

DYAMIN-OSA

Antitranspirant ortho silicic acid and micronutrients



Drought tolerance & plant turgidity





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Transpiration – The Loss of Water from Plants

- The elemental compound most required for a plants existence and normal development, is water.
- The bulk of water absorbed by plants takes no permanent part in their development or metabolic processes, but evaporates from leaves and other aerial parts. Excessive transpiration during times of drought will reduce plant turgidity, causing the onset of wilt and may also reduce crop quality and yield.
- Most of the water vapour lost from leaves occurs through the stomata, this is termed stomatal transpiration. However, around 20%-25% of water vapour is lost by direct evaporation from the leaf epidermal cells through the cuticles, this is usually termed cuticular transpiration.





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Ortho silicic acid plus micro nutrients for plant nutrition and protection

Ortho silicic acids (OSA) are recognised for their benefits within plant nutrition and structural development. OSA helps to reinforce plant cell walls by forming solid amorphous, hydrated silica gel between the cuticle and cell wall, and between the cell membrane and cell wall, creating stronger plants with greater tolerance toward drought, heavy metals, pests and diseases.

As ortho silicic acid accumulates within cell walls it quickly hardens to provide structural support. The xylem and phloem are also strengthened and expanded to enable higher sap pressures, enabling important nutrients like calcium to move extensively throughout the plant. With improved osmoregulation, ortho silicic acid reduces stress from cold, heat, drought and environmental issues.





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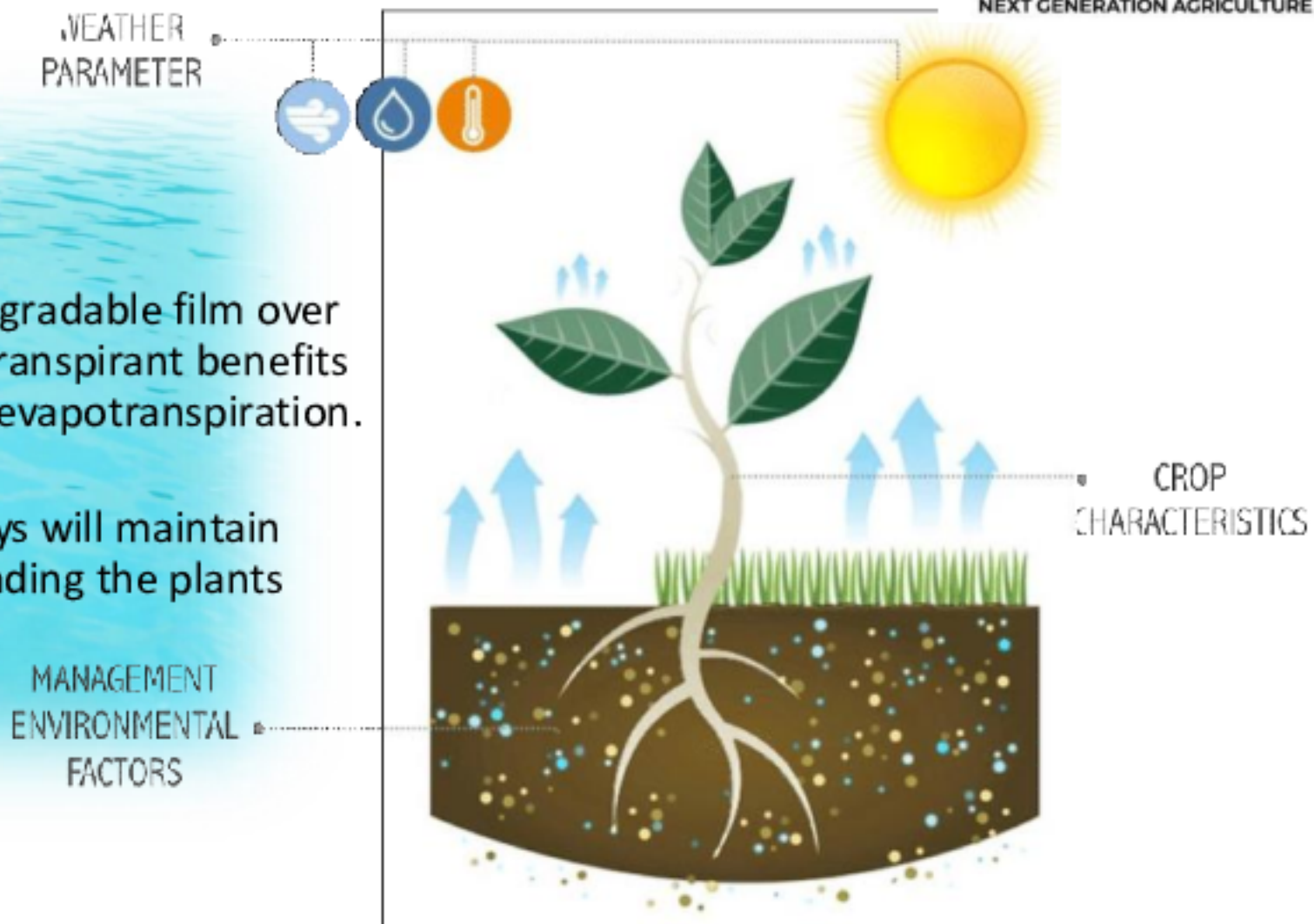
Antitranspirant ortho silicic acid and micronutrients



Antitranspirant benefits

DYAMIN-OSA creates a light biodegradable film over leaf pores providing temporary antitranspirant benefits through reductions in water loss via evapotranspiration.

Regular applications every 7 – 10-days will maintain crop protection without risk of degrading the plants natural physiology.





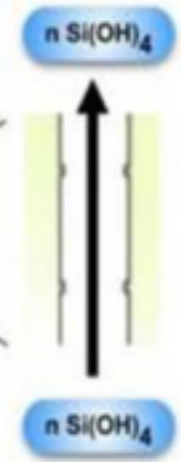
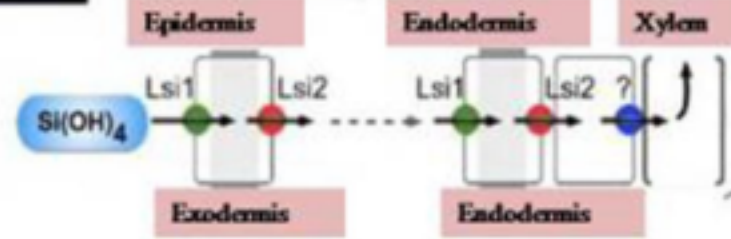
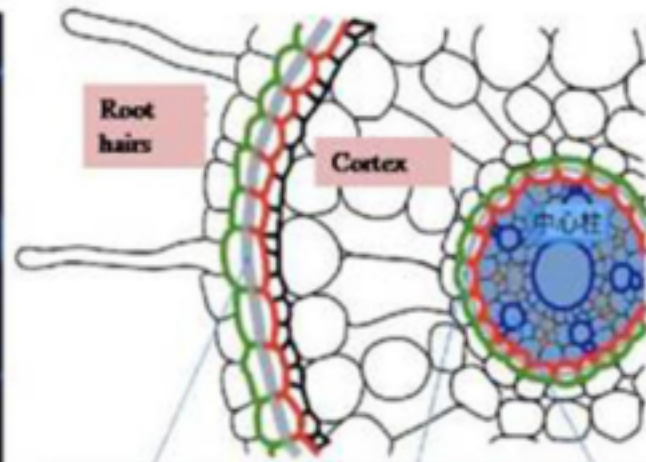
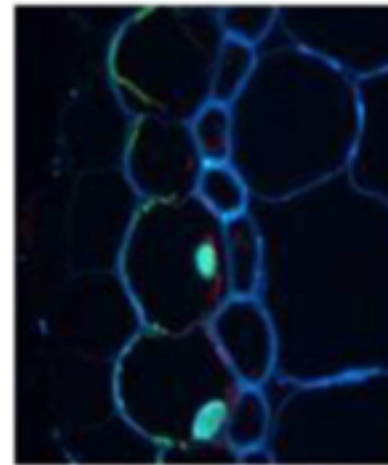
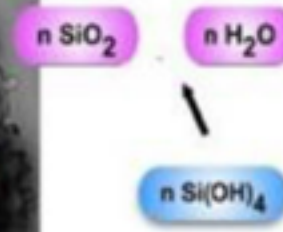
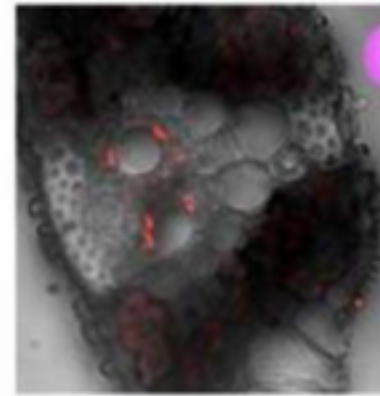
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DYAMIN-OSA improves the physical functionality of cells throughout the plant.

OSA in plants help to alleviate many biotic and abiotic stresses.

OSA does not form a constituent of any cellular component but is primarily deposited on the walls of the epidermis and vascular tissues conferring strength, rigidity and resistance to pests and diseases.





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The effect of treating plants with Silicon

The upper leaf is on a cucumber plant treated with foliar applied nutrients plus silicon, while the lower leaf was treated with a nutrient solution that was unamended with silicon. Both leaves were inoculated with equal amounts of conidia of (*S. fuliginea*) Powdery Mildew.

(R Belanger, P. Bowen, D Ehret & J. Menzies)

Not all sources of silicon are the same!

Silicon source	Plant availability	Declaration
Ortho Silicic acid	Within hours	Organic certified
Oligomeric silicic acid	Within days	Synthetic
Potassium silicate	Within weeks	Industrial
Calcium silicate	Within months	Mining
Sand	Within years	Natural





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Agriculture and horticulture

- Stronger stalks and stems for reduced risk of lodging
- Improved photosynthesis through extended leaf and chlorophyll life
- Reduced transpiration, heat and drought stress
- Greater resistance to cell penetration by pests, fungi and mildew



Fruit, vegetables and flowers

- Improved firmness and colour of flowers
- Helps resistance to frost, fungi, pests and environmental stresses
- More fruit remains on the plant until maturity building sugars for higher Brix values and improved taste
- Reduction in skin splitting, shape distortion of fruits and tubers, while also extending shelf life



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Uniquely stabilized formulation of Ortho silicic acid

Molecular Formula H_4O_4Si

Molecular weight 96.11 g/mol

CAS Number 10193-36-9 (62647-18-1)

- Form: Liquid
- Colour: Blue-Green
- Solubility in water: 100%
- pH (1% solution in distilled water): 1.1-2.2
- Specific gravity (g/m): 1.07-1.15
- Orthosilicic acid (H_4SiO_4): 2.0%
- Plant available silicon: 0.6 %
- Biostimulants: 1.0%
- Potassium (K_2O): 0.25%
- Copper (Cu): 0.2%
- Boron (B) 0.2%
- Iron (Fe): 0.1%
- Zinc (Zn): 0.1%



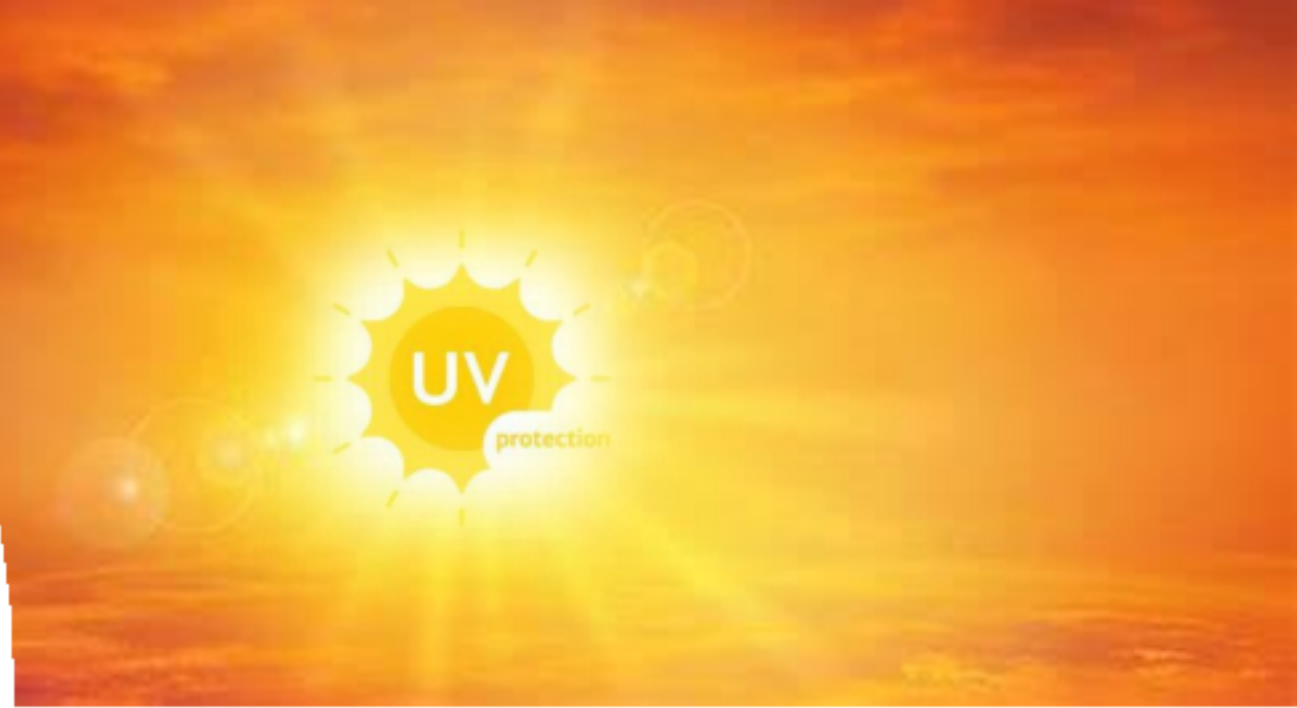


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Sunburn – A cause of physiological stress in plants

- Excessive sun exposure for plants, during arid conditions is the ultimate cause of sunburn.
- Both ordinary sunlight and electric UV light can cause sunburn in plants.
- Water droplets suspended within plant leaf hairs intensifies the sunlight, which can lead to burns.
- As new crop varieties and species are introduced to high temperature climates with greater UV intensity, the provision of UV protection can reduce crop damage and increase saleable yield





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Application on amenity grasses

1 litre per hectare / 1 ml per M2 when applied to greens, tees & sport pitches

Antitranspirant biostimulant

- 200 ml/ha in 200+ li/ha. Based on 1/1000 dilution rate, spray foliage until wet.

Antitranspirant biostimulant plus UV protection

- 400 ml/ha in 200+ li/ha. Based on 1/500 dilution rate, spray foliage until wet.

Foliar apply at 7 - 10 day intervals during stem elongation, flowering and early fruit/tuber/seed formation.

