

Super Kelp

Superior Growth
Stronger Plants
Mixes easily



Stress Tolerance - heat and frost

Activity

- Increased chlorophyll production
- Increased root growth
- Better plant establishment
- Improved plant defence system
- Improved fruit set (tomatoes, capsicum, cucumber)



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Results

Stress Tolerance

Plants better able to withstand environmental stress (drought, frost, heat)

Plant Vigour

Greener, lusher plants

Yield Increase

Increased production, sizing and quality

Ease of Use

Compatible with fertilisers (particularly calcium nitrate, potassium nitrate), fungicides, insecticides, acidic GA

Can be applied with copper and fungicide sprays

Liquid filtered to 90 microns to ensure it can be used as a foliar spray (or via irrigation) and acidified to a pH of 4-4.5 (for stability).

Harness the power of nature

Why Super Kelp works

Improved crop performance

In kelp, macro- and micro- elemental nutrients, amino acids, vitamins, cytokinins, auxins, betaines, alginates, sterols and abscisic acid affect cellular metabolism in plants that lead to enhanced growth and yield. They are bioactive at low concentrations. -Khan 2009; Blunden 1997

Heat Tolerance

Kelp can be used to provide protection during heat stress with effects lasting for 2-3 weeks. Betaines in Kelp increase chlorophyll content and consequently photosynthesis, cytokinins induce heat tolerance, increase potassium uptake and improve root growth, while anti-oxidants in Kelp help plants in temperature extremes. -Khan, 2009; Ervin 2004

Frost Tolerance

Offers an extra degree or two tolerance to frost, although some information suggests as high as 3-4°C. Lowers temperature at which cells will freeze. This is because it is a highly effective brix builder. Plants with higher sugar content have a lower freezing point. -Wilson 2001

Improved fruit set (Cucumbers, tomatoes, capsicum)

Kelp enhances the mobilization of cytokinins from the roots to the developing fruit. This increase in cytokinin availability will eventually result in greater supply of cytokinins to the maturing fruit. -Khan 2009

Enhanced plant defence against pest and diseases

- Kelp imparts nematode resistance possibly by altering the auxin:cytokinin ratio in the plant -Khan 2009
- Kelp contains elicitors (eg polysaccharides) which plants use to protect themselves against pathogen invasion. -Khan 2009
- Alginates in Kelp promote growth of beneficial fungi which colonise roots and result in stronger plants -Kuwada 2006

How to use

Super Kelp can be applied every 4 - 6 weeks during the growing season as a foliar feed or soil drench, enabling the plant to receive direct benefits from the naturally balanced nutrients and growth promoting substances.

For heat and cold (frost) stress:

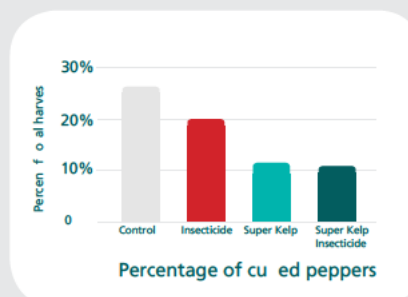
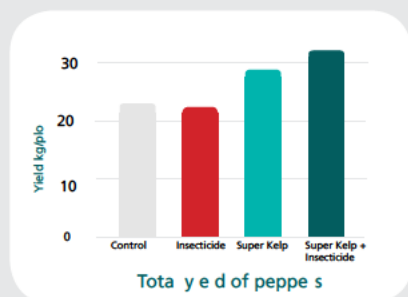
- Apply 36-48 hours prior to stress event as a foliar spray or via irrigation. During events it is recommended to apply via irrigation.
- Repeat every 14 days during extended heat and cold periods. For extra frost tolerance it can be mixed with 0.5% potassium fertiliser to help strengthen plants.

Drought Tolerance:

- Regular use during drought to stimulate root growth can help crops explore greater soil volume and access moisture.

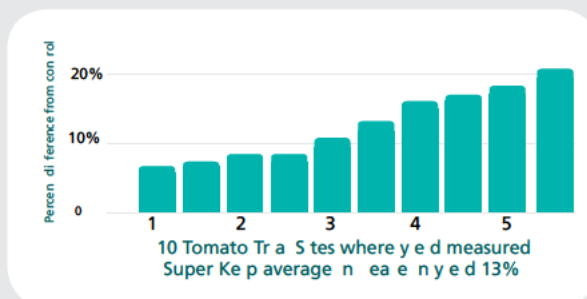
A selection of results

Peppers - yield increase, less culls



The result was increased yield of peppers by 24% with Super Kelp and 30% with Super Kelp + Insecticide.

Tomato yield increase - 10 sites - average 13% increase



Treated plants improved vigour + 20% increase in number of fruit.

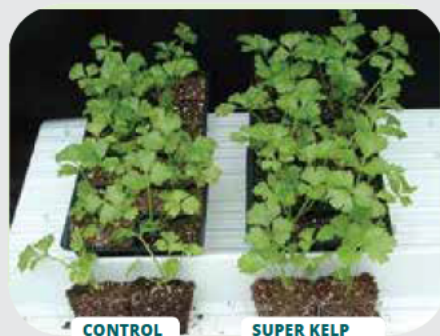
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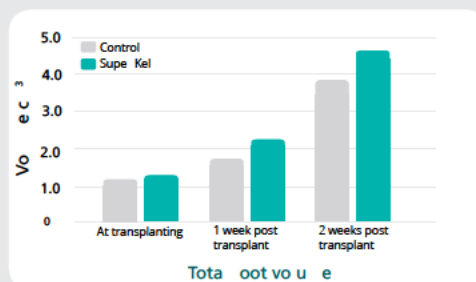
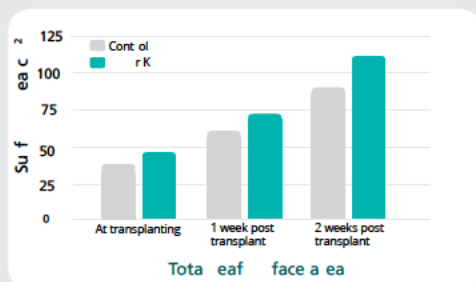
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Celery - improved root growth and leaf area



Visual observation after 2 weeks in greenhouse

Growth 1 and 2 weeks after transplant in the field showed increased root volume, root surface area and total leaf area.



Tomatoes - improved yield



The increase in yield was 25%.

Replicated trial with 3 rows per treatment.

4.5L/ha at transplant



Peppers - improves salinity tolerance



Visual observation 14 days after root drench.

Improved root development with Super Kelp

Salinity stress is a common issue with vegetable crops.

In this trial, Super Kelp was applied as a root drench when the pepper seedlings were transplanted into cell packs. Salt was added to stress the plants.

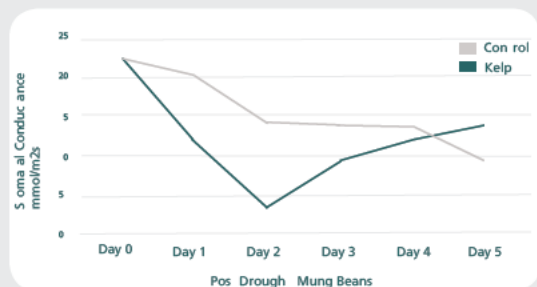
14 days after transplant, root length increased by 110% over control. Leaf surface area increased 60% over control.

Broccoli - improved growth



Super Kelp improved roots and growth on day 14

Super Kelp closes stomata during water stress

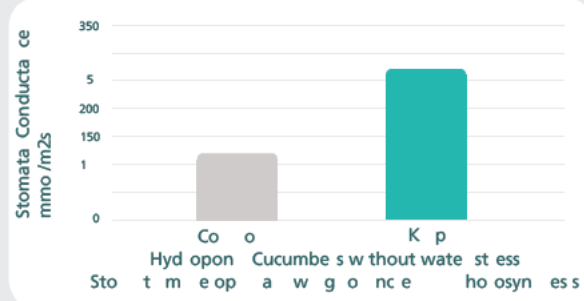


Plants treated with kelp close the stomata faster in response to the stress, maintaining more water within the plant.

The stomata are the pores on the underside of leaves where the plant exchanges water for carbon dioxide (photosynthesis). During water stress the stomata close and stay closed until conditions improve. 99% of water loss is via transpiration through the stomata. Plants that can close the stomata will reduce water loss and recover faster after stress.

Super Kelp opens stomata when not stressed

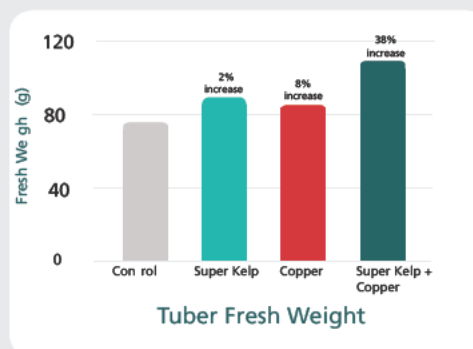
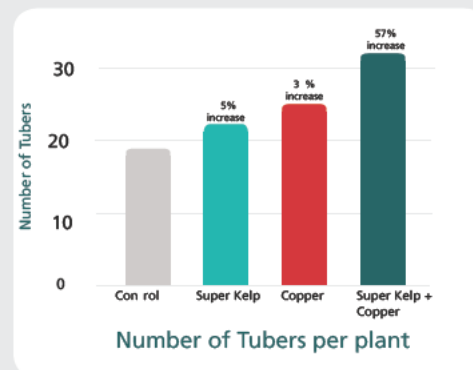
When not stressed, Super Kelp does not close stomata, but rather helps plants self regulate. Without water stress the graph below shows cucumbers with more open stomata allowing for increased photosynthesis.



Lettuce - reached marketable size earlier

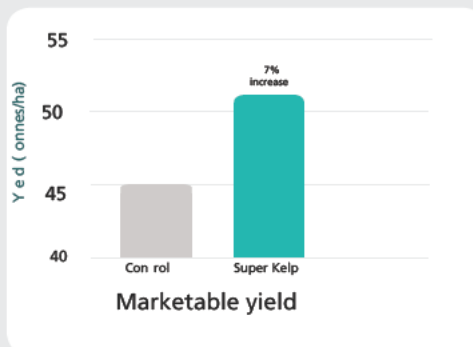


Potatoes - increased tubers



Super Kelp showed synergistic effects when applied with copper. Increases in tuber numbers 57% and tuber weights 38%.

Potatoes - increase in yield



Treated plants showed a shift in size distribution towards medium and large. Heavier potatoes increased yield and attracted a premium price.

There was a 15% increase in leaf area of plants which supports tuber formation and bulking.

Information & Advice

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