

**Seaweed** is a recognized source of several natural plant growth regulators, plant vitamins, macro and micronutrients, and much more. Processing through a "Cold Extraction Process" ensures the preservation of these valuable components, unlike dehydration processes that degrade or completely destroy them. Research shows that the effects of seaweed application are greatly enhanced when applied in conjunction with fertilizer. Ample data also exists concluding that seaweed chelates macro nutrients as well as trace elements in soil.

<u>Organic Matter</u>	<u>Micro Nutrients</u>	<u>Bio-Stimulants</u>	<u>Vitamins</u>
Carbohydrates	Copper	Abscissic Acid	Carotene
Alginate Acid	Iron	Gibberellins	Absorbic Acid
Mannitol	Manganese	Indoleacetic Acid	Riboflavin
<u>Inorganic Matter</u>	Zinc	Betaines	Thiamin
Ash	Boron	Zeatin	Biotin
	Molybdenum	2-IP	Tocopherols
<u>Macro Nutrients</u>	Calcium	Laminarin	Niacin
Nitrogen (N)	Sulfur	Tri IAA	Vitamin B12
Phosphorus (P)	Magnesium	Cytokinins	Folic Acid
Potassium (K)	Sodium	Auxins	Folinic Acid

## BENEFICIAL EFFECTS AND PHYSIOLOGICAL RESPONSES

Almost **all plants** respond positively to seaweed application. One of the most predictable effects is the development of a more vigorous, fibrous root system. These root systems provide larger surface areas for nutrient and water uptake, resulting in improved mineral nutrition and growth characteristics.

**Turf Grasses**, when treated with seaweed plus minimal levels of nitrogen, resulted in increased cytokinin levels in the root. The cytokinin encourage strong collecting points for photosynthates and nutrients, thus stimulating fibrous root mass development.

**Fruits and Crops** show more vigorous shoot growth, flower and fruit production, and increased fresh weights of fruit. Increased health and vigor allow plant materials to better resist frost, insect, drought, transplantation stress and pathogen attack. Seaweed application is also known to slow the aging process, allowing the crop leaves to remain photosynthetically active longer.

## INTERACTIONS BETWEEN THE CROP AND SEAWEED

For optimum benefits of seaweed, it should be applied during early vegetative growth and continued throughout plant maturity and establishment. It is important to note, seaweed applications have a dose-dependent response, being more promotory at low concentrations and inhibitory at higher rates – **with seaweed, LESS is MORE.**

**Hydroponics - Aqua Culture** systems show the best response when seaweed is added to the hydroponic solution compared to the foliar spray application.

## CONCLUSION

In addition to the benefits of increased nutrient and water uptake, plants are healthier and less symptomatic to transplant shock, drought, disease pathogens and other negative stress symptoms. Seaweed is a natural product, considerably less expensive than equivalent synthetic products, and is routinely used in agricultural and horticultural practices. With Seaweed offering such an effective and diverse complex of component building blocks, it is little wonder why Seaweed has become one of the most important tools available to help ensure **Optimal Plant Health and Vigor, even under the most stressful and adverse environmental conditions.**

