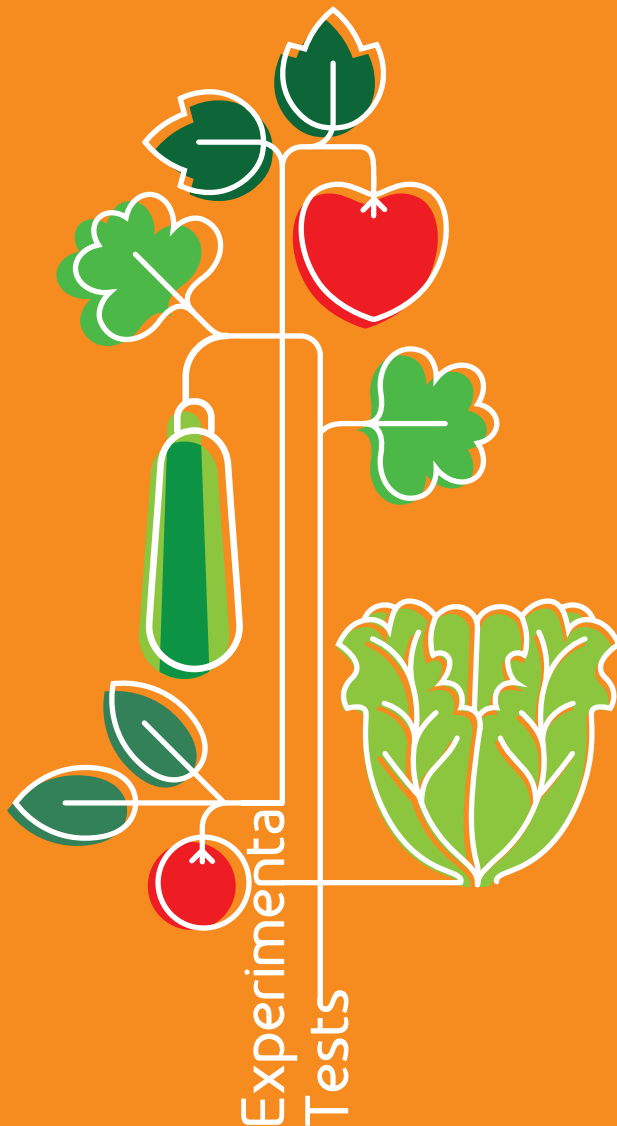


GROW QUICK

VEGETATIVE-REPRODUCTIVE
BALANCE



hydro fert



Grow Quick

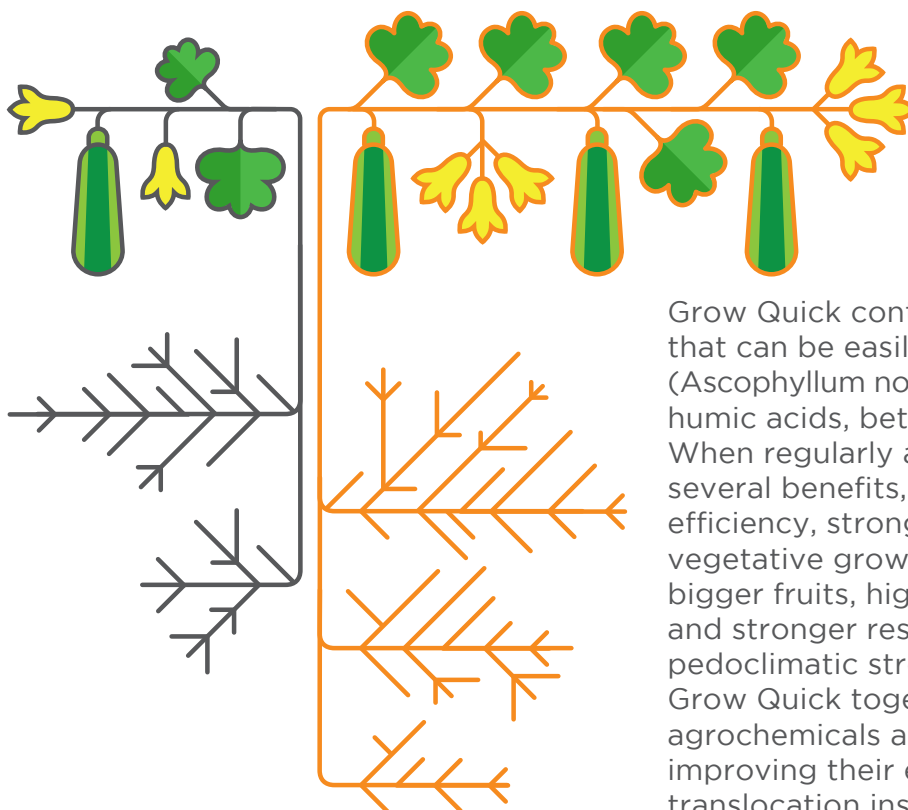
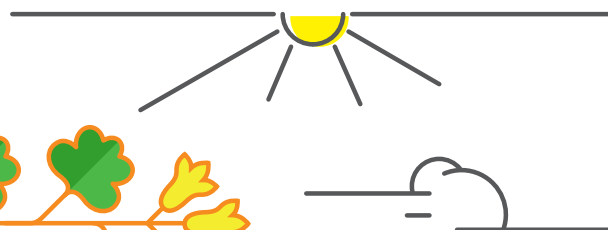
1L	5 - 20 L	120 L	1000 L

Organic fertilizer based on amino acids, seaweeds (*Ascophyllum nodosum*), oligosaccharides, humic acids, betaines and enzymes.

It can be applied on all crops in both foliar application and fertigation.

BENEFITS:

- stronger root system and better hair-root balance
- bigger fruits size and higher sugar content
- improves resistance against water and saline stress



Grow Quick contains free amino acids that can be easily absorbed, seaweeds (*Ascophyllum nodosum*), oligosaccharides, humic acids, betaines and enzymes. When regularly applied, it provides several benefits, such as: better fertilizers efficiency, stronger root systems, better vegetative growth and fruit setting, bigger fruits, higher sugar content and stronger resistance against pedoclimatic stress. We advise using Grow Quick together with fertilizers, agrochemicals and weedkillers, improving their effectiveness and translocation inside the plant.

The importance of a good rooting

Rooting is such an important topic not to be underestimated, whether it is concerned with a post-transplanting rooting of a horticultural crop or the vegetative regrowth of tree crops after winter break. A difficult root development leads to a general deterioration of plants, with a consequent occurrence of physiopathies not directly connected to nutritional deficiencies. Such phenomenon generally occurs on crops freshly transplanted and it's classified as "post-transplanting stress".

In order to avoid the above-mentioned conditions, we should use some specific fertilizers containing humic and fulvic acids, amino acids, oligosaccharides and seaweeds. They can improve the chemical-physical features of soils, plants rooting, as well as both the vegetative and fruit development.

After a constant R&D activity with public and private research institutions, Hydro Fert has conceived and developed Grow Quick, a biostimulant fertilizer, allowed in organic agriculture.

It is specifically able to stimulate a uniform and balanced development for both roots and vegetative part leading to a good hair-root ratio.



Zucchini

in growth chamber



MATERIALS AND METHODS

Species	<i>Cucumis melo</i> var. Ortano
Experimental design	Randomized complete block design
Test duration	4 weeks
Temperature	22,5 - 23 °C
Relative humidity	65-75%
Lights	14 hours
Substratum	Mixture of peat and perlite (10:1)
Method of administration	Fertigation
Number of applications	3 (once a week)
Compared treatments	Grow Quick 20 l/ha; Control

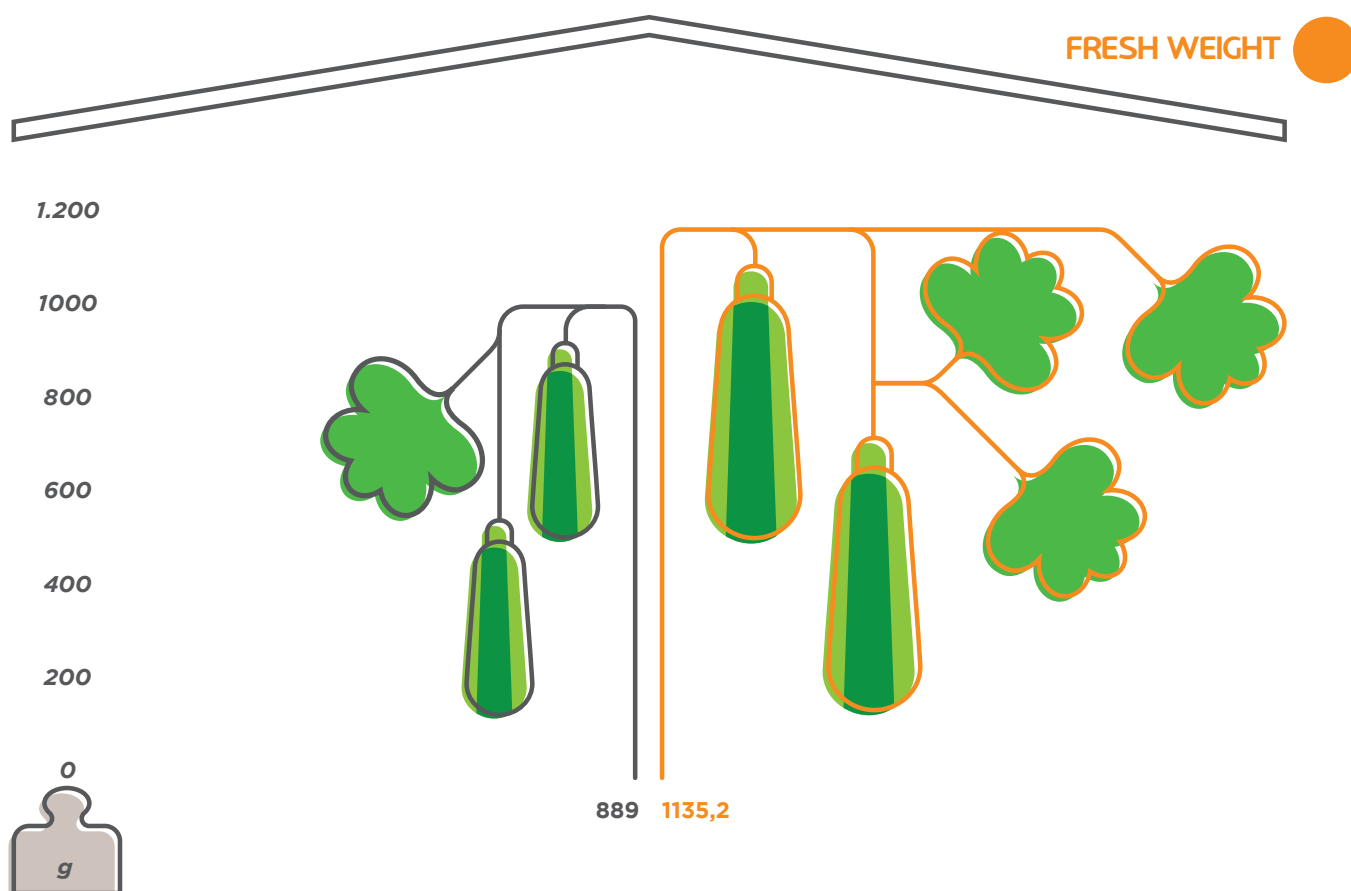


FIG 1 - Average fresh weight per experimental plot after 30 days from transplanting, in two compared treatments. Plants in growth chamber.

Grow Quick increases the N-P-K nutrients efficiency and stimulates the production of vegetable biomass in zucchini, after root application at a dose of 20 l/ ha. Such effect comes from the presence of animal AA, improving the vigour of crops.

ROOT SYSTEM INDEX

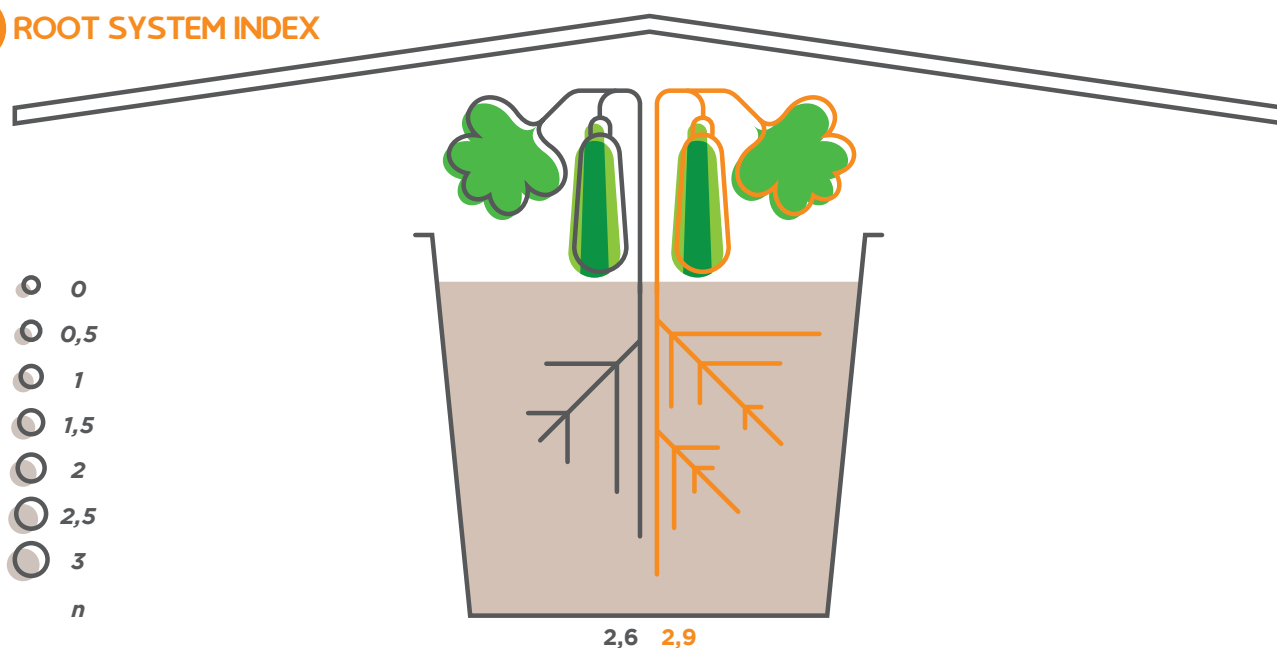


FIG 2 - Root volume quality index between 1 and 4, after 30 days from transplanting in two compared treatments. Plants in growth chamber.

Grow Quick increases roots volume after its application at a dose of 20 l/ha in fertigation, also combined with common NPK fertilizers.

The roots are stronger, bigger and more numerous thanks to the auxin-like and biostimulating action, proper of seaweeds and humic substances.

FLOWERS NUMBER



FIG 3 - Flowers number per experimental plot after 30 days from transplanting in two compared treatments. Plants in growth chamber.

Plants cultivated using Grow Quick have developed more flowers than the untreated control. Therefore, such data confirm the biostimulant activity of Grow Quick in enhancing a more abundant flowering.

The active substances contained in seaweeds stimulate the production of hormones, such as cytokinins, important for the production of flowers and fruits.

Tomato crops in growth chamber



MATERIALS AND METHODS

Species | *Solanum lycopersicum* var. Cuore di bue

Experimental design | Fully randomized blocks

Test duration | 4 weeks

Temperature | 19 °C (at night) / 23 °C (Day time)

Relative humidity | 65-75%

Light | 14 h

Substratum | Peat

Method of administration | Fertigation

Number of applications | 3 (once a week)

Compared treatments | **Grow Quick 20 l/ha**; Control

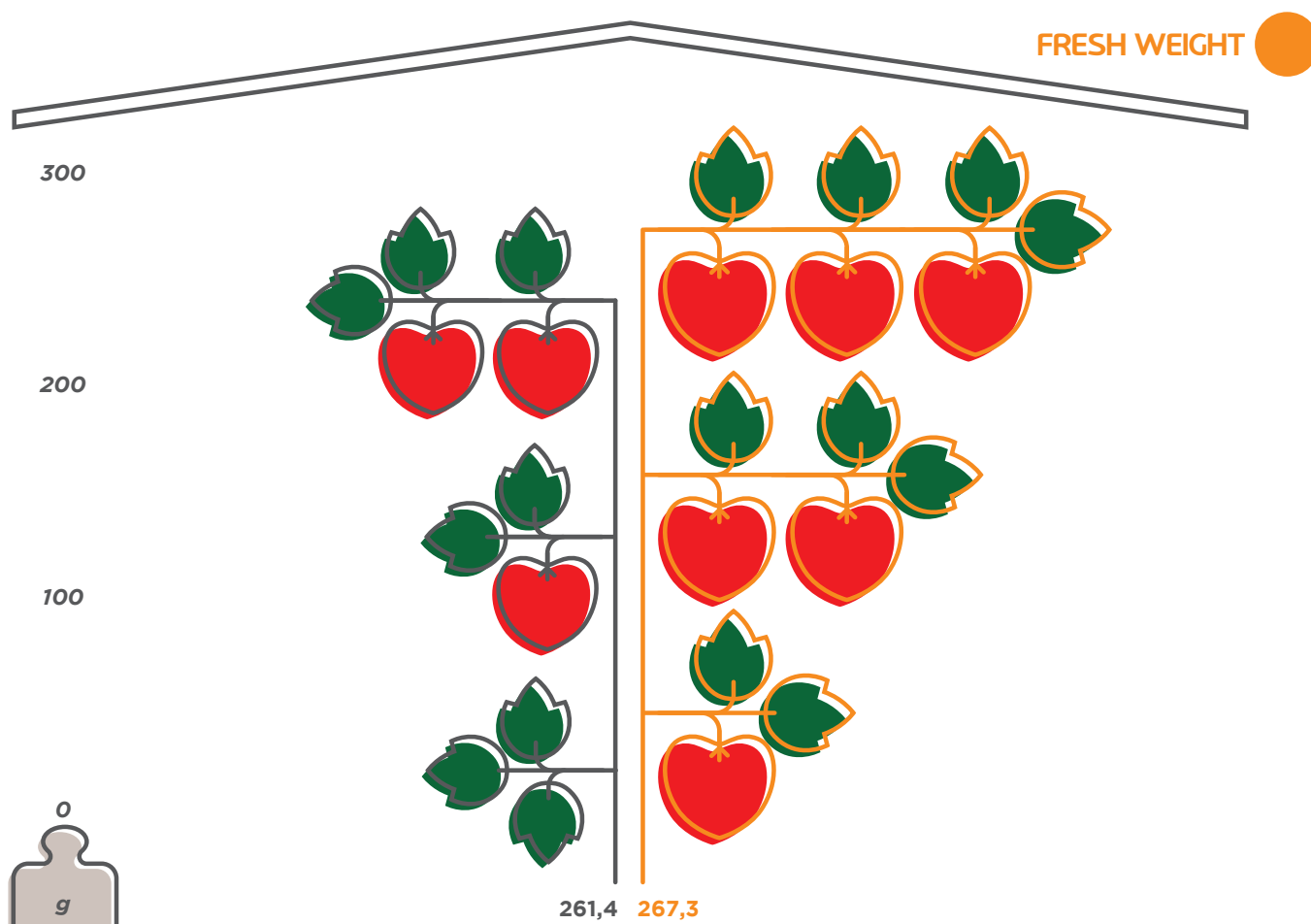
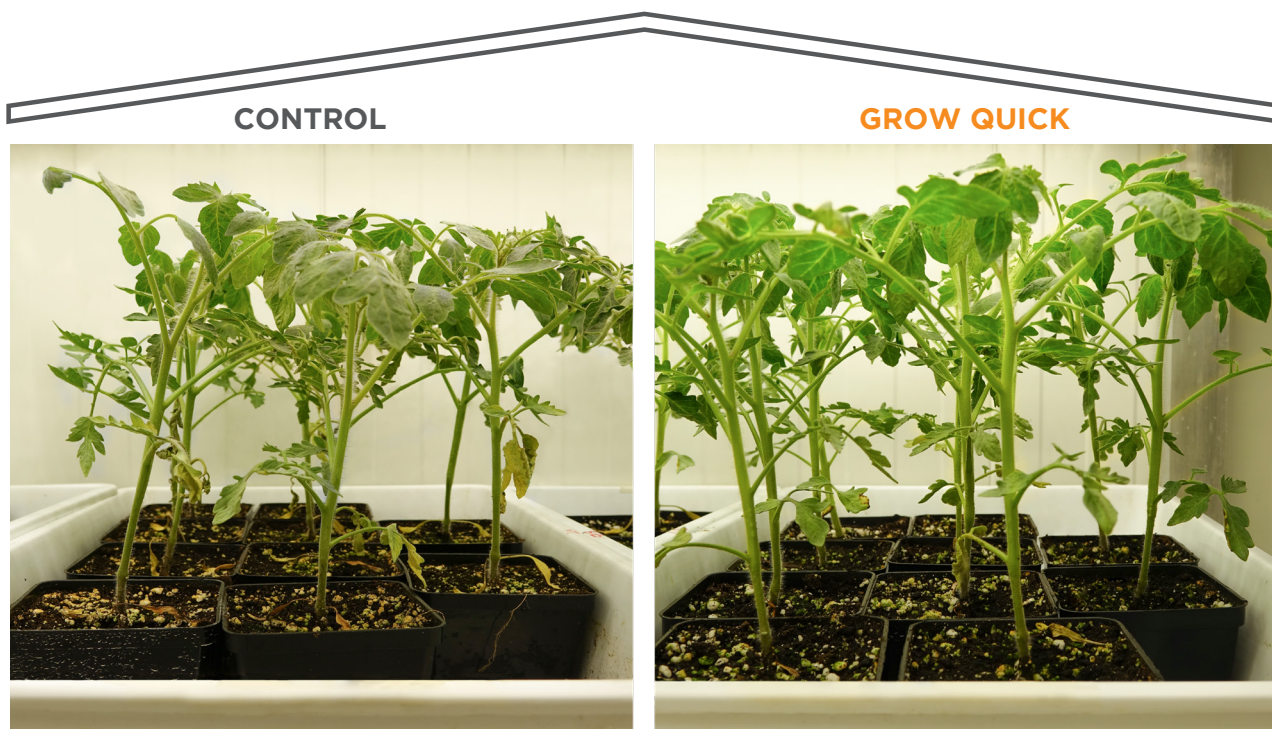


FIG 1 - Average fresh weight per experimental plot after 30 days from transplanting, in two compared treatments. Plants in growth chamber.



IMG 1 - Vegetative development of tomatoes in growth chamber after 30 days from transplanting, in two compared treatments.

Grow Quick increases the N-P-K nutrients efficiency and stimulates the production of vegetable biomass in tomatoes in a growth chamber, after a root application at a dose of 20 l/ ha. Grow Quick in fertigation reduces the production time of both seedlings in nursery and cultivation in open field, thus anticipating the harvest.

DRY WEIGHT

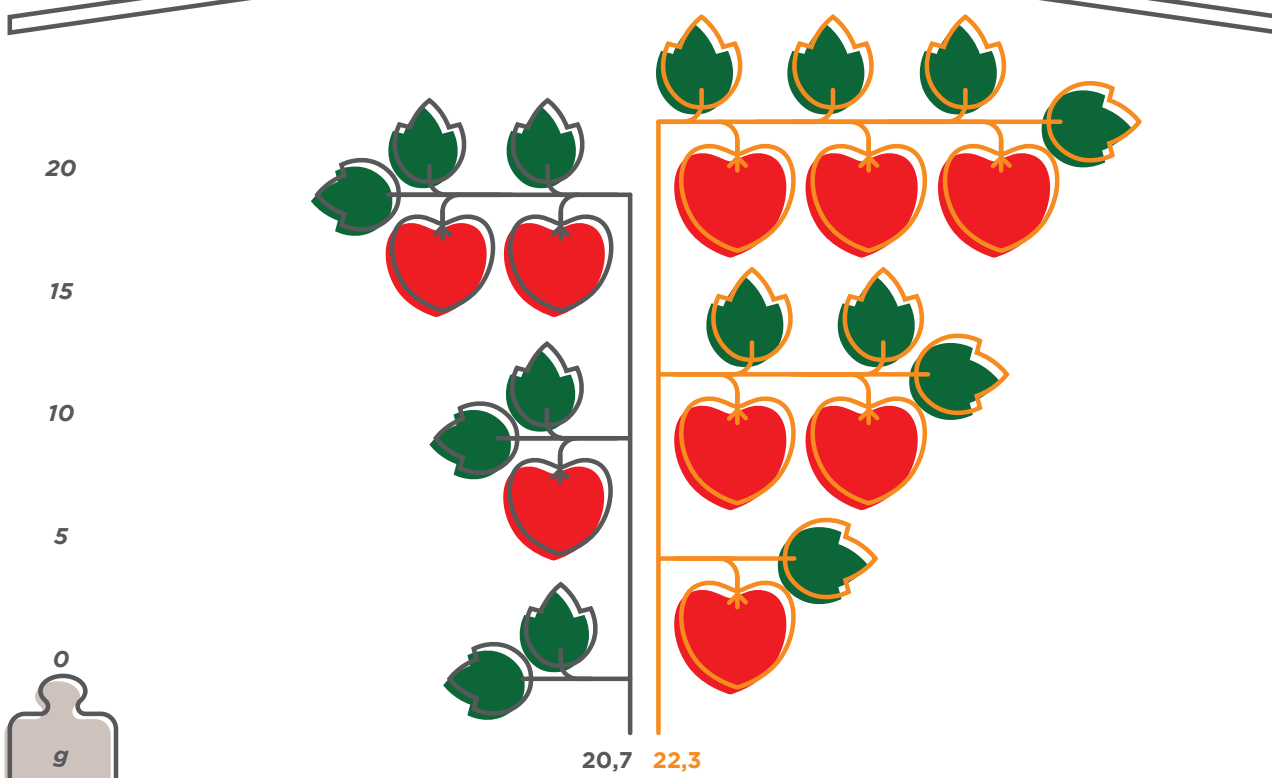


FIG 2 - Average dry weight per experimental plot after 30 days from transplanting, in two compared treatments. Plants in growth chamber.

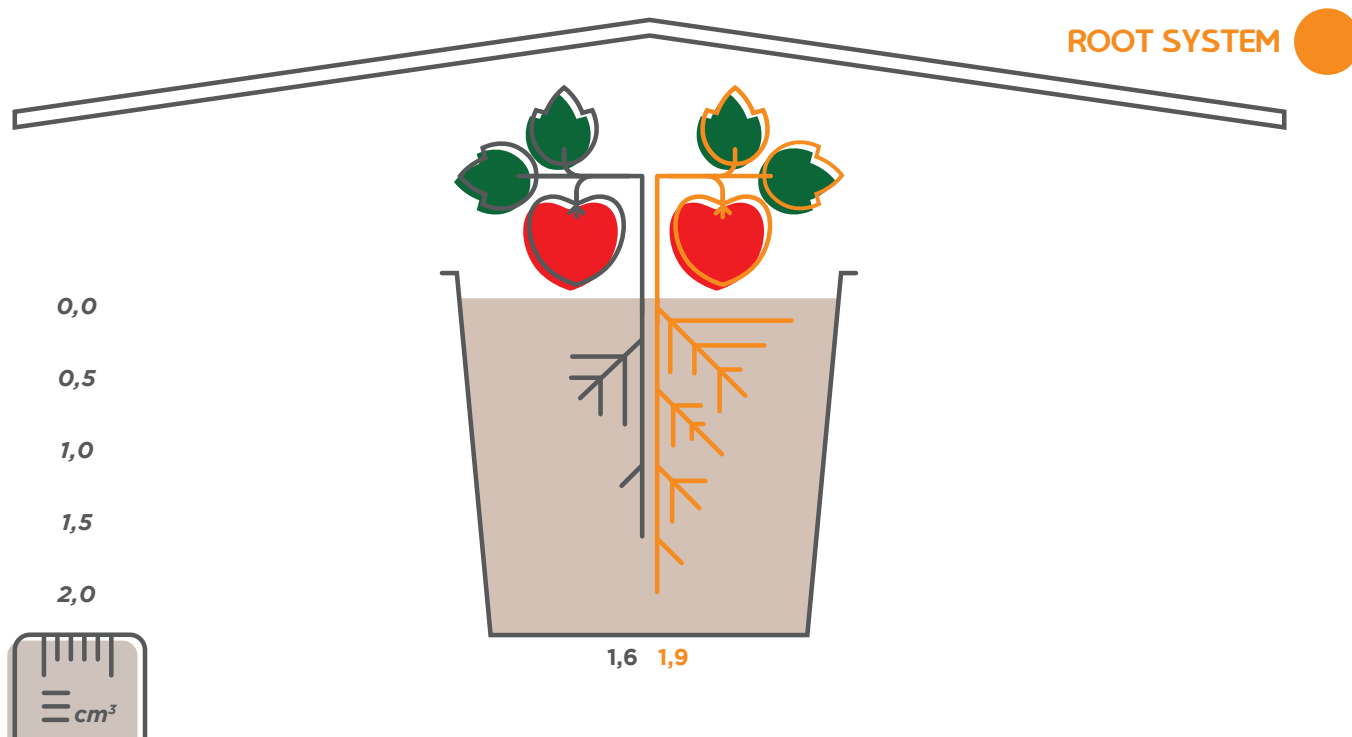


FIG 3 - Root volume of tomatoes in growth chamber after 30 days from transplanting, in two compared treatments.

The use of Grow Quick in fertigation at a dose of 20 l/ha increases the dry weight per plot. It's proven the ability of Grow Quick to stimulate the photosynthetic process and the accumulation of total solids, thus confirming the anti-stress properties of such seaweeds-based formulation.



IMG 2 - Data obtained by image analysis of the root system through WinRhizo software

Tomato crops in open fields



MATERIALS AND METHODS

Species	<i>Solanum lycopersicum</i> var. HEINZ 1538	
Experimental design	Fully randomized blocks	
Test duration	14 weeks (transplanting 13/05/2019 - Test conclusion 23/08/19)	
Temperature	According to the climate trend in the countryside of Trinitapoli (Italy)	
Relative humidity	According to the climate trend in the countryside of Trinitapoli (Italy)	
Light	Typical of the trial period	
Substratum	Sandy and loamy soil	
Method of administration	Fertigation	
Number of applications	3 (flowering, fruit setting, fruit growth)	
Compared treatments	Grow Quick 20 l/ha; Control	

IMG 1

Tomato *Solanum lycopersicum* in open field



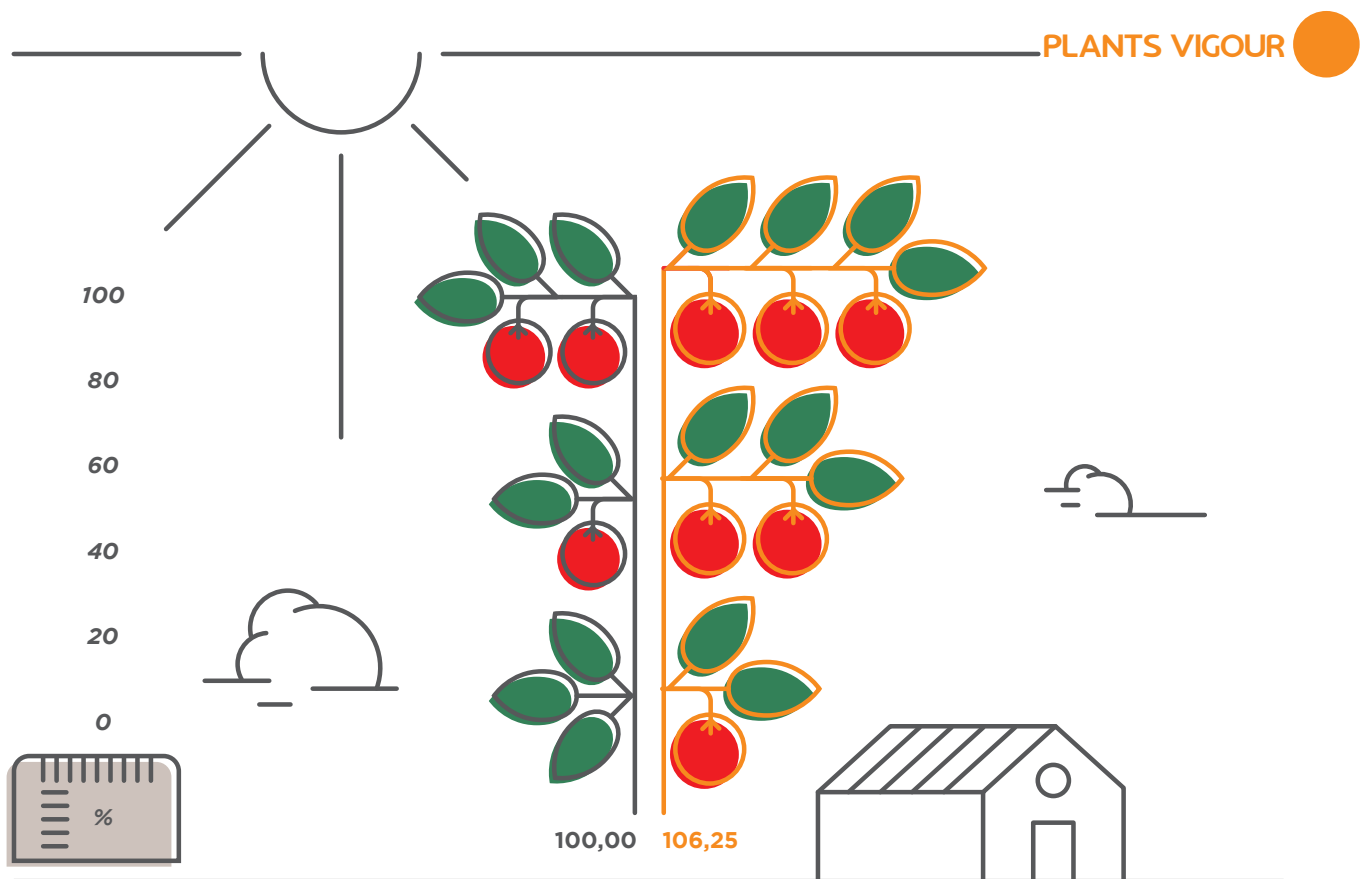


FIG 1 - Plants vigour index after 8 weeks from transplanting, in two compared treatments.

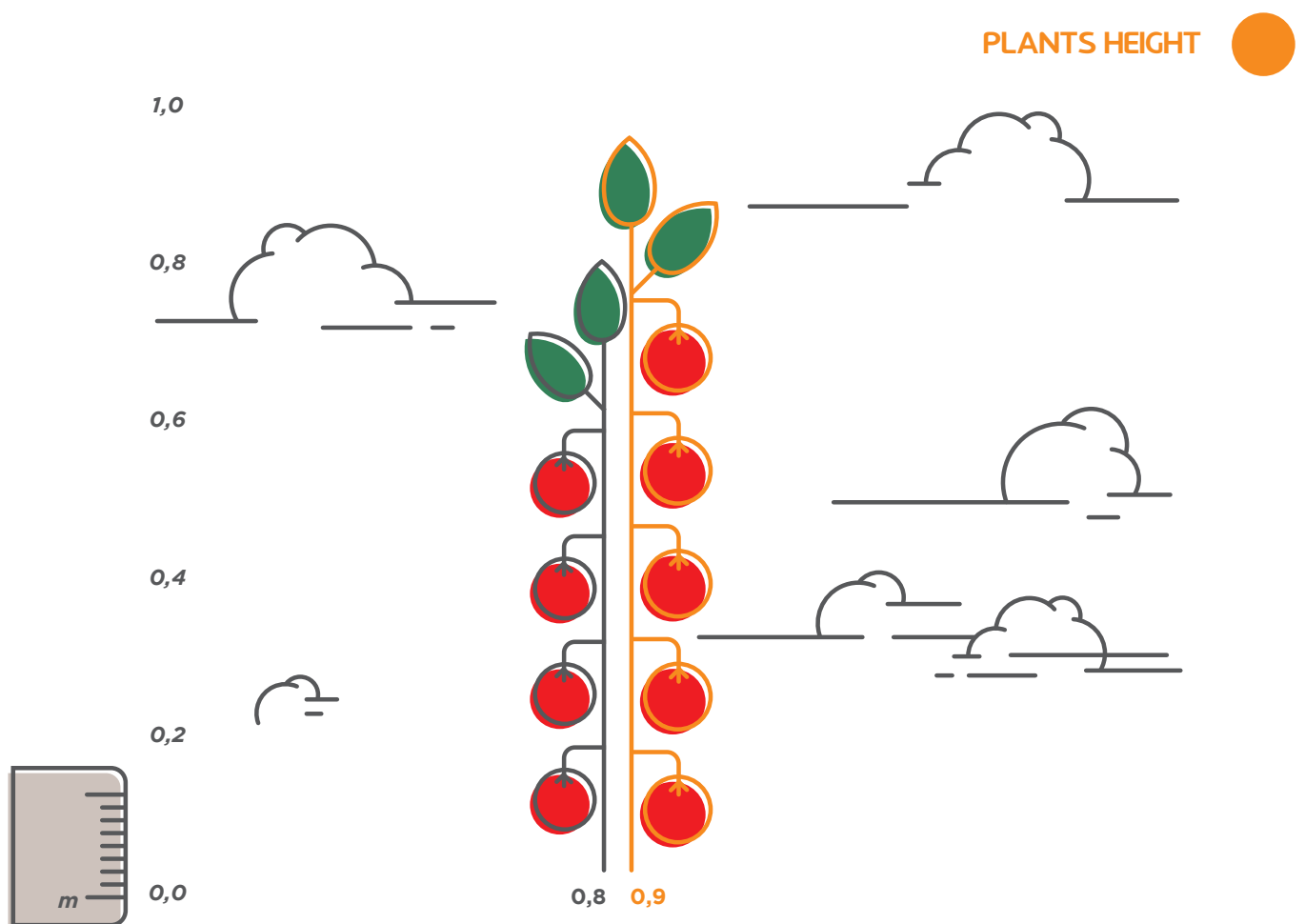


FIG 2 - Plants height after 8 weeks from transplanting, in two compared treatments.

PLANTS WIDTH

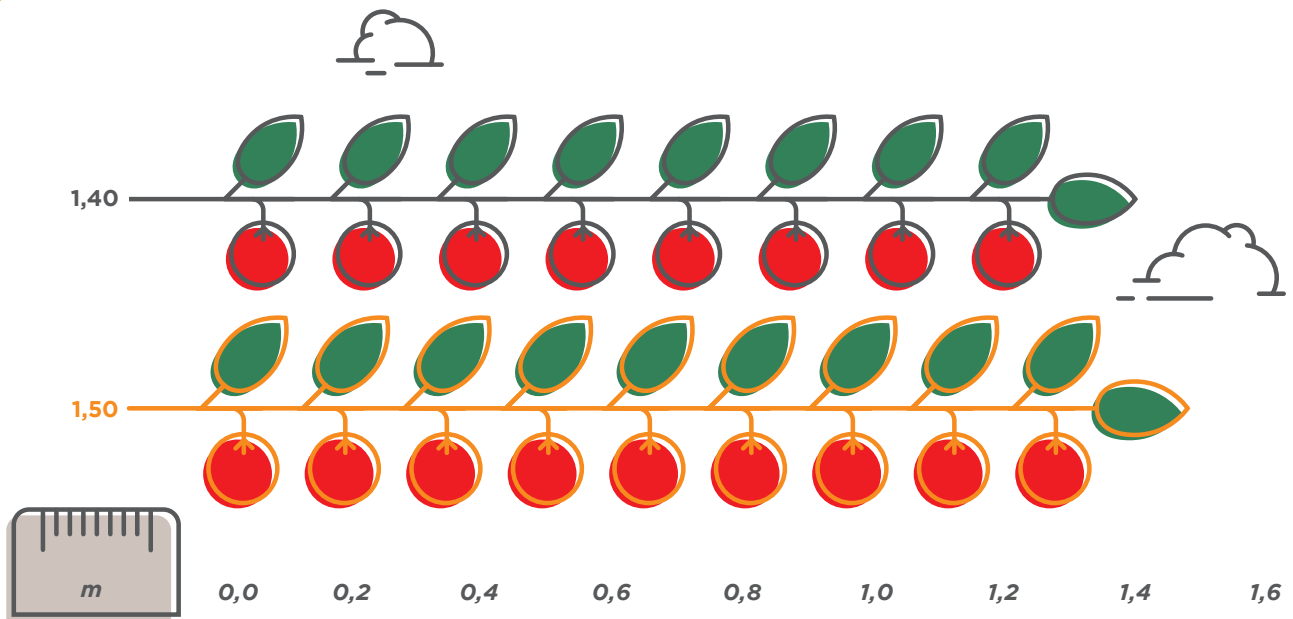


FIG 3 - Plants width after 8 weeks from transplanting, in two compared treatments.

CHLOROPHYLL INDEX

- 0,8
- 0,7
- 0,6
- 0,5
- 0,4
- 0,3
- 0,2
- 0,1
- 0
- n

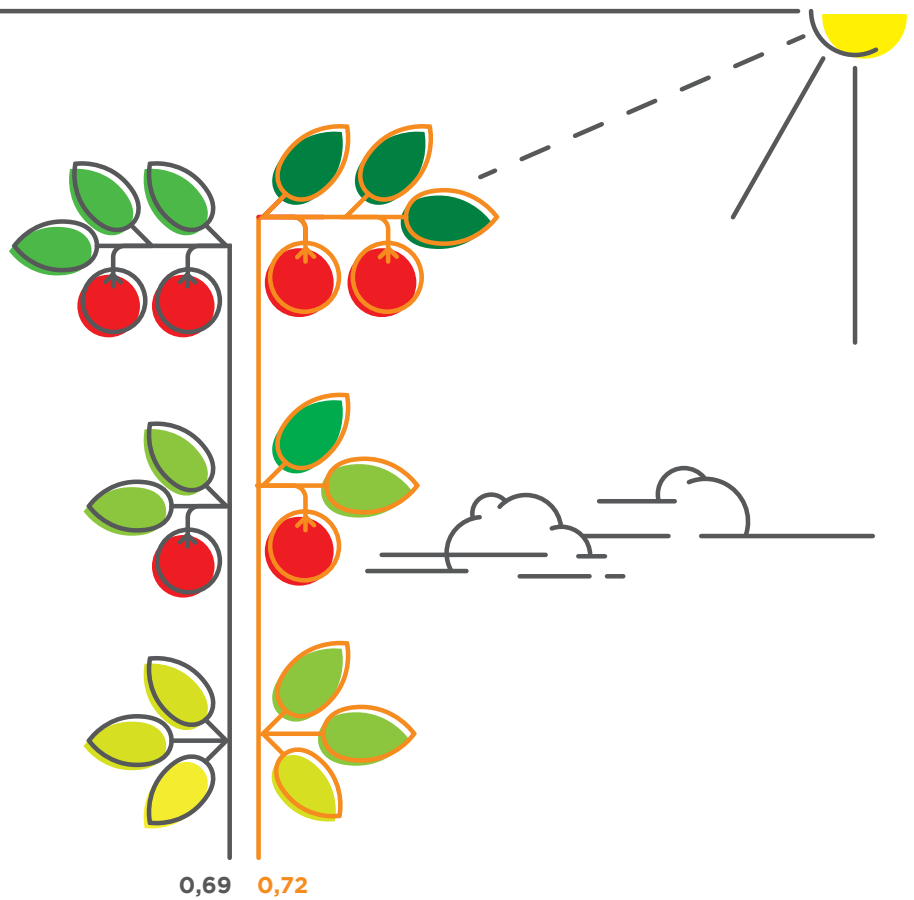


FIG 4 - SPAD index (photosynthetic activity of the plant)

After the analysis of the results, we can see the remarkable effect of Grow Quick on the vegetative part of plants, affecting both vigour (height and width of plants) as well as biostimulation (photosynthetic activity). The SPAD values show a significant increase in photosynthetic efficiency, after an application in fertigation at a dose of 20 l/ha

ROOTS WIDTH

ROOTS LENGTH

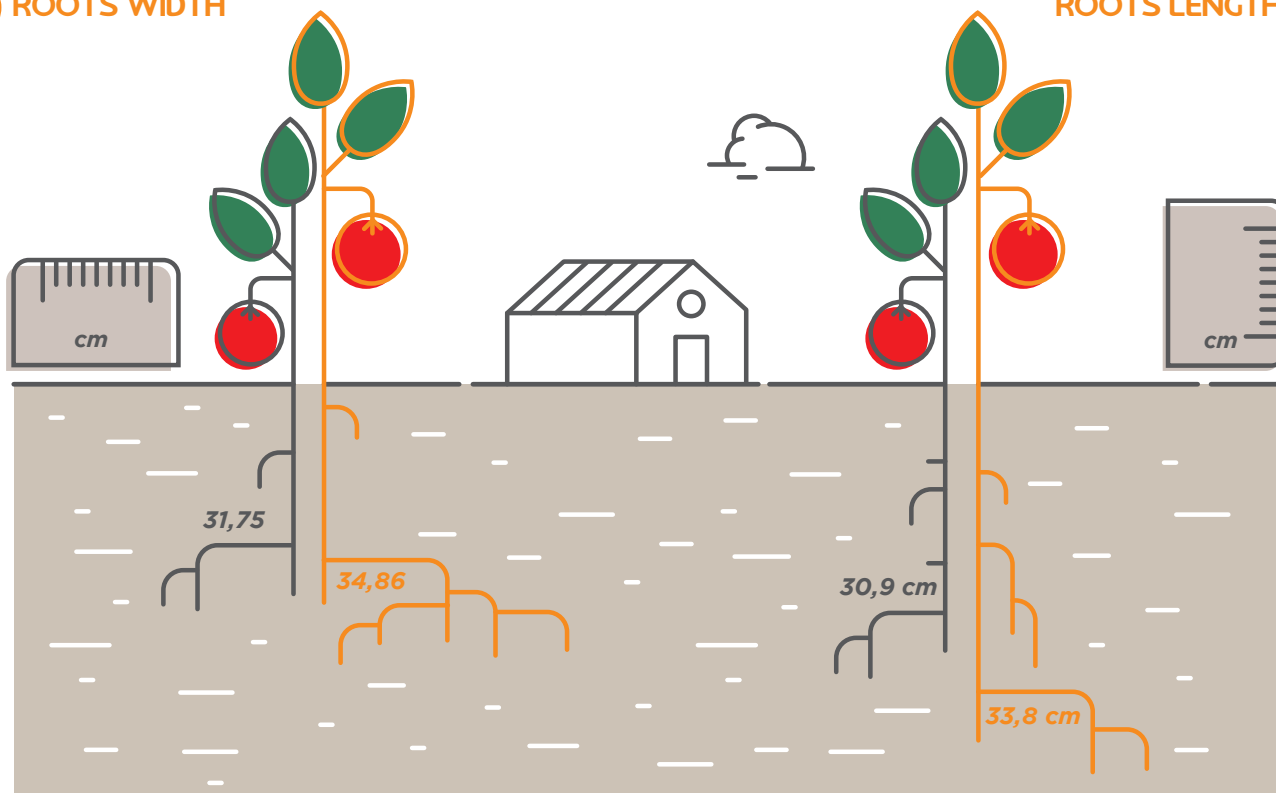


FIG 5 - Roots width and length at the end of the test, in two compared treatments.

As proved for the vegetative part, Grow Quick confirms a positive and significant influence on the development of roots, increasing both length and width. A bigger and more vigorous root system improves the plant's water absorption, besides its nutrients levels as well as its resistance against stress.

FRUITS SIZE

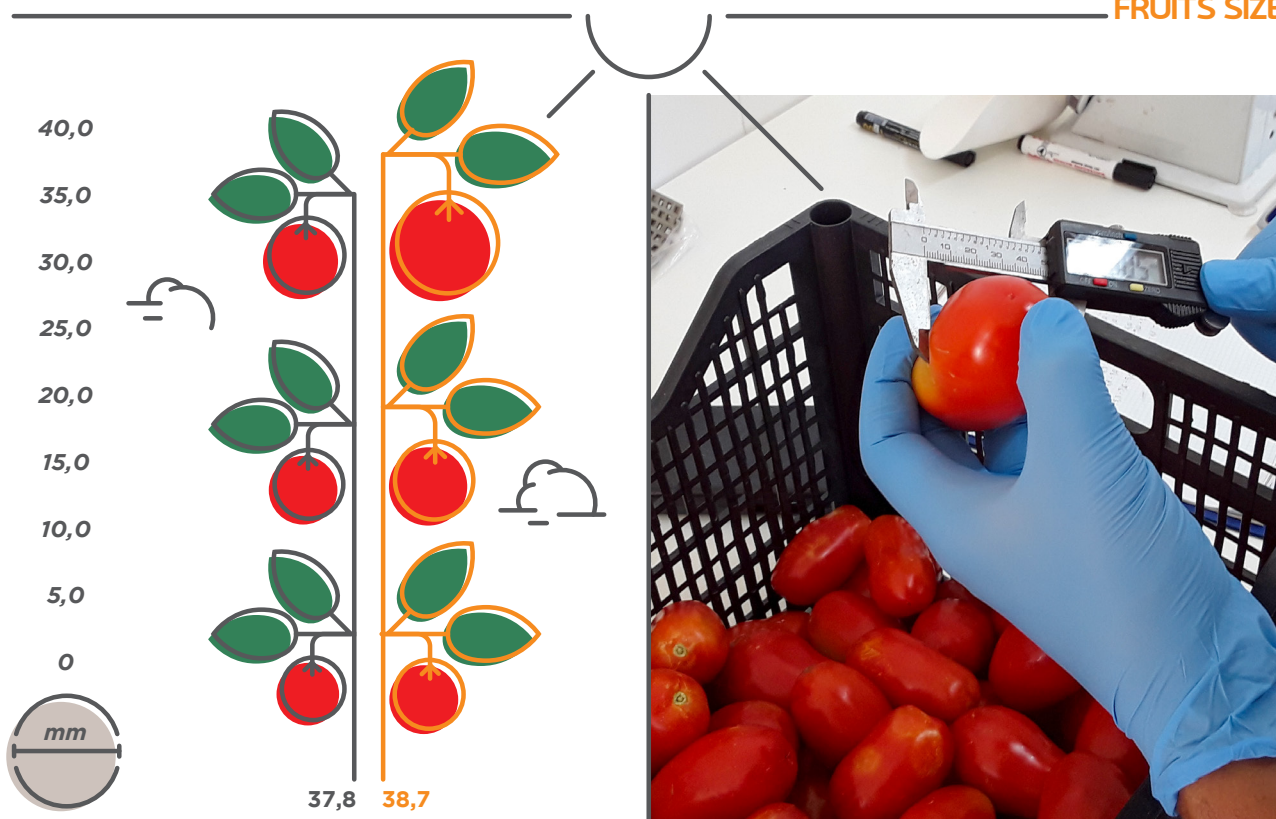


FIG 6 - Average fruits size in compared treatments.

IMG 2 - Measurement of the average size of fruits with a digital calibre

DRY MATTER OF FRUITS

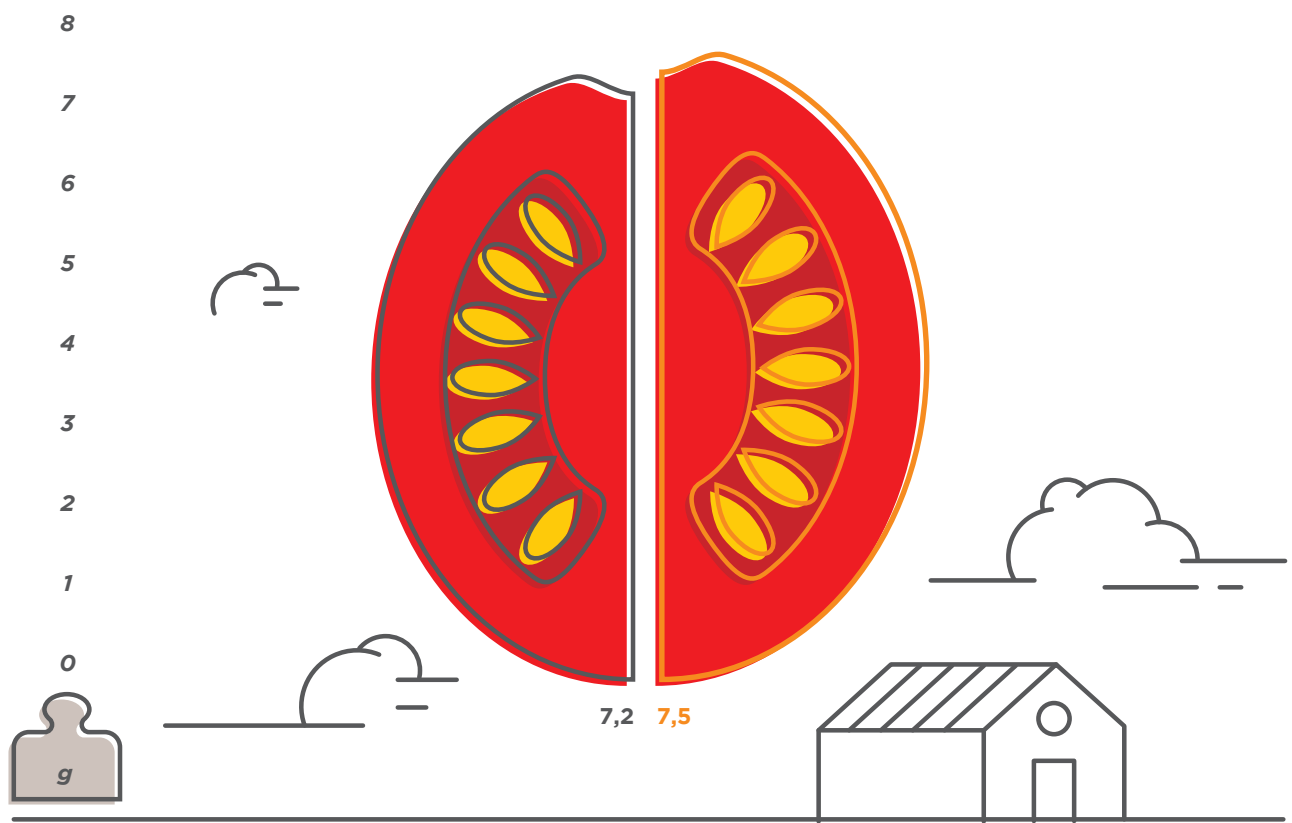


FIG 7 - Average dry matter of tomatoes in compared treatments.

YIELDS

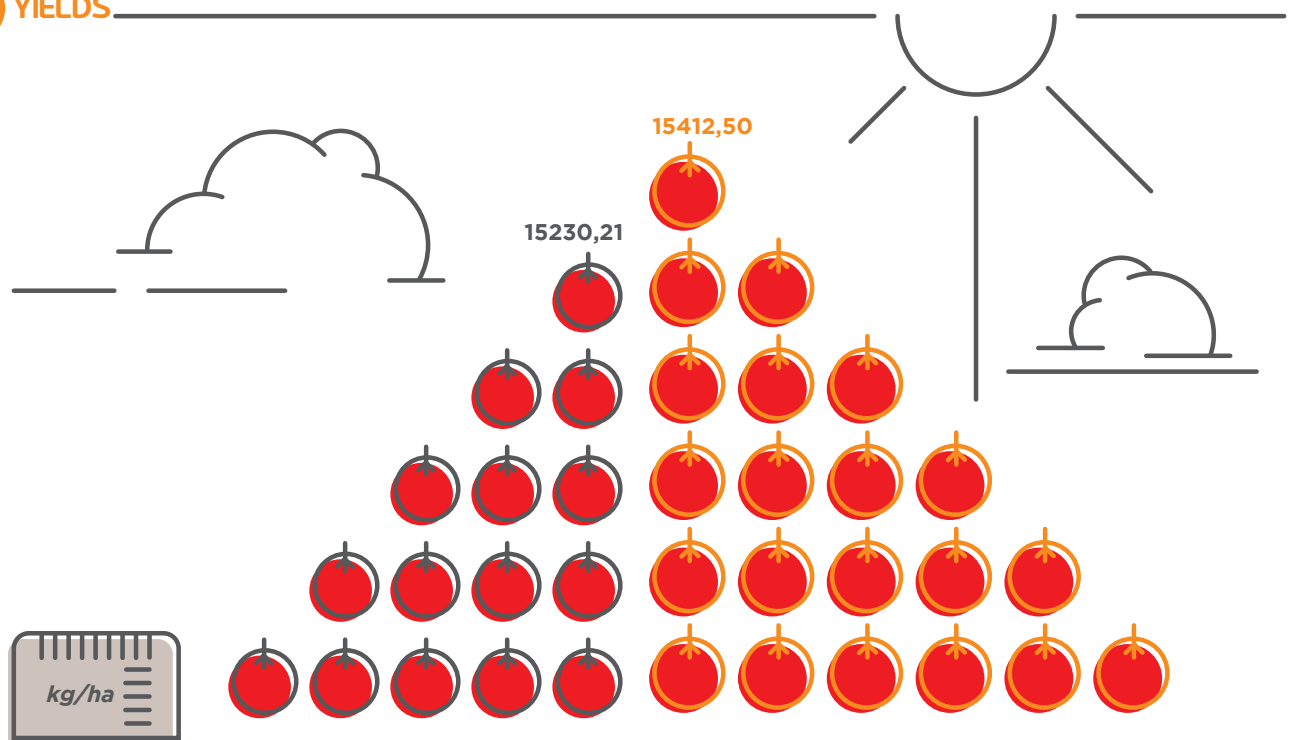


FIG 8 - Production of tomatoes (kg/ha) in compared treatments.

Eventually, the analysis on fruits has confirmed that the use of Grow Quick increases the average weight, thus affecting the productivity of crops.

Lettuce in greenhouse



MATERIALS AND METHODS

Species	<i>Lactuca sativa</i> var. Romana		
Experimental design	Factorial at fully randomized blocks		
Test duration	62 days		
Temperature	4-31 °C	Average temperature	15 °C
Relative humidity	30-95%		
Substratum	93,3% sandy soil / 3,2% loamy soil / limo 3,5%		
Method of administration	Fertigation		
Number of applications	2 (pre-transplanting 15/10/2020 and post-transplanting 5/11/2020)		
Compared treatments	2 biostimulant applications Control (1) and Grow Quick 20 l/ha (8)		
3 salinity levels	S1 S2 S3 = 0,48 dS/cm, 3 dS/cm, 5 dS/cm		
3 water stress levels	I1 I2 I3 = no stress / medium stress / high stress		

VIGOUR

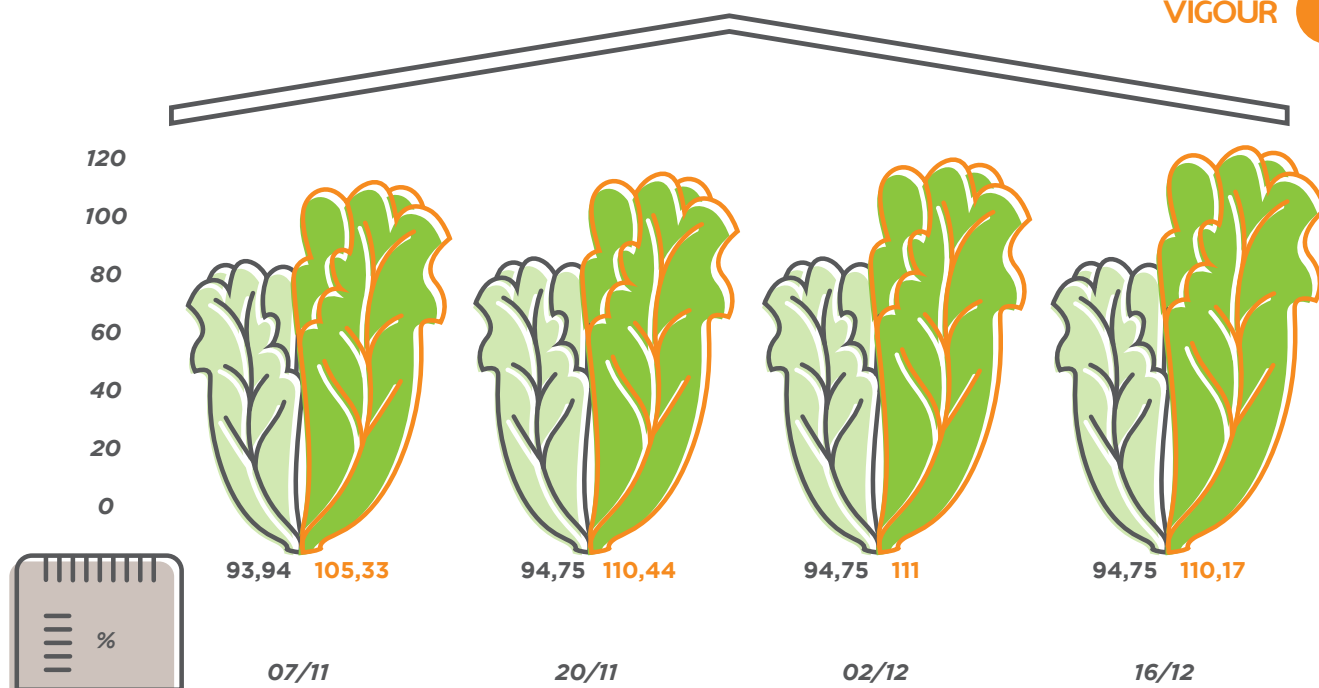


FIG 1 - Average vigour per experimental plot after 23-36-48-62 days from transplanting, in two compared treatments.

Grow Quick stimulates the vegetative development, leading to an increased vigour in lettuce after a root application at a dose of 20 l/ ha, starting from the 1st experimental survey (23 days after transplanting).

SPAD

FRESH WEIGHT

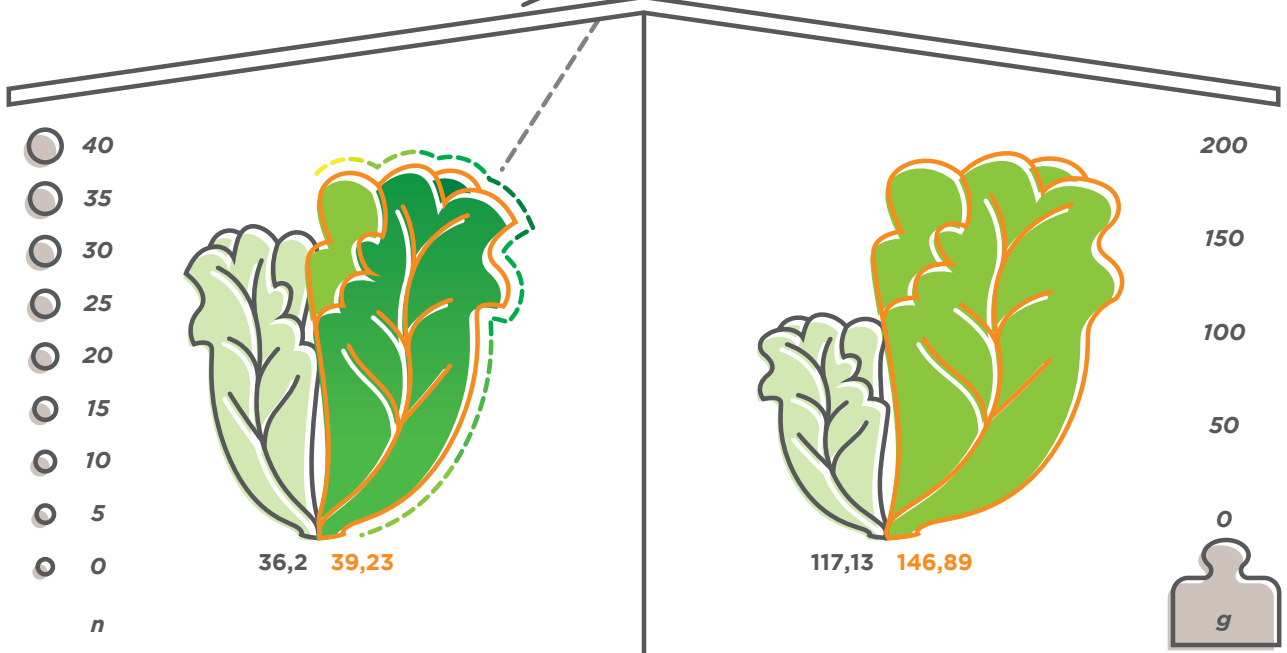


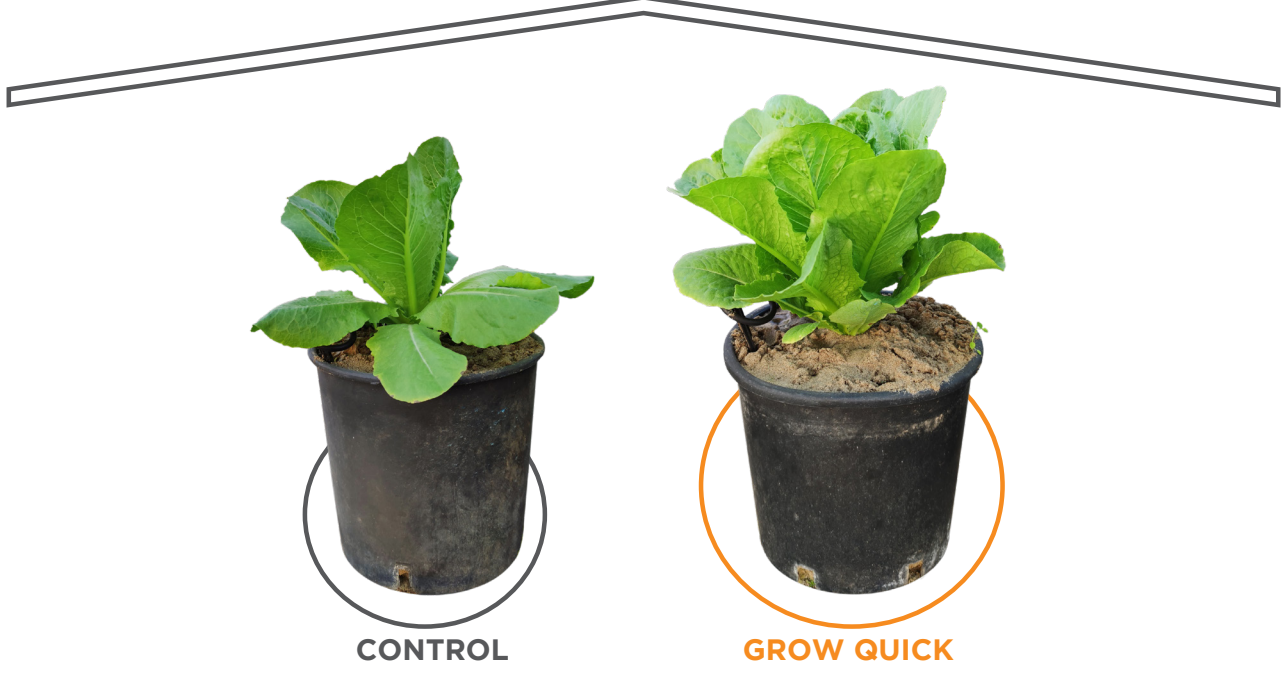
FIG 2 - Average SPAD values after 36 days from transplanting, in two compared treatments.

Grow Quick increases the chlorophyll content by influencing SPAD values compared with the untreated control. In details, Grow Quick rises the SPAD value up to 8%, thus improving the plants phytosanitary status, confirming its biostimulant effect with an increased photosynthetic activity.

FIG 3 - Average fresh weight per plant after 62 days from transplanting, in two compared treatments.

Grow Quick increases the efficiency of nutrients, enhancing the production of vegetable biomass and therefore the yields. Therefore, the use of Grow Quick allows an increase in fresh weight up to 25%.

VEGETATIVE PART



IMG 1 - Vegetative development of lettuce in greenhouse, in two compared treatments.

FRESH WEIGHT OF ROOTS

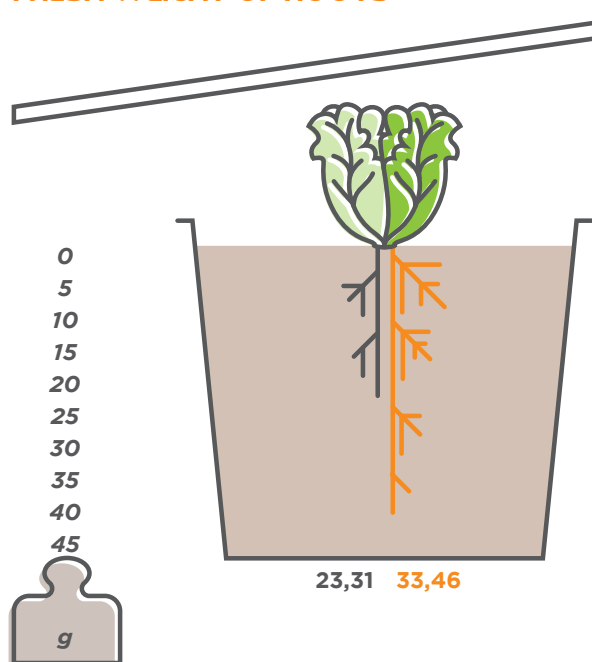


FIG 4 - Average fresh weight of roots after 62 days from transplanting, in two compared treatments.

DRY MATTER OF ROOTS

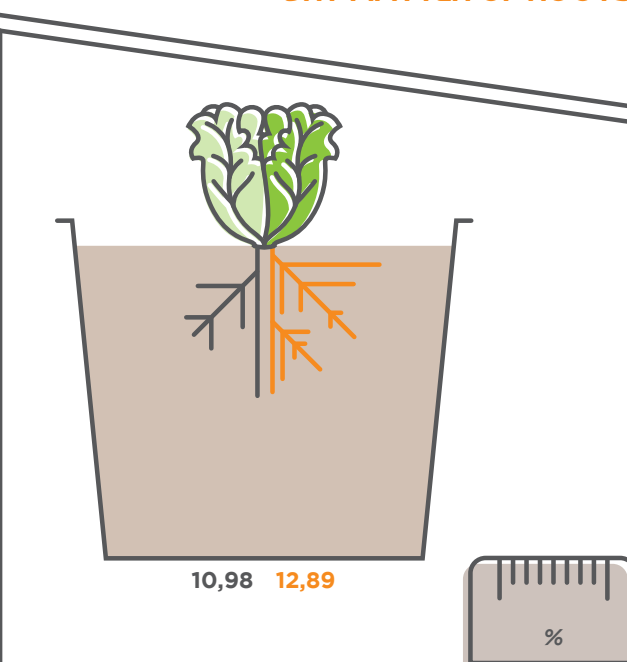


FIG 5 - Average dry matter of roots after 62 days from transplanting, in two compared treatments.

Grow Quick increases both the fresh weight of roots and the absorption of nutrients, thus improving the rooting activity and therefore the phytosanitary status of plants. Consequently, the positive effect of Grow Quick in stimulating the root system is demonstrated as well as the development of vegetable biomass. The use of Grow Quick results in an increase of roots fresh weight up to 44%.

ROOTS VOLUME INDEX

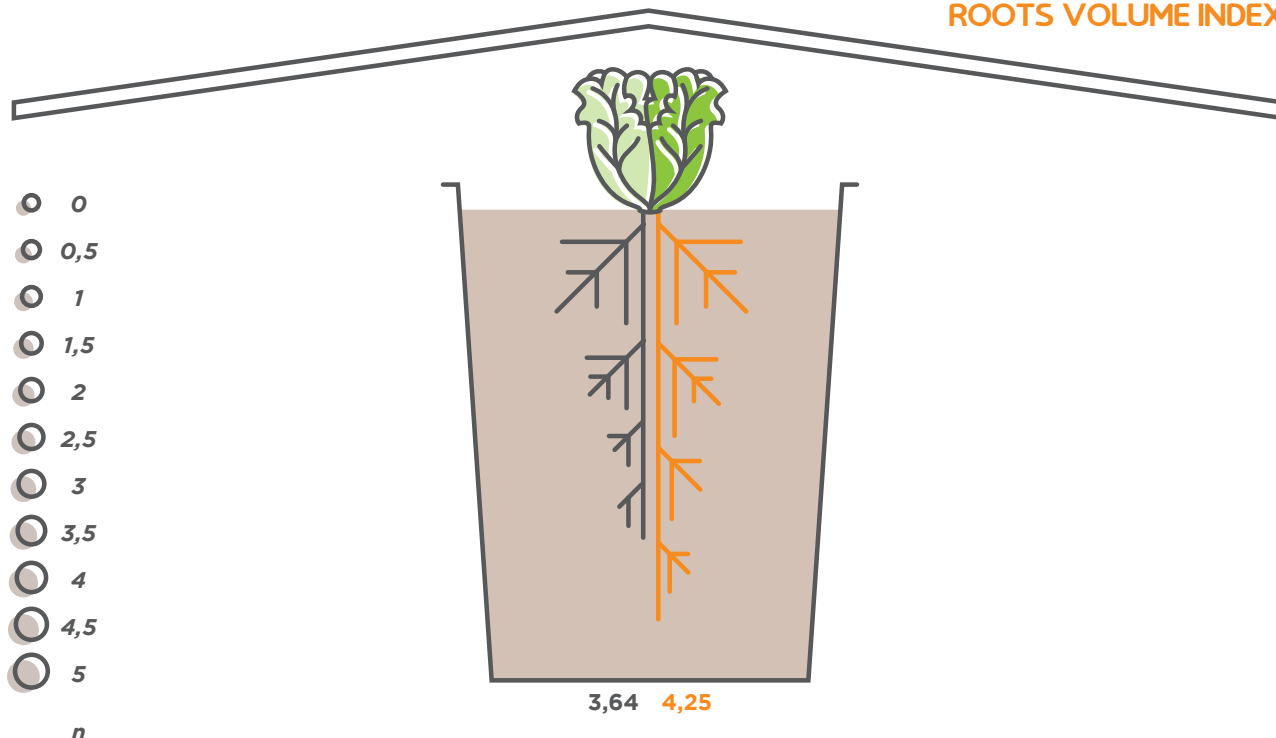
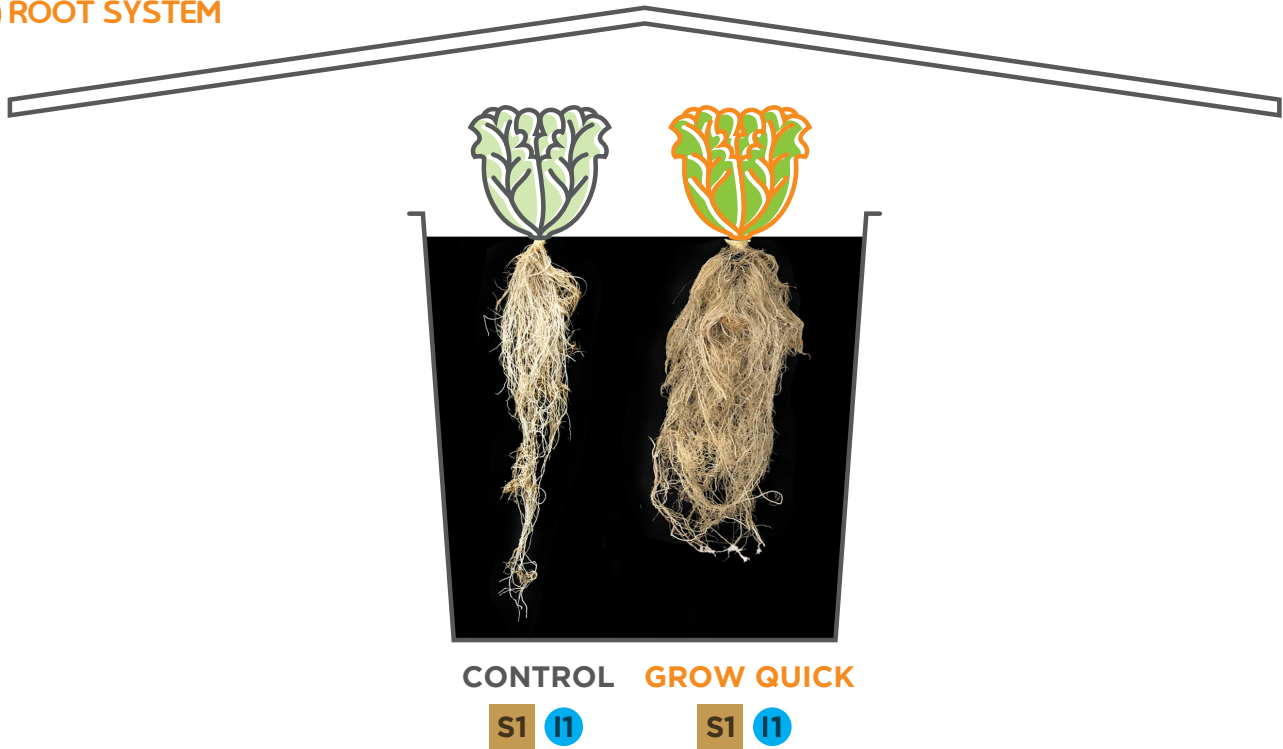


FIG 6 - Quality index of roots volume between 1 and 5, after 62 days from transplanting, in two compared treatments..

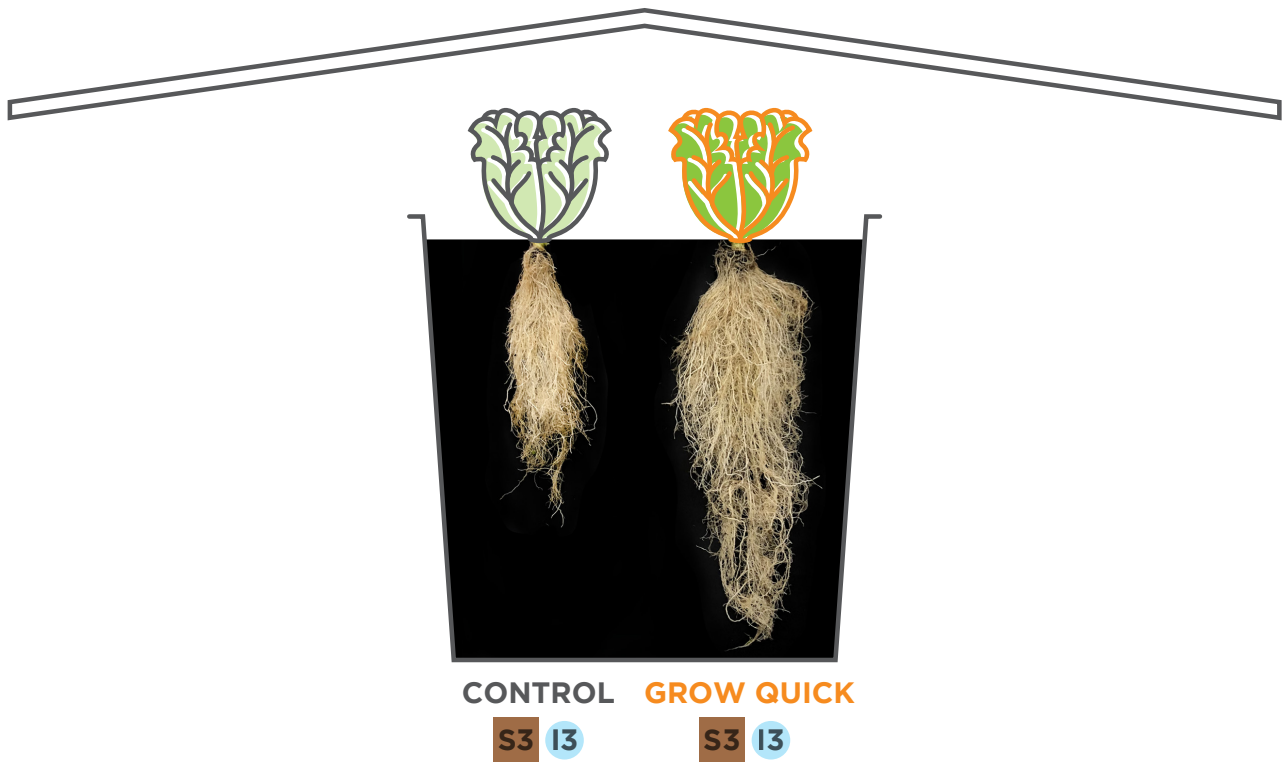
The use of Grow Quick increases the roots fresh weight, roots volume and % of dry matter (up to 17%). Bigger and stronger roots allow a wider exploration of the rhizosphere, making it more efficient the use of fertilizers, as well as the rooting activity, the vegetative development and the resistance against stress.

ROOT SYSTEM



IMG 2 - Lettuce roots without water and saline stress (I1XS1)

Image 2 shows that the plants treated with Grow Quick have a more developed root system compared with the untreated one, proving the previous results.



IMG 3 - Lettuce roots with high water and saline stress condition (I3XS3)

Image 3 shows how the use of Grow Quick helps the roots and consequently the plant, even in conditions of high saline (S3= 5 dS/cm) and water stress (I3=high stress). Images 2 and 3 show that roots of the treated plant are bigger and more numerous. Therefore, their wider expansion allows the plants to better resist against stress conditions.



VIGOUR WITH STRESS

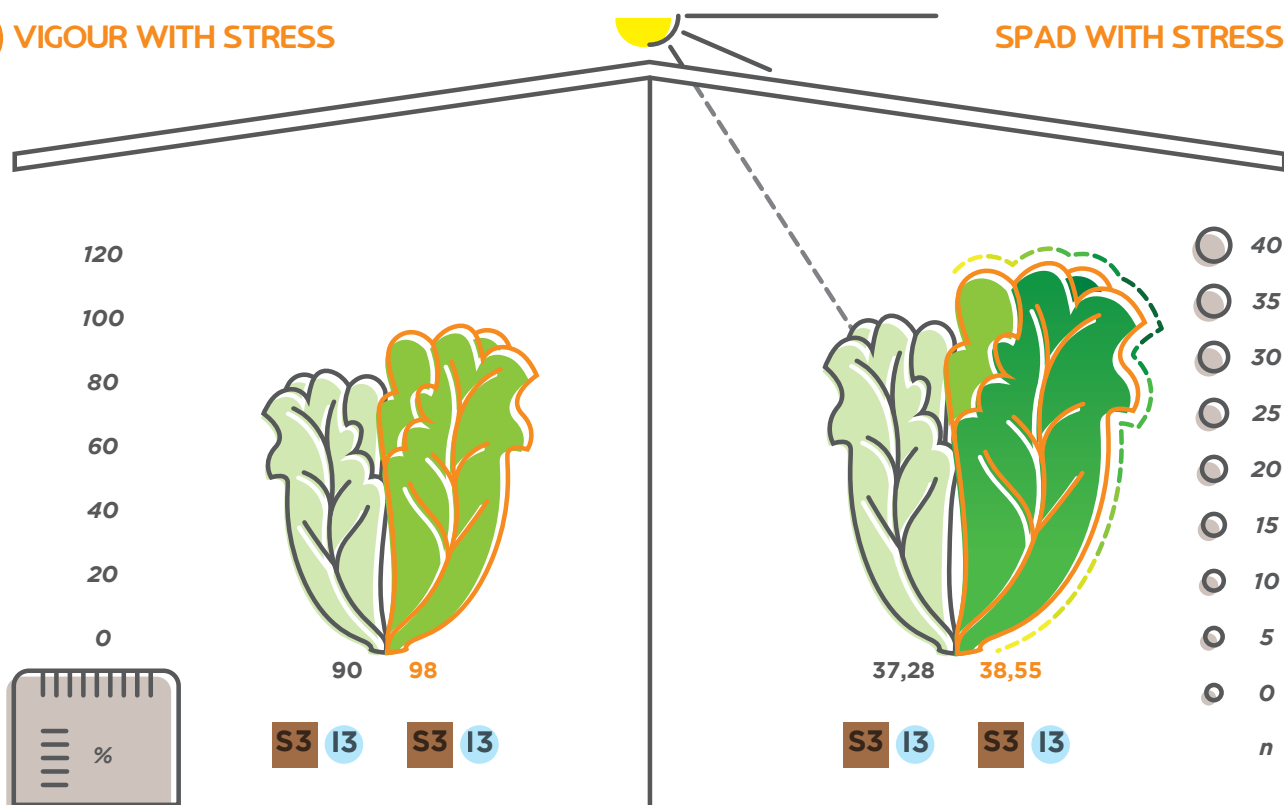


FIG 7 - Average vigour after 23 days from transplanting, in two compared treatments under high electrical conductivity conditions (5 dS/m and high stress).

SPAD WITH STRESS

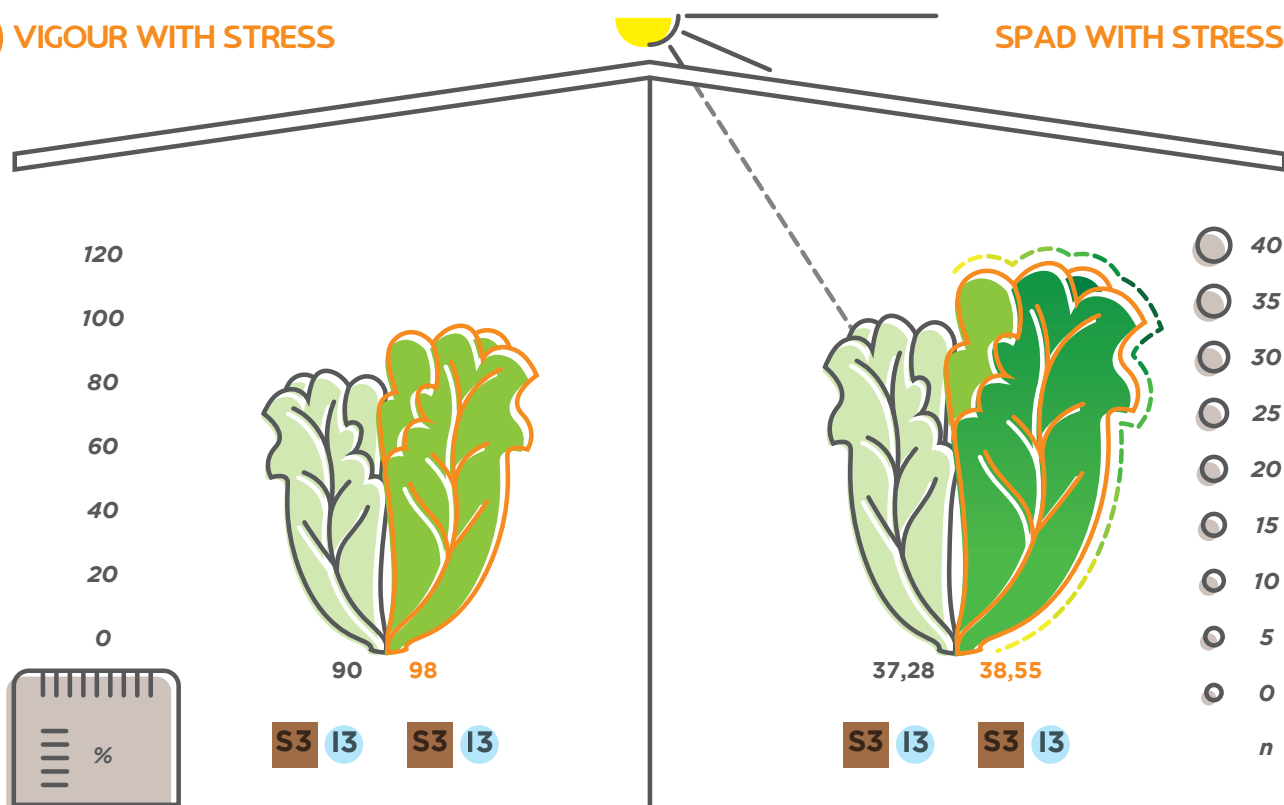


FIG 8 - Average SPAD values after 36 days from transplanting, in two compared treatments under high electrical conductivity conditions (5 dS/m and high water stress).

DRY MATTER WITH STRESS

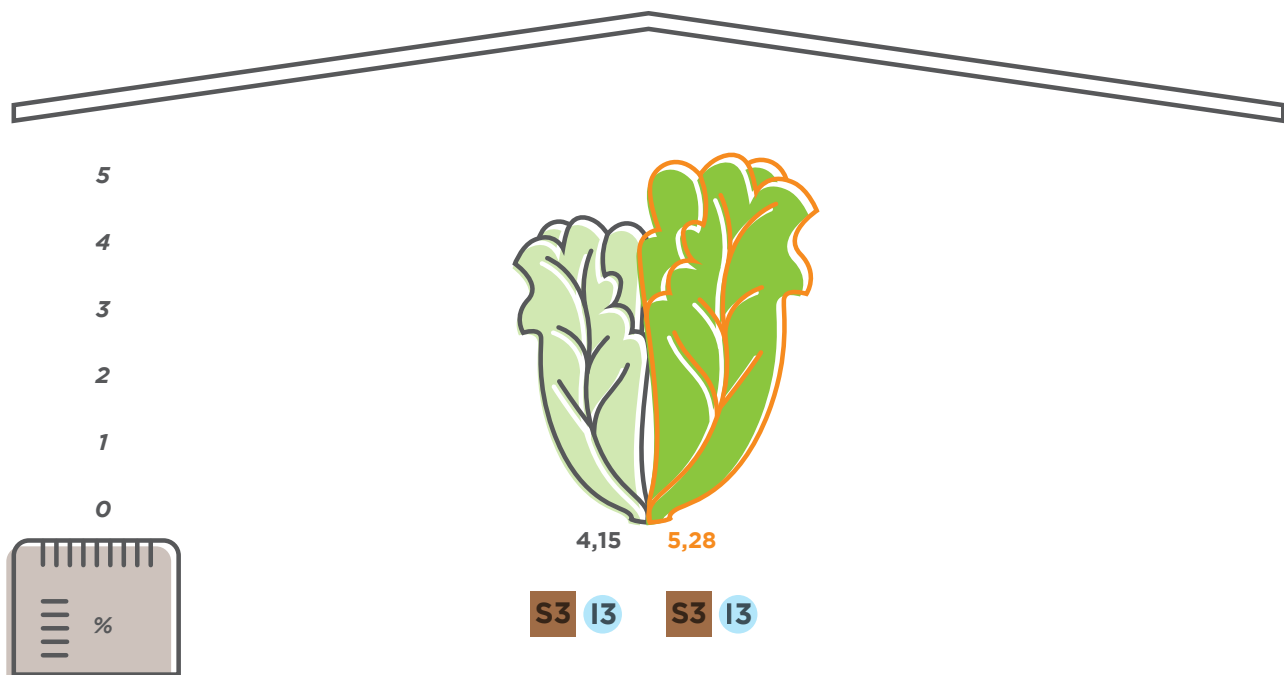


FIG 9 - Average dry matter after 62 days from transplanting, in two compared treatments under high electrical conductivity conditions (5 dS/m and high stress).

Figures 7-8-9 show that, even under conditions of high electrical conductivity and water stress, Grow Quick gives higher average values in terms of vigour, SPAD and dry matter, thus improving the characteristics of final products and the resistance of plants against biotic and abiotic stress.

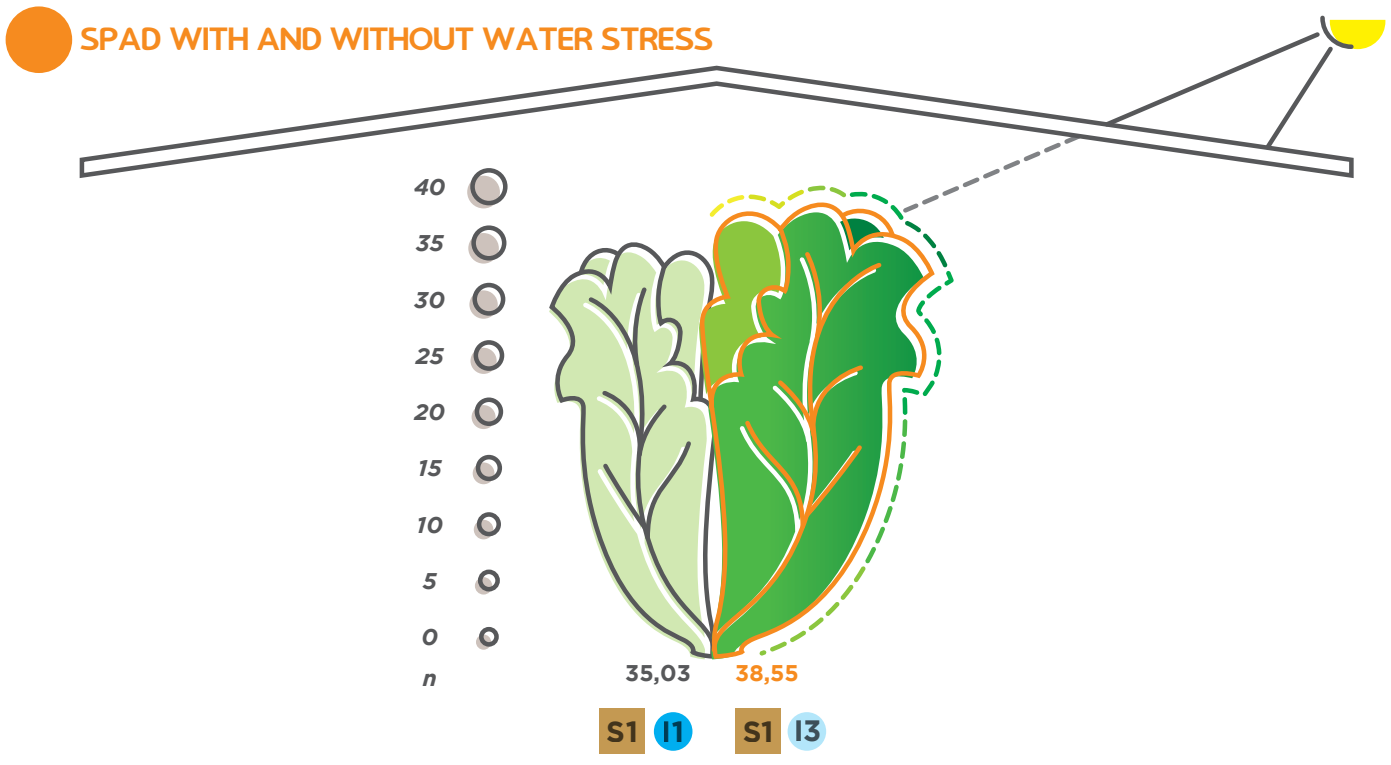


FIG 10 - Average SPAD values after 36 days from transplanting, in two compared treatments.

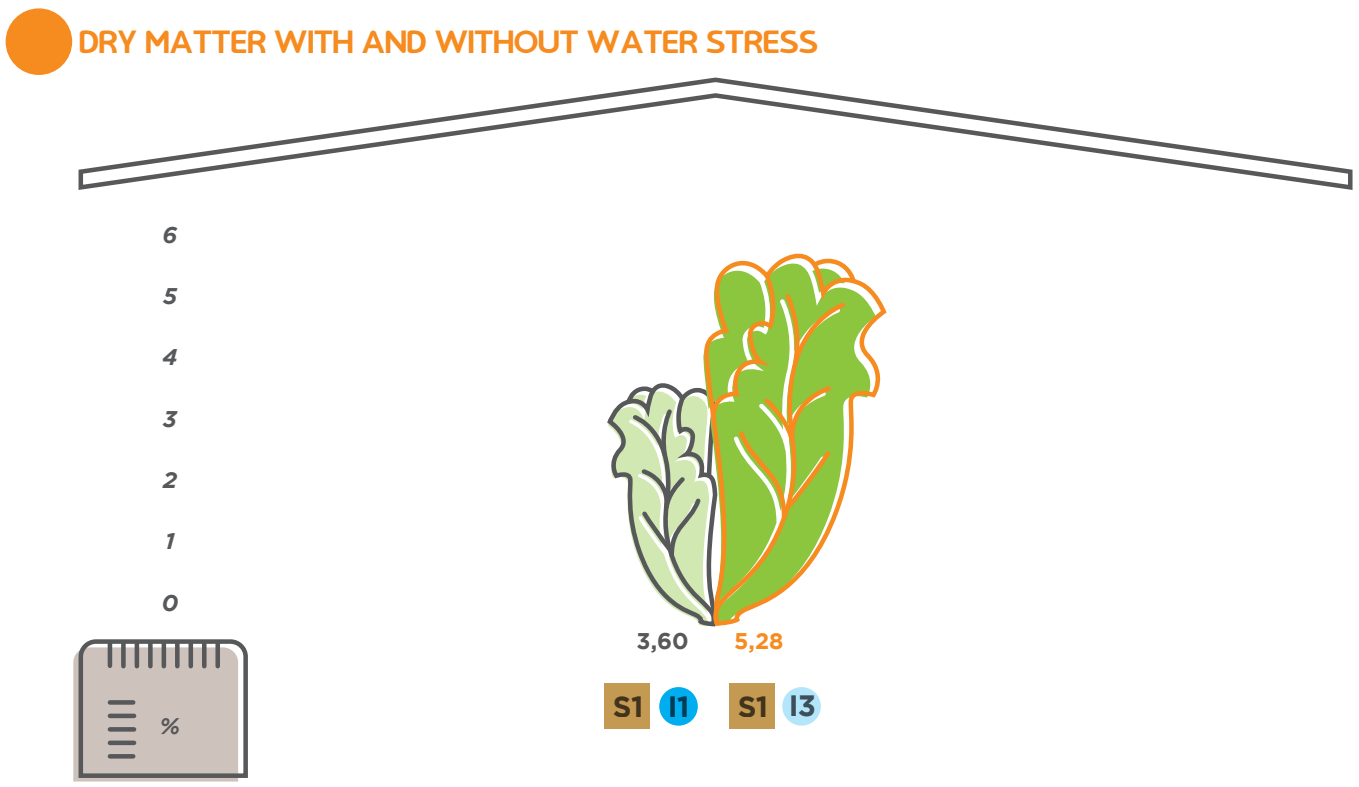


FIG 11 - Average dry matter after 62 days from transplanting, in two compared treatments.

The above figures show that, even with high water and saline stress conditions, Grow Quick can provide the crop an advantage in terms of photosynthetic efficiency and dry matter. Consequently, we obtain plants with a better health status and a stronger resistance against biotic and abiotic stress.

