



NUTURF
FOLI MAX[®]
TRACE+
TRACE ELEMENTS WITH
NUTREX DELIVERY TECHNOLOGY



FOR MORE INFORMATION ON FOLI MAX, CONTACT YOUR LOCAL TERRITORY MANAGER OR CALL 1800 631 008.

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Liquid nutrition at its best

FoliMAX Trace+ with Nutrex™ Delivery Technology

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FoliMAX Trace+ is a complete liquid trace element package delivering essential micronutrients with Nutrex Delivery Technology for optimum foliar uptake. FoliMAX Trace + contains boron, copper, magnesium, manganese and zinc, supplying the building blocks for healthy turf.

Rate: 5-10L/Ha

The FoliMAX Trace+ guaranteed minimum analysis:

Boron (B): 0.24%

Copper (Cu): 0.06%

Magnesium (Mg): 0.06%

Manganese (Mn): 1.08%

Zinc (Zn): 5.7%

Trace elements in turf

Like all plants turfgrasses require access to a particular group of elements in varying amounts to survive and remain healthy and vigorous. Micronutrients or trace elements are typically required in small volumes relative to macronutrients such as oxygen, carbon and hydrogen. Although the quantities of trace elements required for plant growth are small, they are all essential in maintaining quality turf surfaces. Sandy soils are generally much more prone to trace element deficiencies, therefore requiring nutritional input through liquid or granular fertiliser.

Trace element deficiencies are often related to soil pH. Deficiencies of manganese, zinc and copper can be induced by high pH soil, or excessive soil phosphorus. When the cause for a nutrient deficiency is related to the soil condition the best avenue of nutrient delivery is often through foliar application. The delivery of nutrients through turfgrass foliage can be achieved efficiently provided the product selection and application method are correct. FoliMAX Trace + harnesses a unique delivery catalyst to ensure efficient uptake and translocation of foliar applied trace elements.

Trace element	Deficiency symptom
Manganese	Chlorosis of young leaves and spotting of older leaves.
Iron	Chlorosis between leaf veins and ultimately total chlorosis.
Zinc	Leaves become yellow, stunted and tightly packed.
Copper	Dieback of stems, stunted growth and chlorosis.
Molybdenum	Pale yellow foliage, bleaching and withering of leaves.
Boron	Slow growth with pale green blade tips.
Chlorine	Stunted growth and yellowing.
Silica	Reduced structural integrity, susceptible to disease.

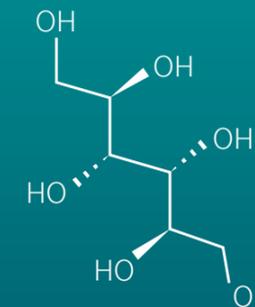
Nutrex™ Delivery Technology

FoliMAX Trace+ utilises Nutrex™ Delivery Technology which is designed to enhance foliar uptake of liquid nutrition products and optimise internal mobility of the applied nutrients. This vastly improves the efficiency of trace element applications, resulting in minimal nutrient loss and optimum plant response.

Trace elements applied to the foliage in raw form are often not absorbed efficiently by the plant leaf, and may take an extensive period of time to move into plant tissue. This can result in significant environmental losses of applied nutrient, and poor post application response from the plant. Nutrex™ Delivery technology works by complexing the relevant nutrient with a plant-derived carbohydrate. The carbohydrate molecule is recognised by the plant as a desirable compound and is efficiently taken into the leaf and mobilised throughout the plant's vascular system.

The Nutrex™ Carbohydrate Complex

Nutrex™ technology harnesses a specific plant-derived carbohydrate called glucitol ($C_6H_{14}O_6$) to act as a chelate within the formulation. The glucitol carbohydrate is synthesised within several plant species, and performs various functions in internal moisture management. With several points of polarity on the glucitol molecule, a complex is easily formed with the desired nutrient making it an efficient complexing / chelating agent. The small size and compact structure of the Nutrex™ molecule are unique among chelating compounds, making it an extremely efficient uptake catalyst. The result is a superior chelate option compared to other commonly used nutrient carriers which are generally much larger and can hinder foliar absorption.



Name	Glucitol
Class	Carbohydrate
Structure	$C_6H_{14}O_6$
Mass	182 mol

The key advantages of Nutrex™ Delivery Technology are:

- Enhanced uptake and nutrient delivery to the plant's vascular system.
- Integrated surfactant package for optimised surface spreading, further enhancing foliar uptake.
- Natural humectants within the formulation prolong drying time on the leaf to extend the uptake window.
- Improves internal mobility of applied nutrients, getting the nutrient to where it needs to be faster, and with less expense of energy to the plant.
- Provides a source of energy to the plant as the carbohydrate is metabolised internally.

Nutrient Carrier	Molar Mass (mol)
Nutrex™	182
Glucosulphonate	248
EDTA	292
Lignosulphonate	>500
Fulvic Acid	>1,000
Humic Acid	>10,000

Mobility within plants

Once applied to the foliage the Nutrex™ molecule acts as a catalyst to carry the nutrient into the plant's vascular system. As the plant recognises the Nutrex™ molecule as an energy compound it immediately assimilates it into the phloem where it can be transported throughout the entirety of the plant. Phloem is an active transport system, selectively transporting nutrients and photosynthetic compounds throughout the plant to perform various functions. Mobility within the phloem allows the plant to transport the Nutrex™ molecule both upwards and down, to wherever it is required for immediate use. Once active within the phloem the Nutrex™ carbohydrate complex is metabolised, releasing the nutrient as well as the carbon, hydrogen and oxygen ions that comprise the molecule. Xylem on the other hand functions as a passive system, operating automatically under the capillary forces of water molecules, and so cannot selectively determine the location to which the nutrient will be sent. Traditionally, soil nutrients are up taken by the plant roots and move only upwards within the xylem, where they are taken to nutrient sinks and utilised or stored.

