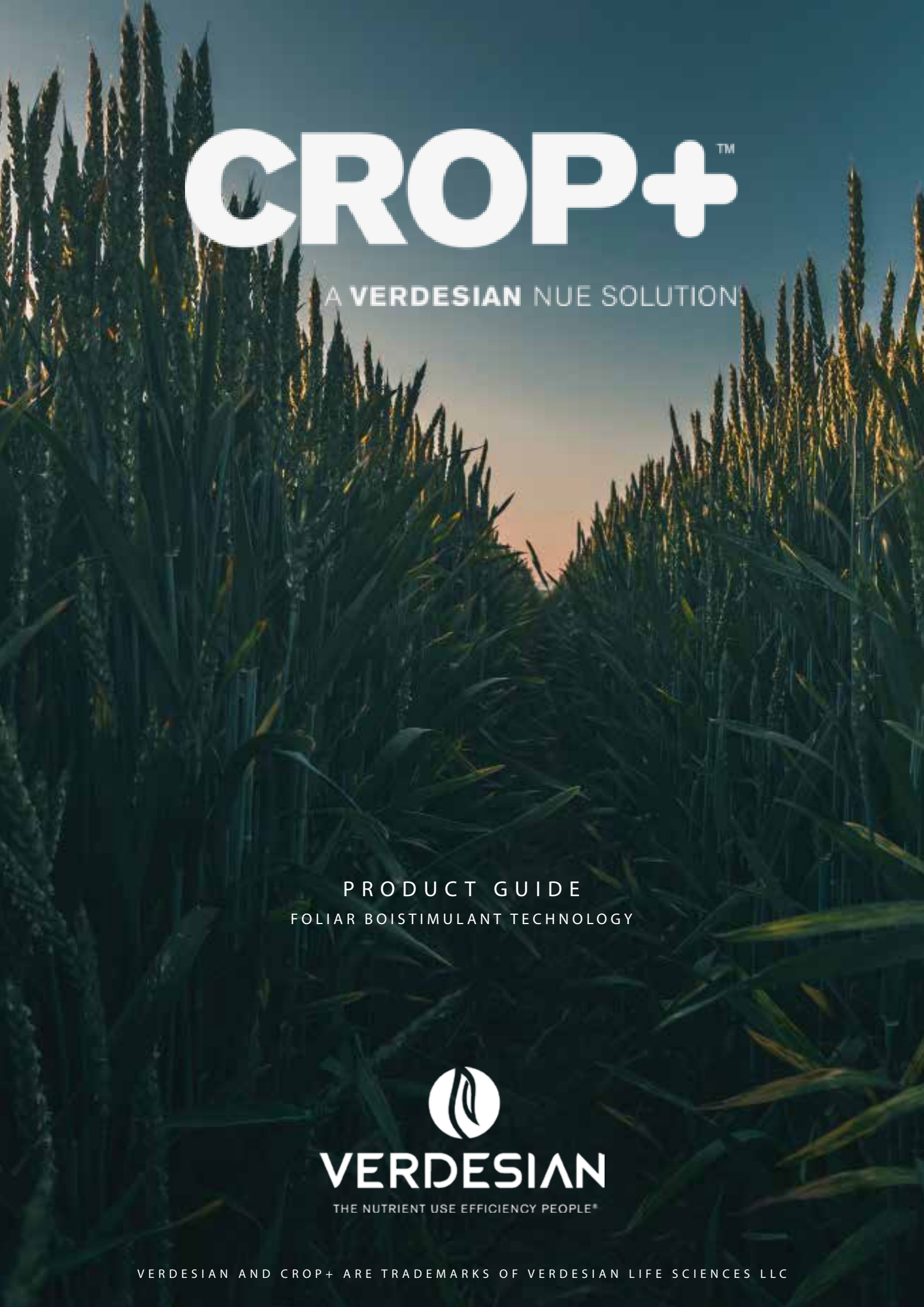


CROP+™

A VERDESIAN NUE SOLUTION

PRODUCT GUIDE

FOLIAR BOISTIMULANT TECHNOLOGY

VERDESIAN

THE NUTRIENT USE EFFICIENCY PEOPLE®

An Analogy

Factors Responsible for the Generation of Reactive Oxygen Species

ROS (Reactive Oxygen Species) could be equated to human adolescents that have both genetic and environmental influence; full of energy and communication potential. Though in larger groups have capability to harm themselves and their surrounding.

Cellular Damage

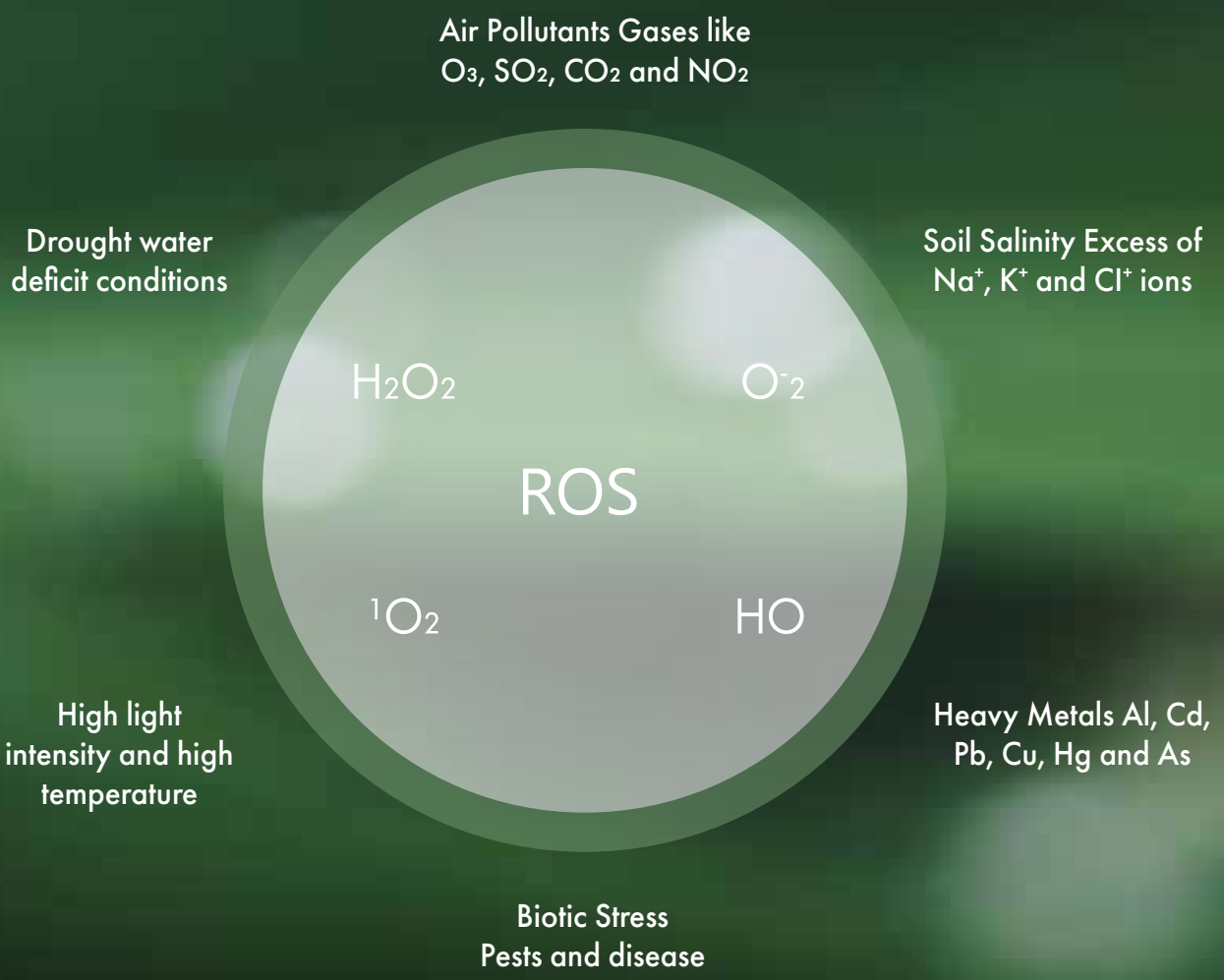
- Phospholipid chain broken
- Membrane disruption leading to electrolyte leakage

Protein Damage

- Disruption of protein molecule structure
- Enzyme inactivation
- Increased protein break down

Genetic Damage

- Disruption of DNA molecule structure
- Error in coded message



Aerobic life is based on the reduction of oxygen via electron transfer systems:

- Production of ROS takes place in chloroplasts
- Consumption of ROS occurs in mitochondria

Free radicals = ROS

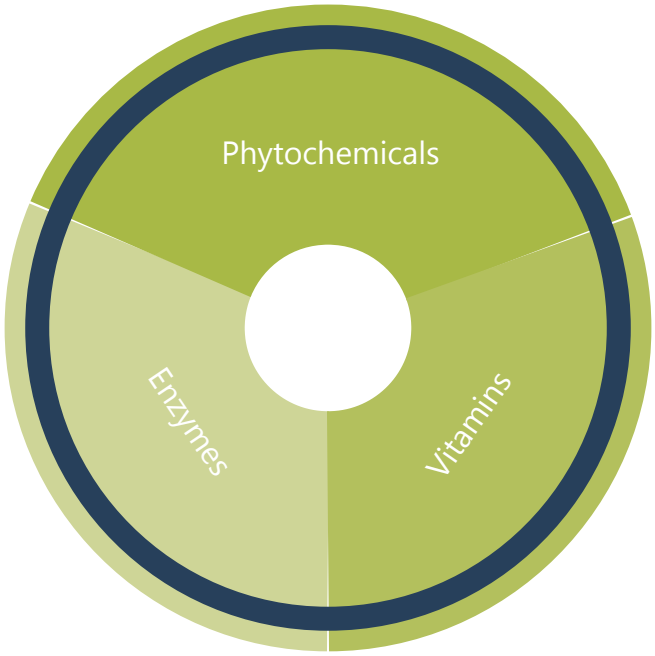
- Hydrogen peroxide (H_2O_2)
- Superoxide (O^-_2)
- Hydroxyl radical (HO)
- Singlet oxygen ($^1O_2$)

Antioxidants

Antioxidants are the role models and guardians of the adolescent groups. Antioxidants are able to convey positive messages, reduce instability, dissipate harmful tendencies and direct the energy into positive growth.

An antioxidant is a substance that balances the oxidation process, capable of counteracting the excessive effects of oxidation in plants

Antioxidant – the types



There are three primary types of antioxidants found in nature, including:

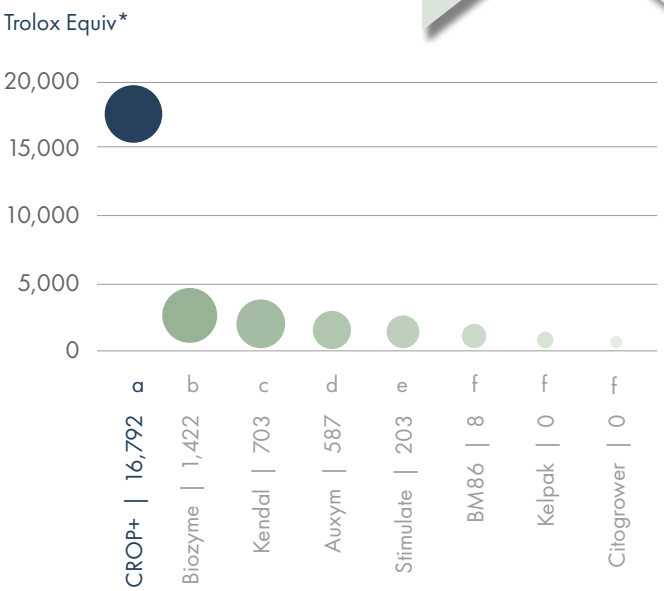
- Phytochemicals - two kinds of polyphenols and carotenoids, contribute the most to the antioxidant properties within plants
- Vitamins - Three key antioxidant vitamins, vitamin A, vitamin C and vitamin E
- Enzymes - certain amino acids lower the energy the plant needs to activate key reactions, reducing the occurrence of free radicals

The most powerful antioxidants are found in plants. This is due to the fact that plants are daily exposed to UV light.

Competing products

CROP+ has x10 higher antioxidant activity than leading competitor products

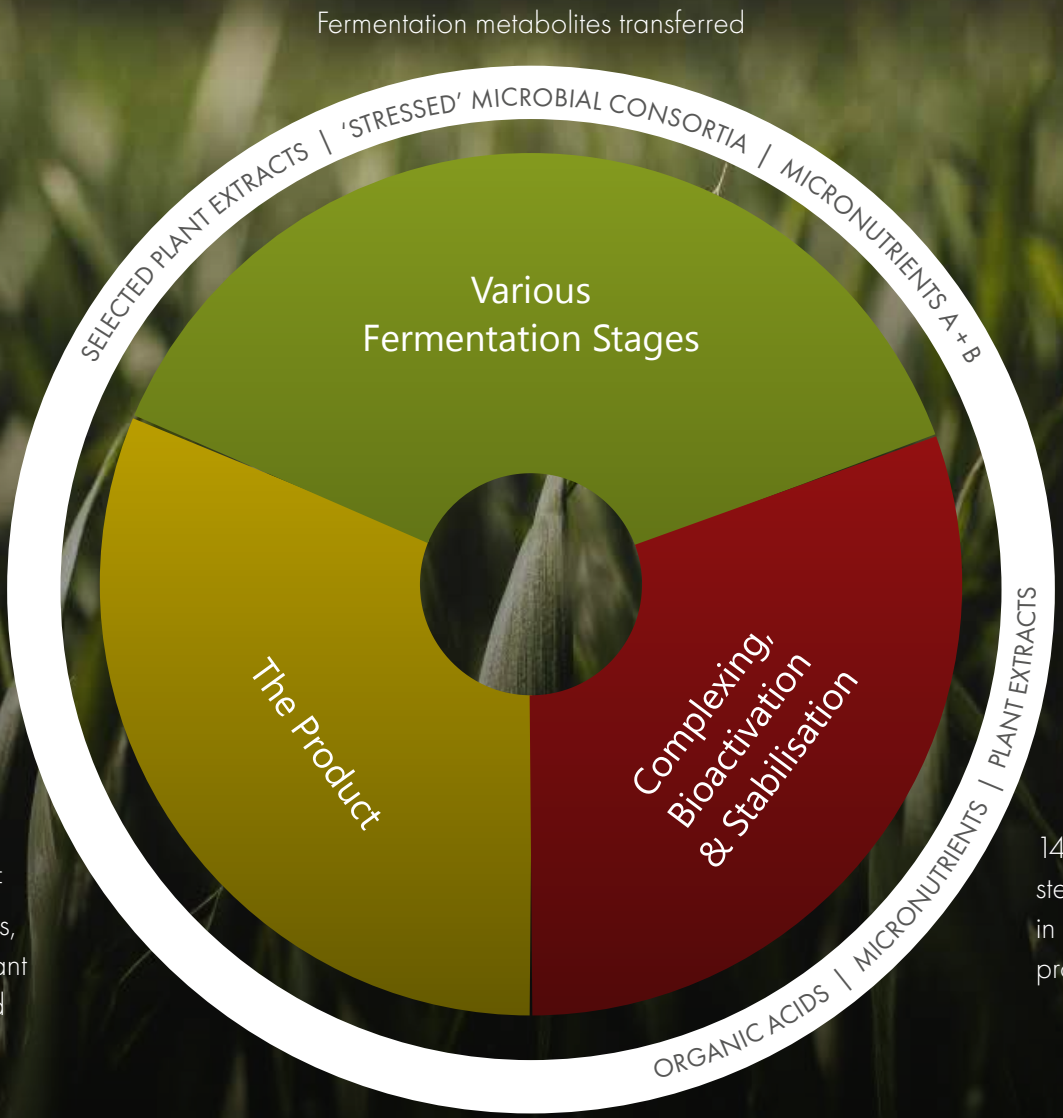
x10 ANTIOXIDANT ACTIVITY



Mean obtained from three independent analytical runs. LSD=92; Numbers followed by different letters are significantly different (p = 0.05)

*Trolox Equivalent per 100g are units used by nutrition scientists as a benchmark for antioxidant capacity - Verdesian acknowledges the trademark of these companies

The Production Process of CROP+



A proprietary formulation of homogeneous, synergistic plant and seaweed compounds

14 quality control steps involved in the production process

CIRCULAR

CROP+ influences gene expression

Four key plant metabolic processes crucial for seedling growth and development:

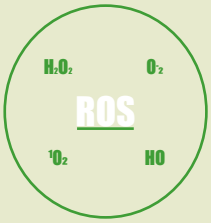
Photosynthesis

To increase energy and carbohydrate supply

Lipid metabolic processes

To strengthen cell membranes

Oxidation-reduction reactions

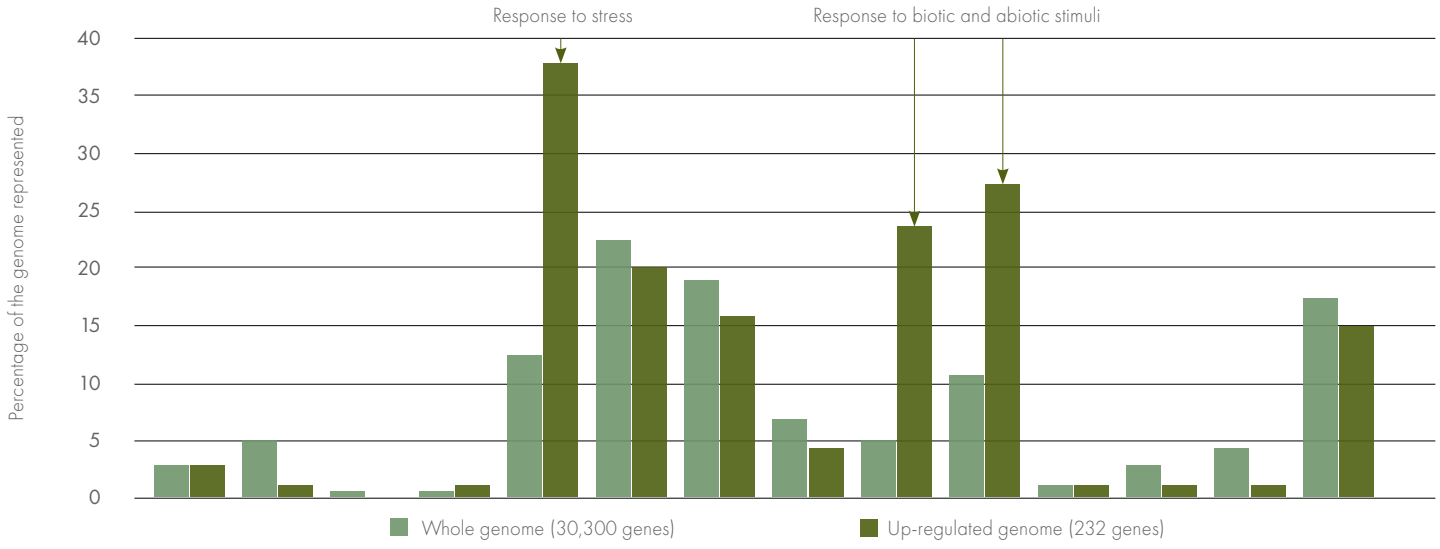


To protect from reactive oxygen stress species

Carbohydrate metabolic processes

To strengthen cell walls

Microarray Results



Model plant: Arabidopsis Thaliana Source: Cytozyme Labs Inc. in cooperation with Arizona State University, USA

How CROP+ influences maize seedlings' genes activation

CROP+ altered gene expression for 1,164 genes involved in key plant

Photosynthesis processes:

has 33 genes with influenced expression

Chloroplast organisation:

has 20 genes with increased expression

Gene ontology:

(molecular function / cellular component / biological processes) – total of 58 (3%) of 1,980 genes enriched in shoots & roots

Carbohydrate metabolism:

a total of 253 genes influenced in shoots & roots

Lipid metabolic process:

a total of 145 genes influenced in roots & shoots

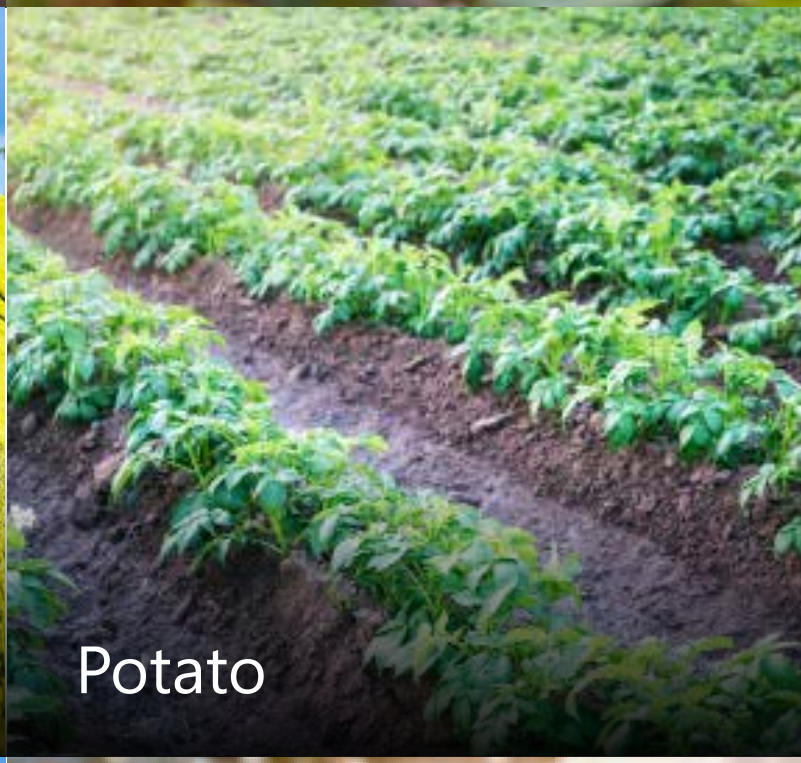
Oxidation-reduction:

a total of 713 genes influenced, of which 183 (26%) in shoots and 530 (74%) in roots


Cereals


Kiwi


Oilseeds


Potato


Soybean


Cotton

The Trials

Lab data*

Demonstrating biostimulant effect on plant and improved nutrient use efficiency. CROP+ applied at 1l/ha at 4/5 leaf stage of winter wheat. Results at 21 days after application.

+12.6%
SHOOT WEIGHT
GRAMS

+23%
LEAF
COPPER CONTENT

+7.2%
LEAF
MANGANESE CONTENT

+47.2%
LEAF
ZINC CONTENT

* Sponsored trial conducted 2020 by Dr S. Rossall, Plant Sciences Consultant, UK

Field data*

Demonstrating biostimulant effect on plant through increased grain weight, plant count and ear count leading to increased grain yield . CROP+ applied to winter wheat at 0.6 lt/ha @ BBCH30.

+ 8.1%
PLANT COUNT
M^2

+ 4.4%
EAR COUNT
M^2

+ 1.8%
WEIGHT
SPECIFIC GRAIN KG/HL

+ 3.5%
GRAIN
YIELD T/HA

*Sponsored trial conducted 2021 by Velcourt Ltd, UK

Overcoming Abiotic stress

CROP+
A VERDESIAN NUE SOLUTION™

- Improves flavour by increasing the soluble solids/acidity index on tomato fruits, even under water stress
- Improved quality of taste and sweetness to tomato
- Improvement in quality retained 9 days post-harvest

To determine the influence of cold stress; and the effect of use the bio-stimulant CROP+ had on chemical characteristics, two tomato fruit plants were subjected to low temperature stress.

The plant on the right was treated with the Bio-Stimulant CROP+.

2 weekly product applications were made to the tomato plant on the right, then both plants were exposed to –5 degrees for periods of 2 hours.

It was successfully demonstrated that the anti-oxidant technology in CROP+ reduced abiotic stress

BIOSOLUTIONS AWARD ITALY 2023 | Yellow Kiwi – Variety G3

CROP+
DAYS
DURATION
21
TRIAL PERIOD

CROP+
TEMPERATURE
HEATWAVE
42°C
TRIAL PERIOD

CROP+
FRUIT DROP
REDUCED
14.5%
TRIAL PERIOD

CROP+
TONNES / HA
INCREASED
6.3 T/
TRIAL PERIOD

CROP+
MARKETABLE FRUIT
INCREASED
7.6%
TRIAL PERIOD

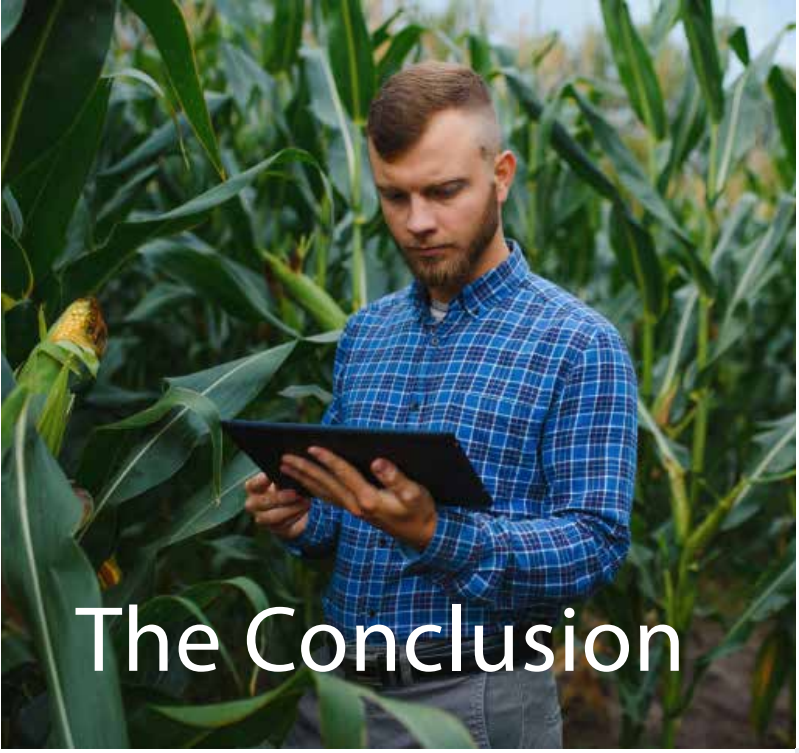
CROP+
The trial period was 21 days. Results were compared to non-treated crops

CROP+
The 21-day duration of the trial was conducted through a heatwave

CROP+
Fruit drop was successfully reduced by 14.5%, which was compared to untreated crops in the same trial

CROP+
Yield was increased by 6.3 tonnes per hectare when compared to the untreated crop in the trial

CROP+
The marketable fruit was increased by 7.6%, when compared to the untreated crops



The Conclusion

Enhanced nutrient uptake

Root and shoot growth showed statistically significant increases

Improved yield and crop quality

The Reasoning

Upregulation of key genes improves the plants nutrient use efficiency and overall efficiency of its metabolic systems

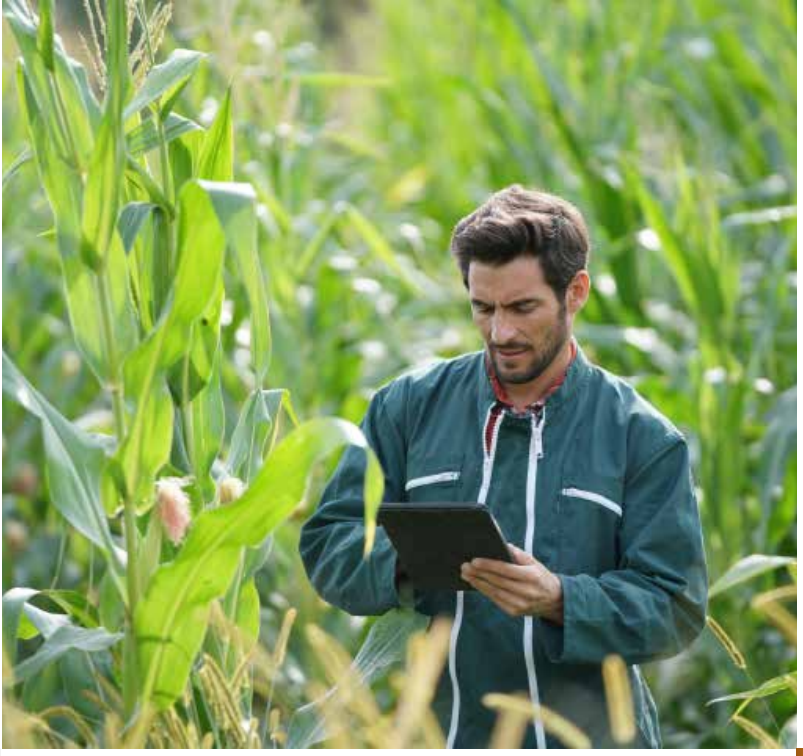
Antioxidant and increased gene activity reduces the negative effect on the plant's growth from abiotic stress, especially effects from drought, heat and cold

Combination of the two modes of action helps the plant get closer to its genetic potential

The Summary

Highly sophisticated and unique manufacturing process

x10 antioxidants, known and quantified performance indicators



Technology works within plants and is backed up by 40 years of research

The regulation of specific genes positively influences plant growth

Unique set of fully demonstrated crop biostimulant qualities

VERDESIAN

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Brochure designed by The Just Brand
2024