

# Seaweed extracts: A key to unlocking nutrients during fertiliser applications

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**E**ffective fertilisation has become a critical component in sustainable crop production. However, the effects of higher fertiliser prices and the lack of availability thereof will impact this important step in crop production.

The use of seaweed extracts in combination with fertiliser programmes is increasingly acknowledged as a regenerative and sustainable solution to improving the efficiency of fertiliser applications. Seaweed extracts contain biologically active molecules with biostimulant effects, such as enhancing crop nutrient acquisition. Applying seaweed extracts throughout the growing season can provide potential benefits to emergence, crop development, plant stress response and yield.

## Seaweed extracts

Seaweed extracts are derived from the extraction of several macro-algae species, which, depending on the extraction methodology, produce complex mixtures of biologically active compounds and plant growth regulators.

These metabolites comprise auxins, cytokinins, ethylene, gibberellins,

polyamines, abscisic acid and brassinosteroids. The mixture of natural active compounds in seaweed extracts can act individually or synergistically to deliver favourable physiological responses upon exogenous application to plants.

The benefits of seaweed extract applications include improved root structures, flowering and leaf development, fruit set, plant-disease tolerance, tolerance of abiotic stresses, soil structure, soil water-holding capacity and soil microbiology. Most important in the current fertiliser supply environment is the enhancement of nutrient acquisition.

## Enhanced nutrient acquisition

Plants treated with seaweed extracts show improved nutrient acquisition capabilities, growth and vigour. This enhancement in plant nutrient uptake could be attributed to seaweed extracts' role in enhancing the functioning of root nutrient transporters. Nutrient uptake is further enhanced by established root development, which is regulated by some of the phytohormones (auxin and cytokinins) found in concentrated seaweed extracts.

Auxin is a plant hormone that is primarily involved in regulating plant

growth. It is mainly responsible for the elongation of cells in plants and especially the development of different types of plant roots. Auxin affects the positioning of the root hair outgrowth site and promotes root hair elongation.

The increased root volume and number of root tips increase moisture and nutrient uptake from the soil, boosting the overall growth and health of plants. Furthermore, a positive effect on nutrient distribution within treated plants can occur even when no extra nutrients are supplied.

Cytokinins are a class of phytohormones that promote cell division, shoot and root growth, cell enlargement and auxiliary bud release. Cytokinins serve many important functions in plant development and morphogenesis, and induce salicylic acid accumulation and a plant defence response. Treated plants are therefore more resilient against disease and harsh environmental conditions, ultimately enhancing all physiological and developmental processes, including nutrient-use efficiency (NUE).

## Nutrico's seaweed-based range

Nutrico has developed a nutrient range that supplies essential micro- and macro-

nutrients, as well as biostimulants at the correct physiological growth stage. The active components in each of these products are expertly combined in a seaweed extract matrix which improves NUE, boosts resilience to abiotic/biotic stress factors, and conditions the soil, creating the ideal conditions for growing seeds during planting, vegetative and reproductive growth.

Our seaweed-based range\* includes, among others, STSA, EZ Gro, Nutrivo™ and Molboro X®, and is designed to be complementary to other fertiliser, biological and chemical treatments (\*these products have been submitted for registration as Group 3 fertilisers, as set out in the newly published biostimulant requirements of the *Fertilizers, Farm Feeds, Seeds and Remedies Act, 1947 [Act 36 of 1947]*). The instructions and time of application of this range are shown in *Table 1* as an example programme for soya beans.

**STSA (B4304, Act 36 of 1947)**

Concentrated dry seed treatment provides seeds access to nutrients at an early growth stage. The microfine particles of STSA ensure even coverage and effective dressing of seeds. STSA is specially formulated for safe use on all types of seeds and equipment. It is formulated with graphite and talc to reduce wear on

**Table 1: Nutrico’s seaweed-based nutrient programme for use in soya beans.**

Product	Growth stage and application	Dosage
STSA	During planting	1,25 to 2,5g/kg seeds
EZ Gro	In the plant furrow or foliar spray	1 to 2ℓ/ha
Nutrivo™	Foliar application at early growth stages	2 to 4ℓ/ha
Molboro X®	During flowering	1 to 2ℓ/ha

Sources: O Ali, A Ramsubhag, and J Jayaraman. *Biostimulant Properties of Seaweed Extracts in Plants: Implications towards Sustainable Crop Production. Plants (Basel). 2021 Mar 12;10(3):531*

machinery. It is also compatible with most other chemical seed treatments and is further enhanced through the inclusion of seaweed extract.

**EZ Gro (B4307, Act 36 of 1947)**

A concentrated combination of nutrients, growth hormones and seaweed extracts to promote root initiation and growth. It can be applied as a foliar spray or in-furrow and drench application.

**Nutrivo™ (K8794, Act 36 of 1947)**

A liquid foliar fertiliser formulated to address the nutrient deficiencies resulting from glyphosate use on Roundup Ready (RR) crops. Nutrivo™ is registered for use in glyphosate tank mixtures. The formulation includes micro-nutrient complexes manufactured by patented technology and contains manganese (Mn), zinc (Zn), boron (B) and molybdenum (Mo), especially added to support the crop

during stress conditions. Seaweed extract is added for additional support in systemic resistance and nutrient uptake efficiency.

**Molboro X® (B5122, Act 36 of 1947)**

A liquid foliar fertiliser combining the benefits of B, Mo, Zn and biostimulants, encompassing patented technology to deliver nutrients to crops in a highly mobile and absorbable format. The formulation contains seaweed extracts and other proprietary ingredients to boost crop growth, seed yield and quality.

For more information on how you can add value with Nutrico’s seaweed-based nutrient range, contact your local Nutrico representative at 011 392 4072, 021 807 5922 or [info@nutrico.co.za](mailto:info@nutrico.co.za).

