

Mangan-ion®

IONIC MANGANESE



MANGANESE FERTILIZER

MODERN AND UNIQUE TECHNOLOGY OF IONIC MANGANESE FOR GREEN, VIGOROUS, HEALTHY AND PRODUCTIVE PLANTS

Lightning Fast
Ionic Action



Mangan-ion®

IONIC MANGANESE



Mangan-ion is a liquid fertilizer containing manganese sulphate monohydrate ($MnSO_4 \cdot H_2O$) in a hydrated ionic form of high bioavailability and efficacy, which is used against deficiency of manganese in plants.

Role of manganese in plants

Manganese is absorbed by plants mainly in its bivalent cationic form (Mn^{2+}) either through the roots or foliage. Absorption from the soil is a difficult process as it is hindered by chemical reactions which immobilize manganese in the soil. Absorption by foliage is a much simpler and more direct process as long as manganese is administered in a readily absorbable form such as Mangan-ion's bivalent manganese ions (Mn^{2+}).

Manganese plays an important role in the amino acid and protein production, lignin synthesis, activation of many enzymes, phytohormone level regulation, plant respiration and nitrogen metabolism, photosynthesis, nitrate reduction and facilitation of their use by plants, chlorophyll synthesis and photosynthesis.

Potential manganese deficiency can affect the crown volume negatively as well as the size and color of fruits.

Manganese deficiency is very common in Greek cultivated soils at a frequency almost equal to that of iron. However, it is usually neglected or underestimated by farmers. It occurs usually in alkaline and calcareous soils with high pH or high content in organic matter, in poor sandy soils as well as in soils that resulted from rocks poor in manganese.

Manganese is a very immobile nutrient inside plant, and therefore deficiency usually manifests on new leaves as interveinal chlorosis/yellowing which can be similar to that of iron. However, iron deficiency has clearly more distinct contrast between the green and yellow areas while in that of manganese the boundaries between green and yellow are indistinct. Also, manganese deficiency symptoms are similar to that of magnesium with the difference that in the latter symptoms appear on old leaves first.



Mangan-ion: Unique Canadian Technology

Mangan-ion is produced through innovative technology which achieves the creation of active manganese ions interlaced with dipole molecules of water, which penetrate rapidly into plant tissues, move to parts in need of manganese, penetrate cell membranes easily and provide manganese to plants quickly and effectively. The results are so fast that they become visible in 2-3 days from its application.



Properties and Advantages of Mangan-ion

- **Low dose rates of Mangan-ion per ha are required** to cover crop requirements for manganese. The effective rates range from 50-100ml per 100 liters of water foliarly while through fertigation they range from 1-2 liters per ha depending on crop condition and requirements.

- **Mangan-ion can also be applied through the soil** through fertigation systems, gradually reducing soil pH. Manganese is not bound by soil components because it is protected by special interlocking agents. In addition, **Mangan-ion cleans the fertigation piping** from potential scale deposits.

- **Preventive action.** Application with Mangan-ion, foliarly or through the soil, will help plants to absorb manganese immediately and therefore to continue photosynthesis and other vital functions seamlessly.

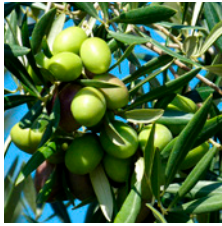
- **Therapeutic action.** If symptoms of manganese deficiency have already occurred, Mangan-ion will bring back green color of leaves rapidly and restore all suspended plant metabolic processes.



USE OF MANGAN-ION ON IMPORTANT CROPS

Crop requirements for nutrients are different depending on plant species, crop stage and age, soil properties and other factors.

Generally, it is recommended that a complete soil analysis is made before implementation of an annual fertilization program. The exact crop requirements will be specified and a sustainable, rational fertilization scheme can be planned.



POME AND STONE FRUIT, NUTS, KIWI, GRAPEVINE, POMEGRANATE, OLIVE

Indicative rates: 75-100ml Mangan-ion per 100 liters of water for foliar applications, or 1.5-2 liters Mangan-ion per ha for fertigation depending on crop requirements.

Indicative water volume for foliar applications: 0.8-1.5 tons per ha.



CITRUS

Indicative rates: 75-100ml Mangan-ion per 100 liters of water for foliar applications, or 1.5-2 liters Mangan-ion per ha for fertigation depending on crop requirements.

Indicative water volume for foliar applications: 1.5-2 tons per ha.



SOLANACEAE, CUCURBITS

Indicative rates: 75-100ml Mangan-ion per 100 liters of water for foliar applications, or 1.5-2 liters Mangan-ion per ha for fertigation depending on crop requirements.

Indicative water volume for foliar applications: 0.5-1.5 tons per ha.



LEAF AND OTHER VEGETABLES, STRAWBERRIES, LAWN TURF, AREA-WIDE CROPS (RICE, COTTON, MAIZE, ALFALFA, TOBACCO etc.)

Indicative rates: 50-75ml Mangan-ion per 100 liters of water for foliar applications, or 1-1.5 liters Mangan-ion per ha for fertigation depending on crop requirements.

Indicative water volume for foliar applications: 0.3-0.8 tons per ha.

- Mangan-ion is a liquid and acidic formulation, **fully water soluble, with very good compatibility with other agro-chemical formulations** in tank mixtures, with **100% manganese bioavailability** and high absorption speed from plants.

- Thanks to its **high and fast penetration** into plant tissues, Mangan-ion increases manganese ion content in plants significantly within 2-3 days from its application time. Thus, plants will start or continue their metabolic processes which were inhibited, achieving high production yields.

- Mangan-ion has a **high content of water-soluble manganese** (9.1gr per 100ml) in its most bioavailable and easily absorbable form, the bivalent manganese cations Mn^{2+} .

- **It forms a homogeneous and stable aqueous solution**, for foliar spraying of plants, without agglomerates/sediments and risk of nozzle blockage.

- **It does not stain plants and plant organs** (i.e. leaves, flowers, fruits) which are sprayed.

CROPS, APPLICATION METHOD AND TIMING

Mangan-ion can be applied on **all crops**, preventatively or curatively, **during the vegetative growth**. It can be administered to plants either through foliar applications or through the soil via fertigation systems on glasshouse crops, orchards, vines etc.

Generally, Mangan-ion is not recommended to be applied more than **3 times** during the growing period because of its high potency and efficacy. Applications with Mangan-ion should start with the onset of vegetative growth and **be repeated every 20-30 days** depending on crop requirements in combination with the availability of manganese through the soil.

Recommended doses should not be exceeded. Mangan-ion does not cause phytotoxicity if applied at the recommended doses.



The best manganese fertilizer
With lightning fast, ionic speed of action



MIXING INSTRUCTIONS

Due to its acid reaction, Mangan-ion has good mixing compatibility with most agrochemicals. However, it cannot be tank mixed with fosetyl-Al and chlorpyrifos.



CANADIAN TECHNOLOGY

It is manufactured by
ENVIRO SAFE SOLUTIONS Sdn Bhd.



STORAGE INSTRUCTIONS

Mangan-ion should be stored in its sealed package at temperatures above -4°C in a closed warehouse, protected from extreme temperatures, fire and moisture.

ATTENTION!

Read the product label carefully before use

AgroCu^{re}

STAMP OF
LOCAL AGRONOMIST