SUSTAINABLE FARMING SOLUTIONS

Fruit & Nuts

Super Kelp

Superior Growth
Stronger Plants
Mixes easily

Stress Tolerance - heat and frost

Activity

Increased root growth

Improved plant defence system

Improved flower retention and fruit set

SUPER KELP - HEAT STRESS

Supported higher than expected yield in WA.
4 x Kelp at 3-4L/ha in January to March heat

Results

Stress Tolerance

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

Plant Vigor

Greener plants & better developed canopy

Yield Increase

Increased production, sizing and quality and delayed senescence

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

Super Kelp

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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. Betains 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^{0}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 flower and berry set

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:

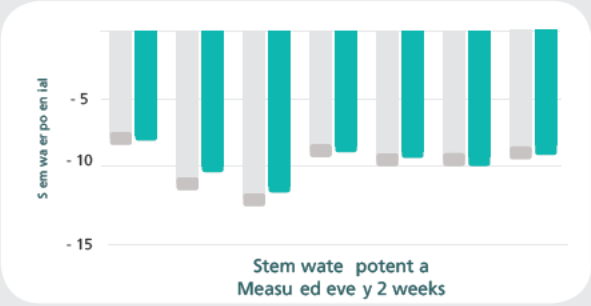
- *Apply 36-48 hours prior to stress event as a foliar spray or via irrigation. During events it is recommended to apply via irrigation.*
- *Repeat every 14 days during extended heat and cold periods. For extra frost tolerance it can be mixed with 0.5% potassium fertiliser to help strengthen plants.*

Drought Tolerance:

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

A selection of results

Almonds - less water stress

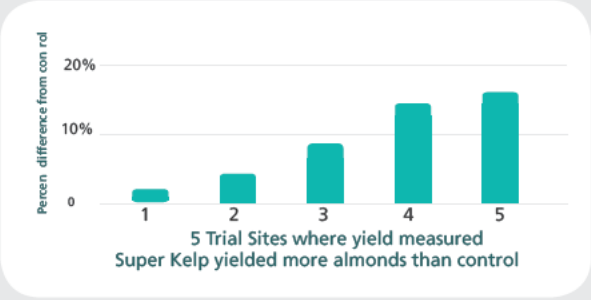


Stem water potential measured every 2 weeks prior to irrigation.

A more negative stem water potential represents a higher degree of water stress.

Leaves from trees treated with Super Kelp had less water stress compared to the control. Soil moisture was the same in both treatments.

Almond yield increase - 5 sites - average 12% increase



1st application - pin bud (foliar)

2nd application- petal fall (foliar)

3rd application - before summer heat stress

Repeat - every 2-4 weeks

Post harvest application - 2-4 weeks after harvest

Stone Fruit - bigger fruit

Over 10 trial sites including peaches, nectarines, plums and apricots, the fruit produced was larger compared to the contol. The average increase in class size was 42% over the control.

Information & Advice

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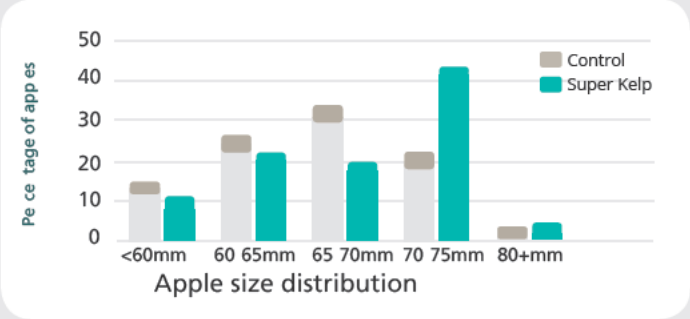
Web sustainablefarming.com.au

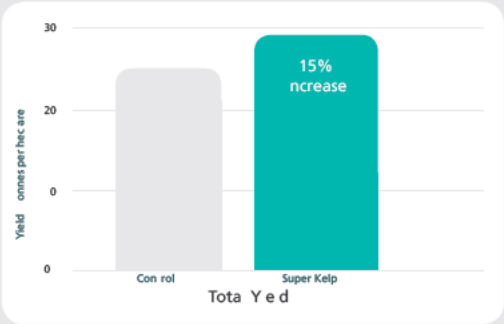
Harness the power of nature

Super Kelp - strengthening plants; superior growth

Apples- bigger fruit, increase in yield

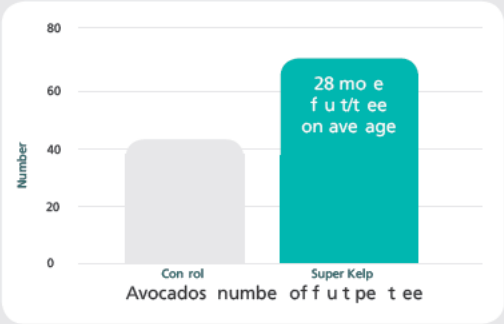


Super Kelp shifted the size distribution.
Control - 57% of apples > 65mm
Super Kelp - 64% of apples > 65mm

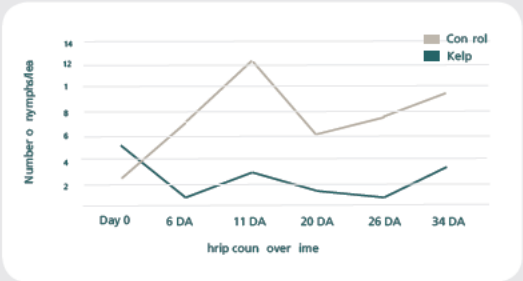


Applications of Super Kelp increased total yield by 15% compared to control.

Avocados - more fruit; improved natural defenses



Trees treated with Super Kelp had on average 28 more fruit per tree. Throughout the season treated trees has consistently larger fruit.

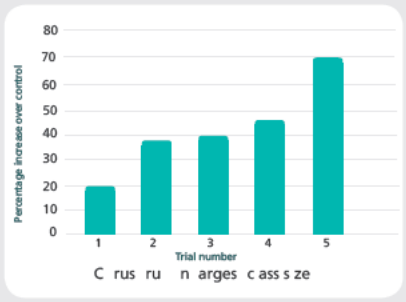


Super Kelp elicits natural defenses to environmental stressors. Super Kelp treated plants had 78% less mites and 67% less thrips than control.

Citrus - improves early plant development

In a nursery, Super Kelp increased plant height by 13%.

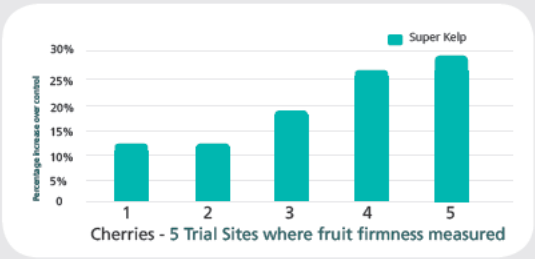
Photo shows plants after 4 applications.
Applications to seedling root stock started 20 days after emergence, applied every 2 weeks.



Field trials show Super Kelp increases the percentage of fruit in the largest class by an average of 40%.

Larger fruit demands a premium, improving profit.

Cherries - fruit weight and firmness



Super Kelp consistently increased average weight of cherries by 8%.

Overall firmness increased by an avergage of 19%.

Firmer fruit represent higher quality & ship better.