

HAND HARVESTED SEAWEED FROM IRELAND

SALES RATIONALE

10/2018



Manufacturing Process

The seaweed (*Ascophyllum nodosum*) is delivered and stored on a storage ramp on the factory grounds. All incoming seaweed is issued a delivery number, which is used to identify where each load of seaweed was harvested. Four tonne of "wet" seaweed is required to produce one tonne of seaweed meal. The seaweed is fed into a hopper and washed with seawater to remove any silt or sand. The seaweed is then conveyed into the factory to be milled.

A hammer mill pulverises the seaweed, which is then fed into dryers that are heated. The temperature applied to the seaweed is regulated to achieve sufficient evaporation of the surface and embedded water and to ensure the temperature of the seaweed reaches 75C. The seaweed meal leaves the rotary dryer after thirty minutes and has now achieved moisture content of 12% - 14%. From here the seaweed meal is fed via underground suction lines to the fine milling plant, where the product is broken down into customer specifications.

Once inside the finite milling plant, seaweed meal is milled to further break down the product. The meal is then fed through a series of screens, which sieve the product into the required specific micron. The product falls into a 1 tonne bag, after which it is brought to the bagging plant. A batch load of 20 tonne is produced and assigned a batch number, which is used to identify the load when it is shipped to its final destination.

The seaweed meal product is finally bagged into 1000kg, 25kg or 20kg bags, depending on customer requirements. Each bag is labelled with the appropriate batch number. All finished product is placed on a 1200 x 1000mm pallet. All finished product is brought to the store where it is stored in a numbered bay until the product is finally shipped

The Aran Islands off the west coast of Ireland are windswept rock plateaus, nearly devoid of natural soil, and yet there are gardens everywhere, thanks to the virtues of seaweed. For centuries the islanders have hauled loads of seaweed and sand up from the beaches and deposited both in fieldstone enclosures. There the seaweed and sand are composted with clay scraped from rocks. Over the generations, islanders have collected enough fertile soil that their carefully tended plots are able to supply the community's vegetable needs.

The agricultural use of seaweed has a long history in coastal areas around the world. Even in regions endowed with plentiful soil, seaweed has been used successfully. In the 1950s, production of liquid seaweed concentrate began, providing inland gardeners with the benefits of seaweed. A liquefied concentrate can be used to water plants, but more important, it can be used as a foliar spray.

Why does seaweed possess such special properties? The answer lies in the environment in which it lives. Most of the seaweed used horticultural in the United States grows in the turbulent coastal shallows of the northern Pacific Ocean and the northern Atlantic Ocean. Many of the earth's minerals are dissolved in sea water, and the agitated action of waves and currents assures seaweed access to all of them.

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Most of the seaweed products sold in the United States for horticultural use are derived from the seaweed *Ascophyllum nodosum*, commonly called knotted wrack. *A. nodosum* contains at least 60 elements, including many of those known to be essential for terrestrial plants: nitrogen (N), phosphorus (P), and potassium (K), boron, calcium, copper, iron, magnesium, molybdenum, sulphur, and zinc. Except for nitrogen and potassium, the amount of each of these elements in seaweed is quite small. The amount needed by plants is also relatively small, but it is critical. At best, deficiencies will lower productivity; at worst, plants will wither away.

Although amounts vary, dried *A. nodosum* typically contains from 1 to 1.5 percent nitrogen, 1.25 percent potassium, and only 0.2 percent phosphorus. Since seaweed is applied to plants in a highly diluted state, even the amount of NPK supplied is very small. Seaweed is not, therefore, a complete fertilizer.

But the benefits of seaweed go beyond supplying nutrients. The sea water that provides seaweed with nutrients also carries bacteria, viruses, and fungi. As a defence against these organisms, it is thought that seaweed synthesizes an arsenal of chemical compounds, and these in turn can be used by garden plants. Seaweed also suffers damage from storms and foraging marine animals, yet re-grows rapidly. In fact, some seaweed is rich in compounds known as plant growth regulators.

When seaweed is incorporated into soil or sprayed on leaves, plants absorb its compounds for their own use. Seaweed promotes rapid, healthy growth and also stimulates the activity of bacteria that decompose soil particles into simpler nutrient compounds that plants can readily absorb. Compounds in seaweed latch onto these nutrients, preventing them from leaching out of the soil, yet readily releasing them to plants.

Composting seaweed

since I live near the shore, I gather seaweed from the beach and compost it. I always rinse seaweed with fresh water before adding it to the compost pile, so that salt doesn't build up in the soil. I mix the seaweed with a lot of carbonaceous material, such as leaves or straw, which will create air spaces needed for good oxygen flow through the compost. Insufficient oxygen will turn the decomposition process anaerobic, which will cause the pile to exhale an odour that will not soon be forgotten. Even with good aeration, a certain aroma will linger around the pile for several days. This can be controlled by covering the pile with several inches of carbon material, which also prevents the pile from getting too hot. I like to keep the pile below 110°F to prevent decomposition of the valuable organic compounds.

Those who plan to gather seaweed should obtain permission first. Most towns have ordinances against removing natural material from beaches, though they pay crews to remove seaweed. Whenever I've asked the Parks Department for permission to remove seaweed, it has been most cooperative, as long as removal was done in an ecologically responsible manner. Never remove seaweed from the water; only seaweed washed up on the beach should be collected.

If you cannot gather seaweed, you can purchase seaweed meal, which is raw seaweed ground up and bagged. You can add the meal to your compost pile or turn it into your soil.

Using liquid seaweed year-round

I use seaweed with my first gardening activity of the year—indoor seed starts. After depositing seeds on the surface of soil blocks, I cover them with a thin layer of dry soil, moistened with a misting of liquid seaweed dilution. Research shows that liquid seaweed speeds up germination and increases the percentage of seeds that germinate.

I have also found that the fungus-retarding property of seaweed suppresses damping-off disease. This first application of liquid seaweed, together with periodic watering of the growing seedlings with a seaweed dilution, assures the seedlings access to all the micronutrients they require, as well as to plant growth regulators. As an experiment, I grew two groups of seedlings, half of them treated with seaweed, half without. The seaweed-treated seedlings grew significantly more rapidly, were more robust, and had better root development. My observations have been verified by formal research at Clemson University in South Carolina.

By James Carr October 1999 from issue #23

The following comments are extracted from a gardening article on use of seaweed (there are various species of seaweed which may differ in composition that influences bio stimulation). "Seaweed is a rootless plant in the Focus family that floats freely or clings to rocks by holdfasts (root-like or disk shaped plant parts that attach seaweed to rocks but don't absorb nutrients). Seaweed photosynthesizes the sunlight that reaches it through shallow water and it absorbs nutrients from sea water through its leaves. Since the ocean receives runoff from the entire earth, it contains all known minerals, trace elements, and vitamins.

This primal supermarket supplies a more complete diet for sea plants than any plot of rich soil or fertilizer provides for land plants. Seaweed contains 60 or more minerals and several plant hormones. It is not however a complete fertilizer. It has a fair amount of nitrogen and potash, but very little phosphorus, a major plant nutrient.



Only a few seaweeds are harvested commercially. Norwegian kelp (*Ascophyllum nodosum*), a brown algae is the seaweed most used in gardening. Norwegian kelp is gathered off the coasts of England, Ireland, Norway, and both the Atlantic and Pacific coasts of North America where it is called rockweed. Gulfweed (*Sargassum*), a floating sea plant, is harvested off the coast of North Carolina. Giant kelp (*Macrocystis*) is collected in the Pacific Northwest.

Seaweed is constantly worn down by tides and eaten by fish, so it must grow rapidly to survive. Studies at the University of California showed that a frond of seaweed can grow a foot or more a day, given optimal conditions. The same growth hormones that prompt such rapid growth in seaweed, when applied to plants as a foliar spray, can increase the rate of cell division and elongation in those plants. The hormones also increase root growth when applied to the soil as meal or when seaweed extract is used as a root dip.

In recent turf tests at Virginia Polytechnic Institute in Blacksburg, plots sprayed with seaweed extract had 67% to 175% more roots than untreated plots. Plots treated in fall showed a 38% increase in spring growth over untreated plots and showed 52% more roots.

In tests at South Carolina's Clemson University, seeds soaked in liquid seaweed extract showed rapid germination, and the resulting seedlings had increased root mass and stronger plant growth than seedlings from untreated seeds. They also had a higher survival rate. Soaking plant roots in seaweed extract reduces transplant shock and speeds root growth. Seaweed foliar sprays promote faster, stronger stem and leaf growth, and earlier blossoming and fruit set when sprayed on leaves and flower buds."