

Knowledge grows

# YaraVita™

UK Products and Services Guide



# YaraVita™ Products you can reply on



# Contents


Page

YaraVita™ Foliar Nutrients for Superior Field Performance 5

**Key Nutrients**

Apples 6
Brassicas 8
Cereals 10
Maize 12
Oilseed rape 14
Peas 16
Potatoes 18
Strawberries 20
Sugar beet 22

YaraVita™ Nutrients by product 24

YaraVita™ Product range

BETATREL DF 26
BORTRAC 150 28
BRASSITREL PRO 30
BUD BUILDER FL 32
COPTREL 500 34
CROPLIFT PRO 36
FERLEAF 100 38
FOLIAR POTASH 40
GLYTREL MnP 42
GRAMITREL 44
MAGFLO 300 46
MAGPHOS K 48
MAIZE BOOST 50
MANCOZIN 52
MANCUFLO 54
MANTRAC DF 56
MANTRAC PRO 58
MOLYTRAC 250 60
PHOTREL PRO 62
SAFE-N 300 64
SENIPHOS 66
STOPIT 68
THIOTRAC 300 70
ZINTRAC 700 72
Tankmix™ 74
Yara Analytical Services 76
The Influence of Soil pH & Nutrient Interactions 82



# YaraVita™ Foliar Nutrients for Superior Field Performance

## More than just nutrients - the key to easier and better results

YaraVita products are not simply nutrients. They are finished products designed from the start with crop nutrition in mind. When you choose YaraVita you can be sure that what you apply will be easy and convenient to use and effective and safe for the crop. This handbook includes information on YaraVita products for application as foliar sprays and seed treatment. There is also a range for fertigation in soilless systems.

## YaraVita products for foliar application

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

Each YaraVita foliar product is formulated from consistently high quality nutrient compounds. The raw materials used will depend on the final product formulation and its use. The range includes soluble powders, liquids and suspension products. All are based on raw materials with low impurities. They are manufactured to very high, often food and even pharmaceutical grade standards. Products contain co-formulants, such as wetters, stickers and absorption aids, to control and enhance the performance of the nutrient raw materials.

YaraVita foliar spray products are widely tankmixable with other agrochemical inputs to make treatment easier and more convenient. At www.tankmix.com you will find the results of over 30,000 tank mix tests available 24 hours a day, 365 days a year. This database is updated daily and is searchable by product or by active ingredient.

## YaraVita products for seed treatment

Seed treatment with YaraVita GLYTREL MNP ensures a good trace element supply around the germinating and emerging plant. The main benefit is to boost early growth and ensure good, fast establishment. At the same time, the healthier root and emerging leaves are less liable to cold or frost or damage due to other environmental stresses. Plant establishment counts can be improved so the grower can drill more accurately and provide the best platform for consistent yields.

YaraVita GRAMITREL, MANTRAC PRO, MANCOZIN, MANCUFLO & ZINTRAC are now a dual-purpose formulations designed for seed treatment to coat seeds evenly and safely. The formulations avoid problems of dusting but are highly concentrated too so that it will not over wet the seed during application. These YaraVita products can be co-applied with a wide range of fungicides and insecticides that are commonly used as seed protectants.

Yara has improved production facilities at Pocklington in Yorkshire and will continue to provide development know-how, technical support and product competence.

Our rigorous quality control ensures consistency and performance. We do whatever is necessary to ensure that what arrives in the field is of the highest quality. Our main YaraVita production facilities have been ISO certified for over 20 years.



# Key nutrients for **apples**

Adequate and balanced nutrition is one of the most important factors affecting quality, yield and storage potential of fruit.

The essential elements for quality pip fruit production are: -

- **Zinc** and **boron** for flowering and fruit set.
- **Calcium** and **phosphorus** for fruit development, at-harvest quality and the storability of fruit.
- **Magnesium, manganese** and **iron** for overall tree health and leaf quality.
- When these elements are deficient, even in the absence of visible symptoms, yield and quality will be reduced.

## Calcium Deficiency - Fig 1

A low level of calcium in fruits at harvest will affect quality and storage potential. Severe deficiency causes bitter pit, poor fruit firmness and senescent breakdown.

The risk of low fruit calcium levels is increased by excessive or vigorous shoot production, large fruits and hot dry seasons.


Fig 1

## Phosphorus Deficiency - Fig 2

Phosphorus is directly linked to quality and storage potential. An insufficient phosphorus level in fruits leads to reduced firmness during storage and low temperature breakdown. The level of phosphorus in fruits can be low even in cases of good soil levels due to insufficient uptake by roots. Severe phosphorus deficiency will reduce yield.


Fig 2

## Boron Deficiency - Fig 3

Symptoms can be seen on all parts of the tree. On leaves and branches they are seen at the growing points with death of terminal buds and deformation of new growth. On wood the characteristic sign is the development of blisters on the bark. Underneath the bark there are corky black spots. Symptoms on fruit can appear without being evident on the leaves. Fruits are corky and show splitting, which can be pronounced with severe deficiency. Skin quality is also affected.

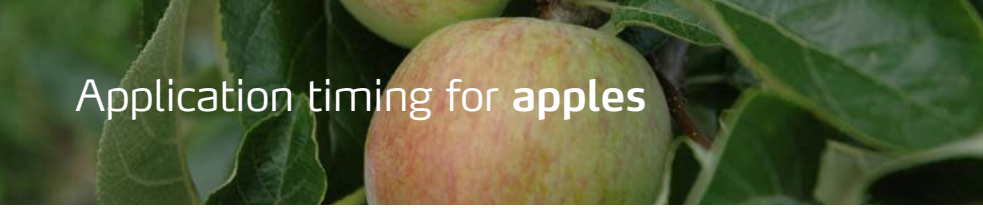

Fig 3

## Zinc Deficiency - Fig 4

Symptoms are seen on the younger leaves which are abnormally small and malformed. They show interveinal chlorosis with shortened internodes, leading to the formation of rosettes. These are more usually seen on one, or a few branches only. The development of fruit buds is also affected.


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*



# Application timing for **apples**

| Growth stages | Dormancy | Bud Burst | Pink Bud | Start of flowering | Full bloom | Petal fall | Fruit set | Fruit devel-opment | Post harvest before leaf fall |
|---|---|---|---|---|---|---|---|---|---|
| YaraVita BORTRAC 150 | | | 1 - 2 l/ha | 1 - 2 l/ha | | 1 - 2 l/ha | | | 2 l/ha |
| YaraVita BUD BUILDER FL | | 5 - 10 l/ha | | | | | | | 10 l/ha |
| YaraVita CROPLIFT PRO | | | 2.5 - 5 kg/ha | | | 2.5 - 5 kg/ha repeat as necessary | | | 2.5 - 5 kg/ha |
| YaraVita FERLEAF 100 | | | 1 l/ha | | | | 1 l/ha Repeat at 7 - 14 day intervals | | |
| YaraVita FOLIAR POTASH | | 5 l/ha | | | | 2 - 3 l/ha 2 to 3 applications at 10 to 14 day intervals | | | 5 l/ha |
| YaraVita MAGFLO 300 | | 4 l/ha for severe deficiency | | | | 4 l/ha | | | |
| YaraVita MANTRAC PRO | | | 1 l/ha for severe deficiency | | | 1 l/ha for severe deficiency repeat as necessary | | | |
| YaraVita MANTRAC DF | | | | | | 3 kg/ha repeat as necessary | | | |
| YaraVita SAFE-N 300 | | 5 - 10 l/ha repeat as necessary | | | | | | | 5 - 10 l/ha |
| YaraVita SENIPHOS | | | | | | 10 l/ha - up to 8 applications at 10 - 14 day intervals - to enhance red colouration, 1 or 2 applications 2 - 3 weeks before picking | | | |
| YaraVita STOPIT | | 2 - 5 l/ha repeat as necessary at 7 to 10 day intervals | | | | 5 - 10 l/ha regular applications at 7 to 14 day intervals | | | |
| YaraVita THIOTRAC 300 | | | 3 - 5 l/ha | | | | 3 - 5 l/ha | | 3 - 5 l/ha |
| YaraVita ZINTRAC 700 | | 1 - 2 l/ha | | | | 1 - 2 l/ha | | | 1 - 2 l/ha |

# Key nutrients for **brassicas**

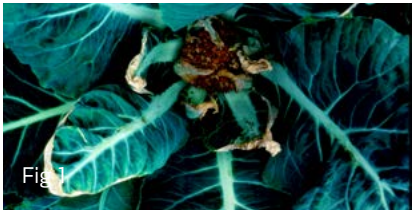
As well as NPK application, consideration must be given to the secondary and trace element requirements of vegetable crops.

- **Calcium** for cell strength and structure.
- **Magnesium** for chlorophyll function and photosynthesis.
- **Boron** for cell structure.
- **Iron** for chlorophyll manufacture and photosynthesis.
- **Manganese** for photosynthesis and leaf performance.
- **Molybdenum** for **nitrogen** metabolism.

Even in the absence of the visual symptoms shown and described below, crop quality will be affected if any nutrients are limiting, even for a short time.

## Boron Deficiency – Fig 1

Boron deficiency affects the growing points of crops causing distortion, discoloration and in some cases death. This results in loss of apical dominance and the production of side shoots. Tissues become brittle and crack easily. Hollow stems and internal tissue breakdown are also caused by boron deficiency. Plants are stunted and develop poorly.


Fig 1

## Manganese Deficiency – Fig 2

Usually seen as interveinal chlorosis which begins on new leaves but may soon spread to others. In certain circumstances the plant may "grow away" from the deficiency so that new leaves appear less affected than older ones. The smallest veins of affected leaves remain green giving rise to a netted effect. Chlorotic areas may become white or necrotic.


Fig 2

## Magnesium Deficiency – Fig 3

Magnesium deficiency is always seen first on older leaves. Interveinal chlorosis or yellowing develops followed typically by a purple coloration spreading inwards from leaf tips and margins.

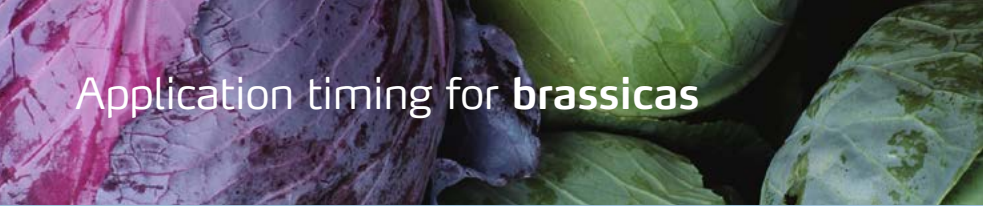

Fig 3

## Molybdenum Deficiency – Fig 4

Symptoms of molybdenum deficiency often resemble those of nitrogen deficiency due to the role of this element in nitrogen metabolism. Leaf areas may be reduced resulting in the classic "whiptail" symptoms seen on cauliflowers. Leaves of young brassicas may be cupped or show interveinal chlorosis. Quality of production is adversely affected.


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*



# Application timing for **brassicas**

| Growth stages | 4-6 leaf stage | Stem extension/Early heading |
|---|---|---|
| YaraVita BORTRAC 150 | 3 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita BRASSITREL PRO | Up to 4 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita CROPLIFT PRO | 5 kg/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita FOLIAR POTASH | 5 l/ha | |
| YaraVita MAGFLO 300 | 2 - 4 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita MAGPHOS K | 4 l/ha | |
| YaraVita MANTRAC PRO | 1 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita MANTRAC DF | 3 kg/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita MOLYTRAC 250 | 0.25 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita PHOTREL PRO | 3 kg/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita SAFE-N 300 | | 10–15 l/ha, repeat at 10–14 day intervals. |
| YaraVita SENIPHOS | | 2 - 3 applications at 10 l/ha at 7 - 14 day intervals |
| YaraVita STOPIT | | 2 to 3 applications at 5 l/ha at 10 - 14 day intervals |
| YaraVita THIOTRAC 300 | 5 l/ha repeat as necessary at 10 - 14 day intervals | |
| YaraVita ZINTRAC 700 | 1 l/ha | |

# Key nutrients for **cereals**

The major nutrients, nitrogen (N), phosphorus (P) and potassium (K) are applied routinely to cereal crops. But just as important for optimum yield and quality are the secondary nutrients and trace elements.

- **Magnesium**, **manganese**, **zinc** and **copper** for early plant establishment, production of healthy tillers and the maintenance of healthy green leaves throughout the season.
- **Copper** for ear fertility and grain set of the crop.
- **Magnesium**, **sulphur** and **copper** for grain quality such as protein content, thousand-grain-weight and baking characteristics.

Even in the absence of the deficiency symptoms illustrated here, sub-clinical deficiency, or "hidden hunger", can seriously reduce crop health and performance will be affected if any nutrients are limiting, even for a short time.

## Magnesium Deficiency – Fig 1

Alternate green and pale yellow bands along leaves, resembling a string of beads. Older leaves are affected first and die back prematurely. Magnesium is important for good crop establishment and part of the chlorophyll molecule.


Fig 1

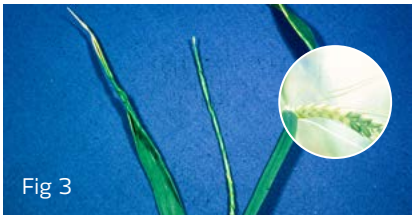
## Manganese Deficiency – Fig 2

Pale yellow mottling on the most recently matured leaves, which may also appear 'floppy'. Also, brown flecking in barley. Usually seen in patches across a field, deficiency is aggravated by wet, cold conditions and high pH, peaty and sandy soils (especially those with a 'puffy' structure), liming and cropping of old pastures. Soil compaction and nitrogen top dressing can temporarily alleviate symptoms.


Fig 2

## Copper Deficiency – Fig 3

Spiralling of younger leaves (flag leaf in particular) and shrivelling of leaf tips. Deficiency frequently occurs following nitrogen application, reclamation of heathland, on peaty and sandy soils and thin organic soils over chalk. Ears show blind grain sites or poor grain formation.


Fig 3

## Zinc Deficiency – Fig 4

Parallel yellow bands appear at either side of the leaf midrib. In wheat this is followed by necrotic blotches. In barley this is followed by orange/brown blotches.

## Sulphur Deficiency

Symptoms occur first in younger leaves, the entire leaf becoming pale yellow. Crop growth is stunted. Prolonged deficiency results in delayed maturity and reduced protein in grain.


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment. Where deficiencies of a number of nutrients are diagnosed, consider applications of crop-specific multinutrient product – YaraVita™ GRAMITREL.*



# Application timing for **cereals**

| Growth stages | Seed treatment | 2 - 6 leaf stage | Tillering | GS 31 - 32 | GS 39 | GS 55 - 69 |
|---|---|---|---|---|---|---|
| YaraVita BORTRAC 150 | | 1 l/ha | | 0.5 l/ha | | |
| YaraVita COPTREL 500 | | 0.5 l/ha repeat as necessary | | | | |
| YaraVita CROPLIFT PRO | | | 2.5 - 5 kg/ha | | | |
| YaraVita FOLIAR POTASH | | | 5 l/ha | | | |
| YaraVita GLYTREL MNP | Typical Rate: 3 litres per tonne. Also, up to 6 litres per tonne if necessary. | | | | | |
| YaraVita GRAMITREL | 3 to 6 litres per tonne. | 1 – 3 l/ha Repeat as necessary at 10 – 14 day intervals | | | 1 l/ha | |
| YaraVita MAGFLO 300 | | | 2-4 l/ha | | 2 l/ha | |
| YaraVita MAGPHOS K | | 2-5 l/ha | | | | 5 l/ha |
| YaraVita MANCOZIN | Typically 3 litres per tonne. Rate can be increased up to 6 litres per tonne if necessary. | 1 - 2 l/ha | | | | |
| YaraVita MANCUFLO | Typically 3 litres per tonne. Also, up to 6 litres per tonne if necessary. | 1 - 2 l/ha | | | | |
| YaraVita MANTRAC PRO | 2 to 6 litres per tonne | 1 l/ha repeat as necessary | | | 0.25 l/ha | |
| YaraVita MANTRAC DF | | 3 kg/ha repeat as necessary | | | | |
| YaraVita SAFE-N 300 | | | 10 - 20 l/ha | | | |
| YaraVita THIOTRAC 300 | | | 5 l/ha | | | |
| YaraVita ZINTRAC 700 | Typical rate: 3 litres per tonne. Increase up to 8 litres per tonne if necessary. | 1 l/ha repeat as necessary | | | | |

# Key nutrients for **maize**

Most profitable maize production relies upon good early plant establishment, maintenance of healthy leaf production and maximum cob fertility right through to crop maturity.

- Foliar application of **phosphorus** early in the season can alleviate the effects of temporary phosphorus shortage when soils become cold and wet. This is most effective after period of adverse spring weather.
- **Zinc** and **magnesium** deficiencies are the two most widespread nutritional disorders in maize worldwide.
- Magnesium deficiency affects the early establishment of the plant which is reflected in reduced crop yield at harvest.
- **Boron** is an important element in the fertility of the grain and is necessary for good cob development.

Even in the absence of the deficiency symptoms illustrated here, sub-clinical deficiency, or "hidden hunger", can seriously reduce crop health and performance will be affected if any nutrients are limiting, even for a short time.

## Zinc Deficiency - Fig 1 and 2

Pale yellow stripes develop lengthwise between the leaf edge and the central midrib starting at the base of the youngest leaves. If deficiency is severe the yellow stripes turn white and the leaves then become necrotic. A red colouration can appear on the most severely affected parts of the plant. Internodes are reduced and the ears are only partially filled. Crop maturity is delayed.


Fig 1

## Phosphorus Deficiency - Fig 3

Reddening/purpling at the edges of the leaves and necrosis of the older leaves with stunted growth and delay in ear emergence and ripening. Cold wet springs reduce phosphorus availability in the soil, which adversely affects crop uptake.


Fig 2

## Magnesium Deficiency - Fig 4

A beaded chlorosis appears between the veins. Symptoms are always seen on the older leaves. In the case of severe deficiency these leaves become brown, red and then necrotic.

## Copper Deficiency

The plant has a pale appearance characterised by a yellowing and withering of the edges of the leaf. Internodes are shortened and the growth of the plant is delayed. Often at flowering the youngest leaves remain attached to each other inducing the symptom know as basket handle. High levels of soil organic matter can cause copper deficiency.


Fig 3


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*

# Foliar Nutrition in the Early Stages of Growth for **Maize**

## Phosphate

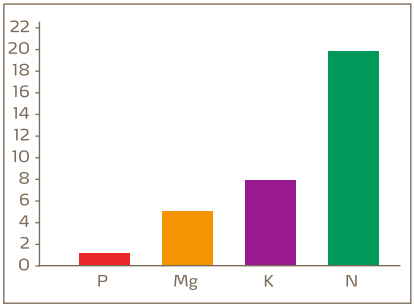
Phosphate, in particular, is so important but its availability is restricted by low soil temperatures, slightly acid soils and made worse by its poor mobility in the soil. The adjacent chart shows that if the soil has a pH of 6.0 then only 46% of existing P is available. Worse still, availability is reduced to just 14% if the soil temperature is 13°C or below. In these circumstances a serious growth check is inevitable.

### Relative availability of soil Phosphate (%)

| Soil pH | Soil temperature (deg.C) | | | |
|---|---|---|---|---|
| | 21 | 18 | 16 | 13 |
| 7 | 100 | 73 | 43 | 31 |
| 6.5 | 92 | 67 | 40 | 29 |
| 6 | 46 | 34 | 20 | 14 |
| 5 | 23 | 17 | 10 | 7 |

The situation is made worse because the crop cannot absorb phosphate in the soil if the roots are more than 1 mm away from the source.

### Maximum distance (mm) from root for absorption




Foliar phosphate, in the form of MAIZE BOOST applied at 5 litres/hectare at the 4 to 6 leaf stage provides readily available phosphate at that critical time when the crop cannot source sufficient P from the soil.

**MAIZE BOOST** also provides zinc and magnesium, key nutrients for the maize crop.



# Key nutrients for **oilseed rape**

Oilseed rape is a hungry crop, which rapidly produces a large biomass, removing more nutrients from the soil than any other major arable crop.
As it is difficult for oilseed rape to obtain all the nutrients it requires from the soil in the period between the four-leaf stage and flowering, foliar sprays of the most important trace elements should be used even where crops do not show the deficiency symptoms illustrated here.

- **Manganese, magnesium, boron, molybdenum** and **sulphur** are essential to aid root and leaf development, rapid plant establishment and to maintain leaf quality through to flowering.
- **Boron** also has a direct function in flower fertilisation and seed set and sulphur, a role in oil formation. It is therefore essential that these elements be provided to the crop up to early flowering.

### Magnesium Deficiency - Fig 1

Older leaves show interveinal yellowing followed by purple coloration spreading from the leaf margins. Poor growth with squat, low-yielding plants. Attention to magnesium deficiency is essential for good establishment of oilseed rape.

### Boron Deficiency - Fig 2

Serious deficiency causes lengthwise cracking of main and secondary stems and leaf petioles with poor flowering, reduced pod set and pod fill and uneven maturation.

### Manganese Deficiency - Fig 3

Faint yellow mottling, seen first on recently matured leaves. Necrotic spots may follow with retarded crop development and pod fill.

### Molybdenum Deficiency - Fig 4

Reduced leaf blade area and extended midrib, similar to Whiptail in cauliflower. Leaves become pale and limp. Lower pod yield compared with healthy plants.

### Sulphur Deficiency

A yellow marbling of young leaves is seen during rapid spring growth giving rise to stunted plants. Purpling of the stem base and lower leaves may then follow. At flowering, the petals may become pale instead of golden yellow.

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost effective treatment. Where deficiencies of a number of nutrients are diagnosed, consider applications of a multinutrient product - YaraVita™ BRASSITREL PRO or YaraVita™PHOTREL PRO.*


Fig 1


Fig 2




Fig 3


Fig 4



# Application timing for **oilseed rape**

| Growth stages | Seed | 4 - 6 leaf stage | Stem extension | Start of flowering | End of petal fall |
|---|---|---|---|---|---|
| YaraVita BORTRAC 150 | | 3 l/ha | 3 l/ha | | |
| YaraVita BRASSITREL PRO | | up to 4 l/ha | up to 4 l/ha | | 3 l/ha |
| YaraVita CROPLIFT PRO | | 2.5 - 5 kg/ha | | | |
| YaraVita FOLIAR POTASH | | 5 l/ha | | | |
| YaraVita MAGFLO 300 | | 2 - 4 l/ha | 2 - 4 l/ha | | |
| YaraVita MAGPHOS K | | 5 l/ha | 5 l/ha | | |
| YaraVita MOLYTRAC 250 | | 0.25 l/ha | 0.25 l/ha | | |
| YaraVita MANCOZIN | | 1 l/ha | | | |
| YaraVita MANCUFLO | | 1 l/ha | | | |
| YaraVita MANTRAC PRO | Up to 22 litres per tonne | 1 l/ha | 1 l/ha | | |
| YaraVita MANTRAC DF | | 3 kg/ha | 3 kg/ha | | |
| YaraVita PHOTREL PRO | | 3 kg/ha | 3 kg/ha | | 3 kg/ha |
| YaraVita SAFE-N 300 | | 10 - 20 l/ha | 10 - 20 l/ha | | |
| YaraVita THIOTRAC 300 | | | 5 - 10 l/ha | | |

# Key nutrients for **peas**

Balanced nutrition is one of the most important factors in achieving the maximum yield potential of peas.
The most common deficiency symptoms are described below.
Even in the absence of these symptoms yield can be significantly reduced.

- **Molybdenum** is vital for **nitrogen** fixation and the metabolism of a number of other nutrients, including phosphorus & iron.
- **Magnesium, manganese** & **iron** are all involved in chlorophyll, photosynthesis & protein synthesis.
- **Boron** has functions in meristem growth & pollen germination.

### Molybdenum Deficiency - Fig 1

Deficiency causes reduced nodulation leading to poor growth and pale leaves. It should be noted that in the majority of cases molybdenum acts as a growth stimulator and consequently benefits from molybdenum application may be obtained even in the absence of visual symptoms of deficiency.


Fig 1

### Manganese Deficiency - Fig 2

Interveinal chlorosis starting at leaf edges in younger leaves. Internal discoloration of seed (Marsh Spot). A similar disorder occurs in beans.


Fig 2

### Iron Deficiency - Fig 3

Chlorosis (yellowing) of leaves and tendrils. In severe cases the entire leaf becomes white. Small necrotic spots appear close to the leaf edges.


Fig 3

### Boron Deficiency - Fig 4

Death of the growing point and development of secondary growth. Leaves become brittle.


Fig 4

### Magnesium Deficiency

Areas between leaf veins become pale and yellow except at the leaf bases. Older leaves are affected first.

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*



# Application timing for **peas**

| Growth stages | Main vegetative stage (from 10 to 15 cm tall) | Start of flowering (early bloom) | End of flowering/ Pod set |
|---|---|---|---|
| YaraVita BORTRAC 150 | 2 l/ha<br>repeat as necessary<br>10 - 14 days late | | |
| YaraVita BRASSITREL PRO | Up to 4 l/ha<br>repeat as necessary<br>10 - 14 day intervals | | |
| YaraVita CROPLIFT PRO | 2.5 to 5kg/ha<br>repeat as necessary<br>10 - 14 day intervals | | |
| YaraVita FOLIAR POTASH | 5 l/ha | | |
| YaraVita MAGFLO 300 | 2 to 4 l/ha<br>repeat as necessary<br>10 - 14 day intervals | | |
| YaraVita MAGPHOS K | 5 l/ha<br>repeat as necessary<br>10 - 14 days later | | |
| YaraVita MANTRAC PRO | 1 l/ha | 1 l/ha | 1 l/ha |
| YaraVita MANTRAC DF | 3 kg/ha | 3 kg/ha | 3 kg/ha |
| YaraVita MOLYTRAC 250 | 0.25 l/ha<br>repeat as necessary<br>10 - 14 day intervals | | |
| YaraVita PHOTREL PRO | 3 kg/ha<br>repeat as necessary<br>10 - 14 day intervals | | |
| YaraVita SAFE-N 300 | 10 - 15 l/ha | | 10 - 15 l/ha |
| YaraVita THIOTRAC 300 | 5 l/ha<br>repeat as necessary<br>10 - 14 day intervals | | |

# Key nutrients for **potatoes**

To maximise return on investment, potato growers must maximise tuber yield and address factors including tuber numbers and size, dry matter content and skin finish.

- **Magnesium** and **manganese** for good early canopy establishment and the maintenance of optimum leaf quality throughout the season. The vegetative state of the crop often determines its yield and quality potential and must be carefully managed.
- **Phosphorus** applications to the leaves at tuber initiation promote tuber set and numbers and sprays during tuber bulking increase tuber size.
- **Magnesium** plays a role in tuber dry matter production.
- **Boron** and **calcium** applications can help to reduce the incidence of Internal Rust Spot and other tuber quality defects.
  When these elements are deficient, even in the absence of visible symptoms, yield and quality will be reduced.

## Magnesium Deficiency - Fig 1 and 2

Pronounced yellowing with brown (dead) tissue also visible. Leaves wither and die. Plants are stunted and the crop matures earlier than usual. Tubers are more susceptible to disease, particularly scab, and to mechanical damage during harvesting. Sandy or acid soils and/or soils receiving heavy potash applications (common on potatoes) are prone to magnesium deficiency.


Fig 1

## Manganese Deficiency - Fig 3

Discrete black/brown spots along veins or over the whole surface of younger leaves in particular. These symptoms, together with general rather than interveinal yellowing, allow distinction from magnesium deficiency.
Tubers have poor skin finish and, like those from magnesium deficient plants, are more easily damaged during harvesting and grading.


Fig 2

## Phosphorus Deficiency

Phosphorus deficiency affects both the yield and quality of tubers. A lack of phosphorus during tuberisation causes severe reduction in the number of tubers. Later on in the season deficiency will lead to the production of small tubers. In cases of severe deficiency plants are stunted and the older leaves chlorotic (yellow). Younger leaves are small and dark green in colour.


Fig 3

## Calcium Deficiency - Fig 4

Beginning discolouration of tuber pith. Calcium deficiency promotes the occurrence of internal browning and hollow tubers. Calcium is important for healthy green foliage. Improved yield, quality and skin finish. Better storage potential of tubers.


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*



# Application timing for **potatoes**

| Growth stages | From 1 week after 100% emergence | Tuber initiation | Tuber bulking |
|---|---|---|---|
| YaraVita BORTRAC 150 | 1 - 2 l/ha | | |
| YaraVita CROPLIFT PRO | | 2.5 - 5 kg/ha | |
| YaraVita FOLIAR POTASH | | | 10 l/ha or 2 applications of 5 l/ha 10 - 14 days apart |
| YaraVita MAGFLO 300 | 2 to 4 l/ha repeat as necessary 10 - 14 day intervals | | 2 to 4 l/ha |
| YaraVita MAGPHOS K | | 10 l/ha to increase tuber number | 5 - 10 l/ha repeated 10 - 14 days later (to increase tuber size) |
| YaraVita MANTRAC PRO | 1 l/ha repeat as necessary at 10 - 14 day intervals | | |
| YaraVita MANTRAC DF | 3 kg/ha repeat as necessary at 10 - 14 day intervals | | |
| YaraVita SAFE-N 300 | 10 - 20 l/ha | | 10-20 l/ha |
| YaraVita SENIPHOS | | 15 /ha to increase tuber number | 5 l/ha repeated at 2 - 3 week intervals (to increase tuber size) |
| YaraVita STOPIT | | 5 - 10 l/ha repeat at 10 - 14 day intervals | |
| YaraVita THIOTRAC 300 | 5 l/ha repeat as necessary at 10 - 14 day intervals | | 5 l/ha |
| YaraVita ZINTRAC 700 | 1 l/ha repeat as necessary at 10 - 14 day intervals | | |

# Key nutrients for **strawberries**

Quality is increasingly recognised as crucial to success in the growing of a profitable strawberry crop. It is vital that the full range of nutrients be available at critical growth stages when yield and quality are determined.

- **Magnesium** and **manganese** are essential for good leaf development and the maintenance of optimum leaf quality throughout the season.
- **Boron** and **zinc** for good flower quality and fertilisation. Poor fruit or seed set in strawberries directly influences the size and visual quality of the fruit.
- **Phosphorus** and **calcium** help to strengthen the fruit making it firmer with a longer shelf life potential and more resistant to mechanical damage during harvest and transport. A stronger fruit is also more able to withstand the spread of fungal infections such as Botrytis further increasing the marketable life of the harvested fruit.

## Iron Deficiency - Fig 1

The first leaves to be affected by iron deficiency are the younger leaves which turn yellow. As the deficiency progresses, the yellowness increases almost to the point of becoming white. In cases of slight deficiency, the veins stay green.


Fig 1

## Boron Deficiency - Fig 2

The deficiency affects the youngest leaves, causing cracking and tip-burn, badly formed fruit and a reduction in secondary root growth. Moderate deficiency reduces both the flower size and pollen production, resulting in small and misshapen fruit. The symptom is different from that of calcium deficiency, where the space between seeds is reduced.


Fig 2

## Manganese Deficiency - Fig 3

Symptoms are similar to those of iron deficiency, but, in time, the pale green converts into fine netting of the veins giving a unique symptom characteristic of manganese deficiency.


Fig 3

## Calcium Deficiency - Fig 4

Produces tip-burn, small fruit, and damage to the growing points. Leaves are crinkled and have light green or yellow margins. Deficient fruit fails to enlarge and a tightly packed covering of seeds is formed in parts of, or all of the fruit.

## Phosphorus Deficiency

Deficient plants are dark green with smaller than normal leaves. As the deficiency worsens the upper leaf surfaces develop a metallic sheen, lower leaf surfaces a metallic sheen, while lower leaf surfaces develop a red-purple coloration. Studies have shown that phosphorus, together with calcium, plays an important role in fruit firmness. Levels in the fruit can be low even when the plant is adequately supplied.


Fig 4

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment.*

 © Yara



# Application timing for **strawberries**

| Growth stages | Dormancy | Green bud | White bud | Start of flowering | Full flower | End of flowering | Fruit develop ment | Post harvest before leaf fall |
|---|---|---|---|---|---|---|---|---|
| YaraVita BORTRAC 150 | | | 1 - 2 l/ha repeat 10 - 14 days later | | | | | 2 l/ha |
| YaraVita BUD BUILDER FL | | 5 l/ha | | | | | | 5 l/ha |
| YaraVita CROPLIFT PRO | | | 2.5 - 5 l/ha | | | 2.5 - 5 kg/ha repeat as necessary | | 2.5 - 5 l/ha |
| YaraVita FERLEAF 100 | | 1 l/ha repeat at 7 - 14 day intervals | | | | | | |
| YaraVita FOLIAR POTASH | | 5 l/ha | | | | | | |
| YaraVita MAGFLO 300 | | 4 l/ha | | | | | | |
| YaraVita MANTRAC PRO | | 1 l/ha | | | | | | |
| YaraVita SAFE-N 300 | | | | 5 -10 l/ha | | | 5 - 10 l/ha | |
| YaraVita SENIPHOS | | | | Non-everbearing varieties, 3 applications of 10 l/ha at 7 to 10 day intervals Everbearing varieties, divide a total rate of 30 l/ha into 6 applications of 5 l/ha at 10 to 14 day intervals. | | | | |
| YaraVita STOPIT | | | | 3 applications of 10 l/ha at 7 to 10 day intervals | | | | |
| YaraVita ZINTRAC 700 | | 0.5 l/ha | 0.25 l/ha | | | | | 0.25 l/ha |

# Key nutrients for **sugar beet**

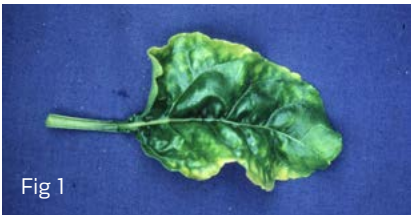
Adequate and balanced nutrition is one of the most important factors affecting root and sugar yield in Sugar Beet.

- Adequate provision of **nitrogen, phosphorus** and **potassium** is vital in sugar beet production.
- Attention must also be paid to **magnesium, boron, copper** and **manganese** supply if the grower is to maximise returns from his crop.

Where these elements are in short supply from the soil, plant establishment early in the season can be adversely affected which reduces the crops potential for maximum root and sugar yield at a very early stage. Statistics prove that the highest returns are always achieved when these nutrients are kept at optimum levels in the sugar beet plant. If leaf quality is not maintained throughout the entire growing season through magnesium and manganese nutrition reduced sugar production and sugar yield can be expected.

### Boron Deficiency – Fig 1 and 2

Patchy leaf yellowing with texture of older leaves becoming rubbery. Leaves may be distorted with cracks across upper surface of midribs. Growing point dies (heart rot) and small bunches of new leaves may develop around neck of root. Boron problems are associated with heavy nitrogen and potash applications, prolonged wet conditions or drought.


Fig 1

### Magnesium Deficiency - Fig 3

Marked yellowing of older leaves begins between veins near tips and margins, eventually spreading towards midribs. This may be followed by dead patches on leaves with a cigarette burn appearance. Leaves droop. Poor root development.


Fig 2

### Manganese Deficiency - Fig 4

Mottling of leaves, seen to best effect when viewed against the light. In severe cases, whole leaves become yellow (Speckled Yellows). Margins curl inwards, giving characteristic triangular leaf outline with upright growth habit.


Fig 3

The symptoms described appear only in cases of severe deficiency. Yield loss will occur even in the absence of visual symptoms.

*Analysis is the most accurate way of assessing nutrient deficiency and identifying cost-effective treatment. Where deficiencies of a number of nutrients are diagnosed, consider applications of the multinutrient product, YaraVita™ BETATREL DF.*


Fig 4

 © Yara



# Application timing for **sugar beet**

| Growth stages | 4 - 6 leaf stage | 8 - 12 leaf stage |
|---|---|---|
| YaraVita BETATREL DF | 5 kg/ha | 5 kg/ha |
| YaraVita BORTRAC 150 | 3 l/ha | 3 l/ha |
| YaraVita BRASSITREL PRO | 3 l/ha | 3 l/ha |
| YaraVita COPTREL 500 | 0.5 l/ha | 0.5 l/ha |
| YaraVita CROPLIFT PRO | 2.5 - 5 kg/ha | 2.5 - 5 kg/ha |
| YaraVita MAGFLO 300 | 2 - 4 l/ha | 2 - 4 l/ha |
| YaraVita MAGPHOS K | 5 l/ha | 5 l/ha |
| YaraVita MANTRAC PRO | 1 l/ha | 1 l/ha |
| YaraVita MANTRAC DF | 3 kg/ha | 3 kg/ha |
| YaraVita PHOTREL PRO | 3 kg/ha | 3 kg/ha |
| YaraVita THIOTRAC 300 | 5 l/ha | 5 l/ha |
| YaraVita ZINTRAC 700 | 1 l/ha | 1 l/ha |

# YaraVita™ Nutrients by product

| PRODUCT | B | Ca | Cu | Fe | Mg |
|---|---|---|---|---|---|
| **Single Nutrients - Foliar sprays** | Boron | Calcium | Copper | Iron | Magnesium |
| BORTRAC 150 | ■ | | | | |
| COPTREL 500 | | | ■ | | |
| FERLEAF 100 | | | | ■ | |
| FOLIAR POTASH | | | | | |
| MAGFLO 300 | | | | | ■ |
| MANTRAC DF | | | | | |
| MANTRAC PRO | | | | | |
| MOLYTRAC 250 | | | | | |
| SAFE-N 300 | | | | | |
| STOPIT | | ■ | | | |
| THIOTRAC 300 | | | | | |
| ZINTRAC 700 | | | | | |
| Nutrient Combinations - Foliar Sprays | | | | | |
| BETATREL DF | ■ | | | | ■ |
| BRASSITREL PRO | ■ | ■ | | | ■ |
| BUD BUILDER FL | ■ | | | | ■ |
| CROPLIFT PRO | ■ | | ■ | ■ | ■ |
| GLYTREL MnP | | | | | |
| GRAMITREL | | | ■ | | ■ |
| MAGPHOS K | | | | | ■ |
| MAIZE BOOST | | | | | ■ |
| MANCOZIN | | | ■ | | |
| MANCUFLO | | | ■ | | |
| PHOTREL PRO | ■ | | | | ■ |
| SENIPHOS | | ■ | | | |
| Nutrient Combinations - Seed Treatment | | | | | |
| GLYTREL MnP | | | | | |

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| Mn | Mo | N | K | P | Na | S | Zn | Page No |
|---|---|---|---|---|---|---|---|---|
| Manganese | Molybdenum | Nitrogen | Potassium | Phosphorus | Sodium | Sulphur | Zinc | |
| | | | | | | | | 28 |
| | | | | | | | | 34 |
| | | | | | | | | 38 |
| | | | ■ | ■ | | | | 40 |
| | | | | | | | | 46 |
| ■ | | | | | | ■ | | 56 |
| ■ | | | | | | | | 58 |
| | ■ | | | | | | | 60 |
| | | ■ | | | | | | 64 |
| | | | | | | | | 68 |
| | | ■ | | | | ■ | | 70 |
| | | | | | | | ■ | 72 |
| ■ | | ■ | | | ■ | ■ | | 26 |
| ■ | ■ | ■ | | | | | | 30 |
| | | ■ | | ■ | | | ■ | 32 |
| ■ | ■ | ■ | ■ | ■ | | ■ | ■ | 36 |
| ■ | | | | ■ | | | | 42 |
| ■ | | ■ | | | | | ■ | 44 |
| | | | ■ | ■ | | | | 48 |
| | | | ■ | ■ | | | ■ | 50 |
| ■ | | | | | | | ■ | 52 |
| ■ | | | | | | | | 54 |
| ■ | ■ | | | | ■ | ■ | | 62 |
| | | ■ | | ■ | | | | 66 |
| ■ | | | | ■ | | | | 42 |

# YaraVita™
# BETATREL DF

## Water dispersible dry flowable microgranule.
## Crop Specific Product for sugar beet.

### ANALYSIS
10% Na w/w = 100 g/kg Na
10% Mg w/w = 100 g/kg Mg
4% B w/w = 40 g/kg B
4% Mn w/w = 40 g/kg Mn
1.2% N w/w = 12 g/kg N
17% $SO_3$ w/w = 170 g/kg $SO_3$

### PACK SIZE
10 kg

### PRODUCT FEATURES AND BENEFITS
- Pourable formulation
- Easy and convenient to handle
- Safe to the crop
- Fully glasshouse tested for peace of mind of application
- Nutrient uptake
- Balanced crop nutrition management
- Long term feeding action
- Reduced need for repeat applications
- Widespread tank mixability
- Cost effective incorporation into plant protection programmes

### ADDITIONAL FEATURES
- Dry flowable formulation
- Extended storage performance
- Easy stock management
- No shelf life issues
- Dust free
- Safer to handle traditional powders
- Easy emptying and cleaning of packs
- Rapid and efficient spray operation




 © Yara

# BETATREL DF
## Application rates and timings

**Sugar beet:** 5 kg/ha from the 4 to 6 leaf stage, with a repeat application 10 to 14 days later.
Water rate: 100 to 200 l/ha.

*(Recommendations for application to other crops are available. Check Yara Product Advice System for details)*






# YaraVita™ BORTRAC 150

A liquid micronutrient fertilizer containing boron for foliar application to provide additional boron for crops such as brassicas with a high requirement or treat boron deficiencies in a wide range of crops.

## ANALYSIS

15% w/v = 150 g/l boron

## PACK SIZE

10 litres, 1000 litres

## PRODUCT FEATURES AND BENEFITS

- A high quality and consistent 'true' liquid
- No sedimentation
- Highest concentration
- Widest tank mixability
- Rapid plant uptake
- Very mobile within the plant
- Kind to the crop
- Easy to handle




 © Yara

# BORTRAC 150
## Application rates and timings

**Apples, Pears**
1 - 2 l/ha at pink bud, start of flowering and again at petal fall. 2 l/ha after harvest but before leaf senescence. Water rate: 500 to 1000 l/ha.

**Broccoli, Cabbage, Cauliflower, Calabrese, Sprouts**
3 l/ha at 4 - 6 leaf stage with repeat applications at the above rate at 10 to 14 day intervals for moderate to severe deficiency. Water rate: 200 l/ha.

**Carrots**
3 l/ha when crop is 10 -15cm tall or when sufficient foliage to intercept spray. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Cereals**
Apply at 1.0 l/ha from the 4 leaf stage to pseudo stem erection, (Zadoks Growth Stage 14 to 30). Apply at 0.5 l/ha from first node detectable to the end of booting, (Zadoks G.S. 31 to 49).
Water rate: 30 to 200 l/ha.

**Cherries, Plums**
1 to 2 l/ha at winter bud and again at pink bud. 2 l/ha after harvest but before leaf senescence.
Water rate: 500 to 1000 l/ha.

**Daffodils, Lilies & Tulips (field grown)**
1 l/ha. Repeat applications at 7 - 14 day intervals commencing when crop is 10 to 15 cm tall.
Water rate: 200 l/ha. Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Filbert, Kentish Cob Nuts**
1.5 l/ha to be applied immediately post fertilisation (e.g. mid-May) and again 10 - 14 days later.
Water rate: 500-1000 l/ha.

**Fodder Beet, Red Beet, Swedes, Turnips**
3 l/ha at 4 - 6 leaf stage. For moderate to severe deficiency repeat applications at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Leeks**
3 l/ha applied two weeks after transplanting or in the case of direct sown crops, when the crop is 15 cm tall. For moderate to severe deficiency one or two repeat applications may be necessary at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lettuce (field grown)**
1 to 2 l/ha 10 - 14 days after transplanting or emergence. Water rate 500 l/ha.

**Lupins:**
2 l/ha at 4 - 6 leaf stage. Repeat once or twice at 10 - 14 day intervals if necessary (For winter varieties, apply the repeat sprays at spring re-growth).
Water rate: 200 l/ha.

**Maize**
3 l/ha at 6 - 8 leaf stage. For moderate to severe deficiency, a repeat application may be necessary 10 to 14 days later. Water rate: 200 l/ha.

**Oilseed Rape**
For a single application, 3 l/ha at onset of stem extension. For moderate deficiency, 3 l/ha at 4 to 6 leaf stage and 3 l/ha at onset of stem extension. An extra application can be made 10 - 14 days later up to the start of flowering. Water rate: 50-200 l/ha.

**Onions**
1 - 2 l/ha as soon as there is sufficient foliage to intercept spray. A second application may be made at the same rate 10 - 14 days later. Water rate: 200 l/ha.

**Parsnips**
3 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals (3 applications maximum).
Water rate: 200 l/ha.

**Peas, Beans, Soya**
2 l/ha at 10 - 15 cm stage.
For moderate to severe deficiency, a repeat application may be necessary 10 - 14 days later.
Water rate: 200 l/ha.

**Potatoes**
One application of 1 to 2 l/ha applied one week after 100% emergence. A second application may be made 10 to 14 days later. A further application may be made following petiole analysis, during tuber bulking.
Water rate: 200 l/ha.

**Strawberries (field grown)**
Two applications of 1 l/ha commencing at white bud stage and repeated 10 - 14 days later. 2 l/ha applied at re-growth (after harvest).
Water rate: 200 to 500 l/ha.

**Sugar Beet**
3 l/ha at 4 - 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals.
Water rate: 50 to 200 l/ha.

**Protected Crops in Polytunnels**
0.1 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing. N.B. Do not exceed a rate of 10 mls per 10 litres of water applied over 100 $m^2$

**Soil Application**
5 l/ha pre-planting or pre-emergence in sufficient water to ensure accurate application.

# YaraVita™ BRASSITREL PRO

A flowable liquid suspension fertilizer with a balanced combination of micronutrients including manganese, magnesium, boron and molybdenum for foliar application to oilseed rape, brassicas and legumes

## ANALYSIS

6.0% w/v = 60 g/l boron (B)
7.0% w/v = 70 g/l manganese (Mn)
0.4% w/v = 4 g/l molybdenum (Mo)
6.9% w/v = 69 g/l nitrogen (N) [4.5% ureic nitrogen]
11.8% w/v = 118 g/l magnesium oxide (MgO) [7.0% w/v = 70 g/l magnesium (Mg)]
12.5% w/v = 125 g/l calcium oxide (CaO) [8.9% w/v = 89 g/l calcium (Ca)]

## PACK SIZE

10 litres

## PRODUCT FEATURES AND BENEFITS

- Balanced combination of essential nutrients for oilseed rape and vegetables
- Nurtures autumn-sown crops through winter
- Triggers rapid growth in the early spring
- Tank mixes with almost all oilseed rape pesticides
- Easy mixing
- Lasting feeding effect
- Very safe formulation




 © Yara

# BRASSITREL PRO
## Application rates and timings

**Asparagus**
Two applications of 3 l/ha during vegetative growth at a 10 to 14 day interval. Water rate: 200 l/ha.

**Beans**
3 to 4 l/ha as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4 to 6 leaf stage). Repeat as necessary at 10 to 14 day intervals up to one month before harvest. N.B. Do not spray during flowering.
Water rate: 200 l/ha.

**Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
3 to 4 l/ha as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4 to 6 leaf stage). Repeat as necessary at 10 to 14 day intervals up to one month before harvest.
Water rate: 200 l/ha.

**Carrot**
Two applications of 3 l/ha applied when the crop is 15 cm tall and again 2 weeks later.
Water rate: 200 l/ha.

**Cereals**
3 l/ha applied at any time from the 2 leaf stage to 1st node detectable (Zadoks G.S. 12 to 31).
Water rate: 200 l/ha.

**Fodder Beet**
3 to 4 l/ha at 4 to 6 leaf stage. For moderate to severe deficiency repeat applications at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Leek**
3 l/ha applied two weeks after transplanting or in the case of direct sown crops, when the crop is 15 cm tall. For moderate to severe deficiency one or two repeat applications may be necessary at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lettuce (Field Grown)**
3 to 4 l/ha as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4 to 6 leaf stage). Repeat as necessary at 10 to 14 day intervals up to one month before harvest.
Water rate: 200 l/ha.

**Linseed**
3 l/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lupin**
3 l/ha at the 4 to 6 leaf stage. Repeat once or twice at 10 to 14 day intervals if necessary. (For winter varieties apply the repeat sprays at spring re-growth).
Water rate: 200 l/ha.

**Maize**
3 l/ha at the 4 to 8 leaf stage.
Water rate: 200 l/ha.

**Oilseed Rape**
3 to 4 l/ha at the 4 to 9 leaf stage and again at the onset of the rapid stem extension phase up to the start of flowering. Repeat at 10 to 14 day intervals within these growth stages as necessary. Also, 3 l/ha at the end of petal fall. Water rate: 50 to 200 l/ha.

**Onion**
2 applications of 3 l/ha applied as soon as there is adequate leaf cover (6 leaves) and repeated 2 weeks later. Water rate: 200 l/ha.

**Peas**
3 to 4 l/ha as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4 to 6 leaf stage). Repeat as necessary at 10 to 14 day intervals up to one month before harvest. N.B. Do not spray during flowering.
Water rate: 200 l/ha.

**Potatoes**
3 l/ha applied one week after 100 percent emergence with a second application 10 to 14 days later.
Water rate: 200 l/ha.

**Pumpkin (Field Grown)**
Two applications of 3 l/ha sprayed at the 4 to 6 leaf stage and again 10 to 14 days later.
Water rate: 200 to 500 l/ha.

**Soya Bean**
3 to 4 l/ha as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4 to 6 leaf stage). Repeat as necessary at 10 to 14 day intervals up to one month before harvest. N.B. Do not spray during flowering.
Water rate: 200 l/ha.

**Squash (Field Grown)**
Two applications of 3 l/ha sprayed at the 4 to 6 leaf stage and again 10 to 14 days later.
Water rate: 200 to 500 l/ha.

**Sugar Beet**
3 l/ha in 200 litres of water. Repeat applications can be made at 10 to 14 day intervals. Apply from 4 to 6 leaf stage.

# YaraVita™
# BUD BUILDER FL

A flowable liquid suspension fertilizer with nutrients and micronutrients including magnesium, zinc, nitrogen, boron and phosphate for foliar application to improve the flowering of top and soft fruit.

## ANALYSIS

24.0% w/v = 240 g/l magnesium oxide ( MgO) [14.4% w/v = 144 g/l magnesium (Mg)]
10.0% w/v = 100 g/l zinc (Zn)
6.9% w/v = 69 g/l nitrogen (N)
3.0% w/v = 30 g/l boron (B)
5.0% w/v = 50 g/l phosphorus pentoxide ($P_2O_5$)

## PACK SIZE

10 litres

## PRODUCT FEATURES AND BENEFITS

- Significant provision of key nutrients at the right time in the spring
- Improves flowering and fruit set
- Easy mixing
- Kind to crops
- Good tank mixability




 © Yara

# BUD BUILDER FL
## Application rates and timings

**Apples**
10 l/ha applied post-harvest before leaf fall. Also, 5 - 10 l/ha applied at bud burst.
Water rate: 500 to 1000 l/ha.

**Asparagus**
10 l/ha post-harvest or pre-senescence only.
Water rate: 300 l/ha.

**Blackcurrants**
5 l/ha applied from green bud to just prior to start of flowering. Also, 5 l/ha post-harvest, pre-leaf senescence.
Water rate: 200 - 500 l/ha.

**Cereals**
5 l/ha from the two leaf stage to first node detectable (Zadoks G.S. 12 to 31). Repeat 10 - 14 days later in the case of moderate to severe deficiency. Water rate: 200 l/ha.

**Cherries**
10 l/ha applied post-harvest before leaf fall. Repeat if necessary leaving 10 - 14 days between applications. Also, 5 - 10 l/ha applied from bud burst to start of flowering.
Water rate: 500 - 1000 l/ha.

**Chestnuts**
10 l/ha applied post-harvest before leaf fall.
Water rate: 500 - 1000 l/ha.

**Grapevines:**
**1 to 3 applications of 5 l/ha applied pre-flowering at a 10-14 day interval. Also, 10 l/ha applied post-harvest before leaf fall. Water rate: 500 to 1000 l/ha.**

**Hops**
5 - 10 l/ha when the crop is 2 metres tall.
Water rate: 500 l/ha.

**Nuts (Deciduous)**
10 l/ha applied post-harvest before leaf fall. Also, 5 - 10 l/ha applied from bud burst to start of flowering. Water rate: 500 - 1000 l/ha.

**Pears**
10 l/ha applied post-harvest before leaf fall. Also, 5 - 10 l/ha applied at bud burst.
Water rate: 500 - 1000 l/ha.

**Plums**
10 l/ha applied post-harvest before leaf fall. Repeat if necessary leaving 10 - 14 days between applications. Also, 5 - 10 l/ha applied from bud burst to start of flowering.
Water rate: 500 - 1000 l/ha.

**Raspberries**
5 l/ha applied from green bud to just prior to start of flowering. Also, 5 l/ha post-harvest, pre-leaf senescence.
Water rate: 200 - 500 l/ha.

**Strawberries (Field Grown)**
5 l/ha applied from green bud to just prior to start of flowering. Also, 5 l/ha post-harvest, pre-leaf senescence.
Water rate: 200 - 500 l/ha.

**Protected Crops in Polytunnels**
0.3 l per 100 litres of water maximum concentration. Water rate: 1,000 l/ha maximum. Refer to the equivalent field grown crop for application timings.






# YaraVita™ COPTREL 500

A flowable liquid micronutrient fertilizer containing a high concentration of copper for foliar application to treat copper deficiencies in cereals and a wide range of crops.

## ANALYSIS
50% w/v = 500 g/l Cu

## PACK SIZE
5 litres

## PRODUCT FEATURES AND BENEFITS
- Highest concentration of Cu
- Suitable for almost any tank mix
- Gives greater flexibility in field recommendations
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect
- Very safe formulation




 © Yara

# COPTREL 500
## Application rates and timings

**Apple, Cherries, Pears, Plums**
0.5 l/ha applied after harvest before leaf fall. Water rate: 1000 l/ha.

**Brassicas, Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
0.5 l/ha applied at the 4 to 6 leaf stage. For moderate to severe deficiency, one or two repeat applications should be made at 10 to 14 day intervals. Water rate: 200 l/ha.

**Carrot**
0.5 l/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Cereals**
0.5 l/ha from 2 leaf to second node detectable (Zadok's G.S. 12 to 32). For moderate to severe deficiency repeat applications at 10 to 14 day intervals, within the growth stages indicated. Water rate: 200 l/ha

**Conifers**
2 applications of 0.5 l/ha, once there is new season leaf production and again in early Autumn. Water rate: 500 l/ha to 1,000 l/ha.

**Grass (amenity)**
0.5 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: 200 l/ha.

**Grass (grazing)**
0.5 l/ha applied 15 to 21 days before grazing or cutting. (Do not apply to grass for sheep). Water rate: 200 l/ha.

**Grass (growth)**
0.5 l/ha as soon as growth commences in the Spring. In the case of moderate to severe deficiency, repeat applications at 10 to 14 days intervals. Water rate: 200 l/ha.

**Leek**
0.5 l/ha applied two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. One or two repeat applications may be necessary at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lettuce (Field Grown)**
0.5 l/ha at 10 to 14 days after transplanting or emergence. Water rate: 200 l/ha.

**Lilies, Tulip (field grown)**
0.5 l/ha. Repeat applications at 7 to 14 day intervals commencing when crop is 10 to 15 cm tall. Water rate: 200 l/ha. Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Maize**
0.5 l/ha at the 4 to 8 leaf stage. Water rate: 200 l/ha.

**Oilseed Rape**
0.25 l/ha at the 4 to 8 leaf stage. Water rate: 200 l/ha.

**Onion**
0.5 l/ha two weeks after transplanting, or in case of direct-sown crops, when the crop is 15 cm tall. Repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Parsnip**
0.5 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. (3 applications maximum). Water rate: 200 l/ha.

**Potatoes**
0.5 l/ha applied 7 to 14 days after 100% emergence and following petiole analysis during tuber bulking. Water rate: 200 l/ha.

**Strawberry (field grown):** 0.5 l/ha applied early in the season before the start of flowering. Water rate: 200 to 400 l/ha.

**Sugar Beet, Swede, Turnip**
0.5 l/ha applied at the 4 to 6 leaf stage. For moderate to severe deficiency, one or two repeat applications should be made at 10 to 14 day intervals. Water rate: 200 l/ha.

**Turf**
0.5 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: 200 l/ha.

**Soil Application**
5 to 10 l/ha pre-drilling or pre-planting (or before re-growth of perennial crops). Water rate: 50 l/ha minimum.

# YaraVita™
# CROPLIFT PRO

A fully soluble powder foliar fertilizer containing multiple nutrients and micronutrients for foliar application to a wide range of crops during times of stress or periods of rapid growth.

**NPK (Mg.S) fertilizer 20-8-14 (1.2, 5) with micronutrients**

## ANALYSIS

20% w/w = 200 g/kg nitrogen (N)
8% w/w = 80 g/kg phosphorus pentoxide ($P_2O_5$)
14% w/w = 140 g/kg potassium oxide ($K_2O$)
2% w/w = 20 g/kg magnesium oxide (MgO)
[1.2% w/w = 12 g/kg magnesium (Mg)]
12.5% w/w = 125 g/kg sulphur trioxide ($SO_3$)
[5% w/w = 50 g/kg sulphur (S)]
0.04% w/w = 0.4 g/kg boron (B)
0.2% w/w = 2 g/kg copper (Cu)
0.02% w/w = 0.2 g/kg iron (Fe)
0.26% = 2.6 g/kg manganese (Mn)
0.006% w/w = 0.06 g/kg molybdenum (Mo)
0.14% w/w = 1.4 g/kg zinc (Zn)

## PACK SIZE

5 kg
20 kg

## PRODUCT FEATURES AND BENEFITS

- Highly concentrated nutrient combination
- More than just a 'foliar N'
- Excellent NPK balance
- Good S and Mg contribution
- Valuable trace element provision
- Immediate boost for crops under stress e.g.
  - potatoes in very dry conditions
  - prior to rapid growth periods such as stem-extension in cereals and oilseed rape
- Lasting feeding effect
- Good tank mixability
- Easy to mix
- Very safe formulation




 © Yara

# CROPLIFT PRO
## Application rates and timings

**All Crops (field grown)**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Avoid applications during flowering (except potatoes). Also, apply as necessary to perennial fruit crops post-harvest. Water rate: 200 l/ha. Alternatively: Spray to run off using a concentration of 2.5 grammes per litre. Allow 10 to 14 days between successive applications.

**Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Carrot**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Cereals**
2.5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Avoid applications during flowering. Water rate: 200 l/ha.

**Conifers**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha. Alternatively: Spray to run off using a concentration of 2.5 grammes per litre. Allow 10 to 14 days between successive applications.

**Grass:**
2.5 to 5 kg/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. Allow 7 days after treatment application before “turnout” / grazing.
Water rate: 200 l/ha.

**Maize**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Avoid applications during flowering. Water rate: 200 l/ha.

**Nursery Stock/Ornamentals**
2.5 kg/ha as soon as there is sufficient leaf area to intercept a spray. Repeat at 10 to 14 day intervals as necessary. Avoid applications during flowering. Spray a maximum of three applications per crop per annum. Note: Do not apply within one month of picking / marketing. Water rate: 100 to 200 l/ha.

**Oilseed Rape**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Avoid applications during flowering. Water rate: 200 l/ha.

**Onion**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Potatoes**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Turf:**
5 kg/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: 200 l/ha.

**Sugar Beet**
2.5 to 5 kg/ha. Repeat at 10 to 14 day intervals as necessary. Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.3 kg per 100 litres water (maximum concentration). Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.






# YaraVita™ FERLEAF 100

A liquid chelated micronutrient fertilizer containing 100 g/l iron for foliar application to prevent iron chlorosis and to treat iron deficiency in a wide range of crops.

## ANALYSIS

10% w/v = 100 g/l Fe
chelated by EDTA

## PACK SIZE

5 litres

## PRODUCT FEATURES AND BENEFITS

- High concentration for a liquid chelate
- Desirable EDTA chelate form
- Formulated for foliar spray application
- Good tank mix spectrum




 © Yara

# FERLEAF 100
## Application rates and timings

### Foliar Application
**All crops (field grown)**
1 l/ha applied 3 to 8 times at 7 to 14 day intervals. Start applications as soon as there is sufficient leaf cover to intercept the spray (preventative treatment), or as soon as first symptoms appear (curative treatment). Avoid applications during flowering. Water rate: 600 to 1000 l/ha.

### Hydroponics
The rate will very according to the concentration of iron requirement in the final solution. Mixing 10ml of product with 1,000 litres of water will give a solution containing 1 ppm iron.






# YaraVita™
# FOLIAR POTASH

A fully formulated liquid foliar fertilizer containing 500 g/l potash for foliar application to provide additional potassium for a wide range of crops.

## ANALYSIS
50% w/v = 500 g/l $K_2O$
8% w/v = 80 g/l $P_2O_5$

## PACK SIZE
10 litres

## PRODUCT FEATURES AND BENEFITS
- Highly concentrated
- Ideal where soil application is limiting factor
- No sedimentation
- Rapid uptake through the leaf
- Lasting feeding effect
- Good tank mixability
- Easy to handle




 © Yara

# FOLIAR POTASH
## Application rates and timings

**Apples, Pears**
5 l/ha at bud burst. Also, two to three applications of 5 l/ha at 10 - 14 day intervals starting at petal fall. A further application of 5 l/ha may also be applied post-harvest before leaf fall. Water rate: 500 l/ha.

**Beetroot**
3 to 5 l/ha during bulb filling. Repeat applications at 10 - 14 day intervals as necessary. Water rate: 200 l/ha.

**Blackcurrants**
5 l/ha at start of flowering.
Water rate: 200 to 500 l/ha.

**Brassicas**
5 l/ha at the 4 - 6 leaf stage. Repeat as required for moderate to severe deficiency at 7 to 14 day intervals. Water rate: 200 l/ha.

**Carrots**
5 l/ha when crop is 15 cm tall. Repeat if necessary at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Cereals**
5 l/ha from early tillering to 2nd node detectable (Zadoks G.S. 21 to 32). Repeat at 10 to 14 day intervals between these growth stages as necessary. From 2nd node detectable onwards apply 5 l/ha, if necessary, up to the end of inflorescence (Zadoks G.S. 32 to 59).
Water rate: 50 to 200 l/ha.

**Cherries**
3 applications of 3 - 5 l/ha from stone hardening, with repeat applications at 10 - 14 day intervals. Also apply at the same rate post harvest before leaf fall.
Water rate: 500 to 1000 l/ha.

**Grapevines (Wine Grapes only)**
3 - 5 l/ha at fruit set, pea-sized berries and first colour softening/one month before harvest.
Water rate: 200 to 500 l/ha.

**Grass (amenity), Turf**
10 l/ha as soon as growth commences in the spring. In the case of moderate to severe deficiency, repeat applications at 14 day intervals.
Water rate: 500 to 1,000 l/ha.

**Leeks**
5 l/ha two weeks after transplanting.
Repeat at 10 - 14 day intervals as necessary.
Water rate: 200 l/ha.

**Lettuce (field grown)**
5 l/ha 14 to 20 days after the 4 - 6 leaf stage.
Repeat if necessary at 10 day intervals. Note: Final application to be made at least one month before harvest. Water rate: 500 l/ha.

**Maize**
5 l/ha at the 4 - 8 leaf stage.
Water rate: 200 l/ha.

**Oilseed Rape**
5 l/ha at the 4 to 6 leaf stage. Repeat as required for moderate to severe deficiency at 7 to 14 day intervals, up to the green bud stage. Do not apply during flowering.
Water rate: 200 l/ha.

**Onions**
5 l/ha when sufficient leaf area to intercept spray. Water rate: 200 to 500 l/ha.

**Peas, Beans**
5 l/ha before flowering. Water rate: 200 l/ha.

**Potatoes**
One application of 10 l/ha or two applications of 5 l/ha during tuber bulking (as soon as first formed tubers are 10 mm in diameter). Allow 10 - 14 days between applications.
Water rate: 200 l/ha.

**Strawberries (field grown), Raspberries**
5 l/ha at green bud.
Water rate: 200 to 500 l/ha.

**Sugar Beet**
5 l/ha from 16 leaf stage onwards. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.3 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.
N.B. Do not exceed a rate of 30 mls per 10 litres of water applied over 100 $m^2$

# YaraVita™
# GLYTREL MnP

A fully formulated liquid of manganese & phosphate for use as a foliar and seed treatment for cereals, pulses and oilseed rape.

## ANALYSIS
9.3% w/v = 93 g/l Mn
9.3% w/v = 93 g/l $P_2O_5$

## PACK SIZE
10 litres

## PRODUCT FEATURES AND BENEFITS
- Provides manganese & phosphate right from germination
- Helps germination
- Ensures manganese & phosphate supply in autumn when spraying may not be possible
- Provides an immediate manganese & phosphate supply for spring-sown crops
- Nourishes crops through the critical stages
- Strengthens resistance to fungal attack
- Can be applied in conjunction with pesticidal seed treatments
- Complements subsequent foliar sprays




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**Apple:** 3 l/ha applied at petal fall and again 10 to 14 days later. Water rate: 200 l/ha.

**Barley:** Foliar Spray:3 l/ha from 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). For moderate to severe deficiency repeat applications at 7 to 14 day intervals as necessary within these growth stages.
Water rate: 30 to 200 l/ha.
**Seed Dressing:** Typical Rate: 3 litres per tonne. Also, up to 6 litres per tonne if necessary.

**Brassicas:** 3 l/ha from 4 true leaves. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals as necessary.
Water rate: 30 to 200 l/ha.

**Carrot:** 3 l/ha when crop is 15cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 30 to 200 l/ha.

**Lettuce (field grown):** 3 l/ha applied two weeks after transplanting. Repeat, if necessary, once or twice at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Maize:** 3 l/ha at the 2 to 8 leaf stage. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals as necessary.
Water rate: 30 to 200 l/ha.
**Seed Dressing:** 4 to 8 litres per tonne.

**Oats:** Foliar Spray: 3 l/ha from 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). For moderate to severe deficiency repeat applications at 7 to 14 day intervals as necessary within these growth stages.
Water rate: 30 to 200 l/ha.
**Seed Dressing:** Typical Rate: 4 litres per tonne. Also, up to 8 litres per tonne if necessary.

**Oilseed rape:** 3 l/ha from the 3 to 4 leaf stage. For moderate to severe deficiency, repeat once or twice at 10 to 14 day intervals.
Water rate: 30 to 200 l/ha.

**Onion:** 3 l/ha from 4 true leaves. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals as necessary.
Water rate: 30 to 200 l/ha.

**Pears:** 3 l/ha applied at petal fall and again 10 to 14 days later. Water rate: 200 l/ha.

**Peas:** 3 l/ha when the crop is 10 to 15 cm tall. Repeat 10 to 14 days later if necessary.
Water rate: 30 to 200 l/ha.

**Potatoes:** 3 l/ha at one week after 100 percent emergence. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. Also, 3 l/ha following petiole analysis during tuber bulking. Water rate: 30 to 200 1/ha.

**Wheat:** Foliar Spray: 3 l/ha from 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). For moderate to severe deficiency repeat applications at 7 to 14 day intervals as necessary within these growth stages.
Water rate: 30 to 200 l/ha.

# YaraVita™ GRAMITREL

A flowable liquid fertilizer with a balanced combination of micronutrients including manganese, magnesium, copper and zinc for foliar application to cereals.

## ANALYSIS

6.4% w/v = 64 g/l nitrogen (N)
15% w/v = 150 g/l magnesium (Mg)
[25% w/v = 250 g/l magnesium oxide (MgO)]
15% w/v = 150 g/l manganese (Mn)
5.0% w/v = 50 g/l copper (Cu)
8.0 % w/v = 80 g/l zinc (Zn)

## PACK SIZE

10 litres

## PRODUCT FEATURES AND BENEFITS

- Concentrated combination of essential nutrients for cereals
- Easy to measure, pour & mix
- Tank mixes with almost all cereal pesticides
- Quickly taken up by the crop
- Lasting feeding effect
- Very safe formulation




 © Yara

# GRAMITREL
## Application rates and timings

**Cereals:**
1 to 3 l/ha from the 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). Repeat applications at 10 to 14 day intervals, within this timing, if necessary. For autumn sown crops, an application prior to winter dormancy may also be beneficial. In addition, 1 l/ha from second node detectable to flag leaf fully emerged (Zadoks G.S. 32 to 39). Water rate: 50 to 200 l/ha.

Seed Dressing: 3 to 6 litres per tonne.






# YaraVita™ MAGFLO 300

A fully formulated flowable liquid fertilizer containing a high concentration of magnesium for foliar application to extend greenness in cereals and potatoes or to treat magnesium deficiency in a wide range of crops.

## ANALYSIS
30% w/v = 300 g/l Mg (50% w/v = 500 g/l MgO)

## PACK SIZE
10 litres

## PRODUCT FEATURES AND BENEFITS
- Highest concentration of Mg
- Three times the percentage Mg of magnesium sulphate
- More than 8-10 times the Mg concentration of a typical liquid chelate
- Widest tank mixability
- Gives greater flexibility in field recommendations
- Excellent plant absorption
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect
- Extends greenness of flag leaf in wheat
- Extends greenness of potato haulm
- Very safe formulation




 © Yara

# MAGFLO 300
## Application rates and timings

**Apples, Pears**
4 l/ha after petal fall. Repeat if necessary at 10 - 14 day intervals. In cases of severe deficiency apply also before flowering (around pink bud stage).
Water rate: 500 - 1000 l/ha.

**Blackcurrants**
4 l/ha at full flower and 4 l/ha at first fruit set. Water rate: 200 to 500 l/ha.

**Cereals**
2 - 4 l/ha from 2 leaf stage to first node detectable (Zadoks G.S. 12-31). For moderate to severe deficiency repeat applications at 10 - 14 day intervals. A further application of 2 l/ha at flag leaf ligule just visible to anthesis complete (Zadoks G.S. 39-69).
Water rate: 200 l/ha

**Cherries, Plums**
4 l/ha at fruit set. If necessary a second application may be made 10 - 14 days later.
Water rate: 200 - 500 l/ha.

**Conifers**
2 - 4 l/ha when there is new season leaf production and 2 to 4 l/ha in early autumn.
Water rate: 500 - 1000 l/ha.

**Daffodils, Lilies & Tulips (field grown)**
4 l/ha. Repeat applications at 7 - 14 day intervals commencing when crop is 10 - 15 cm tall. Water rate: 200 l/ha. Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Grapes**
4 l/ha at flower buds visible, flower buds separated and fruit set. Water rate: 200 - 500 l/ha.

**Amenity Turf**
2 - 4 l/ha as soon as growth commences in the spring. In the case of moderate to severe deficiency, repeat applications at 14 day intervals.
Water rate: 200 l/ha.

**Grass (grazing)**
5 l/ha applied 7 - 14 days before grazing.
Water rate: 200 l/ha.

**Leeks (field grown)**
2 - 4 l/ha. 10 - 14 days after transplanting. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Lettuce (field grown)**
2 to 4 l/ha. 2 weeks after transplanting. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Note: Final application to be made at least one month before harvest. Water rate: 500 l/ha.

**Maize**
2 - 4 l/ha at 4 - 6 leaf stage. Water rate: 200 l/ha.

**Oilseed Rape**
For a single application, 2 - 4 l/ha at onset of stem extension. For moderate deficiency, 2 - 4 l/ha at 4 - 6 leaf stage and 2 - 4 l/ha at onset of stem extension. An extra application can be made 10 -14 days later for severe deficiency. Avoid flowering. Water rate: 200 l/ha.

**Onions**
2 - 4 l/ha two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Parsnips**
4 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. (3 applications maximum).
Water rate: 200 l/ha.

**Peas, Beans, Soya, Carrots, Linseed**
2 - 4 l/ha when crop is 15cm tall. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.
N.B. On carrots, final application to be made one month before harvest.

**Potatoes**
2 - 4 l/ha 1 week after 100% emergence and following petiole analysis during tuber bulking. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Raspberries**
4 l/ha at start of flowering and at 10 - 14 day intervals as necessary, up to 14 days before harvest
Water rate: 200 - 500 l/ha.

**Strawberries (field grown)**
4 l/ha at green bud. Repeat if necessary at 10 - 14 day intervals. Water rate: 200 - 500 l/ha.

**Squash (Field Grown)**
4 l/ha at 4 leaf stage. Repeat if necessary 10 to 14 days later. Water rate: 200 l/ha.

**Sugar Beet, Broccoli, Sprouts, Cabbage, Cauliflower, Calabrese, Kale, Fodder Beet, Red Beet, Swedes, Turnips**
2 - 4 l/ha at 4 - 6 leaf stage. For moderate to severe deficiency repeat applications at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.2 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.
N.B. Do not exceed a rate of 20 mls per 10 litres of water applied over 100 $m^2$
N.B. MAGFLO 300 may leave a white deposit.
Do not apply within one month of harvest.

# YaraVita™ MAGPHOS K

A fully formulated liquid fertilizer containing a high concentration of phosphate together with potash and magnesium for foliar application to potatoes and other crops.

## ANALYSIS

Guaranteed analysis
44% w/v = 440 g/l $P_2O_5$
7.4% w/v = 74 g/l $K_2O$
6% w/v = 60 g/l Mg

## PACK SIZE

10 litres, 1,000 litres

## PRODUCT FEATURES AND BENEFITS

- Increases tuber size and quality
- Improves total yield
- Extends life of haulm
- Gives extra time for tubers to swell
- Makes possible more starch production
- Up to 10 times more available than soil applied phosphorus
- In the preferred readily available phosphoric acid form
- Enhances root development
- Allows applications timed for maximum cell division or cell expansion




 © Yara

# MAGPHOS K
## Application rates and timings

**Broccoli, Sprouts, Cabbage, Calabrese, Cauliflower**
4 l/ha applied soon after transplanting.
Water rate: 200 l/ha.

**Carrots**
3 - 5 l/ha when crop is 15 cm tall. Repeat if necessary at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Cereals**
5 l/ha at tillering. Repeat at 10 - 14 day intervals if necessary. Also apply from ear emergence until the end of flowering (Zadoks G.S. 51-69).
Water rate: 200 l/ha.

**Daffodils, Lilies, Tulips (field grown)**
5 l/ha applied 7 - 21 days after the flowers have been removed, and repeated again 10 - 14 days later. Water rate: 200 l/ha.
Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Grapes (wine):**
3 to 5 l/ha at flower buds visible, flower buds separated, fruit set, grape expansion, early veraison (one month before harvest) and 10 to 14 days later. Water rate: 200 l/ha. Soil Application: 25 to 40 l/ha applied from the swollen bud stage to fruit set. For coloured varieties, repeat the application at veraison.

**Grass (amenity), Turf**
5 - 10 l/ha as soon as growth commences in spring and /or following identification of need by analysis. Repeat sprays at 10 - 14 day intervals as necessary. Water rate: 200 l/ha.

**Leeks**
5 l/ha applied from two weeks after transplanting, or in the case of direct sown crops when the crop is 15 cm tall. Repeat applications may be necessary at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Lettuce (Field Grown)**
5 l/ha. Apply 10 - 14 days after transplanting or emergence. One or two repeat applications may be made at 10 - 14 day intervals.
Water rate: 500 l/ha.

**Maize**
5 l/ha at 4 to 8 leaf stage. Repeat at 10 - 14 day intervals if necessary. Water rate: 200 l/ha.

**Onions**
5 l/ha. Apply when the foliage is 15 cm tall, with a second application 10 - 14 days later if necessary. Also, 1 - 2 applications of 5 l/ha during bulb filling, with a 10 - 14 day interval between sprays. Water rate: 200 l/ha.

**Oilseed Rape**
For a single application, 5 l/ha at onset of stem extension. For moderate deficiency, 5 l/ha at 4 - 6 leaf stage and at onset of stem extension. An extra application can be made 10 - 14 days later for severe deficiency. Avoid flowering.
Water rate: 200 l/ha

**Parsnips**
5 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. (3 applications maximum).
Water rate: 200 l/ha.

**Peas, Beans**
1 - 2 applications of 5 l/ha when crop is approximately 10 - 15 cm tall. Allow 10 - 14 days between treatments. Water rate: 200 l/ha.

**Potatoes**
To encourage tuber numbers 10 l/ha at tuber initiation (when 50% of the tip swellings are twice the diameter of the rest of the stolon).
**To encourage tuber size**
A minimum of 2 applications of 5 l/ha or 1 - 2 applications of 10 l/ha during tuber bulking. (As soon as first formed tubers are 10mm in diameter) and following petiole analysis during bulking. Allow 10 - 14 days between applications.
Water rate: 200 l/ha.

**Plums**
2 - 5 applications of 3 - 5 l/ha from petal fall. Repeat applications at 10 - 14 day intervals.
Water rate: 500 - 1000 l/ha.

**Sugar Beet**
5 l/ha at 4 - 6 leaf stage. Repeat applications may be made at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Swedes, Turnips**
3 to 5 l/ha at the 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals as necessary throughout the season.
Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.3 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.
*N.B. Do not exceed a rate of 30 mls per 10 litres of water applied over 100 $m^2$*

# YaraVita™ MAIZE BOOST

A fully formulated liquid fertilizer containing a high concentrations of phosphate together with zinc, magnesium and potash for foliar application to maize and other crops.

## ANALYSIS

Guaranteed analysis
44% w/v = 440 g/l $P_2O_5$
7.5% w/v = 75 g/l $K_2O$
4.6% w/v = 46 g/l Zn
4.0% w/v = 40 g/l Mg

## PACK SIZE

10 litres, 1000 Litres

## PRODUCT FEATURES AND BENEFITS

- Combination of key nutrients for maize
- Provides readily available phosphate at a time when the crop cannot source sufficient from cold soils
- Provides important zinc and magnesium to maize which is susceptible to deficiency of these nutrients




 © Yara

# MAIZE BOOST
## Application rates and timings

**Carrot**
3 to 5 l/ha when crop is 15 cm tall. Repeat if necessary at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Cereals**
5 l/ha at tillering. Repeat at 10 to 14 day intervals if necessary. Water rate: 200 l/ha.

**Fodder Beet**
Max Rate of Single Application is 5 l/ha; Minimum Water rate: 50 l/ha; At the 4 to 6 leaf stage. Repeat as necessary at 7 to 14 day intervals.

**Maize**
5 l/ha at 4 to 6 leaf stage.
Water rate: 200 l/ha.

**Onion**
5 l/ha. Apply when the foliage is 15 cm tall, with a second application 10 to 14 days later if necessary. Also, 1 to 2 applications of 5 l/ha during bulb filling, with a 10 to 14 day interval between sprays. Water rate: 200 l/ha.

**Potatoes**
To stimulate early growth: 10 l/ha one week after 100% crop emergence. To increase tuber number: 10 l/ha at tuber initiation (when 50% at the tip swellings are twice the diameter of the rest of the stolon). To increase tuber size: a minimum of 2 applications of 5 l/ha during tuber bulking ( as soon as first formed tubers are 10 mm in diameter) and following petiole analysis during tuber bulking. Allow 10 to 14 days between applications.
Water rate: 200 l/ha.

**Swede**
3 to 5 l/ha at the 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals as necessary throughout the season.
Water rate: 200 l/ha.

**Turnip**
3 to 5 l/ha at the 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals as necessary throughout the season.
Water rate: 200 l/ha.






# YaraVita™ MANCOZIN

A fully formulated flowable liquid fertilizer containing high concentrations of manganese, copper and zinc for foliar application to treat micronutrient deficiencies on cereals and broadacre crops.

## ANALYSIS

33% w/v = 330 g/l Mn
11% w/v = 110 g/l Cu
8.4% w/v = 84 g/l Zn

## PACK SIZE

5 litres

## PRODUCT FEATURES AND BENEFITS

### Highest concentration of Mn with Cu and Zn

- 5 times more Mn than a typical liquid chelate
- Over 2 times more Mn than a typical liquid
- More Cu than in a typical liquid chelate
- Valuable Zn provision

### Widest Tank Mixability

- Suitable for almost any tank mix
- Gives greater flexibility in field recommendations

### Excellent Plant Absorption

- Substantial Mn, Cu and Zn provision
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect




 © Yara

# MANCOZIN
## Application rates and timings

**Beans, Peas**
1 l/ha at 4 to 6 leaf stage (for deficiency/yield). Water rate: 200 l/ha.

**Calabrese**
1 l/ha at the 4 to 6 leaf stage. Repeat 10 to 14 days later if necessary. Water rate: 200 l/ha.

**Carrot**
1 l/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Cereals**
1 l/ha at 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). Water rate: 200 l/ha. For severe deficiency, increase to 2 l/ha or repeat at the above rate. For autumn-sown crops, an application prior to winter dormancy is strongly recommended.
**Seed Dressing:** Typically 3 litres per tonne. Rate can be increased up to 6 litres per tonne if necessary.

**Fodder Beet**
1 l/ha at 4 to 6 leaf stage. For moderate to severe deficiency repeat applications at 10 to 14 day intervals as necessary. Water rate: 200 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: 200 l/ha.

**Grass (Grazing)**
1 l/ha 10 to 14 days before "turnout" / grazing. Do not apply to grass for sheep.
Water rate: 200 l/ha.

**Leek**
1 l/ha two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat applications may be necessary at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lettuce (Field Grown)**
1 l/ha at the 4 to 6 leaf stage.
Water rate: 200 l/ha.

**Maize**
1 l/ha at 4-8 leaf stage. For moderate to severe deficiency repeat applications at 10-14 day intervals. Water rate: 200 l/ha.

**Oilseed Rape**
1 l/ha at the 4 to 6 leaf stage. Repeat 10 to 14 days later if necessary. Water rate: 200 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 applications may be necessary at 10 to 14 day intervals. Water rate: 200 l/ha.

**Potatoes**
1 l/ha at one week after 100% emergence and following petiole analysis during tuber bulking. For moderate to severe deficiency, repeat applications at 10-14 day intervals.
Water rate: 200 l/ha.

**Sugar Beet**
1 l/ha from 4-6 leaf stage. For moderate to severe deficiency, applications may be repeated at 10-14 day intervals. Water rate: 200 l/ha.






# YaraVita™ MANCUFLO

A fully formulated flowable liquid fertilizer containing high concentrations of manganese and copper for foliar application to treat micronutrient deficiencies on cereals and broadacre crops.

## ANALYSIS

37.5% w/v = 375 g/l Mn
12.5% w/v = 125 g/l Cu

## PACK SIZE

5 litres

## PRODUCT FEATURES AND BENEFITS

### Highest concentration of Mn with Cu

- Nearly 6 times more Mn than a typical liquid chelate
- 2 or 3 times the Mn of most manganese liquids
- Almost 40% more Cu than a typical liquid chelate

### Widest Tank Mixability

- Suitable for almost any tank mix
- Gives greater flexibility in field recommendations

### Excellent Plant Absorption

- Substantial Mn, Cu provision
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect

### Safe for Crops and Operators

- Very kind to the crop
- Easy to handle




 © Yara

# MANCUFLO
## Application rates and timings

**Carrots**
1 l/ha 30 days after emergence or transplanting.
Water rate: 200 l/ha.

**Cereals**
1 l/ha in 200 litres of water. For severe deficiency, increase to 2 l/ha or repeat at the above rate.
Timing: 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). For autumn-sown crops, an application prior to winter dormancy is strongly recommended.
**Seed Dressing:** Typically 3 litres per tonne. Also, up to 6 litres per tonne if necessary.

**Grass (Grazing)**
1 l/ha 10 to 14 days before "turnout" / grazing.
Do not apply to grass for sheep.
Water rate: 200 l/ha.

**Maize**
0.5 to 1 l/ha at the 4 to 8 leaf stage. Repeat again 10 to 14 days later for severe deficiency. Water rate: 75 to 200 l/ha.

**Oilseed Rape**
1 l/ha at the 4 to 8 leaf stage.
Water rate: 200 l/ha.

**Onions**
1 l/ha two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat applications at 10 to 14 day intervals.
Water rate: 200 l/ha.






# YaraVita™ MANTRAC DF

A dry flowable micronutrient fertilizer containing a high concentration of manganese for foliar application to a wide range of crops to treat or prevent manganese deficiency.

## ANALYSIS

31% w/w = 310 g/kg Mn
18% w/w S = 180 g/kg S
(45% w/w $SO_3$ = 450 g/kg $SO_3$)

## PACK SIZE

15 kg

## PRODUCT FEATURES AND BENEFITS

- High quality dry flowable powder
- Very high dry Mn concentration
- Mixes easily
- Good tank mixability
- Rapid plant uptake
- Mobile with the plant
- Added sulphur contribution




 © Yara

# MANTRAC DF
## Application rates and timings

**Apple, Pears**
3 kg/ha in 200 l/ha water. After petal fall. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals.

**Beans, Peas**
3 kg/ha in 200 l/ha water. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals. 4-6 true leaves (for yield), at or around flowering (for quality)

**Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
3 kg/ha from 4 true leaves. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals. Water rate: 200 l/ha.

**Carrot**
3 kg/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Cereals**
3 kg/ha in 200 l/ha water. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals, 2 leaf stage to first node detectable (Zadok's G.S. 12-31). For autumn-sown crops, an application prior to winter dormancy is strongly recommended.

**Grass (Grazing)**
3 kg/ha 10 to 14 days before "turnout" / grazing. Water rate: 200 l/ha.

**Lettuce (Field Grown)**
1 kg/ha 10 to 14 days after transplanting or emergence. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Note: Final application to be made at least one month before harvest. Water rate: 500 l/ha.

**Maize**
3 kg/ha at the 4 to 8 leaf stage. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Oilseed Rape**
3 kg/ha in 200 l/ha water. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals. Autumn application at 4-9 true leaves followed by spring application at stem extension (regrowth).

**Onion**
3 kg/ha two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Parsnip**
3 kg/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals (3 applications maximum). Water rate: 200 l/ha.

**Plum**
3 kg/ha in 200 litres/ha water. Apply after fruit set. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals.

**Potatoes**
3 kg/ha in 200 l/ha water. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals. 1 week after 100% emergence.

**Sugar Beet**
3 kg/ha in 200 l/ha water. For severe deficiency, repeat applications should be made at the above rate at 10-14 day intervals. 4-6 true leaves.






# YaraVita™ MANTRAC PRO

A flowable liquid micronutrient fertilizer containing a high concentration of manganese for application as a foliar spray or seed treatment to a wide range of crops to treat or prevent manganese deficiency.

## ANALYSIS
50% w/v = 500g/l Mn

## PACK SIZE
5 litres

## PRODUCT FEATURES AND BENEFITS

### Highest Concentration of Mn
- 8 times as concentrated as a typical liquid chelate
- Over 3 times more concentrated than a typical Mn liquid

### Widest Tank Mixability
- Suitable for almost any tank mix
- Gives greater flexibility in field recommendations

### Excellent Plant Absorption
- Substantial Mn provision
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect




 © Yara

# MANTRAC PRO
## Application rates and timings

**Apples/Pears**
1 l/ha prior to flowering (for severe deficiency), otherwise at petal fall. Repeat 10 -14 days later. Water rate: 500 - 1,000 l/ha.

**Asparagus**
1 l/ha when there is sufficient leaf area to intercept spray and prior to senescence of ferns. Water rate: 200 l/ha.

**Broccoli, Sprouts, Cabbage, Calabrese, Cauliflower**
1 l/ha from 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Carrots, Linseed**
1 l/ha when crop is 15cm tall. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Cereals**
1 l/ha from 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). For moderate to severe deficiency repeat applications at 7 to 14 day intervals. Also, 0.25 l/ha from third node detectable to the end of booting (Zadok's G.S. 33 to 49). Water rate: 200 l/ha.
**Seed Dressing:** 2 to 6 litres per tonne.

**Cherries, Plums**
1 l/ha at fruit set. If necessary a second application may be made 10 - 14 days later.
Water rate: 500 - 1,000 l/ha.

**Conifers**
1 l/ha once there is new season leaf production, and again in early autumn.
Water rate: 500 - 1,000 l/ha.

**Daffodils, Lilies, Tulips (field grown)**
1 l/ha. Repeat applications at 7 - 14 day intervals commencing when crop is 10 - 15 cm tall.
Water rate:200 l/ha.
Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Grapes**
1 l/ha at flowering buds visible, at flower buds separated and at fruit set.
Water rate: 500 - 1,000 l/ha.

**Grass/Turf**
1 l/ha as soon as growth commences in spring. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Grass (grazing)**
1 l/ha 10 - 14 days before turnout/grazing.
Water rate: 200 l/ha.

**Leeks, Onions, Lettuce (field grown)**
1 l/ha two weeks after transplanting. Repeat applications may be necessary at 10 - 14 day intervals. Water rate: 200 l/ha (leeks and onions), 500 l/ha (field grown lettuce).
N.B. On lettuce, final application to be made at least one month before harvesting.

**Maize**
1 l/ha from 4-6 leaf stage. For moderate to severe deficiency, repeat applications at 10-14 day intervals. Water rate: 200 l/ha.
**Seed Dressing:** 4 to 8 litres per tonne.

**Oilseed Rape**
For a single application, 1 l/ha at onset of stem elongation. For moderate deficiency, 1 l/ha at 4-6 leaf stage and at stem extension. For severe deficiency an extra application can be made 10-14 days later. Avoid application during flowering.
Water rate: 200 l/ha.
**Seed Dressing:** Up to 22 litres per tonne.

**Peas, Beans**
1 l/ha at 4-6 leaf stage (for deficiency/yield) and at start and end of flowering (for Marsh Spot).
Water rate: 200 l/ha.
**Seed Dressing:** 2 to 6 litres per tonne.

**Potatoes**
1 l/ha 1 week after 100% emergence. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Raspberries, Blackcurrants**
1 l/ha at start of flowering.
Water rate: 200 - 500 l/ha.

**Strawberries (field grown)**
1 l/ha at green bud.
Water rate: 200 - 500 l/ha.

**Sugar Beet, Fodder Beet, Kale, Turnips, Swedes**
1 l/ha from 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.05 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.
N.B. Do not exceed a rate of 5 mls per 10 litres of water applied over 100 $m^2$.

# YaraVita™
# MOLYTRAC 250

A fully formulated liquid micronutrient fertilizer containing a high concentration of molybdenum for foliar application to treat molybdenum deficiencies on a wide range of crops.

## ANALYSIS
25% w/v = 250 g/l Mo

## PACK SIZE
5 litres

## PRODUCT FEATURES AND BENEFITS
- Highly concentrated true liquid
- 4 times more Mo than alternative liquids
- Rapid uptake by the plant
- Lasting feeding effect
- Widest tank mixability
- Easy to use




 © Yara

# MOLYTRAC 250
## Application rates and timings

**Asparagus**
0.25 l/ha when there is sufficient leaf area to intercept spray and prior to senescence of ferns. Water rate: 200 l/ha.

**Beans, Peas, Soya**
0.25 l/ha when plants are 5 - 15 cm tall. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals from the first application. Water rate: 200 l/ha.

**Broccoli, Sprouts, Cabbage, Calabrese, Kale, Swedes and Turnips**
0.25 l/ha from 4 - 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals. Water rate: 200 l/ha.

**Cauliflower**
0.25 l/ha from 4 - 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals, or a second application may be made at early head development or buttoning. Water rate: 200 l/ha.

**Cereals**
0.25 l/ha from 5 leaf stage until the end of tillering (Zadocks G.S. 15 - 29). Water rate: 200 l/ha.

**Leeks**
0.25 l/ha applied two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. One or two repeat applications may be necessary at 10 - 14 day intervals. Water rate: 200 l/ha.

**Lupins**
0.25 l/ha at the 4 - 6 leaf stage and repeat once or twice at 10 - 14 day intervals if necessary. (For winter varieties, apply the repeat sprays at spring re-growth). Water rate: 200 l/ha.

**Maize**
0.25 to 0.5 l/ha at the 6 to 8 leaf stage. Water rate: 50 to 200 l/ha.

**Onions**
0.25 l/ha applied as soon as there is sufficient leaf cover to intercept the spray. Repeat two weeks later if necessary. Water rate: 200 l/ha.

**Oilseed Rape**
For a single application, 0.25 l/ha at onset of stem extension. For moderate deficiency, 0.25 l/ha at 4 - 6 leaf stage and 0.25 l/ha at onset of stem extension. An extra application can be made 10 - 14 days later for a severe deficiency. Avoid flowering. Water rate: 200 l/ha.

**Parsnips**
0.25 l/ha 10 - 14 days after transplanting or when crop is 15 cm tall. Water rate: 200 l/ha.

**Potatoes:** 0.5 l/ha between 100% emergence and tuber initiation. Water rate: 50-200 l/ha.

**Sugar beet:** 0.25 l/ha at 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals. Water rate: 200 l/ha. **Protected Crops in Polytunnels**
0.025 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.

N.B. Do not exceed a rate of 2.5 mls per 10 litres of water applied over 100 $m^2$.






# YaraVita™
# PHOTREL PRO

A high quality, fully soluble powder product combining a balanced combination of essential nutrients for oilseed rape and vegetable crops including legumes. The nutrient balance was determined by Yara's own nutrient profiling research and YaraVita PHOTREL PRO has since been trialled all over the world. With a 20 year pedigree the product is easy to mix and is very safe on the leaf.

## ANALYSIS

8% w/w = 80 g/kg boron (B)
7% w/w = 70 g/kg manganese (Mn)
0.4% w/w = 4 g/kg molybdenum (Mo)
8.3% w/w = 83 g/kg magnesium oxide (MgO) [5% w/w = 50 g/kg magnesium (Mg)]
28.8% w/w = 288 g/kg sulphur trioxide ($SO_3$) [11.5% w/w = 115 g/kg sulphur (S)]

## PACK SIZE

10 kg

## PRODUCT FEATURES AND BENEFITS

- Balanced combination of essential nutrients for oilseed rape and vegetables
- Nurtures autumn-sown crops through winter
- Triggers rapid growth in the early spring
- Tank mixes with almost all pesticides
- Easy mixing
- Lasting feeding effect
- Very safe formulation




 © Yara

# PHOTREL PRO
## Application rates and timings

**Asparagus**
Two applications of 3 kg/ha during vegetative growth at a 10 to 14 day interval. Water rate: 200 l/ha.

**Beans, Peas**
3 kg/ha in 50 to 200 litres of water as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4-6 leaf stage). Repeat applications can be made at 10-14 day intervals.

**Borage**
3 kg/ha at the 4 to 6 leaf stage. Repeat if necessary 10 to 14 days later.
Water rate: 200 l/ha.

**Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower, Chinese Cabbage**
3 kg/ha in 200 litres of water as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4-6 leaf stage). Repeat applications can be made at 10-14 day intervals.

**Carrot**
3 kg/ha when there is sufficient leaf area to intercept the spray. Repeat if necessary 10 to 14 days later. Water rate: 200 l/ha.

**Cereals**
3 kg/ha applied at any time from the 2 leaf stage to 1st node detectable ( Zadoks G.S. 12 to 31 ).
Water rate: 50 to 200 l/ha.

**Conifers**
3 kg/ha at start of new season leaf production and again in early autumn.
Water rate: 500 to 1000 l/ha

**Fodder Beet**
3 kg/ha at 4 to 6 leaf stage. For moderate to severe deficiency repeat applications at 10 to 14 day intervals as necessary.
Water rate: 200 l/ha.

**Leek**
3 kg/ha applied two weeks after transplanting or in the case of direct sown crops, when the crop is 15 cm tall. For moderate to severe deficiency one or two repeat applications may be necessary at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Lettuce (Field Grown)**
3 kg/ha 10 to 14 days after transplanting or emergence. Repeat after 10 to 14 days if necessary. Water rate: 500 l/ha.

**Linseed**
3 kg/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Lupin**
3 kg/ha at the 4 to 6 leaf stage. Repeat once or twice at 10 to 14 day intervals if necessary. (For winter varieties apply the repeat sprays at spring re-growth). Water rate: 30 to 200 l/ha.

**Oilseed Rape**
3 kg/ha at the 4 to 9 leaf stage and again at the onset of the rapid stem extension phase up to the start of flowering. Repeat at 10 to 14 day intervals within these growth stages as necessary. Also, 3 kg/ha at the end of petal fall. Water rate: 50 to 200 l/ha.

**Onion**
2 applications of 3 kg/ha applied as soon as there is adequate leaf cover (6 leaves) and repeated 2 weeks later. Water rate: 200 l/ha.

**Parsnip**
3 kg/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. (3 applications maximum).
Water rate: 200 l/ha.

**Potatoes**
3 kg/ha applied one week after 100 percent emergence with a second application 10 to 14 days later. Water rate: 200 l/ha.

**Soya Bean**
3 kg/ha in 50 to 200 litres of water as early in the growing season as possible, provided there is adequate leaf cover to intercept the spray (e.g. 4-6 leaf stage). Repeat applications can be made at 10-14 day intervals.

**Sugar Beet**
3 kg/ha in 200 litres of water. Repeat applications can be made at 10 to 14 day intervals. Apply from 4 to 6 leaf stage. .

**Sunflower**
3 kg/ha at the 4 to 8 leaf stage.
Water rate: 200 l/ha.

**Swede, Turnip**
3 kg/ha at 4 to 6 leaf stage. Repeat after 10 to 14 days if necessary. Water rate: 200 l/ha.

# YaraVita™ SAFE-N 300

A concentrated liquid nitrogen fertilizer designed for foliar application which has extremely good wetting properties to ensure maximum uptake and very high crop safety.

## ANALYSIS

31.2% w/v = 312 g/l nitrogen (N)
[14.7% w/v = 147 g/l ureic nitrogen]
[4.9% w/v = 49 g/l nitrate nitrogen]
[4.9% w/v = 49 g/l ammonium nitrogen]
[6.7% w/v = 67 g/l metholene urea]

## PACK SIZE

10 litres

## PRODUCT FEATURES AND BENEFITS

- YaraVita SAFE-N 300 has extremely good wetting properties to ensure maximum uptake and crop safety.
- Although quickly absorbed into the leaf, 20% of the nitrogen is present as a slow release form to give a long lasting feeding effect so in many situations fewer applications are required.
- The liquid formulation is easy to handle and is widely tank mixable for co-application with agrochemicals, removing the need for specific spray operations, saving time and money.




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# SAFE-N 300
## Application rates and timings

**Apples, Pears**
5 to 10 l/ha from bud burst to the start of flowering and/or from petal fall with a repeat application 10 to 14 days later if necessary and/or after harvest before leaf senescence.
Water rate: 500 l/ha.

**Beans, Peas**
10 to 15 l/ha from when the crop has sufficient leaf area to intercept the spray up to the start of flowering. Repeat at pod set if required.
Water rate: 200 l/ha.

**Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
10 to 15 l/ha. Apply 10 to 14 days after thinning or transplanting. Repeat at early head formation and at 10 to 14 intervals if necessary.
Water rate: 100 to 200 l/ha.

**Cereals**
10 to 20 l/ha from tillering to the end of the milk development stage in grain ripening (Zadoks G.S. 21 to 79). Repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha. N.B. Note that later foliar nitrogen applications may raise grain nitrogen status.

**Grass (Amenity)**
5 to 10 l/ha once growth has commenced in spring. Repeat at monthly intervals until late summer. Water rate: 200 to 500 l/ha.

**Grass (Grazing)**
Apply 10 to 15 l/ha 7 to 14 days before grazing.
Water rate: 200 l/ha.

**Lettuce (Field Grown)**
10 to 15 l/ha. Apply 10 to 14 days after transplanting or thinning. Repeat 14 days later and again 14 days prior to harvest.
Water rate: 500 l/ha minimum.

**Maize**
10 to 20 l/ha at the 4 to 6 leaf stage, 10 to 14 days later and at the pre-tassel stage.
Water rate: 200 l/ha.

**Nursery Stock/Ornamentals**
10 to 25 l/ha when sufficient foliage is present with repeat applications at 10 to 14 day intervals. Safe-N 300 has been applied undiluted to some types of ornamentals and nursery stock. Since these plants vary widely in growth habit and leaf texture, some types are more susceptible to leaf or tip burn than others. It is recommended that the user try only a few plants at undiluted or concentrated rates and observe for a week before general applications are made.

**Oilseed Rape**
10 to 20 l/ha at the 4 to 8 leaf stage. Also, 10 to 20 l/ha at the onset of stem extension. Repeat 10 to 14 days later if necessary.
Water rate: 200 l/ha.

**Onion**
10 to 20 l/ha when the crop is 15 to 20 cm tall. Repeat, if necessary, three to four times at 7 to 10 day intervals. Water rate: 200 l/ha.

**Potatoes**
10 to 20 l/ha before tuber set and at onset of flowering. Also, apply 10 to 20 l/ha, if required, following petiole analysis.
Water rate: 100 to 200 l/ha.

**Strawberry (Field Grown)**
5 to 10 l/ha before flowering. Repeat if necessary after fruit set. Water rate: 500 l/ha.

**Sugar Beet**
10 to 25 l/ha at the 4 to 6 leaf stage. Repeat one month later if required.
Water rate: 100 to 200 l/ha.

**Protected Crops in Polytunnels**
0.5 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.

# YaraVita™ SENIPHOS

A fully formulated liquid foliar fertilizer containing high concentrations of phosphate and calcium for foliar application to improve yield and quality in fruit and potatoes.

## ANALYSIS

31% w/v = 310 g/l $P_2O_5$
4% w/v = 40 g/l Ca
3.9% w/v = 39 g/l N

## PACK SIZE

10 litres, 1000 litres

## For Potatoes

- Increases viable tuber numbers
- Enhances root development
- Strengthens cell walls
- Improves yield overall
- Helps make tubers less susceptible to disease
- Improves storage potential
- Thoroughly proven in trials

## For Fruit

- Increases marketable yield
- Enhances fruit quality
- Reduces skin blemishes
- Brings out fruit colour
- Helps combat bitter pit
- Reduces senescent breakdown
- Helps prevent low temperature
- breakdown
- Improves fruit firmness & storage
- potential
- Treated fruit resists disease better
- Supports calcium:phosphorus ratio
- Independently proven
- Used world-wide by leading fruit farmers




 © Yara

# SENIPHOS
## Application rates and timings

**Apples**
5 - 8 applications of 10 l/ha at 10 - 14 day intervals commencing at petal fall. Water rate: 500 l/ha.
For red coloration: Seniphos at 10 l/ha in 1,000 litres water has been shown to enhance red coloration. 1 or 2 applications (7 days apart) should be made once the fruit has started to change colour, normally 2 - 3 weeks before harvest.

**Asparagus**
Up to 3 applications of 5 l/ha applied to ferns at 10 to 14 day intervals prior to senescence. Water rate: 200 l/ha.

**Blackcurrants**
3 applications of 10 l/ha. 50% fruit set, 100% fruit set and fruit swelling. Water rate 500 l/ha.

**Broccoli, Sprouts, Cabbage, Calabrese, Cauliflower**
2 - 3 applications of 10 l/ha from stem extension/head development at 7 - 14 day intervals. Water rate 200 l/ha.

**Carrots**
5 l/ha. 2 to 3 applications when crop is 15cm tall and at 7 - 10 day intervals.
Water rate: 200 l/ha.

**Cherries, Plums**
2 - 5 applications of 10 l/ha at 7 to 14 day intervals commencing at petal fall.
Water rate: 500 l/ha.

**Grapevines**
10 l/ha at fruit set and repeated 2 - 3 times at 10 and 14 day intervals. Water rate: 500 l/ha.

**Hops**
4 applications of 10 l/ha commencing when crop starts to burr, with 3 further applications at 14 day intervals. Water rate: 500 l/ha.

**Leeks**
5 l/ha applied from two weeks after transplanting. Repeat if necessary at 10 - 14 day intervals. Water rate: 200 l/ha.

**Lettuce (field grown)**
2 - 3 applications of 5 l/ha commencing 10 to 14 days after transplanting or emergence with 7 - 10 day intervals between applications.
Water rate: 200 to 500 l/ha.

**Maize**
5 l/ha at 4 to 8 leaf stage.
Water rate: 200 l/ha.

**Onions**
1 - 2 applications of 5 l/ha during bulb filling with a 10 - 14 day interval between sprays.
Water rate: 200 l/ha.

**Pears**
5 - 8 applications of 10 l/ha at 10 - 14 day intervals commencing at petal fall.
Water rate: 500 l/ha.

**Peas**
5 l/ha before flowering. Water rate: 200 l/ha.

**Potatoes**
To encourage tuber numbers: 15 l/ha at tuber initiation (when 50 percent of the tip swellings are twice the diameter of the rest of the stolon).
To encourage tuber size: a minimum of 2 applications of 5 l/ha during tuber bulking (as soon as first formed tubers are 10mm in diameter). Allow 2 -3 weeks between applications.
Water rate: 200 l/ha.

**Raspberries**
3 applications of 10 l/ha. Start of flowering, end of flowering and full development.
Water rate: 500 l/ha.

**Strawberries (field grown)**
Non-everbearing varieties: 3 applications of 10 l/ha from start of flowering. Repeat applications at 7 - 10 day intervals. Everbearing varieties: Divide a total rate of 30 l/ha into 6 applications of 5 l/ha. Do not apply successive applications at intervals of less than 10 - 14 days.
Water rate: 500 l/ha.

**Sugar beet**
5 l/ha at 4 - 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Swedes, Turnips**
3 to 5 l/ha at the 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications should be made at the above rate at 10 to 14 day intervals as necessary throughout the season. Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.5 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.

*N.B. Do not exceed a rate of 50 mls per 10 litres of water applied over 100 $m^2$*

# YaraVita™ STOPIT

A fully formulated liquid foliar fertilizer containing a high concentration of calcium for foliar application to control and reduce calcium related disorders in top fruit and other crops.

## ANALYSIS
22.4% w/v CaO = 224 g/l CaO

## PACK SIZE
10 litres, 1000 litres

## PRODUCT FEATURES AND BENEFITS
- Highly concentrated liquid
- Rapid uptake by crops
- Lasting feeding effect
- Good tank mixability
- Much safer to use than other calcium sources
- Various pack sizes for economy and convenience
- Ideal for enhancing calcium status in fruit




 © Yara

# STOPIT
## Application rates and timings

**Apples**
2 - 5 l/ha applied at bud burst and repeated at 7 - 10 day intervals as necessary to the beginning of flowering. Regular applications of 5 - 10 l/ha at 7 - 14 day intervals from petal fall to one week before harvest.
Water rate: 150 - 500 l/ha.

**Beans**
5 l/ha applied at the 4 - 6 leaf stage (10 - 15 cm tall). Repeat applications can be made at 10 - 14 day intervals. Water rate: 200 l/ha.

**Broccoli, Sprouts, Cabbage, Calabrese, Cauliflowers**
2 - 3 applications of 5 l/ha from stem extension/head development to harvest. Allow 10 - 14 day intervals between applications.
Water rate: 200 l/ha.

**Carrots**
2 - 3 applications of 5 l/ha from 10 - 15 cm stage. Allow 10 - 14 day intervals between applications. Water rate: 200 l/ha.

**Celery (field grown)**
5 l/ha early in the growing season. Repeat at 10 - 14 day intervals as necessary.
Water rate: 200 l/ha.

**Cereals**
5 l/ha. Apply from 4 leaves to second node detectable. (Zadoks G.S. 14-32)
Water rate: 200 l/ha.

**Cherries, Plums**
2 applications of 10 l/ha applied 4 weeks and 2 weeks before harvest. Water rate: 500 l/ha.

**Daffodils, Lilies and Tulips (field grown)**
5 l/ha applied 7 - 21 days after the flowers have been removed, and repeated again 10 - 14 days later. Water rate: 200 l/ha.
Do not apply to crops grown under glass or plastic. Do not apply to the crop in flower.

**Grapevines:**
7 to 10 l/ha. Repeated applications at 7 to 14 day intervals from fruit set.
Water rate: 500 to 1000 l/ha.

**Leeks**
5 l/ha applied two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. Repeat applications may be necessary at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Lettuce (field grown)**
2 - 3 applications of 5 l/ha commencing 10 - 14 days after transplanting or emergence with 10 - 14 day intervals between applications.
Water rate: 500 l/ha.

**Onions**
5 - 10 l/ha at bulb swelling. Repeat applications at 10 - 14 day intervals as necessary.
Water rate: 200 l/ha.

**Pears**
Regular applications of 5 - 10 l/ha at 7 - 14 day intervals from petal fall to one week before harvest. Water rate: 150 to 500 l/ha.

**Potatoes**
2 - 3 applications of 5 - 10 l/ha commencing at tuber initiation (when 50% of the tip swellings are twice the diameter of the rest of the stolon) with 10 - 14 day intervals between applications.
Water rate: 200 l/ha.

**Raspberries**
3 applications of 10 l/ha at start of flowering, end of flowering and at fruit development.
Water rate: 500 l/ha.

**Strawberries (field grown)**
Non-everbearing varieties: Three applications of 10 l/ha from start of flowering. Repeat applications at 7 - 10 day intervals. Everbearing varieties: Divide a total rate of 30 l/ha into 6 applications of 5 l/ha. Do not apply successive applications at intervals of less than 10 - 14 days. Water rate: 500 l/ha.

**Tomato (Field Grown)**
Applications of 5 l/ha commencing from flowering on second truss. Repeat at 7 to 14 day intervals. Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.5 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.

*N.B. Do not exceed a rate of 50 mls per 10 litres of water applied over 100 $m^2$*

# YaraVita™ THIOTRAC 300

A fully formulated liquid foliar solution containing 300 g/l sulphur for foliar application to prevent and treat sulphur deficiencies on a wide range of crops.

## ANALYSIS

20.0% w/v = 200 g/l nitrogen (N)
30.0% w/v = 300g/l sulphur (S) [75% w/v = 750 g/l sulphur trioxide ($SO_3$)]

## PACK SIZE

10 litres, 1000 litres

## PRODUCT FEATURES AND BENEFITS

- A true liquid containing 100% soluble sulphur
- Wholly available to the plant through the leaf
- Rapid uptake by the plant
- Lasting feeding effect
- Maintains N:S ration at critical stages
- Sulphur and nitrogen provision helps protein formation
- Improves protein quality in milling wheat
- Good tank mixability
- Kind to crops




 © Yara

# THIOTRAC 300
## Application rates and timings

**Apple**
3 to 5 l/ha before the start of flowering. Repeat at fruit set and 10 to 14 days later if necessary or after harvest before leaf fall. Water rate: 500 to 1000 l/ha. **WARNING** Do not apply during flowering. This product contains an active ingredient which, when used at rates around 15 l/ha, has been found to cause fruit thinning. These rates may also cause leaf scorch and Yara does not warrant this application.

**Beans, Peas**
5 l/ha at 4 to 6 leaf stage. For moderate to severe deficiency, repeat at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Brassicas, Broccoli, Brussel Sprouts, Cabbage, Calabrese, Cauliflower**
5 l/ha at the 4 to 6 leaf stage. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. Water rate: 200 l/ha.

**Carrot**
5 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Cereals**
5 l/ha at pseudo stem erection to first node detectable (Zadok's G.S. 30-31). For moderate to severe deficiency, repeat applications at 10-14 day intervals.
Water rate: 200 l/ha. Wheat Only: In addition: 3 to 5 l/ha at half inflorescence (ear) emerged to end of milk development stage in grain ripening (Zadok's G.S. 55-79) or two applications of 5 l/ha in the period flag leaf ligule just visible to the end of the milk development stage in grain ripening (Zadok's G.S. 39 to 79).
Water rate: 200 l/ha.

**Grass**
10 l/ha 4 weeks before each silage cut is taken (DO NOT APPLY to Grass for Grazing).
Water rate: 200 l/ha

**Grass (silage/hay)**
10 l/ha 4 weeks before each silage cut is taken.
Water rate: 200 l/ha.

**Lettuce (Field Grown)**
3 to 5 l/ha applied at the 4 to 6 leaf stage. Repeat once or twice at 10 to 14 day intervals if necessary.
Water rate: 200 l/ha.

**Maize**
5 l/ha at the 4 to 8 leaf stage. Repeat 10 to 14 days later if required. Water rate: 200 l/ha.

**Oilseed Rape**
5-10 l/ha at the onset of stem extension. For moderate to severe deficiency, repeat applications at 10-14 day intervals. Do not apply during flowering.
Water rate: 200 l/ha.

**Onion, Leeks**
5 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat at 10 to 14 day intervals.
Water rate: 200 l/ha.

**Parsnip**
5 l/ha when crop is 15 cm tall. For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. (3 applications maximum).
Water rate: 200 l/ha.

**Potatoes**
5 l/ha one week after 100% emergence. Repeat applications may be necessary at 10 to 14 day intervals. Also, 5 l/ha following petiole analysis during tuber bulking. Water rate: 200 l/ha.

**Sugar Beet**
5 l/ha at 4-6 leaf stage. For moderate to severe deficiency, repeat at 10-14 day intervals.
Water rate: 200 l/ha.

**Sunflower**
5 l/ha at the 4 to 6 leaf stage. Water rate: 200 l/ha.

**Wheat**
5 l/ha at pseudo stem erection to first node detectable (Zadok's G.S. 30-31). For moderate to severe deficiency, repeat applications at 10 to 14 day intervals. In addition: 3 to 5 l/ha at half inflorescence (ear) emerged to end of milk development stage in grain ripening (Zadok's G.S. 55-79) or two applications of 5 l/ha in the period flag leaf ligule just visible to the end of the milk development stage in grain ripening (Zadok's G.S. 39 to 79).
Water rate: 200 l/ha.

# YaraVita™
# ZINTRAC 700

A fully formulated flowable liquid micronutrient fertilizer containing a high concentration of zinc for foliar application to prevent and treat zinc deficiency on a wide range of crops.

## ANALYSIS
70% w/v = 700 g/l Zn

## PACK SIZE
5 litres

## PRODUCT FEATURES AND BENEFITS
- Highest concentration of Zn
- Almost 8 times more Zn than in a typical liquid chelate
- 4-5 times more Zn than 'typical' liquid
- Suitable for almost any tank mix
- Gives greater flexibility in field recommendations
- Excellent plant absorption
- Substantial Zn provision
- Quickly taken up by the crop
- Very mobile within the plant
- Lasting feeding effect
- Very safe formulation




 © Yara

# ZINTRAC 700
## Application rates and timings

**Apples, Pears**
1 - 2 l/ha at bud burst and at the end of flowering. Avoid flowering. Apply again after harvest but before leaf senescence.
Water rate: 200 - 1000 l/ha.

**Brassicas**
1 l/ha at the 4 - 9 leaf stage. Water rate: 200 l/ha.

**Carrots**
1 l/ha when crop is 15 cm tall. For moderate to severe deficiency repeat applications at 10 - 14 day intervals. Water rate: 200 l/ha.

**Cereals**
1 l/ha from 2 leaf stage to second node detectable (Zadok's G.S. 12 to 32). Also, 0.5 l/ha from ear fully emerged to the end of flowering (Zadok's G.S. 59 to 69). Water rate: 50 to 200 l/ha.
**Seed Dressing:** Typical rate: 3 litres per tonne. Increase up to 8 litres per tonne if necessary.

**Cherries, Plums**
1 - 2 l/ha applied at winter bud or pink bud and again after harvest but before leaf senescence.
Water rate: 500 - 1000 l/ha.

**Conifers**
2 applications of 1 l/ha once there is new season leaf production and again in early autumn.
Water rate: 500 - 1000 l/ha.

**Grass (grazing)**
1 l/ha 10 to 14 days prior to turnout. Animals should be kept out of treated pastures for 10 days to allow for nutrient uptake by the herbage.
Water rate: 200 l/ha.

**Grass for Hay/Silage**
1 l/ha when crop is 15 cm tall. For severe deficiency repeat applications should be made at the above rate at the 15 cm stage before each subsequent cut. Water rate: 200 l/ha.

**Grass (amenity), Turf**
1 l/ha as soon as growth commences in spring and/or following identification of need by analysis. Repeat sprays at 10 - 14 day intervals as necessary. Water rate:200 l/ha.

**Hops**
1.5 l/ha when crop is 2.5 metres tall.
Water rate: 500 l/ha.

**Leeks**
1 l/ha applied two weeks after transplanting, or in the case of direct sown crops, when the crop is 15 cm tall. One or two repeat applications may be necessary at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Linseed**
1 l/ha when crop is 2 - 15 cm tall.
Water rate: 200 l/ha.

**Maize**
1 l/ha from 3 - 8 leaf stage. For severe deficiency, repeat applications should be made at the above rate at 10 - 14 day intervals.
Water rate: 200 l/ha.
**Seed Dressing:** 2 to 8 litres per tonne.

**Oilseed Rape**
1 l/ha at the 4 - 9 leaf stage. Water rate: 200 l/ha

**Onions**
1 l/ha when there is sufficient leaf area to intercept the spray. Water rate: 200 l/ha.

**Peas**
0.5 - 1 l/ha when crop is 5 - 15 cm tall.
Water rate: 50 to 200 l/ha.

**Potatoes**
1 l/ha one week after 100% emergence.
For moderate to severe deficiency, repeat applications may be necessary at 10 - 14 day intervals. Water rate: 200 l/ha.

**Raspberries**
0.5 l/ha at green bud. Water rate: 200 l/ha.

**Strawberries (field grown)**
One application of 0.5 l/ha at green bud followed by two applications of 0.25 l/ha applied at white bud and post-harvest re-growth.
Water rate: 200 to 500 l/ha.

**Sugar Beet**
1 l/ha at 4 - 6 leaf stage. For moderate to severe deficiency, repeat at 10 - 14 day intervals.
Water rate: 200 l/ha.

**Protected Crops in Polytunnels**
0.05 litres per 100 litres water maximum concentration. Water rate: 1000 l/ha maximum. Refer to equivalent field grown crop for application timing.

*N.B. Do not exceed a rate of 5 mls per 10 litres of water applied over 100 $m^2$*

**Soil Application**
3 - 10 l/ha. Apply pre-drilling or pre-planting (or before regrowth of perennial crops).
Water rate: 50 l/ha minimum.

# Tankmix™

## What is TANKMIX™?

TANKMIX™ is an online service providing information on the mixing of YaraVita™ foliar fertilisers with plant protection products. It is a database of results, containing thousands of individual, two-way or multi component YaraVita™ tank mix tests with other spray materials.

Each tank mix test is carried out under controlled conditions in our product development laboratories following BS EN ISO 9001:2000 guidelines and represents a fair measure of the performance of each mixture made. Of course, there are many variables in making tank mixes under field conditions that can influence the mixing of any combination made: so TANKMIX™ is a test of physical compatibility and answers the question:
"Will it spray without blocking the nozzles on the sprayer?".

There are now in excess of 30,000 physical tank mix test results in Yara's tank mix database, available to everyone online at www.TANKMIX.com. Searches can be made by product name or active ingredient and where a result is not available, a test can be requested using the online request form. If the Yara Pocklington site has a sample of the requested product, a result can often be available within 24 hours.

## How it works

First enter the site as a guest, read and accept the contents of the disclaimer and select a country to access the appropriate product range. From here select the YaraVita™ product and the partner spray material either by trade name or active ingredient.

A full list of all laboratory mixtures made involving the two selected products is then generated and the result of these tests can be viewed. If the required combination is not found, and the spray materials are available in our laboratories, a test can usually be made within a few hours. By registering on to the site, further information is made available (see "Extra Features" opposite).

## Benefits of TANKMIX™

- User-friendly tool easy to understand & available to everybody
- Reliable advice on the suitability of spray mixtures
- Very accurate user information to support the proper application of YaraVita™ products
- On-line database instantly updated as tests are made
- Web form for requesting new tests

## YaraVita Tank Mix Database

- YaraVita™ foliar products are rarely applied alone and are often tank mixed with other products and pesticides. A good tank mix profile is therefore essential to enable growers to co-apply YaraVita products an so improve application efficiency.

- YaraVita™ products undergo physical tank mix testing with other products and pesticides to determine if the products can be physically mixed within the spray tank without causing any problems. The work, which is conducted by two full time technicians at the Pocklington site, does not cover any biological compatibilities or the effects on product efficacy.

- All YaraVita™ products are fully formulated by the chemists to be as compatible as possible with other products used as part of a plant protection programme.

## Free Tank Mix 'App'

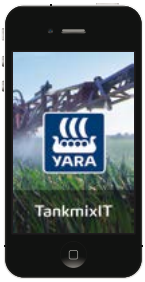
Yara TankmixIT is a smartphone application for Apple iPhones and iPods, as well as numerous Android devices, available from the Apple iTunes and Google Play stores. Search in the store for "Yara TankmixIT".

Yara TankmixIT is a database of all physical mixing tests made with YaraVita products and agricultural pesticides. It provides the same functionality as the website www.tankmix.com, but in a more convenient and freely downloadable App.

For the Blackberry and other mobile devices, with access to the internet, a mobile web version is available at www.tankmix.com.

Upon launch, the App connects through to Yara's data server to ensure the latest and up to date information. As with the web site, first you choose the YaraVita™ product you are interested in and then it enables searching for a pesticide by trade name, or by active ingredient, or another Yara product. This displays all the results of the physical tank mixability tests carried out by Yara's laboratory. If the test is not available a Tankmix request form is provided. Once a request is in the system it can be updated within a few days. This allows planning of product applications in a busy crop spraying season when fast access to results are essential.

Access is freely available to everyone, and allows better planning of spray programmes and spraying opportunities with most of the YaraVita™ range.







## Extra Features are now available on tankmix.com

- An instructional video on how to use the tank mix site and the App can be viewed as a streaming video directly on line in a window or in full screen mode. This can be also found on Yara's YouTube channel.

- Registration on the site provides extra information such as pack shots, the viewing of labels, safety data sheets and wider range of crop recommendations than can be fitted on to the label.

To have access to such a database represents a powerful advantage for the YaraVita™ range over other competitor products in the market as better judgements and therefore more reliable advice can be given on the suitability of a spray mixture.

This enhances the overall value of the YaraVita™ package not only to provide the best quality products but also to provide the most accurate user information available.



# Yara Analytical Services

## THE BENEFITS

- Fast, accurate, impartial
- Easy to understand results
- Complete interpretation and recommendations
- Agronomic advice freely given
- Free postage-paid sample bags
- Free courier collection of bulk samples
- Results available by 1st class post, Internet, fax and e-mail
- Very competitive charges

Yara Analytical Services operate within ISO 9001 and ISO 17025 certification and have 35 years experience of serving farmers, agronomists and independent research units. Only the very latest techniques are used to be sure that we provide the most rapid, accurate and impartial service available.

## The Importance of Analysis

All plants require an adequate and balanced supply of nutrients for healthy growth and maximum performance. Analysis of soils enables you to identify the availability of these nutrients. Used as a diagnostic facility, it will allow you to determine precise fertiliser and trace element requirements.

Plants need different amounts of the major nutrients and differ in their susceptibility to trace element deficiency. Analysis will ensure that any treatment applied is efficient and cost effective.

The incidence of deficiency is increasing as modern farming methods and high performance crops deplete natural reserves. An awareness of the status of the Broad Spectrum of nutrients in the soil is therefore vital if todays crops are to fulfil their potential and be profitable.

Basic soil analysis caters only for fertiliser needs but, for just a few pence more per acre per annum averaged over four years, the analysis can be extended to include all essential nutrients. The small extra charge is quickly recovered in improved crop performance and value. Put another way, without this important extra information crop losses can be substantial.



## Soil Analysis
Soil Analysis can identify a broad spectrum of available key nutrients together with pH and Cation Exchange capacity. Our 35 years experience shows that the information remains relevant for 3-4 years.

## Leaf Tissue Analysis
Leaf tissue analysis will diagnose nutritional problems within the crop at the time of sampling but is not a substitute for soil analysis.

## Fruitlet Analysis
From fruitlet analysis we can identify the likely nutrient status in fruit at harvest and therefore provide the opportunity for corrective treatment.

## Fruit Analysis
Fruit analysis confirms nutrient status at harvest so that decisions can be made on marketing produce fresh or putting it into storage for later sale.

## Potato Petiole Analysis
Petiole analysis is taken at around 10% flowering and the results allow prediction of phosphorus levels through the critical bulking phase. A deficiency during this period can cost the grower 0.5 tonnes per hectare per day.

## Organic Manure Wastes
All types of organic inputs can be analysed to accurately determine the levels of beneficial nutrients they contain. We can also test samples for any potential toxic elements (heavy metals).

## Mapping and GPS Sampling
This service is rapidly increasing and, as well as the basic analysis, many customers now request that an amalgamation of samples be made up for each field or part thereof for comprehensive nutrient analysis.

## Rapidly Accessible Results
Results can be posted, but increasingly our customers are receiving their information via email. This provides the quickest possible response. Direct access to result and interpretation detail is also available over the Internet using our web site.

However, we never forget the value of personal contact. Our advisory team is only a phone call away and we actively welcome direct contact to discuss all aspects of the services provided

## Express Leaf Tissue Analysis
Yara Analytical Services have developed a brand new Express leaf analysis service to allow rapid identification of nutrient deficiencies.

Results can be returned on the same day the sample is received by the laboratory.



# Soil Analysis

| Group Service Code | Description | Types of Analysis |
|---|---|---|
| **S1** | Basic Soil | P, K, Mg, pH, LR |
| **S1A** | Basic Glasshouse and Compost | P, K, Mg, pH, LR, EC, $NO_3$, + $NH_3$ |
| **S1B** | Basic Soil Plus | P, K, Mg, pH, LR, Mn, Cu, B, S |
| **BS** | **Broad Spectrum** for all plants and crops | P, K, Mg, pH, LR, Ca, S, Na, Mn, Cu, Fe, Zn, Mo, B, CEC |
| **AHS** | Animal Health Soil | P, K, Mg, pH, LR, Ca, S, Na, Mn, Cu, Fe, Zn, Mo, B, Co, I, CEC |
| **SA8A** | Heavy Metal Contamination | Pb, Ni, As, Cd, Cr, Hg, Cu, Zn, |
| **SA8B** | Heavy Metal Veg. Production | Pb, Ni, As, Cd, Cr, Hg, Cu, Zn, F, Mo, Se |
| **SA10** | Available Soil Nitrogen | $NO_3$, $NH_3$ + available N in kg/ha |
| **SA12** | Top Soil to BS3882 | P, K, Mg, pH, OM, EC, Total N, particle size |
| **SA13** | Particle Size | Sand %, Silt %, Clay %, inclu. Sand Fraction |

**Additional Service**
O.M. Organic Matter
A price list for all services is available on request

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# Plant and Tissue Analysis

Analysis of plant material is essential in the investigation of poor crop growth or livestock health

| Group Service Code | Description | Types of Analysis |
|---|---|---|
| **BL** | Basic Leaf | N, P, K, Mg |
| **BSL** | Broad Spectrum Leaf for all plants and crops | N, P, K, Mg, Ca, S, Mn, Cu, Fe, Zn, Mo, B |
| **SA11A** | for all plants and crops | $NO_3$, P, K, Mg, |
| **SA11** | Basic Potato Petiole | $NO_3$, P, K, Mg, Ca, Mn, Zn, S, B |
| **XL*** | Broad Spectrum Leaf Same day service | N, P, K, Mg, Ca, S, Mn, Cu, Fe, Zn, Mo, B |

* Samples must arrive before 10am

## Animal Health / Grassland

| | | |
|---|---|---|
| **AHL** | Animal Health Leaf | N, P, K, Mg, Ca, S, Mn, Cu, Fe, Zn, Mo, B, Na, Co, I, Se |
| **SA6** | Animal Feed | Oil, Fibre, Ash, CP, DM |
| **L4A** | Feed Value Silage | DM, pH, D-value, $NH_3$-N, ME, Sugars, CP, Ash, ADF, NDF |
| **L4B** | Feed Value Haylage | DM, CP, ADF, NDF, K, Fibre, D-value, ME, Sugars |
| **L4c** | Feed Value Fresh Grass | DM, CP, ADF, NDF, Buffer Index, K, $NO_3$-N, D-value, ME, Sugars |

A price list for all services is available on request



# Special Analysis and Other Services

| Group Service Code | Description | Types of Analysis |
|---|---|---|
| SA1* | Apple fruit for storage | Ca, Mg, P, K, B, Zn, N |
| SA2* | Apple fruitlet for nutrient requirements | Ca, Mg, P, K, B, Zn, N |
| SA3 | Water/Nutrient Solution | Ca, Mg, Mn, Cu, Fe, Zn, B, K, Na, Mo, P, S, $NO_3$ + $NH_3$, $HCO_3$, pH, EC, Cl |
| SA5 | Fertilizer | N, P, K |
| SA7 | Manure & Slurry | N, P, K, Mg, DM |
| SA7a/b | Basic Manure/Slurry | Total N, P, K, Mg, D.M. |
| SA7c/d | Complete Manure/Slurry | Total N, P, K, Mg, D.M. pH, Cu, Zn, S, Ca & Available N |
| SA9* | Potato Cyst Nematode (PCN) | Cyst Count<br>Cyst & Egg Count |
| SP | PCN Speciation | Specification of Potato Cyst |
| FLN | Free living Nematode | Count and Specification |
| | Stainless steel soil sampler | |
| A price list for all services is available on request<br>*** Samples for SA1, SA2 and SA9 cannot be posted in the Pre-Paid jiffy bags. Self-delivery or other arrangements can be made with our laboratory.** | | |

Our Laboratories have the capacity to carry out many other analyses for example:

- Pesticide Residues
- Bacteria Assessment
- Environmental Contamination
- Vitamin Levels

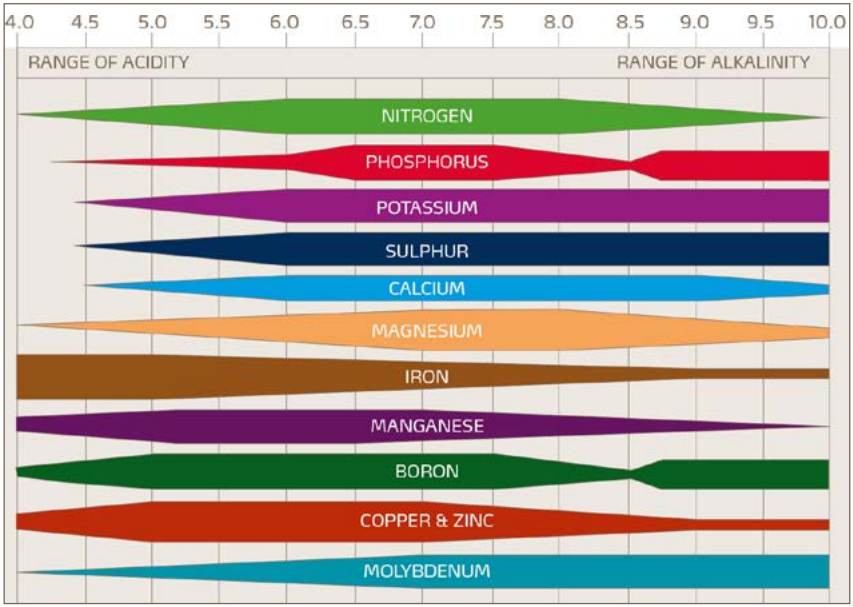
If your requirements fall under these headings or others not mentioned please call 00 44 1759 305116 for details of availability and price.

# Chemical and Other Symbols

As - Arsenic
B - Boron
Ca - Calcium
Cd - Cadmium
CEC - Cation Exchange Capacity
Cl - Chlorine
Co - Cobalt
CP - Crude Protein
Cr - Chromium
Cu - Copper
D-value - Digestibility value
DCP - Digestible Crude Protein
DM - Dry Matter
EC - Electrical Conductivity
F - Fluoride
Fe - Iron
Hg - Mercury
I - Iodine
K - Potassium
LR - Lime Requirement
ME - Metabolisable Energy
Mg - Magnesium
Mn - Manganese
Mo - Molybdenum
N - Nitrogen
Na - Sodium
$NH_3$ - Ammonia
Ni - Nickel
$NO_3$ - Nitrate
OM - Organic Matter
P - Phosphorus
Pb - Lead
RDP - Rumen Degradable Protein
S - Sulphur
Se - Selenium
Zn - Zinc



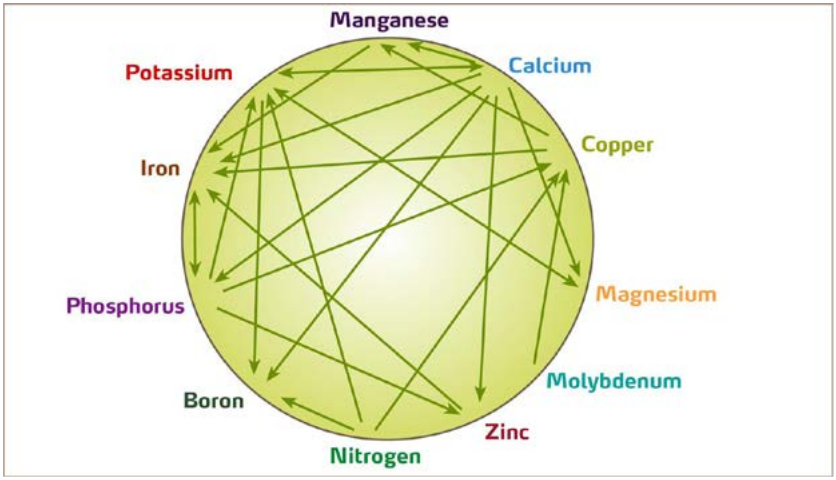
# The Influence of Soil pH on Nutrient Availability




The width of the bar represents the relative availability of each nutrient.
Generally, high (alkaline) or low (acidic) pH conditions reduce the availability of trace elements



# Nutrient Interactions in the soil




Main Nutrient Interactions

| A high level of | Reduces the availability of |
|---|---|
| Calcium | Boron, Iron & Magnesium |
| Potassium | Magnesium |
| Nitrogen | Copper |
| Copper | Iron |



*The information provided is accurate to the best of Yara's knowledge and belief. Any recommendations are meant as a guide and must be adapted to suit local conditions. No guarantee as to, or responsibility for their accuracy can be accepted and no statement herein is to be treated as a representation or warranty.*

Yara UK Ltd,
Manor Place, Wellington Road,
The Industrial Estate, Pocklington,
York.
YO42 1DN

Yara UK Ltd,
Harvest House,
Europarc, Grimsby
N.E. Lincolnshire
DN37 9TZ

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Yara UK Limited

@Yara_UK Yara UK 01472 889250 agronomyuk@yara.com www.yara.co.uk

