ADVANCED NUTRIENTS®

Your Sustainability Partner

Protan™

Organic Bio-Stimulant

Introduction to: Protan™

- Protan™ is a **biostimulant concentrate** derived from natural plant material.
- The high protein content ensures growth stimulation, biotic-and abiotic stress management in crop production.
- The product can be used as soil-and foliar applications.
- Protan™ consists of three major components: L-Amino acids, Organic acids and Phytohormones.
- Protan™ does not contain any Seaweed extracts, Fish-hydrolysates products, Fish emulsion or Molasses.

Protan™ Typical Analysis

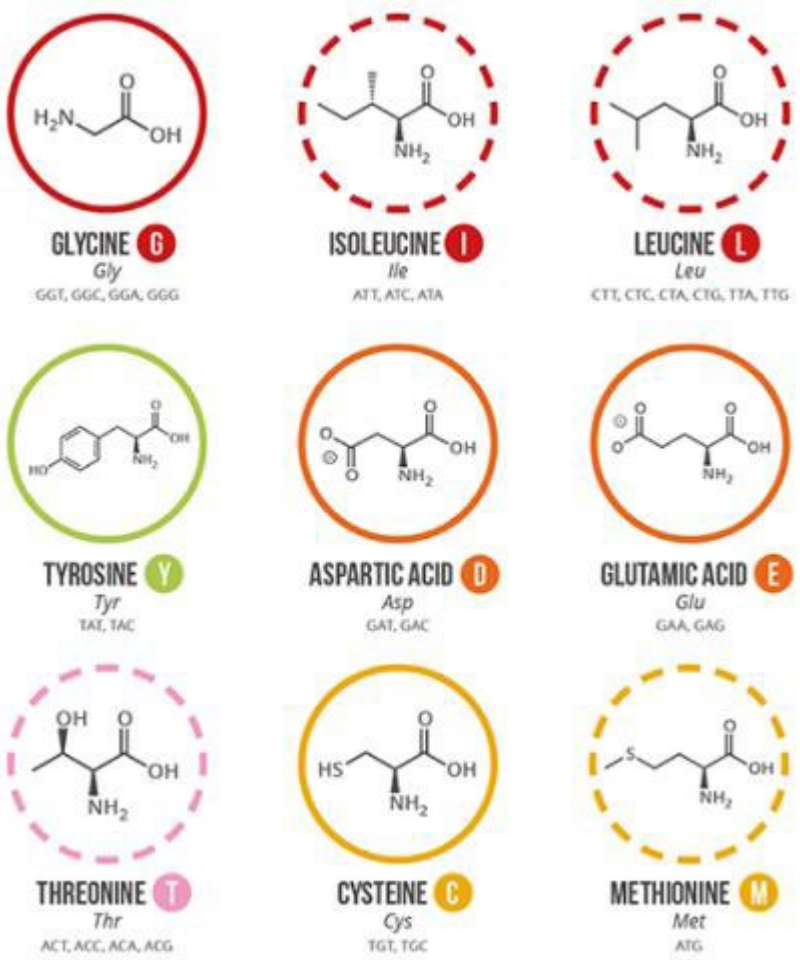
BENEFITS

- Decreases plant physiological stress during stress periods.
- Complexes and hold nutrients in more useful forms
- Increases root growth & health
- Promotes greater nutrient uptake and utilisation by the plant
- Improved nutrient cycling reduces input costs through efficiency
- Highly concentrated liquid results in greater use efficiency for your farming system
- Renewable and sustainable
- A free flowing liquid that will keep booms and sprinklers free of **blockages**

TYPICAL ANALYSIS				
Carbon	C	as organic	11%	111 g/L
Nitrogen	N	as organic	4.5%	45 g/L
Phosphorus	P	as organic	0.9%	9 g/L
Potassium	K	as organic	2.4%	24 g/L
Sulphur	S	as organic	0.25%	2.5 g/L
Magnesium	Mg	as organic	0.3%	3 g/L
Fulvic Acid	FA	as fulvate	2.5%	25 g/L
Amino Acids		from plant base	8%	80 g/L
Phyto Hormones		from plant base		85,000 pmol/ml

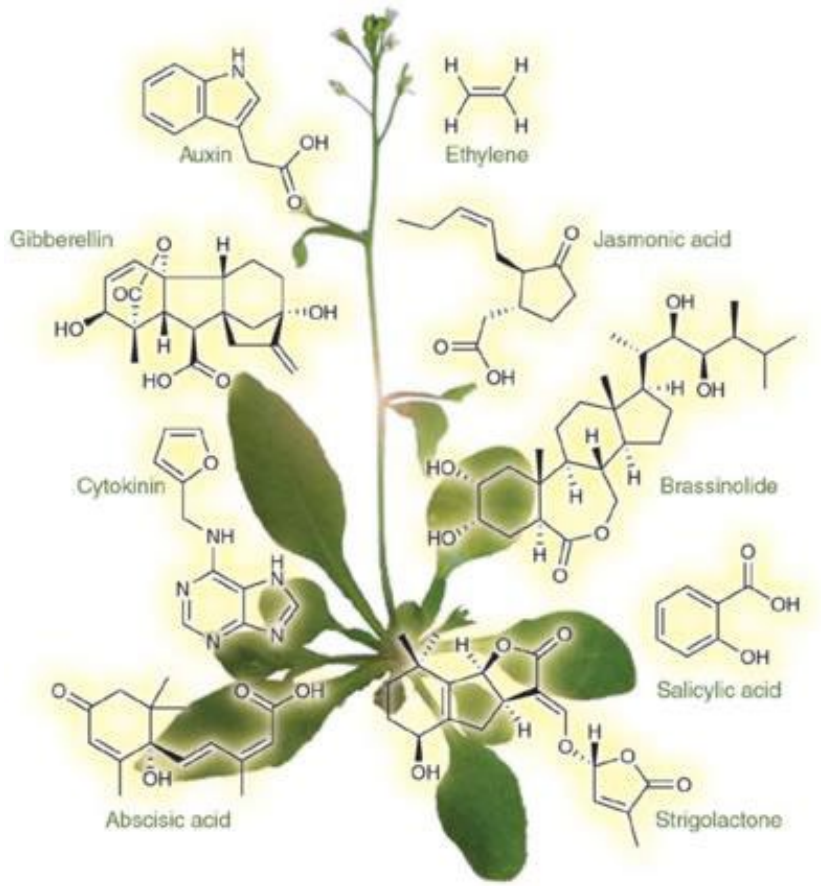
COMPOSITION		
Analysis:	w/v	weight/volume
Product pH:	pH:	4.0
Specific Gravity:	SG:	1.1

L-Amino acids: **Protan™**



- Amino acids are the building blocks of proteins, and they are integral to the chemistry of life.
- L-Amino acids are the purest form of plant amino acids and are readily absorbed by the plant. They are a vital source of organic nitrogen and essential components in various metabolic processes.
- Three of the most important L-amino acids are Tryptophane, Phenylaniline and Tyrosine.
- These amino acids improve the plant's immune system. They are also prerequisites for the plant's ability to naturally produce cytokines & auxins for growth, lignin for tissue structure and phyto-alexins for immunity/plant health.
- Stress factors from agrochemicals (e.g., glyphosate), frost, draught, fertilizer burn etc., inhibit the synthesis of among others, these three amino acids.

Phytohormones: **Protan™**



- Phytohormonesare chemical messengers that co-ordinate cellular activities. Protan™ contains two groups of natural phytohormonesnamely auxins and cytokines.
- Indoleaceticacid (IAA) is the biological active phytohormonesin the auxin group. It regulates growth and development processes such as cell division and elongation, tissue differentiation, apical dominance, and responses to light, gravity & pathogens.
- Cytokinesare responsible for cell division. There are four biological active hormones in this group. tZ, cZ, DZ and iP.
- Stress factors inhibit the plant's ability to use amino acids and produce hormones. Applying Protan™ bridges this obstacle.

Organic acids: **Protan™**

Organic acids are early products of photosynthesis and occupy a central position in the metabolism of plants Protan™ contains the essential Fulvic Acid:

Fulvic Acid

Provides highly effective chelation of several plant nutrients, hence facilitating their absorption by plants.

As an example, iron and magnesium ions are indispensable for photosynthesis. Fulvic acid promotes the function of transporting those ions into plant cells by a chelating effect.

A process that is aided by the product's capacity to improve cell membrane permeability, protein metabolism and the activity of enzymes.

Fulvic Acid has the ability to relieve a plant of oxygen deficiency and is a natural metabolite, thus increasing heat resistance of your crop and enabling crops to better withstand short term heat stress to longer dry times better.

Case Studies: **Protan™**

Control

Treated 3 days prior to severe frost with Protan™ @ 3L/ha

Frost damage Tomatoes, July 2021:

- Treated 3 days prior to severe frost with Protan™ @ 3L/ha

Results:

- 5 days after treatment significant more resistance shownin Protan™ treated block. Recovery time significantly reduced in Protan™ block. Untreated block died back completely.

Volume Application: **Protan™**

Maize, Lichtenburg 2020:

Stem thickness, root development and overall plant health significantly improved on treated plants

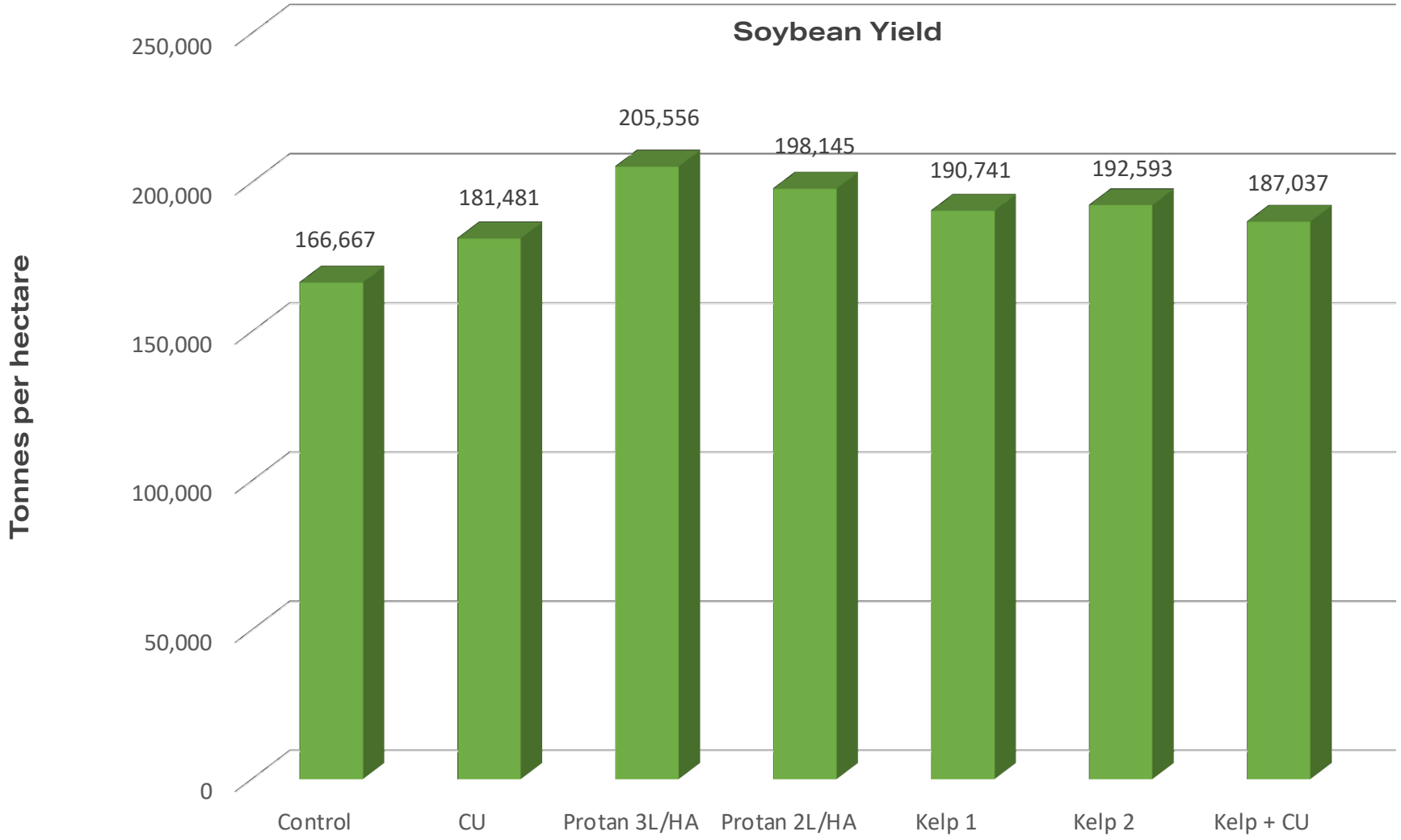
Treated block at 2L/ha

Control

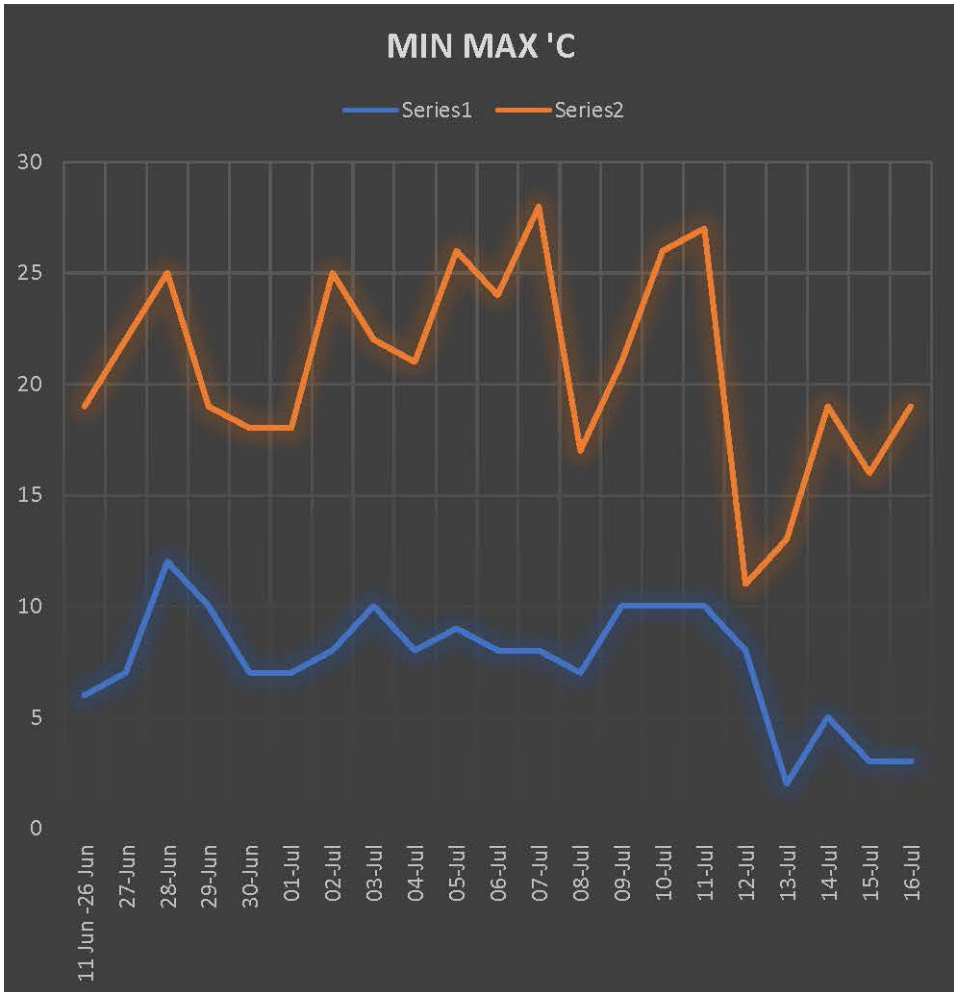
Crop Yield in Sugar Beans, June 2021:

- Increased vegetative growth.
- Increased yield.

Performance vs industry leading products: **Protan™**



Low temperature germination: **Protan™**



Low temperature germination:
July 2020

11/06/2020 –16/07/202035 days after planting

- Sandy soils (<15% clay).
- No additional fertilizers.
- 10 reps/treatment.
- Control, 1L/ha, 2L/ha.

Plant stress and the working of **Protan™**

Germination:
10 REPLICATES/TREATMENT

Day	Control	1L/Ha	2L/Ha
1	-	-	-
16	-	2	5
17	-	3	7
18	-	4	8
19	-	5	8
20	-	6	9
21	-	6	9
22	-	7	10
23	-	7	10
24	1	8	10
25	2	8	10
26	5	9	10
27	7	9	10
28	7	10	10
29	7	10	10
30	7	10	10
31	7	10	10
32	7	10	10
33	7	10	10
34	7	10	10
35	7	10	10

6 days to 100% emergence

12 days to 100% emergence

Root development on sweet potato cuttings: **Protan™**

Control

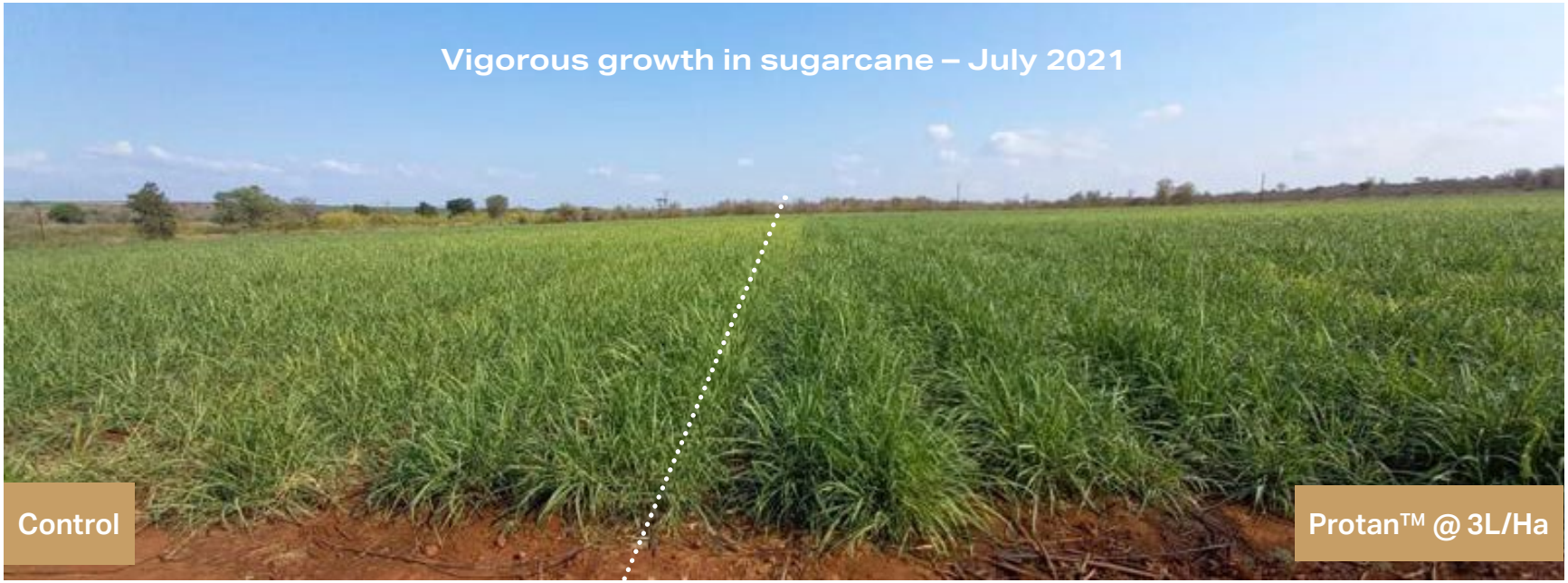
Protan

Root development on sweet potato cuttings: October 2021

07/10/2021

- 50ml Protan™/10L water sprayed on cuttings just before planting. 7 days after planting - Significant root development on treated cuttings at every node.

Vigorous growth in sugarcane: **Protan™**



Early flowering: **Protan™**

Early flowering in Green peppers: July 2021

Control

Protan™ @ 3L/Ha

Control

Protan™ @ 3L/Ha

General plant development: **Protan™**

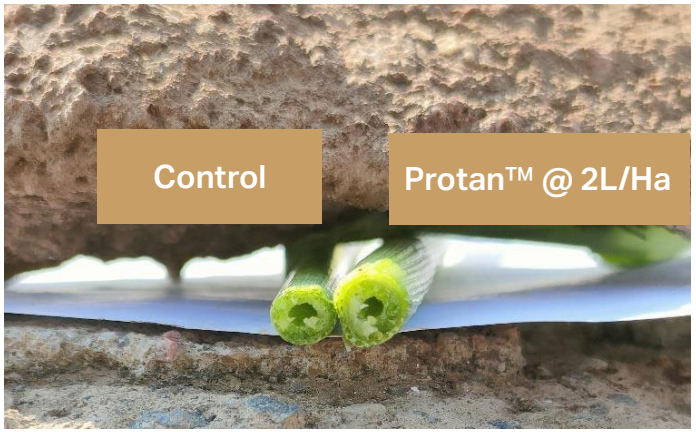
Wheat August 2021 2L/ha
Protan™ mixed with Moddus

Results:

85kg/ha @ $470/ =

$39.95 – $16.00 =

$23.95/ha return

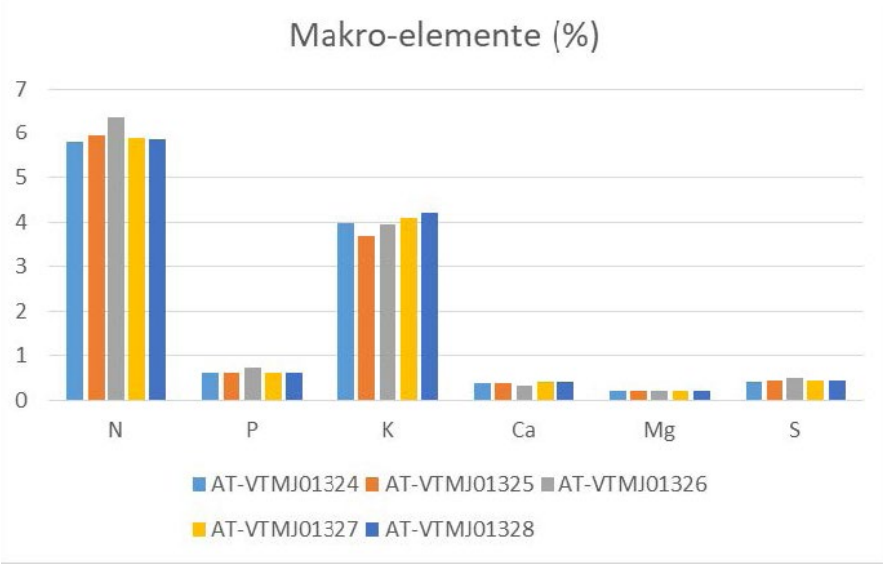


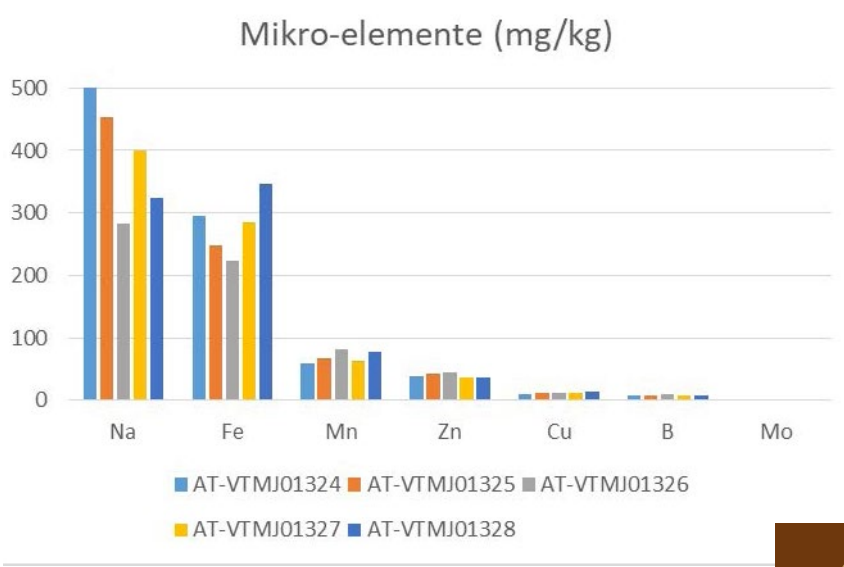
Leaf analysis: **Protan™**

Wheat was planted 9 June 2022, 2L Protan™ p/ha was applied in the furrow with planting.
The leaves were tested July 25, 2022. Protan™ analysis outperforms the other products and controls.

#	LAB No	Reference	Description	Type	N	P	K	Ca	Mg	S	Na	Fe	Mn	Zn	Cu	B	Mo
12	L9-16845	AT-VTMJ01324	20 Ha Rev	Wheat	5.78	0.62	3,96	0.39	0.22	0.43	501	296	58	38	10	7	0.92
13	L9-16846	AT-VTMJ01325	20 Ha Rev	Wheat	5.93	0.61	3,68	0.38	0.22	0.45	453	247	68	43	11	8	0.99
14	L9-16847	AT-VTMJ01326	20 Ha Rev	Wheat	6.37	0.73	3.94	0.33	0.21	0.5	282	223	81	44	12	9	0.87
15	L9-16848	AT-VTMJ01327	20 Ha Rev	Wheat	5.88	0.61	4.09	0.42	0.22	0.46	399	285	64	37	12	7	0.94
16	L9-16849	AT-VTMJ01328	20 Ha Rev	Wheat	5.85	0.62	4.21	0.41	0.21	0.45	323	347	78	37	14	7	0.91

Product 1 Control PROTAN @ 2L/ha Product 2 Product 3





Plant stress due to herbicide: **Protan™**

Soyas sprayed with PROTAN and without Protan™ - 2022

Mixture in the tank was 4L Glyphosate, 1 x 14g packet of Elegance and 2L Protan™ per ha.

Results: Soya's pretty green and +-98% of the Morning Glory died.
BRIX reading is an average of 7

Mixture in the tank was 4L Glyphosate and 1 x 14g packet of Elegance per ha.

Results: Soya's are yellow and +-30% of the Morning Glory died.
BRIX reading is an average of 5

The spraying was done on 22 Dec 2022. BRIX was tested on 24 January 2023.

Leaf analysis: **Protan™**

Industrial Product

Sugar beans - 2023

Where Protan™ was applied most of the Macro and Micro elements were higher than where the Industrial product were applied & Sodium levels were significantly lower than the Industrial product.

Protan @ 2L/ha

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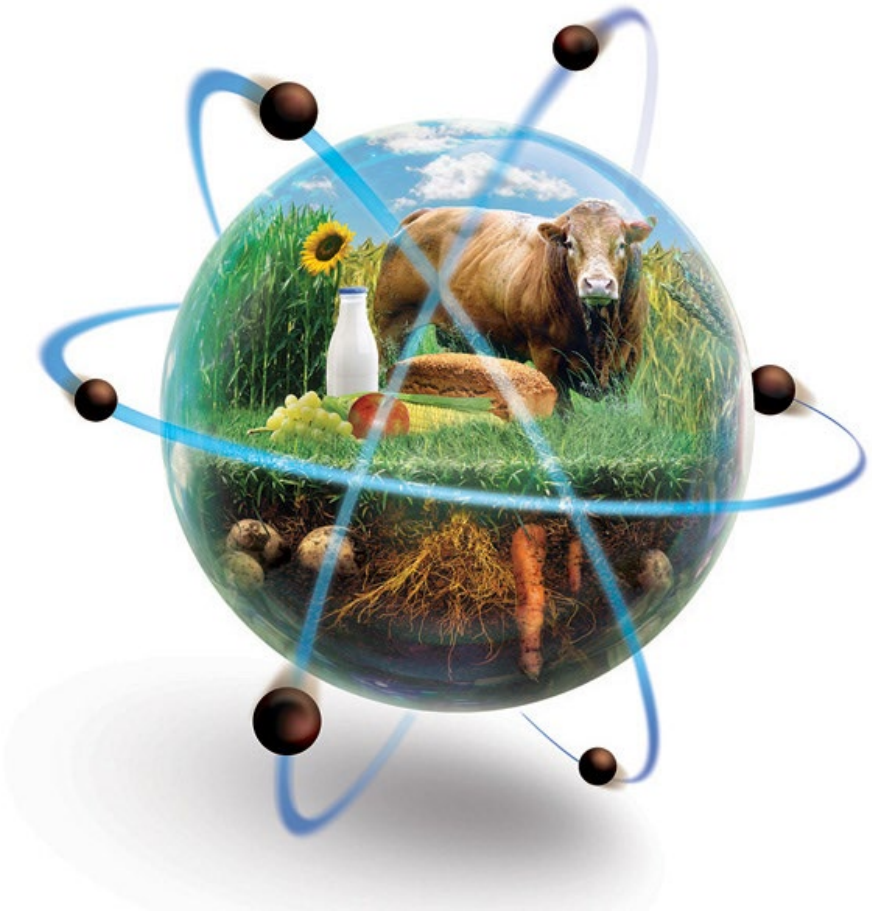

Creating an **economic** and **environmentally sustainable** growing system

Advanced Nutrients® assist farmers to increase whole-of-farm productivity by applying innovative eco-agri principles (soil & plant health, water quality) to conventional agronomy.

Our service & product model is a solution to issue focus through broad spectrum, high analysis product innovation, resulting in strategic advantage in sustainable agriculture Innovation, Production and Profits for farmers.

For more information on Advanced Nutrients®, services and products please call, email or go to our website.

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