

## 10.9 Autotrophic Nutrition

**NUTRITION** → Obtain **Nutrients**

### AUTOTROPHIC NUTRITION

→ Inorganic material → Organic material

### HETEROTROPHIC NUTRITION

Organic Source / Prepared Food → Body Requirements

### PHOTOTROPHIC NUTRITION → Energy Source (light)

→ Formation of organic molecules under the influence of light.



→ All Plants, Algae, Some Bacteria (Purple Sulphur Bacteria)



Non-Sulphur Bacteria, Brown Bacteria → mud / Stagnant water

### CHEMOTROPHIC NUTRITION → Light is not the Energy source

Oxidation of inorganic molecules →  $\text{NH}_3$ ,  $\text{NO}_2^-$ ,  $\text{NO}_3^-$ , Ferrous Ions



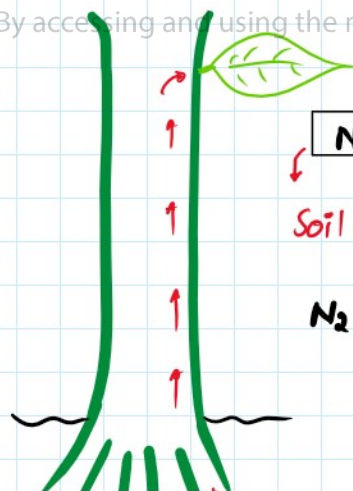
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→ Nitrogen Fixing Bacteria  
→ Nitrobacter, Nitrosomonas.

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### MINERAL NUTRITION IN PLANTS

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**NITROGEN** → 78-79% ( $\text{N}_2$ )

Soil →  $\text{NH}_3$ , Nitrates, Nitrites

$\text{N}_2$  → Amino Acid → Proteins  
→ Nucleotides → Nucleic Acids  
→ Pyrrole Rings → Chlorophyll

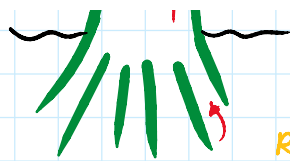
Mineral depend

Soil

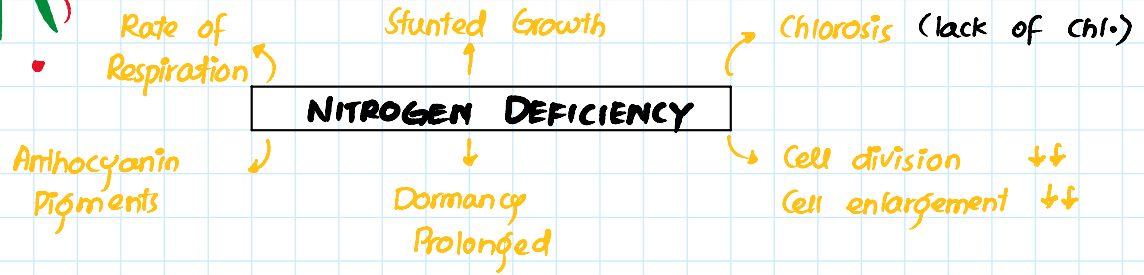
→ Passive + Active

**N-P-K**  
Nitrogen 5%    Phospho. 10%    Potash 5%

→ Fe (Iron)  
→ Mg



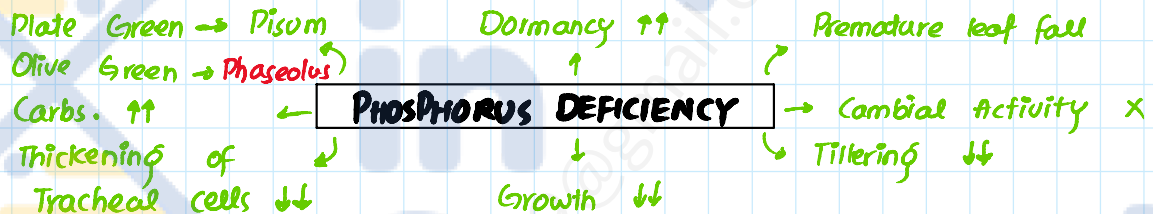
Hydrolysis of Nitrogen



**PHOSPHORUS** → (P) → Phosphates ( $H_3PO_4$ ,  $HPO_4$ )

- Root Growth
- Translocation of carbohydrates

(P) → Phospholipids → Cell membrane formation  
Nucleic Acid, NAD, FAD, (ATP) → Energy currency



**POTASSIUM**

→ (K) → Strongly fixed in soil  
Not in free form  
Opening & Closing of Stomata  
Found in highest concentration in meristematic tissue.  
Stunted Growth ↑

Activator of Enzyme

**POTASSIUM DEFICIENCY** → Leaf Colour (Bluish Green)

Curlling of Broad leaves

**MAGNESIUM**

→ (Mg) → Central atom of Chlorophyll  
Phosphorus carrier

Defoliation (Shedding of leaves)

Necrotic Spots on leaves

**MAGNESIUM DEFICIENCY**

→ Yellowing of older leaves

Chlorosis

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