

### Summary

Liquid Sea Minerals provide a bio-available form of many natural minerals, trace elements and nano minerals. Nano minerals are needed in extremely low quantities, by soil biology and plants. Soil biology is needed for the uptake of many minerals.

Sea minerals contain major minerals of magnesium, potassium, calcium and sodium plus over 40 vitally essential micro elements and minerals. Trace elements assist vitamins to assimilate and be more available to the targeted application. Sea minerals have been used for pastures, crops and human health for a long time.<sup>1</sup>



Harvesting peanut trial



Avocado assessment

### Elements in Sea Minerals

#### Major elements

Nitrogen Phosphorus Potassium Calcium Magnesium Sulphur Sodium

#### Minor elements

Manganese Zinc Iron Copper Boron Molybdenum

#### Micro and nano elements

Nickel Chlorine Selenium Silicon Aluminium Cobalt Titanium Nickel Barium Tin Beryllium Lithium Uranium Vanadium Mercury Cadmium Chromium Lead Silver.

There is little risk of toxicity by heavy metals as the concentrations are extremely low.

### Application

#### Seedlings

- Transplanting: drench with 15 ml/L water and repeat in 14 days
- Soil drenching: cover 10 square m with 15 ml/L water
- Foliar spray: mix 5 -10 ml/ L water and apply early morning or late afternoon  
add a wetting agent to increase wetting.

#### Farming

- Soil applications: 3 – 5 L/ha
- Foliar applications: 5 ml/L will often reduce insect numbers.

<sup>1</sup> Trevor Galletly, QDA, B AgSC - 40 years in biological farming

Peter van Beek, Dip Agr, B Ec, M Ag studies

Liquid Sea Minerals have been applied to peanuts, avocados, soybean and pastures with promising results.

## Background

Sea minerals are extracted from sea water by natural processes after removing most of the sodium salts. Improved plant health and reduced insect pressure have often been noticed, and increases in vitamins, yield and brix readings have been measured.



*Kelp forest Tasmania. Source: blogazine.hannahsmall.com*

*Dust storm. Source ABC*

On land, minerals get washed out, blown away in dust and ash or carted out in produce. As plants use minerals selectively, the balance of minerals can be severely distorted.

Plants can grow with a limited number of minerals: the well-known major ones and trace elements. Science has identified a growing number of minerals as needed to increase plant growth. However, science is still finding more minerals that are needed in very small amounts for optimum plant health.

## Soil biology

Soil biology is needed for the uptake of many minerals. Plants' health and resilience, optimal growth and thus production are affected by it. However, soil biology appears to need a much wider range of minerals to thrive than plants need to survive.

People's health is increasingly recognised as depending in part on the minerals and health of the plants we eat. The need for people to take mineral supplements against ailments is one indication.

In short: sea minerals feed the soil biology that feeds the plants that feed us.

## Building Soil Carbon

Some soil biology, especially fungi, build up Carbon in the soil. Carbon is needed for good soil structure and to store minerals and water. Increasing the amount of carbon in the soil can lead to an extra 15 mm of rain stored for every percent increase. Most Australian soils are low to very low in carbon as it has been destroyed by modern farming methods. These methods inadvertently increase the rate of soil carbon breakdown by cultivation which cuts up the fungi. In addition, they kill the fungi with fertilizers and chemicals and unknowingly exhaust key elements fungi need and fail to replace these.

## Restoring fungi

Where soil biology is low to very low, restoring fungi is essential to gain benefits from sea minerals. Compost teas are good for restoring soil biology.

For further information, "Sea Energy Agriculture", by Dr. Maynard Murray is an excellent reference.

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<sup>i</sup> <https://www.healthy-vegetable-gardening.com/oceantrace.html>