



# UKELP

Atlantic Kelp Supply

## Unleashing the Power of Ukelp:

**EXPLORING VARIETIES,  
ADVANTAGES, AND TRIAL DATA**



**ABUNDIGRO**  
nurturing soil biology

# WHAT IS KELP?

Kelp is a rapidly growing seaweed that thrives in nutrient-rich oceans worldwide. By harnessing its exceptional nutrient absorption capabilities, kelp offers a potent bio-stimulant which is extracted from brown algae (Phaeophyceae). Boost agricultural crops with enhanced root growth and access to vital nutrients.

## WHAT IS A PLANT BIO-STIMULANT?

- A product of **natural origins** that may enhance crop productivity, especially when applied to crops under stress conditions.
- A compound with **biological modes of action** which is distinctly different compared to commercial fertilisers.
- Made up of different levels of minerals in small amounts but make up for this by providing **growth response** hormones to plants.

## HOW IS IT PROCESSED?

Kelp is sustainably harvested manually by divers who cut the seaweed about 30cm from the base of the plant so that it is able to grow back and produce more leaves in the future.

Once the leaves are harvested, they are taken to a processing facility where the kelp is washed and cut for use in various methods of extracting the nutrients and hormones found in the leaves.

## VARIOUS METHODS OF EXTRACTION:

- Enzymatic extraction - the downside is that an alkaline or acid solution is used.
- Fermentation - this method generates heat which can destroy auxins as they are sensitive to heat
- Cold cell bursting and pressing - this is the best method to extract bio-actives contained in seaweeds. Ukelp uses this method to bring you high quality Kelp products.
- Micronization (fine milling) – produces super fine extract which are small enough to pass through a 60-micron filter (if filtered before final product is made, nutrients may be lost).

## THERE ARE TWO MAIN TYPES OF KELP

DIFFERENCES	A.NODOSUM	E. MAXIMA
Growing behavior	Slow growth	Fast growth
Concentrations of bio actives	Higher concentration	Lower concentration. In warmer water – concentration increases
Cellulose content	Less cellulose	More cellulose
Sodium	More sodium	Less sodium
Auxin Compound	* IAA (Indole acetic acid)	* 3x IAA (Indole acetic acid)
	** ABA (abscisic acid)	** ABA (abscisic acid)
	-	***IBA (Indole butyric acid)
Amino acids	Less	More

\* **IAA** is the main auxin in plants and regulates growth processes like cell division and elongation, tissue differentiation, apical dominance, and responses to light, gravity, and pathogens.

\*\* **ABA** plays a role in many plant development functions, including seed and bud dormancy, the control of organ size and stomatal closure. ABA plays a vital role in the plant's response to environmental stresses.

\*\*\* **IBA-derived auxin** has strong roles in various aspects of root development, including regulation of root apical meristem size, root hair elongation, lateral root development, and formation of adventitious roots.

## UNLOCKING THE POWER OF UKELP: THE SUPERIORITY OF ECKLONIA MAXIMA

### The supreme brown kelp extract

- Exceptional amino acid concentration for robust plant growth.
- Studies showcase Ecklonia maxima's rich amino acid profile, boasting proline, glycine, alanine, glutamic acid, and aspartic acid. These amino acids play a pivotal role in essential plant processes, including protein synthesis, enzyme activity, and stress response. Vital role in protein synthesis, enzyme activity, and stress response.
- Ascophyllum nodosum, while valuable, falls short in amino acid content compared to Ecklonia maxima. Nevertheless, Ascophyllum nodosum compensates with other beneficial compounds like cytokinins and gibberellins.

Natural origins

Biological modes of action

Growth response hormones

Unleash the power of Ukelp, the ultimate solution for your agricultural needs. Experience the undeniable benefits of Ecklonia maxima and elevate your crops to new heights.

## 1 POLY-SACCHARIDES

Polysaccharides are like carbohydrates which consist of several sugar molecules (starch, cellulose or glycogen) bonded together. They give structure to crops, while also acting as a food source for beneficial microbes.

### FUNCTION OF POLYSACCHARIDES:

- Polysaccharides perform an important role in energy storage and structural support.
- Detection of algal polysaccharides at the cell membrane has been demonstrated to increase the plant's immune system response.
- The activation of plant defences by kelp extracts can thus be used to pre-emptively protect against biotic stress.

## 2 BETAINES

Betaine is a natural chemical compound found in *E. maxima* extracts.

### FUNCTION OF BETAINES:

- Mitigate osmotic stress caused by salinity and drought stress.
- Increases chlorophyll content in leaves due to an enlarged leaf area, which will increase photosynthesis that could lead to higher yields.
- Betaines also serve as a Nitrogen source.
- Growth hormones may vary in levels according to species and growing conditions.
- Various extraction processes which include alkaline, acid hydrolysis and pressure differential cell bursting or fermentation – will have an impact on the extract's stability and properties.
- Plant growth promoting activity may further be affected by soil pH and temperature.

## 3 STEROLS

Kelps contain various types of Sterols.

### FUNCTION OF STEROLS:

- Help mitigate osmotic stress by buffering membrane fluidity and permeability over a broad temperature range.

## 4 GROWTH HORMONES OR GROWTH REGULATORS

Kelp extracts contain more than 1 group of plant growth promoting substance. It is known that kelp extracts contain plant hormones and when applied to crops, have similar responses to the application of purified or synthetic plant hormones.

### 4.1 AUXINS

- Auxins are a part of cell growth and expansion and are usually found in the parts of the plant that are actively growing, with the highest concentration in the primary stem.
- Auxins are most effective when partnered with another hormone like cytokinins. Working together to stimulate fast, early nodal root development.
- This hormone encourages plant cells (elongated by the auxins) to divide and create

### 4.2 CYTOKININ

- This hormone encourages plant cells, elongated by the auxins, to divide and create new plant organs.
- Assist in plants healing themselves when wounded.
- Cytokinin slow the natural aging process to allow more time for root growth and increase the time that roots function before being replaced.

## 5 BENEFITS OF UKELP APPLICATIONS

- Promotes rapid root development which mitigates abiotic stress.
- Expands root hair surface area which increase water and nutrient uptake.
- When applied during root flush just before flowering, it ensures an improved bud break and vigorous flowering.
- Rapidly absorbed as a foliar feed or soil drench.

# WHY UKELP?

Our Ukelp solution stands as the epitome of excellence, crafted with utmost care to deliver the highest quality and purest state possible. Through meticulous mechanical cold pressing of *Ecklonia Maxima*, we ensure unparalleled purity, setting a new standard in kelp formulation. Experience the pristine power of Ukelp and unlock the true potential of your crops.

# TRIED & TESTED

NUMEROUS TRIALS WERE CONDUCTED OVER TWO SEASONS WITH UKELP TO DEMONSTRATE HOW OUTSTANDING THIS PRODUCT REALLY IS AND CLEARLY THE RESULTS SPEAK FOR THEMSELVES.

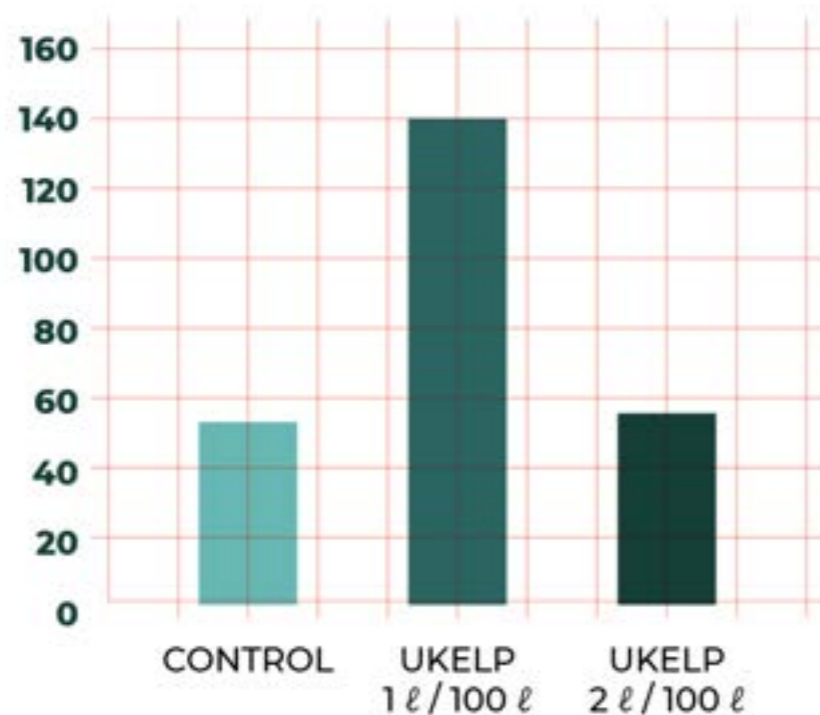


## UKELP ON TOMATOES

### 2 FOLIAR APPLICATIONS

- **First** application 3-4 weeks after transplant
- **Second** application prior to flowering (bud breaking)

**Yield of Tomatoes**  
Average weight of fruit in grams



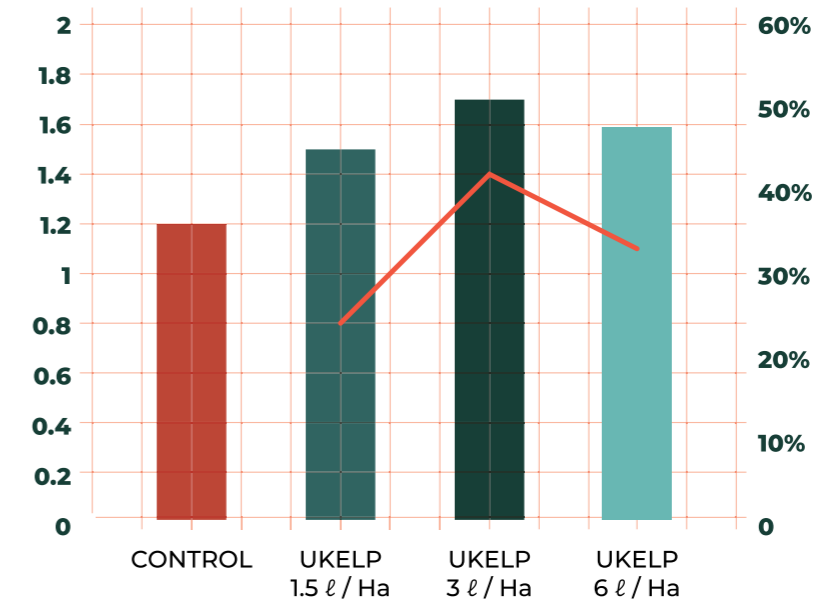
## UKELP ON CITRUS

### 3 FOLIAR APPLICATIONS DURING THE SEASON, AT VARIOUS RATES INDICATED AS l/ HA

- **First** application prior to flowering (bud breaking)
- **Second** application 7 days after 100 % petal fall
- **Third** application before November drop

### Kelp treatment on citrus

Yield in kg | Increase in %



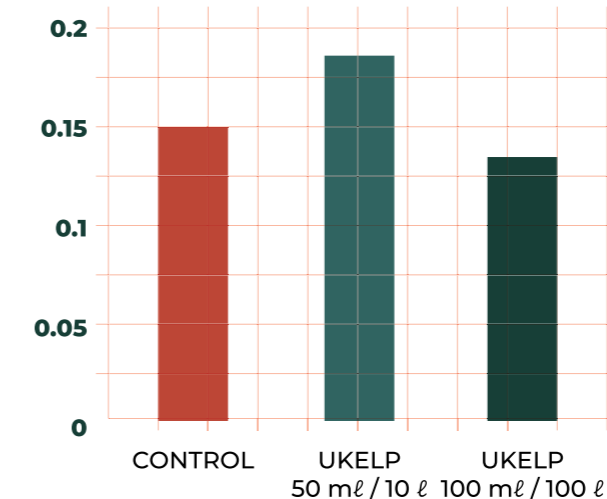
## UKELP ON BABY MARROWS

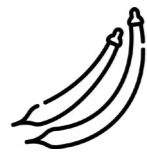
### 2 FOLIAR APPLICATIONS

- **First** application 3 weeks after germination
- **Second** application at the start of flowering

### Kelp treatment on baby marrow

Yield in kg





## UKELP ON GREEN BEANS

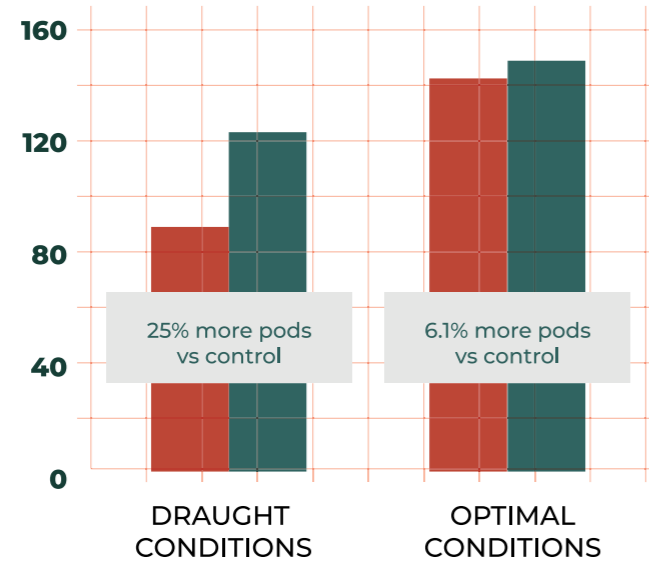
### 4 FOLIAR APPLICATIONS AT INTERVALS

- **First application** (with first flower flush)
- **Fixed interval** applications that follow (10-21 days apart)

### Green Beans

Pod count at harvest under two water conditions

CONTROL vs UKELP

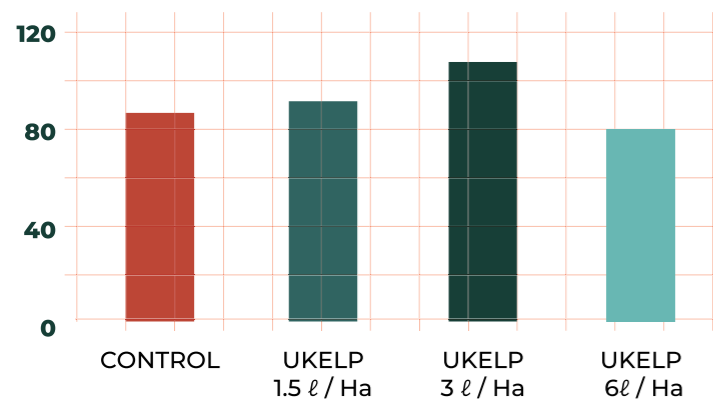


## UKELP ON APPLES

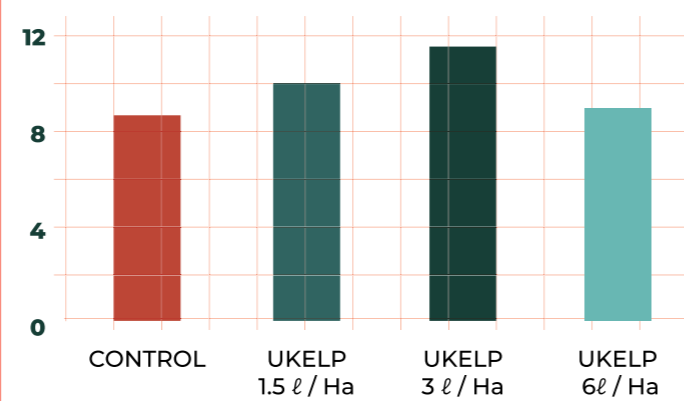
### 4 FOLIAR APPLICATIONS AT INTERVALS

- **First application** (with first flower flush)
- **Fixed interval** applications that follow (10-21 days apart)

### Number of Apples per plot



### Average weight of apples

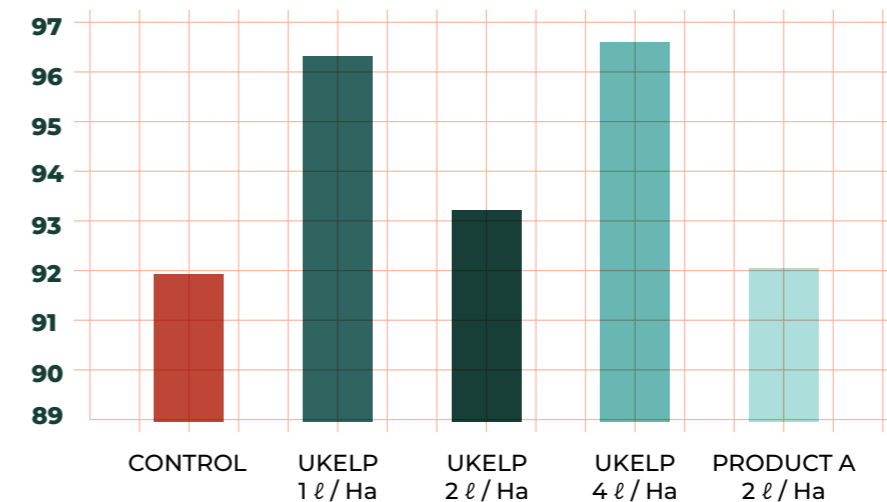


## UKELP ON WHEAT

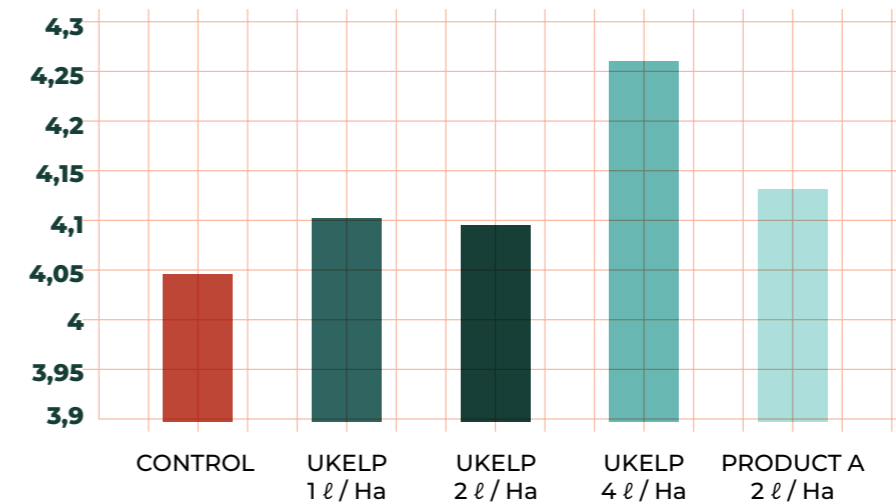
CONDUCTED BENCHMARK TRIAL: WHEAT FARM, COMPARING THE PERFORMANCE OF UKELP AGAINST A COMPETITOR PRODUCT.

- **Variable Application Rates:** Three different application rates of Ukelp were tested to determine the optimal dosage for maximum effectiveness.
- **Competitor Dosage Rate:** The competitor product was applied at a dosage rate of 2L/ha.
- **Water Volume:** Both Ukelp and the competitor product were applied using a water volume of 300L/ha.
- **Randomized Block Design:** The trial was designed using a fully randomized block design to ensure unbiased and reliable results.
- **Targeted Application Stages:**
  - BBCH Stage 16: Tillering stage
  - BBCH Stage 27: Stem elongation stage
  - BBCH Stage 61: Flowering stage

### Plant height in cm



### Yield t / Ha



# THE POSITIVE ENVIRONMENTAL IMPACT OF KELP FARMING

## AND ITS ROLE AS A CARBON-NEGATIVE INPUT INVESTING IN A SUSTAINABLE FUTURE

Discover the power of kelp farming - a carbon-negative solution for corporations seeking environmentally beneficial investments. Join the movement towards a more sustainable future by addressing multiple environmental challenges simultaneously.

### KEY BENEFITS:

- Carbon Sequestration:
- Kelp absorbs and stores CO<sub>2</sub>, capturing up to 20 times more carbon than terrestrial plants.
- Sequestered carbon remains locked away until decay or harvest, reducing carbon footprint.

### CARBON OFFSETTING AND CREDITS:

- Support carbon offsetting by investing in kelp farming projects and purchasing carbon credits.
- Balance carbon emissions and compensate for environmental impact while funding further initiatives.

### OCEAN ACIDIFICATION MITIGATION:

- Kelp absorbs excess CO<sub>2</sub>, reducing carbonic acid concentration and maintaining pH balance.
- Protect coral reefs and marine organisms relying on calcium carbonate structures.

### NUTRIENT CYCLING AND WATER QUALITY:

- Kelp absorbs nutrients, reducing pollution and preventing harmful algal blooms.
- Act as a natural filtration system, improving coastal water quality and preventing dead zones.

### MARINE BIODIVERSITY AND HABITAT CREATION:

- Kelp forests provide critical habitats for marine species, supporting biodiversity.
- Restore habitats, enhance fish populations, and protect coastlines from erosion.

### SUPPORT FISHING COMMUNITIES:

- Ecological Restoration: Harvesting kelp restores degraded marine ecosystems, providing healthier habitats and increased food sources for fish populations.
- Diversification of Income: Kelp farming offers fishing communities an additional income source, reducing vulnerability to fish stock fluctuations and environmental changes.
- Enhanced Food Security: Kelp serves as a nutritious supplement to the diet of fishing communities, reducing dependence on fish as the sole source of sustenance and enhancing food security.
- Invest in UKelp Kelp Seaweed for a sustainable, carbon-negative, and environmentally beneficial solution. Together, we can create a better future for our planet and make a positive impact on the environment.

**FERTILIZER GROUP 2**

**UKELP**  
Atlantic Kelp Supply

**COLD PRESSED ECKLONIA MAXIMA KELP SUSPENSION**

Improved Plant Growth and Yield  
Enhanced Soil Health  
Increased Resistance to Stress

**NATURE'S MOST CONCENTRATED SOURCE OF ABUNDANT NUTRIENTS**

**TYPICAL ANALYSIS:**

Nitrogen (N)	13 g/kg	(13 g/l)
Phosphorus (P)	96,4 g/kg	(96,4 g/l)
Potassium (K)	13 g/kg	(13 g/l)
Sulphur (S)	381,2 mg/kg	(381 mg/l)
Acidity (pH)	3,5	

**DERIVED FROM ECKLONIA MAXIMA**

\* Auxins: 0,287 mg/kg

SC (200 °C) = 1,01 ± 0,02

**SHAKE WELL BEFORE USE**

Store at room temperature  
Freeze at 0 °C or below  
Keep container closed  
when not in use

**OF&G ORGANIC** Approved for use in organic systems in accordance with EC regulations 834/2007 and 889/2008 by Organic Farmers & Growers

**PACKAGED & DISTRIBUTED BY ABUNDIGRO** Oogstweg 2, 3829 BK, Zeewolde, Netherlands, info@abundigro.com

COUNTRY OF ORIGIN: REPUBLIC OF SOUTH AFRICA



**Natural origins**

**Biological modes of action**

**Growth response hormones**





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nurturing soil biology

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