

How Does Guarantee® Seaweed Extract Compare?

PRODUCTS BACKED BY RESEARCH

Our products have been tested through more than 30 universities and independent research organizations for more than 40 years. Using innovative and sustainable techniques, Ocean Organics produces seaweed solutions that are richer than others but with fewer solids and inert ingredients. Lower viscosity allows easy mixing and application. Research flyers that summarize each of our trials are available upon request.

CONSISTENT QUALITY CONTROL AND INDUSTRY-LEADING PERFORMANCE

Ocean Organics harvests fresh *Ascophyllum nodosum* seaweed off the coast of Maine. We've continually improved our extraction techniques for many decades, routinely testing our extracts in a variety of laboratories to ensure bioactive levels of key compounds. Ongoing field research shows not only consistent increases in yield and quality (Table 1 and Table 2), but a history of numerous #1 performances in competitive trials. In our laboratory in Maine, we also compare our extracts to other seaweed extracts and biostimulants in the marketplace to ensure we have the highest quality products.

WHAT DOES THE RESEARCH SAY?

Ascophyllum nodosum seaweed extracts from Ocean Organics improve:

- Abiotic Stress Tolerance
- Yield
- Disease Tolerance
- Root Health

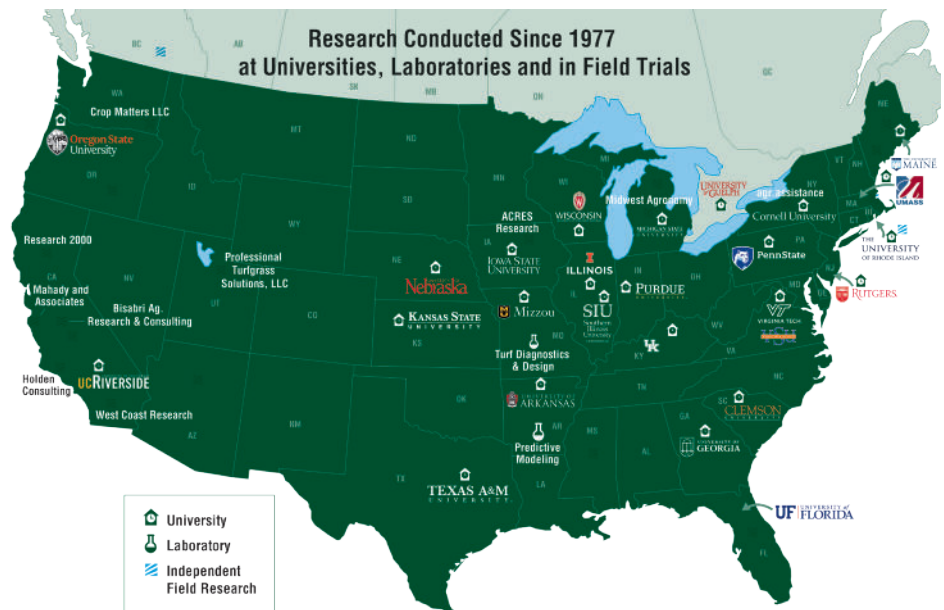
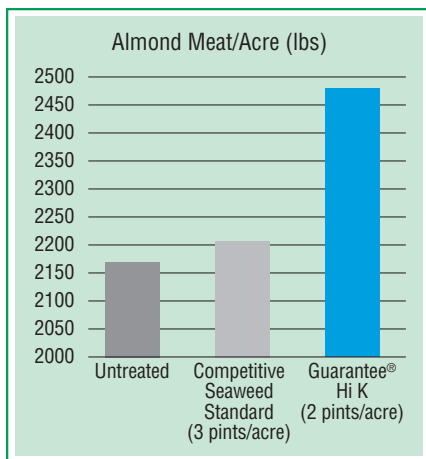


Table 1. Research trials with Guarantee show yield increases in a variety of crops.

Crop	% Yield Increase	Researcher
Alfalfa	20	Research 2000, Blythe, CA
Almonds	12	Dr. Barat Bisabri, Newman, CA
Avocados	3.4	Holden Research, Ventura, CA
Blueberries	17	Robert Schafer, Mid-Michigan Agronomy
Celery yield (reduced N)	12	Holden Research, Ventura, CA
Corn	5	Dr. Bert Schou, ACRES Research, IA
Cucumber	14	Dr. Kerry Johnson, Agra-Hort, Mississippi
Green Beans	22	Grower cooperator trial, OR
Lemons	10	Holden Research, Ventura, CA
Lima Beans	5	Holden Research, Ventura, CA
Mandarins	18	Holden Research, Ventura, CA
Potatoes	14	Robert Schafer, Mid-Michigan Agronomy
Raspberries	10	Holden Research, Ventura, CA
Soybeans	7	Dr. Bert Schou, ACRES Research, IA
Strawberries	15	Holden Research, Ventura, CA
Table Grapes	24	Crop Matters, Pullman, WA
Tomatoes	16	Holden Research, Ventura, CA
Wine grapes	8	Holden Research, Ventura, CA
Zucchini	11	Dr. Kerry Johnson, Agra-Hort, Mississippi



Guarantee Hi K significantly outperforms the most widely used seaweed in a 2019-2020 trial by Dr. Barat Bisabri in Newman, CA.

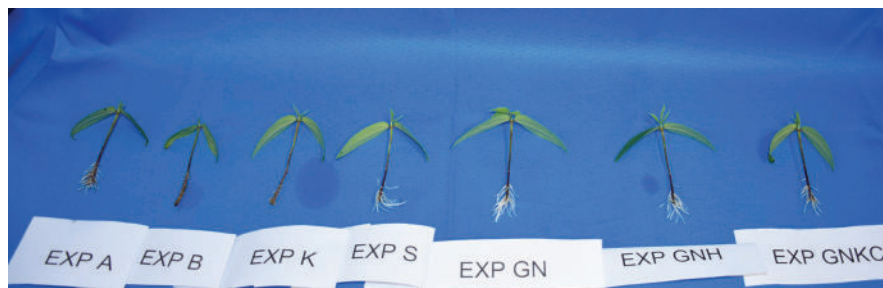
DIVERSE NATURAL COMPOUNDS – DIVERSE BENEFITS

No other biostimulant available has such a diversity of stress-fighting compounds. *Ascophyllum nodosum* is an intertidal species, so it is completely exposed to the elements for part of its life, and completely submerged in salt water at other times, leading to the development of distinct compounds that foster stress management and an array of crop benefits (Table 2). Unique constituents include:

- **Oligosaccharides** – short chain sugars that act as elicitors
- **Hormones** – active at very low levels to play a variety of roles in plant health
- **Antioxidants** – fight free radicals
- **Amino Acids** – building blocks of proteins
- **Osmoprotectants** (including betaines) – compounds that help plant cells adjust to drought and salt stress
- **Pigments** – compounds that help protect plants from harmful UV rays

THE MYTH OF “COLD-PROCESSED”

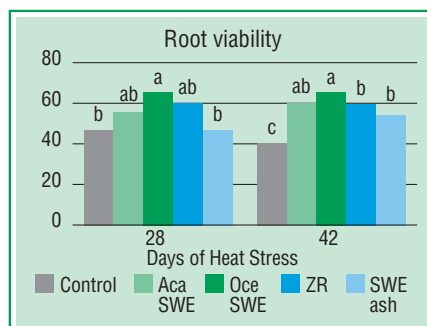
Several decades of research show the ideal seaweed extraction is not cold. We keep temperatures mild enough to maintain bioactivity of key compounds, but high enough to break down long-chain sugars to more bioavailable short-chain sugars.



Mung bean root bioassays performed by Dr. Xunzhong Zhang of Virginia Tech. **Guarantee**, **Guarantee Hi K**, **Guarantee Complex**, and an experimental (four on right) show more robust root growth compared to seaweed extracts from other companies (three on left).

Table 2. Research trials with Guarantee show a variety of crop benefits.

Crop/Plant	Crop Benefit	Researcher
Alfalfa	Improved RFV (relative feed value); TDN (total digestible nutrients); CP (crude protein)	Research 2000, Blythe, CA
Apples	Improved color, brix, reduction in bitterpit	Jeff Alicandro, agr.assistance, North Rose, NY
Avocados	Improved fruit weight/yield	Holden Research, Ventura, CA
Bell Peppers	Increased yield, weight, circumference, total return per acre	West Coast Research, Coachella Valley, CA
Bermuda grass	Improved salinity stress tolerance and quality (#1 program for all 4 yrs)	Dr. James Baird, UC Riverside
Blueberries	Increased berry weight/brix	Robert Schafer, Mid-Michigan Agronomy
Creeping bentgrass	Improved summer stress tolerance and quality (#1 program for both years)	Dr. Bingru Huang, Rutgers University
Creeping bentgrass	Improved drought tolerance	Dr. Bingru Huang, Rutgers University
Mandarins	Improved leaf macro- and micronutrient levels	Holden Research, Ventura, CA
Poa Annua	Improved cold temperature recovery and dollar spot reduction	Dr. Emily Merewitz, Michigan State University
Table grapes	Improved yield, rachis stretch, and shoulder length	Crop Matters, Pullman, WA
Wine grapes	Increased rachis stretch	Holden Research, Ventura, CA
Yellow Onions	Increased quality, size, yield and return	Crop Matters, Pullman, WA



Creeping bentgrass under heat stress and treated with Ocean Organics seaweed extract (Oce SWE) had statistically better root viability than the control, a synthetic hormone, and seaweed ash (Zhang and Ervin, 2008).



Ocean Organics is a manufacturer of high performance, scientifically proven seaweed-based plant growth materials, granular fertilizers and surfactants. Our state-of-the-art products lead the industry in efficiency and effectiveness.