



**YaraVita®**  
**Plant Nutrient Deficiencies**

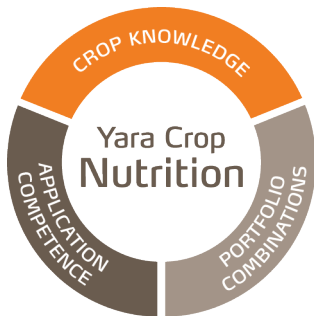
# ATTENTION TO DETAIL

That's what YaraVita® products deliver.

The name YaraVita® is derived from the old Norse language with Yara meaning "good harvest" and "Vita" meaning "knowledge".

YaraVita® is a range of products designed to be part of any crop nutrition program and to complement the basic NPK fertilization. They are fully formulated products created from the chemist's bench with crop nutrition in mind. When you choose YaraVita® you can be sure that what you apply will be convenient to use, effective and safe for the crop.

There are YaraVita® products for foliar application, fertigation, hydroponics and seed treatment. Each of these categories has specific features to bring the best benefit to a specific situation.





# YaraVita®

## Plant Nutrient Deficiencies

### Nitrogen



Strawberries



Peas



Soybean



Cotton



Corn



Apple



Tobacco



Citrus



# YaraVita®

## Plant Nutrient Deficiencies

### Nitrogen

#### Functions

- Primary building block for amino acids, protein and plant protoplasm
- Critical for flower differentiation, rapid shoot growth, bud vigor and fruit set
- Increases size and quality of fruit
- Acts as a catalyst for other nutrients

#### General Deficiency Symptoms

- Foliage is yellowish-green, lower, older foliage shows yellowing first
- Vegetative growth is significantly reduced
- Smaller fruit size
- Lower yields
- High levels result in lower quality, delayed coloration, soft
- Fruit, short storage life and low juice content

#### Made Worse By

- Extreme low or high pH
- Sandy soils, drought, high rainfall/irrigation - leaching
- Low soil OM
- Fast growing crops

**YaraVita® Products**  
**Contact your Yara Regional**  
**Manager for product**  
**recommendations.**

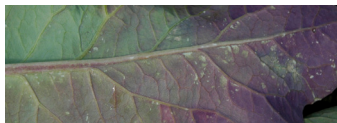
\* Most vegetables and fruit trees benefit from nitrate nitrogen, especially during cooler temperature.  
Yara's CN-9, Tropicote® and CAN-17 are highly recommended under these situations.



# YaraVita®

## Plant Nutrient Deficiencies

### Phosphorus



Cauliflower



Strawberry



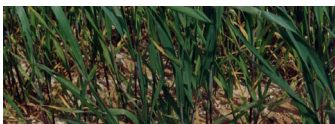
Apples



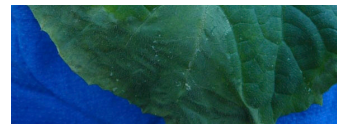
Corn



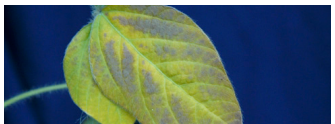
Table Beet



Cereals



Cucumber



Soybean



# YaraVita®

## Plant Nutrient Deficiencies

### Phosphorus

#### Functions

- Hastens maturity
- Energy transfer and storage
- Formation of nucleic acids  
RNA and DNA
- Promotes root, flower and seed development

#### General Deficiency Symptoms

- Leaf die-back
- Older leaves, stems and veins may show purplish coloration
- Delayed maturity
- Poor seed development
- Can cause fruit quality problems

#### Made Worse By

- Very acidic or calcareous soils
- Low OM
- Cold, wet conditions
- Poorly developed root systems
- Low soil available P, high soil Fe

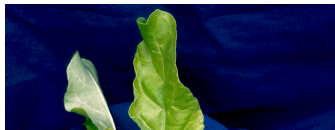
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# YaraVita®

## Plant Nutrient Deficiencies

### Sulfur



Cabbage



Cereals



Tomato



Soybean



Potato



Lettuce



Corn



Spinach



# YaraVita®

## Plant Nutrient Deficiencies

### Sulfur

#### Functions

- Component of amino acids and proteins
- Promotes growth and maturity
- Flavor component
- Necessary for protein and plant oil synthesis
- Aids in nodule formation on legumes
- Necessary for efficient nitrogen stabilization

#### General Deficiency Symptoms

- Young leaves are light green to yellow
- Plants are small and stunted
- Reduced growth
- Delayed maturity

#### Made Worse By

- Acid soils
- Light soils
- Low OM
- Poor soil aeration

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# YaraVita®

## Plant Nutrient Deficiencies

### Potassium



Cabbage



Cauliflower



Corn



Cucumber



Vines



Pepper



Oil Seed Rape



Soybean



# YaraVita®

## Plant Nutrient Deficiencies

### Potassium

#### Functions

- Enzyme activator
- Necessary for the formation of sugars, the synthesis of proteins and cell division
- Essential for oil formation
- Improves cold weather tolerance
- Improves fruit color
- Helps regulate fruit acidity
- Increases oil content of avocados and contributes to cold hardiness
- Improves coloring of grapes and apples, by aiding in anthocyanin synthesis
- High levels increase peel thickness and reduce juice percentage in grapefruit and oranges, but increase juice content in lemons

#### General Deficiency Symptoms

- Leaf distortion and curling
- Older foliage may show marginal leaf scorch, distortion, curling and premature drop

- Late season blotchy or irregular pattern of chlorosis
- Poorly developed root systems may result in lodging of cereals

#### Made Worse By

- Acid soils
- Sandy soils, heavy rainfall irrigation - leaching
- Heavy soils with low K reserves
- High Ca, Mg soils
- Poor soil aeration

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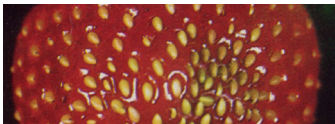
# YaraVita®

## Plant Nutrient Deficiencies

### Calcium



Potatoes



Strawberry



Apples



Soybean



Corn



Tomatoes



Oil Seed Rape



Cabbage



# YaraVita®

## Plant Nutrient Deficiencies

### Calcium

#### Functions

- Aids in cell wall formation and structure
- Necessary for the development of firm fruit
- Helps regulate nutrient uptake by roots and movement throughout the plant
- Necessary for early root growth and new top growth
- Encourages grain and seed development

#### General Deficiency Symptoms

- Poor root development
- External and internal disorders of many fruits and vegetables
- Premature shedding of blossoms and buds
- Deformed terminal leaves and fruit
- Dead terminal buds

#### Made Worse By

- Acid soils
- Sandy or sodic soils
- High soil Al
- Drought

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\* \*Most vegetable and fruit crops benefit from soil applied soluble calcium. Yara's CN-9, Tropicote®, and CAN-17 are highly recommended for Ca sensitive crops



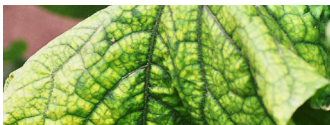
# YaraVita®

## Plant Nutrient Deficiencies

### Magnesium



Potato



Cucumber



Apples



Vines



Oil Seed Rape



Spinach



Corn



Cereals



# YaraVita®

## Plant Nutrient Deficiencies

### Magnesium

#### Functions

- Enzyme activator
- Essential for chlorophyll synthesis and nitrogen metabolism
- Helps formation of amino acids, vitamins, sugars, oil and fats
- Aids in use of phosphorus
- Neutralizes organic acids
- Aids in seed germination
- Promotes early growth, uniform maturity and winter hardiness

#### General Deficiency Symptoms

- Chlorotic leaves with brilliant colors
- Overall yellowing with green veins
- Drooping leaves
- Chlorosis appears first on older leaf tips, moves inward
- Necrotic spots on leaves
- Excessive, premature fruit drop

#### Made Worse By

- Very sandy soils
- Acid soils
- High K or Ca
- Heavy K fertilizer
- Cold wet conditions

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# YaraVita®

## Plant Nutrient Deficiencies

### Zinc



Vines



Citrus



Apples



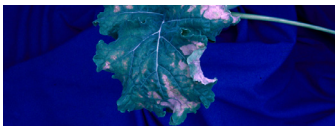
Cucumber



Potatoes



Lettuce



Oil Seed Rape



Soybean



# YaraVita®

## Plant Nutrient Deficiencies

### Zinc

#### Functions

- Needed for the synthesis of auxins (growth hormones) and protein
- Essential for uniform maturity and seed formation
- Aids in chloroplast formation and internodal and cell elongation
- Enzyme activator
- Increases leaf size, fruit size and quality
- Important for calcium translocation in plant tissues

#### General Deficiency Symptoms

- Stunted growth
- Leaves may be small, malformed, yellowish or mottled
- Striping in grasses
- Twig die-back
- Chlorotic interveinal tissue and interveinal mottling in new growth
- Reduced set, fruit development and size

#### Made Worse By

- Organic soils
- High pH
- High P soils or high P fertilization
- Cold, wet soils

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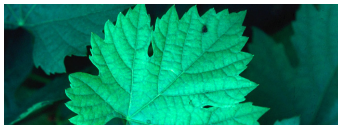




# YaraVita®

## Plant Nutrient Deficiencies

### Manganese



Vines



Curcubits



Citrus



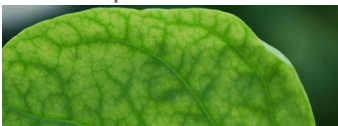
Cotton



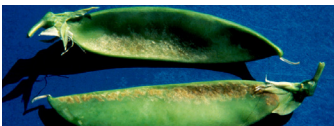
Oil Seed Rape



Cereals



Spinach



Peas



# YaraVita®

## Plant Nutrient Deficiencies

### Manganese

#### Functions

- Acts as a coenzyme, important in oxidation-reduction reactions
- Aids in nitrogen utilization and assimilation
- Assimilates CO<sub>2</sub> in photosynthesis
- Essential for phosphorus and magnesium uptake
- Aids in chlorophyll synthesis

#### General Deficiency Symptoms

- Chlorosis appears first on old leaves
- Chlorosis sometimes seen on new growth
- Rust spots or a mottled pattern on many plants
- Some crop stunting

#### Made Worse By

- Very alkaline soils
- Organic soils
- Heavy leached acid sandy soils
- Prolonged cold wet periods

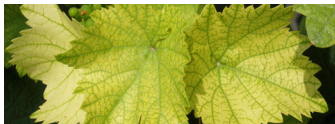
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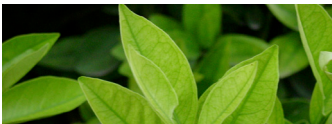
# YaraVita®

## Plant Nutrient Deficiencies

### Iron



Vines



Citrus



Walnuts



Apples



Soybean



Tomatoes



Peanuts



Peach



# YaraVita®

## Plant Nutrient Deficiencies

### Iron

#### Functions

- Aids in energy transfer
- Activator for enzymes that control respiration
- Required for chlorophyll formation
- Important chloroplast and enzyme component

#### General Deficiency Symptoms

- Early season patternless paling in leaf color
- Later season yellowing of leaves
- Young leaves show chlorotic symptoms first, may develop interveinal chlorosis
- In grasses, alternate rows of green and white
- Moderate deficiency, lower crop yield and quality
- Severe deficiency, stunted growth

#### Made Worse By

- High pH soil
- Water logged soil
- Calcareous soil
- High Cu, Mn, Zn

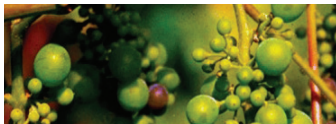
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# YaraVita®

## Plant Nutrient Deficiencies

### Boron



Vines



Citrus



Cauliflower



Lettuce



Oil Seed Rape



Potatoes



Corn



Sugarbeet



# YaraVita®

## Plant Nutrient Deficiencies

### Boron

#### Functions

- Essential for reproduction, aids in formation of pollen tube
- Aids in formation of hormones
- Required for protein synthesis
- Aids in translocation of calcium, sugars and growth regulators
- Important for early growth, flowering and fruit set
- Maintains balance between sugar and starch
- Helps regulate auxin
- Necessary for cell division and differentiation, shoot and root tip development

#### General Deficiency Symptoms

- Death of terminal growth
- Young meristematic tissues disintegrate
- Leaves are thickened, curled and brittle
- Poor seed-set
- Poor fruit-set, reduced flowering

- Tubers, fruits and roots may become discolored, cracked and flecked with brownspots
- Small, malformed fruit

#### Made Worse By

- Sandy, alkaline soils, free lime
- Low OM
- High N or Ca

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# YaraVita®

## Plant Nutrient Deficiencies

### Copper



Corn



Sugar Beet



Lettuce



Soybean



Spinach



Potatoes



Cereals



Onion



# YaraVita®

## Plant Nutrient Deficiencies

### Copper

#### Functions

- Plays a critical role in photosynthesis
- Enzyme activator in respiration processes and the conversion of amino acids to protein
- Necessary for seed and chlorophyll formation
- Component of several enzymes
- Contributes to color and flavor development in fruits and vegetables

#### General Deficiency Symptoms

- Marginal leaf yellowing and chlorosis
- Shoot die-back
- Dead spots and brown areas on terminal leaves
- Stunted growth, undersized fruit
- Mild deficiency, reduced growth and yield
- Severe deficiency, tip necrosis
- Small, malformed fruit

#### Made Worse By

- Organic soils
- Leachable soils
- High N application

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# YaraVita®

## Plant Nutrient Deficiencies

### Molybdenum



Cabbage



Corn



Lettuce



Soybean



Wheat



Pepper



Strawberry



Lettuce



# YaraVita®

## Plant Nutrient Deficiencies

### Molybdenum

#### Functions

- Necessary for nitrogen fixation in legumes
- Necessary for amino acid formation, and nitrogen utilization
- Key role in cell division
- Directly involved in the synthesis of enzymes used for cellular energy metabolism

#### Made Worse By

- Acid peaty soils
- Sloped soils
- Coarse textured soils
- Soils high in available manganese
- Soils high in iron and aluminium oxide
- Red clay soils

#### General Deficiency Symptoms

- Pale yellow leaves, especially in legumes
- Malformed leaves with normal midribs ("whiptail" of Brassicas)
- Interveinal chlorosis, with a glassy appearance ("yellow spot" of citrus)
- Death of vegetative growing point often accompanied by a brown exudate
- Stunted plants with shortened internodes

YaraVita® Products  
**Molytrac, Molybor**

# Yara International ASA

Yara International ASA is a leading chemical company that converts energy and nitrogen from the air into essential products for farmers and industrial customers.

As the number one global supplier of mineral fertilizers and agronomic solutions, we help provide food for a growing world population.





Knowledge grows

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