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Tory Channel Kelp Seaweed Tea Product

Role of Seaweed in Viticulture

Seaweed is playing an increasing role in viticulture in New Zealand. It has become accepted especially by organic growers as a critical part of a sound nutrition and biological stimulation program. Seaweed products can play a number of roles:

- As a fertiliser - Seaweed products can add small amounts of a large range of nutrients. They often are low in mineral nutrition compared with chemical fertilisers but contain a large range of carbon based molecules such as amino acids, plant hormones, alginates and sugars. These are all highly absorbable by leaf tissue and are in forms that can be used directly by the plant. This contrasts with chemical fertilisers which often extract a carbon 'toll' on a plant as they need to be processed into a biological form prior to use.

- Frost protection - Seaweed extracts applied prior to frosts can act to raise cell solute concentration and reduce frost damage.

- Alginate - this carbon molecule is highly absorptive of water and is easily broken down by foliar bacteria to release potassium and highly absorbable sugars. This helps with stomatal control especially in dry weather. Alginate can aid in building soil structure due to its mucilaginous structure which can help to bind soil particles together.

- Free carbon - Seaweed extracts applied as foliar sprays can help to provide extra forms of carbon to plants. This surplus carbon is transported to the root zone and traded with fungi and bacteria for minerals. Carbon supplied to plants by foliar application essentially allows the plant to reserve more of its own photosynthetic production for growth, reproduction and plant defense.

- Foliar microbe stimulation - Adding extra carbon to leaf surfaces in the form of seaweed extract can stimulate microbial growth. This allows an increase in beneficial microbes that can help to outcompete pathogens. Seaweed extracts can stimulate growth

of microscopic algae on leaf surfaces. The photosynthates these algae produce act to further stimulate beneficial microbes on leaves

- Hormones - Seaweed extracts contain many of the common plant hormones that plants use to control growth. These include auxins, cytokinins, gibberellins and betaines. Improving supply of these can not only allow improved growth but also improved growth regulation. This means growth can be stimulated in a strong, controlled manner producing solid, disease resistant plant parts. This contrasts with applications of mineral nitrogen which can result in excessively rapid growth that is vulnerable to disease and pests.

- Amino acids - These are the basic building blocks of plants. Essentially plants make them from sugar created via photosynthesis and mineral nitrogen extracted from the soil food web. Adding additional amino acids gives plants a “carbon subsidy”. Essentially more building blocks are supplied to the building site without the plant having to make them from scratch. The result is stronger more resilient growth.

- Stimulates plant resistance - the presence of the mixed plant hormone, amino acids and alginates stimulate plant phytochemical responses against disease.

Specific benefits of Tory Channel Kelp

- Organic certified

- NZ made - Better still, made in Marlborough.

- Delivery - Can be delivered in bulk, saving on packaging waste. This is done to reduce landfill waste and to keep costs low. Order as much or as little as you need. Delivery is usually free within Marlborough.

- Smell - Fresh like the sea. Many other products smell like instant coffee or rotting seaweed.

- High concentration of amino acids.

- Minimal processing - Other products often undergo alkaline extraction or vigorous mechanical pulverising. This can result in a thick gloopy product which people have come to expect but doesn’t necessarily result in a product that gives results in the field.

- Not heated or dried - Heating or drying kelp products has been proven to denature proteins and amino acids. Tory Channel Kelp uses a cold-water process that preserves the most important beneficial components of seaweed.

- No processing waste - Tory Channel Kelp is made from fresh seaweed, any residue from the process is reused to make seaweed products for ground application. There is no processing waste to dispose of.

- Low carbon footprint - The product is harvested from Tory Channel, processed in Blenheim and delivered to you. Other products are made around the world and accrue large carbon footprints.

- Price - Competes very well with other products on the market.

- Selected Species - Tory Channel kelp uses different species (Macrocystis and Undaria) than commonly found in commercial products, however, these two species are from the same family of brown algae (Phaeophyceae) and are well recognised around the world for their benefits. They confer the same benefits as the more common Sargassum, Ascophyllum and Laminaria.

- Low in heavy metals - Mineral content is lower but this may be due to other products being concentrated or extensively processed. Some products are noted to contain high levels of heavy metals. Tory Channel kelp does not.

- Controlled mineral addition - Because each batch is made locally, product can be made with additional additives upon request. Additives can include additional minerals (Nitrogen, Potassium etc) or biodynamic preparations.

Application rate and frequency

Applying regularly in small applications will obtain maximum benefits compared to large single applications. Apply with sufficient water to ensure full coverage. Tory Channel Kelp is compatible with most common spray chemicals and is organically certified.

General application (vegetables, lawns etc)

- 10-20 mL per litre in hand sprayers and knapsacks or 100- 200 mL per 9L watering can.

Winegrapes

- Apply 3 to 7 litres per hectare depending on canopy size. Apply with sufficient water to ensure full canopy coverage.

Personal experience with vineyard application

I have used Tory Channel Kelp seaweed extracts for the past 6 years and always found them excellent. We switched initially to reduce costs but found the benefits were so marked that we dropped other nutrition products and increased our frequency of application of Kelp tea.

Benefits I have noted have been much improved berry strength, tougher skins with reduced splitting, thickened leaves with better colour and very much improved wind resistance (especially on blocks where winds regularly exceed 100km per hour). One of

the most unexpected benefits was how berries maintained their shape and integrity when machine harvested. The berries often arrived at the winery intact with little crushing or juicing. This required more processing work in the winery but reduced oxidation a great deal helping to preserve juice quality and reduce the need for field additions of sulphur.

These results were noted as part of an organic spray program that included sulphur, copper, soaps and small amounts of fish. Seaweed was the main fertiliser component with two additions of certified mineral fertiliser pre flowering and PBC. Leaf symptoms of K, N and Mg deficiencies were never seen even in blocks with light sandy soils. There would be up to 10 sprays per season depending on variety and disease pressure. Every spray contained seaweed at low rates (3-7 L/ha). Annual cost per hectare was around $200.

Another benefit to regular seaweed applications is that when the two mineral fertiliser applications were made, the vines showed major boosts in growth and colour. I found that flowering was supported in poor seasons and veraison often occurred quickly and evenly in red varieties.

Winemakers have reported improved flavour in fruit that has had kelp tea applied regularly. Disease losses to botrytis and powdery mildew were minimal even in blocks with heavy canopy and during poor weather.

The reduced waste from bulk deliveries or reused containers is an unexpected benefit. This actually saves us quite a bit in time and rubbish disposal cost. I find that stored product doesn't go off but can grow algae on the sides of the container. I would recommend storing it in dark conditions. It is certainly more stable than many of the fish products I have used.

I recommend Tory Channel Kelp to the reader and will be happy to discuss its use in the field.

Matt Oliver
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