MAX RANGE

Fruit Crops • Vegetables • Turf • Grain Crops • Ornamentals • Nut Crops




CALCIMAX® • K-MAX® • ZINCMAX® • MAGMAX® • CU-MAX® • MANMAX™ • FERRO-MAX®

NULANDIS®
unlocking nature's potential

MAX RANGE

INTRODUCTION

Nulandis's **MAX Range**, first developed by Plaaskem in 1991, represents a new concept in micronutrient technology. **MAX Range** nutrients are organic chelates, derived from natural sources which work harmoniously with the metabolism of the plant and ensure maximum uptake and translocation. Unlike synthetic chelates, the **MAX Range** is stable and effective, even under varying water and soil pH conditions.

The formulation of the **MAX Range** approaches the chelation process differently, by using carbohydrate derivatives to neutralise the electrical charge of the cation. Carbohydrates are used in the general biochemical functioning of a plant, and hence, carbohydrate-based chelates are more readily accepted by the plant.

MODE OF ACTION

The charge on the surface of a leaf is negative. Due to the neutral charge of the MAX formulation, the product is not bound by the charge on the surface of the leaf and the MAX product moves through the leaf cuticle by diffusion. As a result of the unique formulation of the MAX products, the built-in humectant activity ensures that the droplet evaporates slowly from the leaf surface, thereby resulting in longer exposure to the foliar surface. This renders greater cuticular uptake, penetration, absorption and improved translocation.

The phloem sap consists of a solution of minerals, proteins and carbohydrates which flows in all directions in the plant. The MAX product, a carbohydrate chelate, enters the phloem and is transported to the relevant site of activity. This complex process is highly compatible with the normal physiological processes within the phloem, as the MAX complex is not alien to the plant due to its organic nature.

MAX PRODUCT RANGE

PRODUCT	MASS/MASS	MASS/VOLUME
CalciMax®	Ca: 78.5 g/kg, B: 5.08 g/kg	Ca: 100 g/ℓ, B: 6.5 g/ℓ
Cu-MAX®	Cu: 40 g/kg	Cu: 50 g/ℓ
Ferro-Max®	Fe: 40 g/kg	Fe: 50 g/ℓ
K-Max®	K: 91 g/kg, K_2O: 110 g/kg	K: 115 g/ℓ, K_2O: 139 g/ℓ
DoubleMax	Ca: 63 g/kg, Mg: 11.6 g/kg, B: 5 g/kg	Ca: 80 g/ℓ, Mg: 15 g/ℓ, B: 6.3 g/ℓ
MagMax®	Mg: 58 g/kg, B: 5 g/kg	Mg: 75 g/ℓ, B: 6.5 g/ℓ
ManMax™	Mn: 60 g/kg, B: 5 g/kg	Mn: 75 g/ℓ, B: 6.5 g/ℓ
ZincMax®	Zn: 100 g/kg , B: 5 g/kg	Zn: 130 g/ℓ, B: 6.5 g/ℓ

MAX RANGE

FEATURES	ADVANTAGES
Organically chelated complexes derived from natural plant material	Hence, not ALIEN to the plant. Therefore rapid uptake and translocation within the plant.
Carbohydrate based ligand	Compatible with the normal biological processes within the plant.
Non-phytotoxic	Product can therefore be applied during the flowering stage of plants - no phytotoxicity or fruit abnormality. In the event of accidental overdosage, to date, no phytotoxicity has been reported. Product may be applied during high temperature weather conditions with no risk of leaf scorching.
Built-in humectant activity	Ensures the slow evaporation of the droplet from the leaf surface, thereby resulting in optimum uptake.
Suitable for prevention or correction of nutritional imbalances caused by adverse soil or climatic conditions	May be used as a foliar spray or via fertigation.
Safe formulation	Free from harmful residues such as chlorides, sulphates and sodium. Non-carcinogenic.
Includes boron	Assists in the mobilization of various cations, e.g. calcium, within the plant. Post-harvest requirements of the tree with respect to boron can be decreased or eliminated depending on the number of MAX sprays applied.
Stable product with a neutral pH	Available to the plant over a broad pH spectrum of soil and water conditions. Due to the neutrality of the product, it is compatible with most pesticides, water-soluble fertilizers and other cations in the **MAX Range**.
Proven track record	Research has been conducted both locally and internationally and results are available on request.
Individual formulations available	Single, as well as multiple deficiencies in crops can be overcome as the products can be used individually or in the required combinations.
Non-corrosive	No damage to expensive spray equipment.
Price competitive	Nutrient uptake, on a comparative basis, reflects in terms of foliar analysis that one litre of MAX product is equivalent to the active of one kilogram of crystalline inorganic product. This is due to the efficient uptake of the MAXES by the plant.

MANMAX™

Reg. No. B2768 Act No. 36 of 1947 | Namibian Reg. No. N-F 236

FUNCTIONS OF MANGANESE

Manganese is required by a number of enzyme systems connected with the metabolism of carbohydrates and nitrogen. Manganese is important in photosynthesis and chlorophyll production,while also influencing the uptake and assimilation of other nutrients.

DEFICIENCY SYMPTOMS

The usual symptom of manganese deficiency is interveinal chlorosis (yellowing) of the older leaves. This can be followed by whitening and speckling of the foliage.

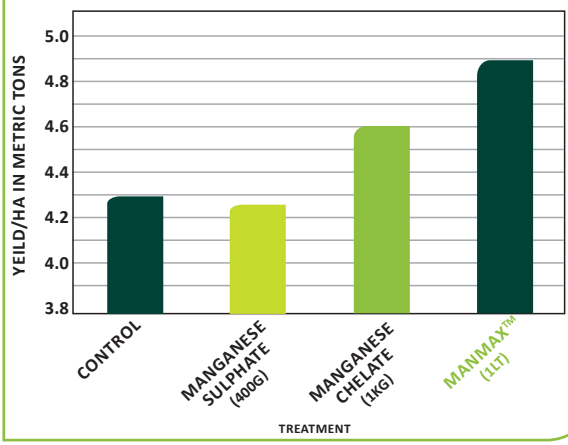
CAUSES OF MANGANESE DEFICIENCY

Manganese availability is largely determined by soil pH. At very low pH there is a tendency for excess manganese to be available. Manganese deficiency occurs in alkaline soils. Excess iron, copper and/or zinc can influence manganese deficiency.

WHEAT

Comprehensive trials were undertaken with various manganese sources in order to evaluate the efficacy of liquid foliar manganese products versus the traditional crystalline products. The results indicate that the liquid chelated product, **MANMAX™**, is the most effective manganese source as indicated by the increase in wheat yield obtained.

COMPARATIVE INFLUENCE OF DIFFERENT FOLIAR FEED TREATMENTS ON YIELD IMPROVEMENT IN WHEAT

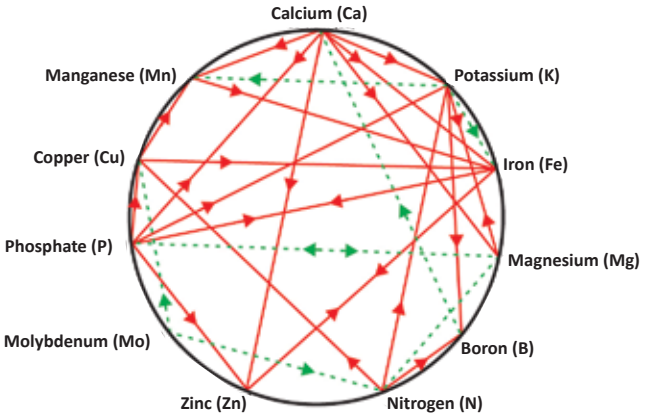


MAX RANGE

EXPLANATION

Mulder's Chart depicts the interactions, be they either synergistic or antagonistic, between the various nutritional elements within the soil. Truogs diagram, on the other hand, indicates the effect of soil pH on the uptake and availability of nutrients to the plant from the soil. These two charts explain why certain elements are not absorbed by the plant under certain conditions. In instances where certain elements are imbalanced or soil pH's are incorrect, foliar feeding is the most effective form of nutrition to the plant. The **MAX Range**, due to its unique formulation, is an excellent form of a foliar nutritional product.

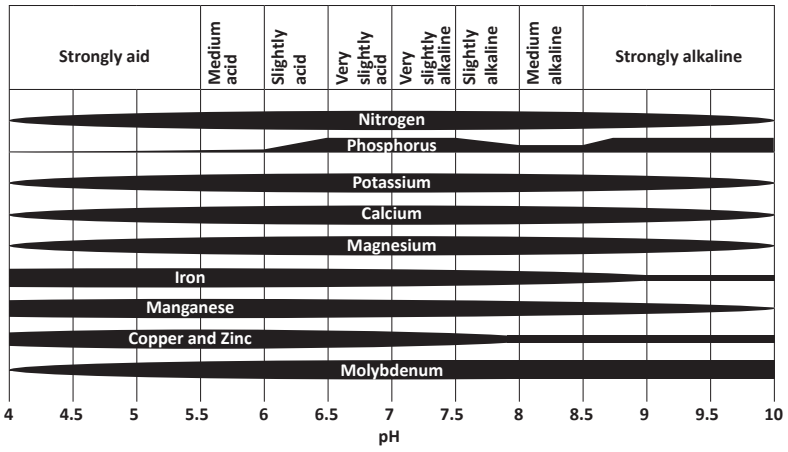
MULDER'S CHART



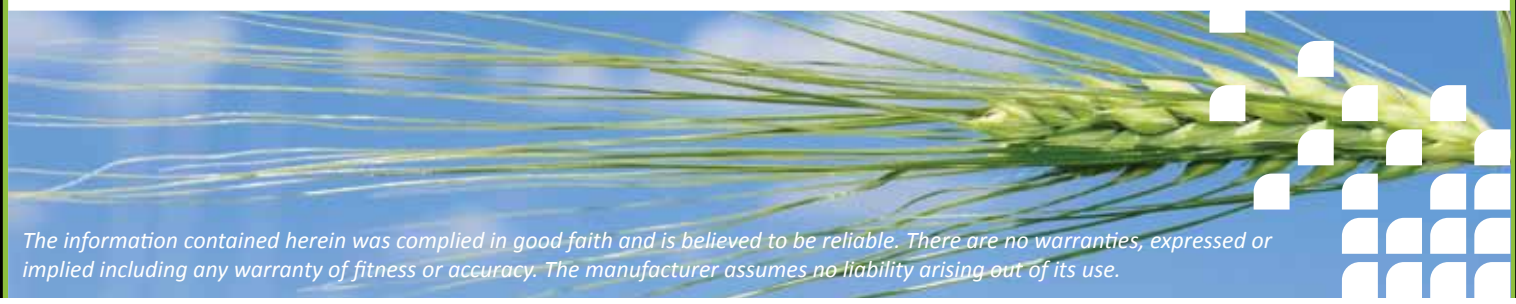
ANTAGONISM
Decreased availability to the plant of a nutrient, due to the action of another nutrient.

SYNERGISM
Increased availability of a nutrient to the plant due to the increase in the level of another nutrient.

TRUOGS DIAGRAM



How Soil pH Affects Availability of Plant Nutrients



Active Ingredients:	**CalciMax®:**	Calcium (Ca)	100 g/ℓ
		Boron (B)	6.5 g/ℓ
	K-Max®:	Potassium (K)	115 g/ℓ
		K_2O	139 g/ℓ
	ManMax™:	Manganese (Mn)	75 g/ℓ
		Boron (B)	6.5 g/ℓ
	Cu-MAX®:	Copper (Cu)	50 g/ℓ
	Ferro-Max®:	Iron (Fe)	50 g/ℓ
	MagMax®:	Magnesium (Mg)	75 g/ℓ
		Boron (B)	6.5 g/ℓ
	ZincMax®:	Zinc (Zn)	100 g/kg (130 g/ℓ)
		Boron (B)	5 g/kg (6.5 g/ℓ)

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