# *AgriSil K50®*
# & stress tolerance

Andermatt

Agricultural crop production is essential to food security and has evolved over the ages to enhance human life. Large scale monocropping is seldom found in natural environments and as crop diversity increases, more plants are being grown outside their natural environments.

This results in plants being exposed to greater environmental stress conditions, which impacts on overall plant health and ultimately crop yields. Resilient plants are essential to crop performance; as such we need to minimise stress.

## What is plant stress?

When plants are exposed to stress conditions (heat, drought, salinity stress, cold, etc.) it results in the formation of Reactive Oxygen Species (ROS). ROS causes damage and may even cause death contributing to reduced yields under stress conditions.

ROS are the same as free radicals which are a concern in human health. Just as many people eat foods rich in antioxidants to help combat the negative effects of free radicals, plants are able to produce their own antioxidants in response to stress conditions. These antioxidants help neutralise the negative effects of ROS, allowing the plant to grow better under stress conditions.

## Stress and Silica

Although silica is not essential for plant growth and development, it has many benefits. Studies have shown that silica increases the plant's ability to produce anti-oxidants, protecting the plant from harmful ROS and reducing subsequent yield losses.

Plants are also capable of depositing silica below the cell walls. This increases cell wall strength and reduces the risk of cells collapsing or bursting, further guarding against environmental stress. Strong cell walls contribute to the improved uptake of water and minerals and adds an extra level of protection against pathogens.

Agricultural crops are subjected to a wide range of environmental stresses which reduces and limits their productivity.

**Environmental stress factors that impact plants are categorised as:**

1. Biotic stress is caused by living organisms, ie pathogens, diseases and insects.

2. Abiotic stress is caused by non-living organisms ie. temperature, water and salinity.

# Andermatt's Silica solution: *AgriSil K50®*

One of the most efficient ways of applying silica to plants is in the form of potassium silicate. This is a highly soluble form of silicon which means it is readily available for uptake by plants.



There is a difference between cold stress tolerance and freezing tolerance. While silicon can help protect plants against mild frost it is unrealistic to expect it to prevent damage under severe frost conditions.

## General application

- Row crops (maize, wheat, etc.): Foliar spray 0.5 L/ha at 20 days, repeat at flowering.
- Vegetables and small fruit: Foliar spray 1-2 L/ha every 7-10 days following emergence or transplant.
- Tree crops: Root drench 5 L/ha every 1-2 months or Foliar spray 4 L/ha every 2-4 weeks as required.

## Compatibility

- Potassium silicate is highly alkaline (pH>11) and as such can cause compatibility problems related to this high alkalinity.
- Buffering agents - Tenderbuff has been confirmed to be compatible with *AgriSil K50®*. Aqua Rite 5 is not compatible.
- Silica salts are highly reactive. Avoid mixing with products containing salts of magnesium, calcium (calcium nitrate), zinc and aluminium.

*Always conduct a jar test before mixing product or consult your distributor.*

Visit our website to find out more about our products

Andermatt

Healthy Food and Healthy Environment, for all

**E:** africasupport@andermatt.com
**W:** www.andermattafrica.com