Maxicrop®
PROFESSIONAL

The first name in seaweed science

Seaweed Extracts – The Maxicrop Edge

What type of seaweed does Maxicrop use, and where does it come from?
Maxicrop uses *Ascophyllum nodosum*, from the unpolluted Arctic waters of northern Norway. The seaweed regrows over a four year period and is fully sustainable.

Why do you artificially dry the raw seaweed?
Fresh seaweed is chopped, dried, and milled into seaweed meal. Some manufacturers claim to dry their product "naturally". However, some compounds are very water soluble and could leach if exposed to the elements.

Why do you have to process Maxicrop, instead of using natural raw product?
The economics of using raw seaweed are prohibitive. Our liquid product is more versatile, quicker acting, and can be applied directly to foliage or soil.

Is *Ascophyllum* the best type of seaweed to use?
Ascophyllum provides all of the known active constituents, is readily available and we have the technology to process our extract from it. Norwegian seaweed has a worldwide reputation for high quality. The selection of a particular species by a manufacturer often comes down to commercial availability.

How does Maxicrop produce a liquid extract from raw seaweed?
Maxicrop seaweed extract is manufactured by a heat and steam pressure cell burst process, known as hydrolysis. The alkaline process used efficiently breaks down the cells of the seaweed raw material, releasing all their contents.

Why does Maxicrop subject seaweed to a heat treatment process?
This process is known to maximise the extraction of beneficial compounds such as betaines, short-chain carbohydrates, sugars and other compounds and has been developed over 60 years. It has been refined to produce consistent results and produces a highly active, more complete extract than other processes.



How much of the goodness is lost in the process?
None that we are aware. Betaines are stable over a large temperature range. We may actually increase the extraction and range of short chain carbohydrates as a direct consequence of the extraction process.

Why do some manufacturers use a cold process?
There are at least two methods of cold extraction in use. These manufacturers have simply developed a system to suit their particular set of circumstances.

What is the advantage of one system over another?
Cold processes (eg Goemar and Kelpak) produce suspensions of solids, rather than liquids. The process is promoted as being less likely to damage active ingredients, but there is no evidence that the Maxicrop extraction process damages or reduces the betaine content, and a hot alkaline extraction is actually critical to remove many of the carbohydrates and sugars tightly bound into the seaweed cell walls. The significance of these components is not fully understood, but it is unlikely that the more 'passive' extraction would effectively release the same material from the seaweed, so the products of 'cold processing' are less effective.

Don't seaweed extracts block spray nozzles?
Seaweed in suspensions of solids can block nozzles. Soluble seaweed extracts (e.g. Maxicrop) do not.

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Is yours the best manufacturing process?

There are various manufacturing processes. The products are divided into true extracts or suspensions of finely divided algae. The former, e.g. Maxicrop, are produced by extraction from seaweed using either water or aqueous alkali. Examples of suspensions are Goemar and Kelpak. Goemar produce a seaweed cream by rapidly freezing seaweed, 'cryo-microcrushing', homogenising and micro-partitioning.

Is Maxicrop better than others?

Kelpak and Goemar are less concentrated due to their manufacturing process. They are more dilute products and are not true solutions (actually seaweed suspensions which have more potential to block sprayers!). Maxicrop research showed that our extracts were more effective than cold processed products in terms of beneficial effects on soil microbes.

Is the potency of Maxicrop impaired by the production process?

According to Prof. Gerry Blunden (an expert in this field), the betaines found in seaweed are very stable between freezing conditions and 220°C. This suggests that none of the commercial practices used to extract from seaweed will have detrimental effects on the betaines present in the raw material.

Do other seaweed extracts have greater concentration of cytokinins?

Perhaps, however, it is irrelevant. According to Prof. Gerry Blunden, here are some facts about the content of seaweed extracts:

Abscisic acid (ABA)	Not present.
Gibberellins	Not present.
Auxins	Not present.

Indole acetic acid (IAA): can be formed during the extraction with alkali, however it is very unstable, breaks down and is not detected in the bottled product.

Cytokinins: Cytokinins are very easily destroyed and likely to be broken down by 'cold' processes to the same extent as the Maxicrop process. Cytokinins are reported in some products, but at levels unlikely to cause significant plant growth effects. The confusion relates to the 'cytokinin-like' effects of seaweed extracts. These activities, such as increased cell division, elongation, stress resistance and chlorophyll content, are now thought to be caused by betaines and low sugar concentrations i.e. cytokinin concentration is irrelevant.

Betaines: *Ascophyllum nodosum* contains 3 main types of betaine (Glycine betaine, Gamma aminobutyric betaine, Delta aminovaleric betaine).

How is Maxicrop different from other seaweed extracts?

Maxicrop uses high quality seaweed, a well-developed production process, is approved by the Soil Association for use in certified organic products, has excellent QC facilities, and has invested in a comprehensive programme of R&D. Maxicrop will stimulate microbial activity by a number of possible mechanisms, compared to products which directly feed bugs or introduce new 'alien' species to the soil. Maxicrop is 'natural', derived from a renewable organic source, and does not add any 'un-natural' bacteria to the soil, only working on the existing populations. Maxicrop has extensive trials data to back up its claims. Maxicrop literature has been approved by the CRD (Chemicals Regulation Directorate).



Maxicrop uses *Ascophyllum nodosum*, from the unpolluted Arctic waters of northern Norway.

Don't seaweed extracts leave a sediment?

Maxicrop is totally soluble, unlike some seaweed suspensions. However, because the product is close to saturation point (to provide maximum value), it is always recommended that the product is stored in ambient temperatures, and should be agitated before mixing and during spraying (standard spray practice).

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