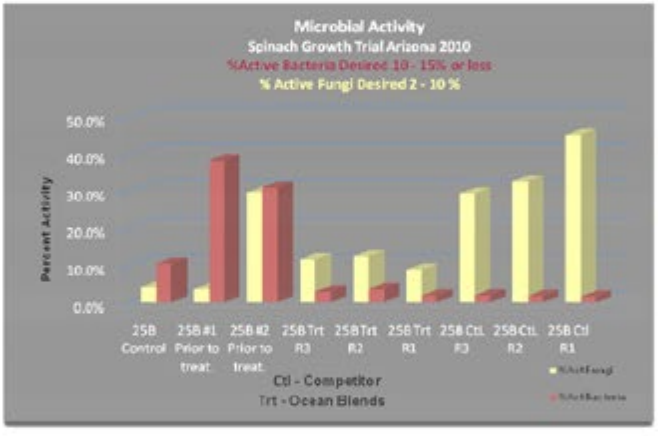
Fish Fertilizer for Soil, Plants & Lawns

ORGANIC 2-3-0 FERTILIZER

Ocean Blends is an OMRI and WSDA registered organic fertilizer made from fresh fish high in proteins. Its natural ocean constituents not only provide proteins and nutrients for quality crop production but also provide a natural food source to build a biologically healthy soil.

The soil matrix is comprised of 3 basic components – biological, chemical and physical components. Soil is a living system full of micro and macro organisms that mediate chemical processes and build stable physical structure. These soil organisms help to unlock nutrients in soil, compost, fertilizers and organic amendments which are then readily available to plant roots. Ocean Blends contains natural fish proteins that promote the growth of bacteria and fungi which in turn convert sources of ammonia nitrogen into nitrate nitrogen.

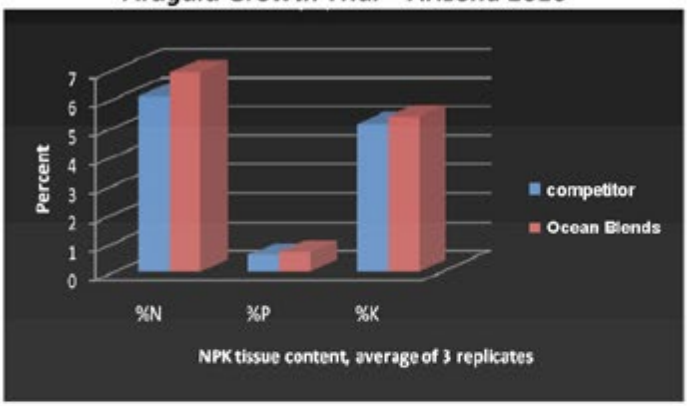
Ocean Blends also contains similar groups of beneficial bacteria and fungi found in soil that not only make nitrogen more efficiently available to plant roots but also helps to break the bonds between calcium and phosphorus thus contributing to root development, fruit sizing and better crop maturation due to better uptake of calcium and phosphorus.

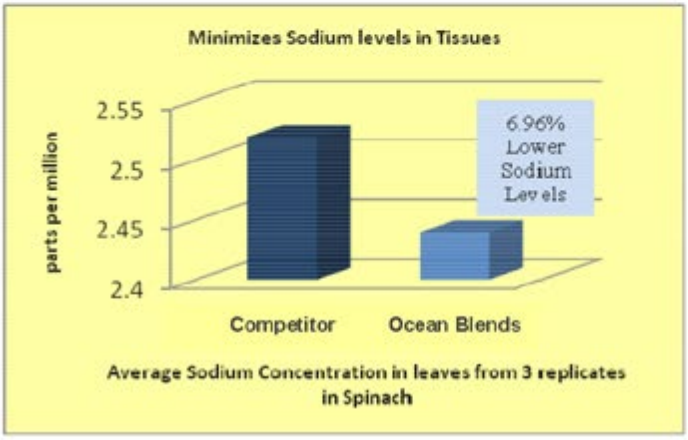


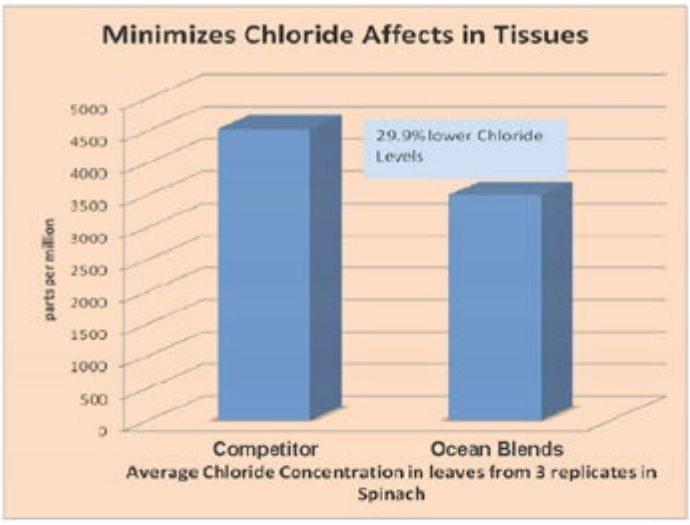
OCEAN BLENDS
Healthy soil for healthy life

OMRI LISTED
Organic Materials Review Institute
For Organic Use

Arugula Growth Trial – Arizona 2010







Advantages of Ocean Blends 2 - 3 - 0

- Improves Nutrient Uptake
- Stimulates Mycorrhizal Colonization
- Builds healthy microbial community around plant roots and in soils.
- Minimizes potential toxic salt affects
- Available year round
- P2O5 Available Phosphorus –root growth and better plant vigor.

OVER →

What is Microbial Activity?

Nutrient Cycling or the availability of nutrients to plant roots is regulated by microbial activity (Paul and Clark, 1996). Microbial Activity is simply when a bacterium or fungus engages in the activity of eating food. This food source can be organic fertilizer, soluble fertilizer, compost or other sources of organic carbon.

Without microbial activity standard soluble fertilizers can easily leach into ground water. In fact, depending on soil type and water management only 10 – 30% of standard or conventional fertilizer added to soil is actually taken up by plant roots (Kloepper, 2009). Thus, 70 – 90% of fertilizer is lost to Nitrogen leaching or run off and Phosphorus tie-up to calcium and organic matter (kloepper, 2006).

In organic farming, fertilizers are not soluble and must be converted into a soluble form that can easily be taken up by plant roots. Bacteria and Fungi that are "metabolically active" use organic sources of carbon (fertilizers, compost, and amendments) for their own metabolic needs just as we do when we sit down for dinner. During this "feeding frenzy" bacteria and fungi convert organic carbon and/or proteins into soluble plant forms of Nitrogen, Phosphorus, Calcium and other nutrients. For example, microbes break down proteins into amino acids such as glycine and in turn convert the NH2 component into nitrate.

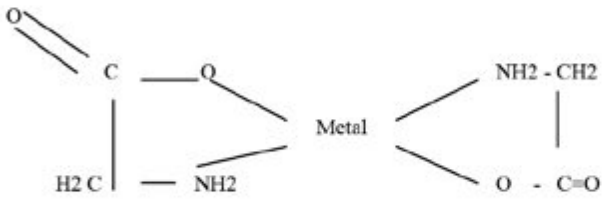
In agriculture it is all about timing. Delivering N or P at the right time will ensure quality crop/plant vigor and growth. Thus, utilizing the right source of organic carbon or proteins that controls the level of microbial activity is crucial. For example, if we just eat donuts or any simple carbon sugar for breakfast we may get an initial burst of energy but not enough to sustain us till the end of the day. However, if we eat carbon food sources of protein we are able to possibly work till 4:00pm without the need for another cup of coffee.

Why is Protein Important?

Protein is made of amino acids which are natural chelators.

What is Chelation?

Chelate is derived from the Greek word "chel" meaning "crab claw" and refers to the manner in which a metal or ion is bound to the amino acid. See typical shape of glycine below:



Natural amino acids such as glycine, glutamic acid and aspartic acid found in Ocean Blends help to increase the availability of nutrients by protecting ions such as Iron in high pH soil from becoming insoluble ferric hydroxide F3(OH)3.

$$Fe^{3+} + 3OH^{1-} \longrightarrow Fe(OH)_3$$

Soluble ***Insoluble***

Hence Chelation and fertilizers high in amino acid content:

- Increases availability of nutrients
- Prevents mineral nutrients from forming insoluble precipitates of Iron and Zinc. Zinc glycinate (i.e. chelated zinc to glycine) increases stem, root and foliage weights.
- Reduces toxicity of some metals and salts. A strong chelator will bind to a salt or metal to prevent uptake into plant tissues thus preventing toxicities.

References:

Kloepper JW, Adesemoye AO (2009). Plant-microbe interactions in enhanced fertilizer use efficiency. Applied Microbiology and Biotechnology. 85:1 – 12.

Mahaffe WF, Kloepper JW (1994). Applications of plant growth promoting rhizobacteria in sustainable agriculture. Soil Biota. 23 – 31.

Paul EA, Clark FE (1996). Soil Microbiology and Biochemistry 2dn edition. Academic Press, San Diego.