

NUTRIENTS & FERTILIZER

NUTRIENTS ARE VERY IMPORTANT FOR HIGH YIELDS AND GOOD PRODUCE QUALITY. IT IS ESSENTIAL THAT PLANTS RECEIVE A VARIETY OF NUTRIENTS, BOTH MACRO AND MICRONUTRIENTS. PLANT NUTRIENTS CAN BE SUPPLIED THROUGH MANURE OR CHEMICAL FERTILIZER FOR GOOD YIELD AND QUALITY. HARVESTING RESULTS IN REMOVAL OF NUTRIENTS AND NEW MANURE OR FERTILIZER MUST BE APPLIED BEFORE STARTING A NEW CROP.

EVERY NUTRIENT HAS A PARTICULAR FUNCTION

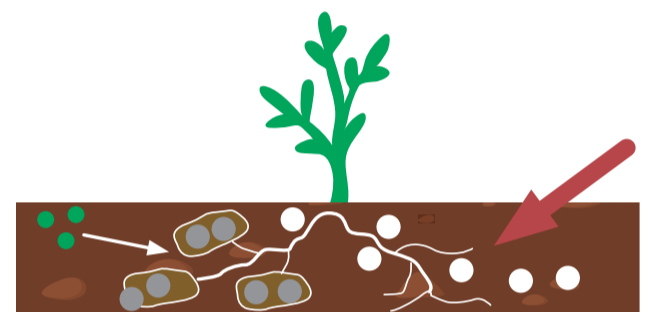
■ macronutrient
■ micronutrient

Bo Mo Mn Cl Ni Cu Co Fe Zn

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|---|---|
| N Nitrogen is needed throughout the growing season: it enhances growth, green leaves and production. | Mg Magnesium plays an important role in a photosynthesis and chlorophyll production. |
| K Potassium enhances the quality and number of fruits. It also helps plants cope better with water stress. | S Sulphur works with nitrogen to produce new protein for plant growth. |
| P Phosphorus is vital for root growth, especially early in a plant's development. | Ca Calcium provides strong cell walls and healthy cell division. It also helps prevent bruising and diseases in fruit, lettuce and vegetables. |

- Applying too much fertilizers to salt-sensitive crops might lead to plant damages.
- Consider adding lime in case of using acidifying fertilizers such as urea, ammonium or sulphate.
- Check total nutrient concentration and ratio in fertilizers for accurate fertilization calculations.

DIFFERENT FORMS OF NITROGEN



- Nitrate (NO₃⁻):** fast acting, root development, mobile and flows with water towards the plant.
- Urea CO(NH₂)₂:** slower, upper plant growth, conversion into ammonium before plant uptake.
- Ammonium (NH₄⁺):** fixation to clay particles, immobile and active uptake needed by roots.

VOLATILIZATION

Ammonium and urea can be wasted due to formation of gasses from granules. Incorporate fertilizers in the soil to prevent losses by volatilization.

REMOVAL OF CROP RESIDUES

CROP RESIDUES LEFT IN THE FIELD

HARVEST

CHEMICAL FERTILIZERS

ORGANIC FERTILIZERS

LEACHING

Nitrates and potassium can be lost after heavy rainfall, because they flow to deeper soil layers where the roots cannot reach these nutrients anymore. On sandy soils the risk of leaching is higher.

AVAILABLE NUTRIENTS IN THE SOIL