YaraVita™

Mantrac™ 500

A concentrated manganese product formulated for foliar application

Guaranteed Analysis: total

manganese (Mn)	27.4%	500 g/l

Why Foliar Apply?

Foliar sprays ensure precise application of the right nutrient mix at the right time, and can be specifically targeted to the leaf or fruit, to suit an immediate crop need.

Foliar application also provides nutrients for immediate uptake by the leaves or fruits. As a result, the grower is not reliant on the right soil, pH or growing media conditions and can quickly put the crop back on course.

Manganese requirements:

Manganese is involved in the activation or function of many enzymes in the plant; e.g. detoxification and water splitting enzymes, which provide the oxygen to form carbohydrates for plant growth. Mn deficiency reduces chlorophyll content and Mn is required in lignin manufacture, a decrease in lignin may be why manganese deficient plants have lower resistance to root pathogens such as Take-all in cereals.

Benefits:

- *Formulated for safe application at critical growth stages to satisfy crop requirements.*
- *Widely tank mixable with other crop sprays. Visit www.tankmix.com/yara for details.*
- *Proven, reliable performance. Trialled and tested on a wide range of crops around the world.*
- *High quality, consistent product. Manufactured to ISO 9001 quality assurance standards*
- *Easy to use flowable formulation. Pours and disperses easily and quickly into the spray tank.*
- *Designed for rapid uptake and long term feeding power so fewer applications are required.*

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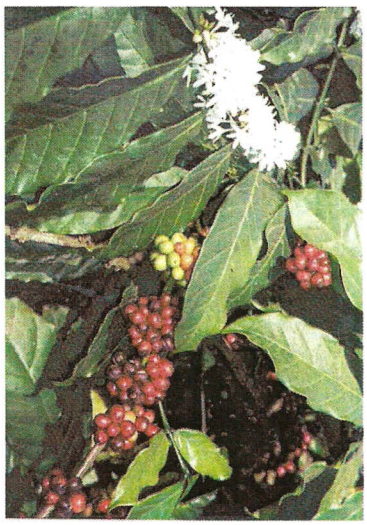

MANGANESE IN THE PLANT

In the plant, manganese resembles magnesium in its biochemical activities. Manganese is involved in the management of hormone activity. It is involved in and is essential to photosynthesis where a manganese containing enzyme is involved in the splitting of water to give oxygen. This is the most sensitive function of manganese to be impaired by manganese deficiency. Resupplying manganese to slightly deficient leaves restores photosynthesis to normal levels within one day. When manganese deficiency becomes severe, structural damage occurs in the sites of photosynthesis, this damage is either very difficult to restore or is indeed irreversible. It is therefore better to spray manganese as soon as the first symptoms are seen.

Research in the USA and Australia suggests that there is a close relationship between the incidence of take all and manganese levels in the soil and in the plant. Manganese availability in the root area and manganese content of roots are reported to play a role in root infection and severity of take-all.

Manganese deficient plants are less able to resist penetration by the take-all fungus compared to manganese sufficient plants. It is also known that the take-all fungus can decrease the soil availability of manganese.

By applying manganese seed treatment and ensuring optimum foliar nutrition it may be possible to limit some conditions favouring take-all infection. The take-all programme is for those areas where take-all is known to be problematic. The programme maximises inputs of manganese.

APPLICATION RATES AND TIMINGS

Product application rates depend on plant requirements. Rates to correct a deficiency will be higher than rates used for maintenance puposes.

Brassicas/Broccoli: 1 l/ha at 4-6 true leaves. For moderate to severe deficiency, repeat application should be made at the above rate 10 to 14 days later.
Water rate: minimum 30 l/ha.
Cabbage (Field Grown): 1 l/ha from 4 true leaves. For moderate to severe deficiency, repeat application should be made at 10 to 14 days later. Water rate: minimum 30 l/ha.
Cereals: 1 l/ha from 2 leaf stage to first node detectable (Zadok's G.S. 12 to 31). For moderate to severe deficiency repeat applications at 10 to14 day intervals.
Water rate: minimum 30 l/ha.
Maize/Sorghum: 2 l/ha at 4 to 8 leaf stage. For moderate to severe deficiency repeat applications at 10 to14 day intervals.
Water rate: minimum 30 l/ha.
Sugar Cane: 1 l/ha when cane is between 30 and 120 cm tall. Repeat applications may be necessary at 10 to 14 day intervals. Water rate : minimum 30 l/ha.
Grass (amenity): 1 l/ha as soon as growth commences in spring and /or following identification of need by analysis. Repeat sprays at 10 to 14 day intervals as necessary.
Water rate : minimum 30 l/ha.
Peas (Field Grown): 1 l/ha at 4 to 6 leaf stage (for deficiency/ yield) and 1 l/ha at start of flowering and end of flowering (for Marsh Spot). Water rate: minimum 30 l/ha.
Beans (Field Grown): 1 l/ha at 4 to 6 leaf stage (for deficiency/yield) and 1 l/ha at start of flowering and end of flowering (for quality). Water rate: minimum 30 l/ha.
Sunflower: 1 l/ha at 4 to 8 pairs of leaves. For moderate to severe deficiency, repeat 10 to 14 days later.
Water rate : minimum 30 l/ha.
Potatoes: 2 l/ha at one week after 100% emergence. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. Water rate: minimum 30 l/ha.
Avocado: 1 l/ha at spring and summer flush.
Water rate : minimum 500 l/ha
Pepper (Field Grown): 1 l/ha applied at the 4 to 6 leaf stage. Water rate : minimum 30 l/ha.
Tomato (Field Grown): 1 l/ha at the 4 to 6 leaf stage and repeated 10 to 14 days later if required by moderate to severe deficiency. Water rate: minimum 30 l/ha.
Coffee: One to two applications of 1 l/ha at the start of regrowth and 14 days later. Water rate: minimum 300 l/ha.
Cotton: 1 l/ha applied 21 to 28 days after emergence and 10 to 14 days later. Water rate: minimum 30 l/ha.
Tobacco: 1 l/ha applied at 3 to 4 leaf stage. Repeat 10 days later if necessary. Water rate: minimum 30 l/ha.
Groundnuts: 1 l/ha applied at the 4 to 6 leaf stage and again 10 to 14 days later. Water rate: minimum 30 l/ha.
Eucalyptus: 2 l/ha applied during spring or autumn flush. Water rate: minimum 20 l/ha.
Onion: 1 l/ha two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat application at 10 to 14 days later, if necessary.
Water rate: minimum 30 l/ha.
Squash (Field Grown): 1 l/ha at the 4 to 6 leaf stage. Repeat if necessary 10 to 14 days later. Water rate: minimum 200 l/ha.
Protected crops: 0.05 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.
Bananas: 1 l/ha. Spray as required. Repeat applications at 10 to 14 day intervals may be necessary where low or marginal levels of manganese exist. Water rate: minimum 30 l/ha.
Pineapples: 1 l/ha pre-flowering. In the case of severe deficiency, the application may be repeated 10 to 14 days later, (again pre-flowering). Water rate: minimum 200 l/ha.
Nursery stock/ornamentals: 1 l/ha as soon as there is sufficient leaf area to intercept a spray. Repeat at 10 to 14 day intervals as necessary. Do not apply once first flower buds have started to open. Spray a maximum of three applications per crop per annum. Water rate: minimum 100 l/ha.
N.B. This product may leave a visible residue.

Always read the label before using the product. Utilise soil and leaf analysis to check your crop's nutritional status. For more information on Phosyn and Phosyn products visit www.phosyn.com.

Distributor: