

FOLIAR NUTRIENT PRODUCTS

The Bio Plant range comprises the use of specialized leaf or foliar applied plant nutrient's, plant growth and root stimulants as well as the anti-oxidant biochemical compounds to protect the membranes of cell organelles during stress conditions. (Plant Stress Management[™]). The critically important organelles are chloroplasts (photosynthesis) and mitochondria (ATP energy supply) that needs protection against oxygen radical build up and the resulting membrane damage and destruction during stress periods.

Why foliar nutrient applications

It involves spraying nutrients directly on the leaves to correct any deficiencies in the soil. Correct application concentrations at these critical stages, boosts physiological processes of the plant, ensuring optimal development and contributes significantly to higher yields and better quality.

Foliar feeding is the most effective practice when deficiency symptoms are noted, and prompt correction of deficiencies is required. Nutrients are rapidly absorbed through the foliage, providing the plant with the missing nutrients and strengthening it. When properly formulated with appropriate amino-acids and PhytoFulvic acids to aid in neutralization of nutrient ion charges, these chelated complexes are mobile within the plant and will successfully reach their point of action.

They are therefore, especially efficient as a preventive and in some cases curative treatments. Foliar nutrient applications offer specific advantages over soil-applied fertilizers, because the nutrients are applied and taken-up directly by their target organs, providing a specific and rapid response. Often the soil with its chemical, physical and biological complexity acts as a barrier and a buffering medium.

Generally, a whole group of macro and micro elements are involved in supporting plant physiology and improved growth.

Typical examples of critical stages are:

- Applying foliar nutrition at the correct times during specific phenological stages ensures optimal growth and best possible yield.
- Foliar application of certain minerals is known to induce dormancy breaking in grapes and deciduous fruit trees. They are also efficient in stimulating flowering.
- During tillering and grain filling in cereals.
 Intensive shoot growth at early spring in all perennial crops.
- During flowering and fruit-set in deciduous crops (there is an increased demand for Boron and Calcium, required for pollen-tube development and growth).
- During rapid fruit expansion in many types of fruit crops.
- During bulking-up process in bulb or tuber crops.
- Waterlogged soils that inhibit roots' respiration and their adequate functioning.
- Low soil temperature restricts nutrient uptake by the roots (especially in early-spring when higher air temperature supports shoot growth).
- Nematode infestation.
- Uncontrolled weeds population, that severely compete with the growing crop.

Internal mobility restriction within the plant, due to shoot-to-root competition, rendering specific organs unable to absorb the necessary nutrients at a high enough rate to realize crop's yielding potential (examples Calcium delivery to developing apple fruits or Potassium delivery to the lint bolls in cotton plants).



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Foliar sprays give the grower full control regarding:

- Application timing that can be immediate when the deficiency symptoms are identified, correcting the damage before it develops serious yield loss.
- Application during the best weather conditions that will provide optimum efficacy.
- The high efficacy offers considerable reduction of the application rate (as compared to soil application), without compromising the results, thus a marked saving on the fertilizer is achieved and a minimal environmental foot-print takes place.
- The nutrients applied can be tank-mixed with other chemicals like pesticides, thereby achieving a synergic effect and additional saving on application costs.
- Foliar feeding can serve as a timely measure to protect the crops against expected biotic or abiotic stress, such as cold, drought or heat stresses.



Biochemical sequence of plant nutrition



DOSE-RESPONSE TRIALS FOR FOLIAR SPRAY CONCENTRATIONS

Why does Agrilibrium use percentage solution recommendations as opposed to litre/ha recommendations as other companies do? Greenhouse test results for determining effective foliar spray concentrations - foliar mass yield.



Leaf mass as % of control, treated with 1, 2, 4 and 4% of foliar spray products

Ideal spray concentration is between 1 – 3% where the farmer can expect between 30 – 50% plant growth response. A visual difference can usually be observed from ± 20%.

Greenhouse test results for the determination of effective foliar spray concentrations - chlorophyll = photosynthesis capacity.





Chlorophyll as % of control, treated with 1, 2, 4 and 4% of foliar spray products

Chlorophyll results confirm 1 - 3% recommendation concentrations as determined with leaf mass results.

* University of Pretoria - 2003 (7 trials, 5 treatments, 4 repetitions)