

THE ELEMENTS FOR SUCCESS

The Wonders of Seaweed

"Call us not weeds, we are flowers of the sea."

E.L. Aveline - The Mother's Fables

Since the very first fields were sown and long before the age of pesticides and chemical fertilizers, farmers used seaweed for its rich nutrient and mineral content, natural bio-stimulant characteristics and unique soil conditioning properties. Although back then, without quantification technology, growers had no idea of just how rich seaweed actually was; they just knew it worked. Unfortunately in the late 1800's, the use of seaweed and other natural supplements declined in popularity with the development of chemical nutrients. Now with the resurgence of more environmentally sound crop production practices, growers, horticulturalists and gardeners alike, including indoor and hydroponic gardeners, are taking another look at seaweed.

Two-thirds of the earth's surface is covered in water and marine algae are the most abundant vegetation under the sea. Seaweeds, a variety of algae, have been around for more than two billion years and scientists are still discovering new species all the time. Different seaweeds are found throughout the world's oceans, but only three of the brown species are harvested for agricultural and horticultural use – *Ascophyllum nodosum*, *Laminaria digitata*, and *Durvillea potatorum*.

Seaweeds acquire nutrition from the surrounding water; temperature and available sunlight also help determine the nutrient profile. Seaweed species native to the cold, fertile waters off the coast of Norway seem to offer the most consistent benefits to growers and gardeners. Current technology verifies that seaweed absorbs and contains over 70 available micronutrients and trace elements at higher concentration than terrestrial plants. Now that is wonderful... But what is fascinating, is the ability of seaweed to absorb potassium (K) and other essential elements from the surrounding seawater while dramatically limiting sodium (Na) even though concentrations of Na in the water are nearly 100 times that of K.

In addition to the rich nutrient and mineral content, seaweed contains natural chelating agents, primarily mannitol. Research shows that the mannitol and other agents not only chelate nutrients in the seaweed itself, making them immediately available, but they also chelate micronutrients in soils and growing medias to lessen or eliminate minor deficiencies. And remember, all plants require chelated micronutrients for successful assimilation.

Also of importance is the vitamin content of seaweed. A number of important vitamins and other growth promoting substances have been identified and quantified in seaweed, including

vitamins B1, B2, B12, C, E, K and the vitamin A precursor beta-carotene, as well as pantothenic acid and folic acid. Assorted research illustrates that vitamin rich plant supplements stimulate faster, more luscious plant growth and development.

This leads us to our next wonder of seaweed... its bio-stimulant properties. Auxins, including indolyl-acetic acid (IAA), cytokinins, several gibberellins, betains and amino acids have all been quantified at various levels in seaweed. These naturally occurring hormones offer increased growth and development, improved green colors and environmental stress relief when applied to crops and ornamental plants. Recent studies show that seaweed applications can enhance your plants immune system through localized acquired resistance. These studies demonstrate an induced resistance to *Pythium ultimum*, a serious vegetable pathogen, and *Rhizoctonia solani*, which causes damping off of seedlings in lettuce and other leafy vegetables. Other recent studies reveal a stimulation and favorable increase (balance) of beneficial microbes, such as *Pseudomonas* and fluorescent *Pseudomonas* from applications of seaweed. Still more information from the field suggests that seaweed can control algae build-up in pipes and ponds, and seaweed is by far healthier for your aqua-systems than chemical fungicides.

Now on to the wonder of seaweed's conditioning properties... among its other beneficial constituents, seaweed contains alginic acid, a soil or growing media conditioner. The alginic acid combines with metallic radicals in the soil or media to form polymers, which improve water-holding capacity and structure. Seaweed also interacts with the beneficial bacteria present to produce polyuronides, which are similar in form and function to the alginic acid in seaweed.

After two billion years of evolution, it is no 'wonder' at all that seaweed is a wondrous plant supplement. Seaweed is an organic, renewable resource that offers a plethora of horticultural benefits to professional and novice growers and gardeners.

"Accuse not nature! She hath done her part; do thou but thine."

J. Milton – Paradise Lost

Want more information on the wonder of seaweed?

Maxicrop®. www.maxicrop.no and www.maxicrop.com

Sea Spray®. www.seaspray.com/research.html

National Biological Information Infrastructure.

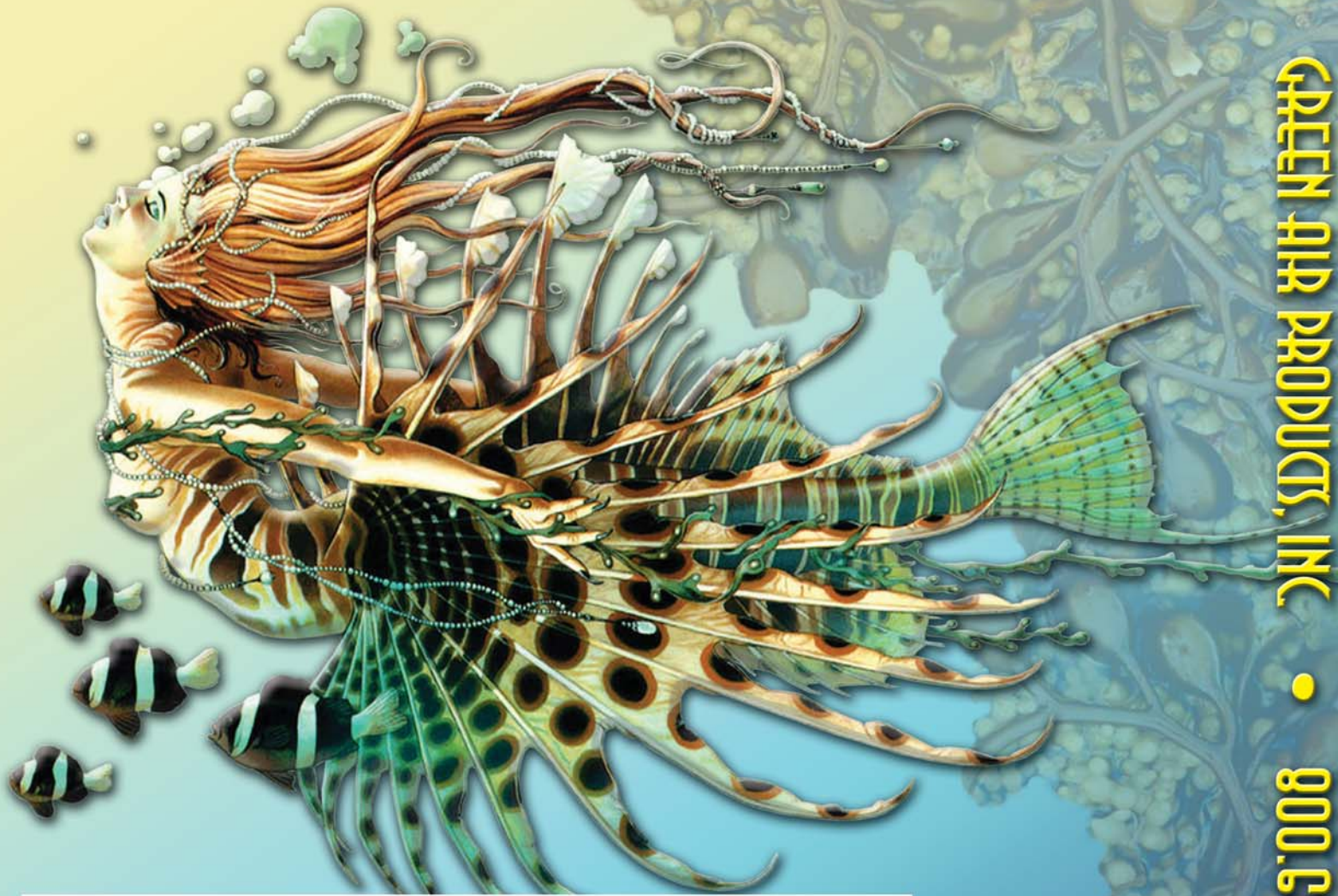
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Dedicated to Serving Hydroponic and Indoor Gardeners for over 20 years



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BIO-GENESIS

High Tide™

Organic Seaweed

100% ORGANIC • 100% VEGAN

AN ORGANIC SEAWEED SUPPLEMENT
TO IMPROVE OVERALL PLANT VIGOR & GROWTH

- Excellent natural source of potassium
- Stimulates root growth
- Improves disease resistance
- pH value between 8.0-8.5
- Increases plant, fruit, & vegetable quality
- Includes natural humic acid from seaweed

DIRECTIONS FOR USE

ALWAYS SHAKE BOTTLE WELL BEFORE USING PRODUCT

ROOT ZONE: Add 1-2 teaspoons per gallon (5-10 mL/ 4 L) every time you change your reservoir or every watering for soil applications.

FOLIAR: Use 1-2 teaspoons per gallon (5-10 mL/ 4 L) and apply as a fine mist every 1-3 weeks during the growing season.

WANT OPTIMUM RESULTS? Make sure hydroponic reservoirs have plenty of oxygen & stay well agitated.

HANDLING AND STORAGE REQUIREMENTS: Keep lid tightly closed. Store in a dry area, above freezing and below 105°F, and not in direct sunlight. Keep out of reach of children.

INGREDIENTS 0-0-4.5

GUARANTEED ANALYSIS
Soluble Potash (K2O) 4.5%
NON-PLANT FOOD INGREDIENTS: 6.0% Humic acids derived from seaweed.

DERIVED FROM: Seaweed (*ascophyllum nodosum*).

Available in Pints (473 mL), Quarts (946 mL) & Gallons (3.8 L)

QUESTIONS? CONTACT US...

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