



# NUTRIENT ROLES

Primary, secondary, and micronutrients are essential for crop development. Each is important to the plant, yet are required in vastly different amounts.

PRIMARY NUTRIENTS

SECONDARY NUTRIENTS

MICRONUTRIENTS

## PRIMARY NUTRIENTS

### Nitrogen (N)

- Essential for plant growth
- Nitrogen is essential in photosynthesis
- Directly responsible for creating protein content
- Nitrogen increases bushels of corn per inch of available water

Monty's Products (Catalog Page): Humihance (50), Hay-Now (33), Agrihance (30-32), Seed Starter (27), All-Purpose (28), Root & Bloom (29), Midnight (37), Microhance (38), Nauxin (39), Agri-N (35), and Sulfur 15 (41)

### Phosphorus (P)

- Plants absorb most of their P as their primary ortho-phos. ( $H_2PO_4$ )
- Plays a role in photosynthesis, respiration, energy storage and transfer, cell division and enlargement, and several other processes in the living plant
- Improves the quality of fruit, vegetable, and grain crops
- Helps roots and seedlings develop more rapidly
- Hastens maturity

Monty's Products (Catalog Page): Hay-Now (33), Agrihance (30-32), Seed Starter (27), All-Purpose (28), Root & Bloom (29), Midnight (37), Microhance (38), Nauxin (39), and Sulfur 15 (41)

### Potassium (K)

- Has a great impact on crop quality, kernel weight, kernels per ear, improved oil and protein content
- Influences water-use efficiency and improves drought-tolerance
- Essential for protein-synthesis
- Is involved in the activation of more than 60 enzyme systems (which regulate the rates of major plant growth reactions)
- Helps the plant overcome the effects of disease

Monty's Products (Catalog Page): Hay-Now (33), Agrihance (30-32), Seed Starter (27), All-Purpose (28), Root & Bloom (29), Midnight (37), Microhance (38), Nauxin (39), and Sulfur 15 (41)

## SECONDARY

### Calcium (Ca)

- Stimulates leaf and root development
- Strengthens plant structure
- Activates several plant enzyme systems
- Improves root growth conditions

Monty's Products (Catalog Page): Calcium Plus (42) and MagmaHume (36)

### Magnesium (Mg)

- Involved in photosynthesis
- Affects seed development
- Aids in phosphate metabolism, plant respiration, and the activation of many enzyme systems

Monty's Products (Catalog Page): Magnesium (46) and MagmaHume (36)

### Sulfur (S)

- Constituents of two of the 21 amino acids which form proteins
- Helps to develop enzymes and vitamins
- Aids in seed production
- Promotes nodulation for N fixation by legumes
- Is present in organic compounds
- Helps to avoid thin-stemmed and spindly plants

Monty's Products (Catalog Page): Hay-Now (33), Midnight (37), Microhance (38), Nauxin (39), and Sulfur 15 (41)

## MICRONUTRIENTS

### Boron (B)

- Essential for germination of pollen grains
- For seed and cell wall formation
- Associated with sugar translocation and protein formation
- Helps to avoid stunted growth

Monty's Products (Catalog Page): Microhance (38), Nauxin (39), and Boron (46)

### Cobalt (Co)

- Is a trace element in plants
- Is a component of a number of enzymes
- Increases drought resistance of seeds
- Is important for nitrogen fixation in legumes
- Helps ensure maximum efficiency of plant activity

Monty's Products (Catalog Page): CoMoB (46) and MagmaHume (36)

### Copper (Cu)

- Necessary to chlorophyll formation in plants
- Catalyzes several other plant reactions
- Helps avoid sickly plants and failure to flower

Monty's Products (Catalog Page): Copper (46)

### Iron (Fe)

- A catalyst to chlorophyll formation
- Acts as an oxygen carrier
- Helps for certain respiratory enzyme systems

Monty's Products (Catalog Page): Iron (46), Hay-Now (33), Agrihance (30-32), Seed Starter (27), All-Purpose (28), Root & Bloom (29), MagmaHume (36), Midnight (37), Microhance (38), Nauxin (39), and Manganese (47)

### Manganese (Mn)

- Plays a direct role in photosynthesis by aiding the plant's chlorophyll synthesis
- Accelerates germination and maturity while increasing the availability of P and Ca
- Deficiency symptoms appear on younger leaves
- Deficiencies may result from an imbalance with other nutrients such as Ca, Mg, and Fe

Monty's Products (Catalog Page): Hay-Now (33), MagmaHume (36), Microhance (38), Nauxin (39), and Manganese (47)

### Molybdenum (Mo)

- Vital for the process of symbiotic nitrogen (N) fixation by rhizobia bacteria in legume root nodules
- Is needed to convert inorganic P to organic forms in the plant
- Is required for the synthesis and activity of enzymes

Monty's Products (Catalog Page): CoMoB (46) and Molybdenum (47), otherwise please inquire

### Zinc (Zn)

- Deficiencies tend to occur early in the growing season when soils are cold and wet
- Deficiencies will cause shortening of inner nodes and stunting of leaf nodes
- Aids in enzyme systems and is essential for certain metabolic reactions
- Aids synthesis of plant growth substances

Monty's Products (Catalog Page): Hay-Now (33), Seed Starter (27), All-Purpose (28), Root & Bloom (29), Midnight (37), Microhance (38), Nauxin (39), and Zinc (47)

Nutrient information: Soil Fertility Manual, Potash and Phosphate Institute. Cobalt information: The Effects of Cobalt, Copper, and Chromium in the Garden, Monica Mansfield, 2017