



MSc. Botany SEM IV

Nutrient Disorders in Plants: Deficiency Symptoms

Dr Nalini Pandey

Plant Nutrition and Stress
Physiology Laboratory,
Department of Botany,
University of Lucknow,
Lucknow

Visual Symptoms of Nutrient Deficiency

- ❖ The most prevalent deficiency symptoms are depression in plant growth and chlorosis and /or mottling of leaf lamina.
- ❖ There maybe distortion in the shape of the leaves or emerging bud.
- ❖ The appearance of symptoms depend on the mobility of the element.
- ❖ If element is mobile symptoms first appear in the old leaves, however in case of immobile elements the symptoms appear in the younger leaves.

Young leaves

Chlorosis

- Fe - interveinal
- S - uniform

Necrosis/Coloration

- Fe -orange spots/necrotic lesions
- Mn -chlorotic spotting/buff color spots/necrosis
- Cu -bluish green lustre/bleaching/wilting
- Zn -white color/bronzing/internode condensed
- B -necrosis

Deformations

- Ca -tip hooking/dieback
- Mo -withering/breakdown of leaf margins
- Cu -downward cupping/leaf rolling
- Zn -little leaf/rosette

Mature leaves

Chlorosis

- N - uniform
- K - interveinal

Necrosis/Coloration

- P - bluish green/purple/marginal necrosis
- Mg - orange/purple interveinal areas
- K - black marginal scorch
- Zn - bronzing

Deformations

- N - acute leaf angles/small leaves
- Mo - breakdown of leaf margins
- B - heart rot/water core/stem crack/top sickness.

Nitrogen deficiency

Cauliflower



Maize



Potato



Cucumber



Phosphorus deficiency

Cauliflower



Sugar beet



Maize

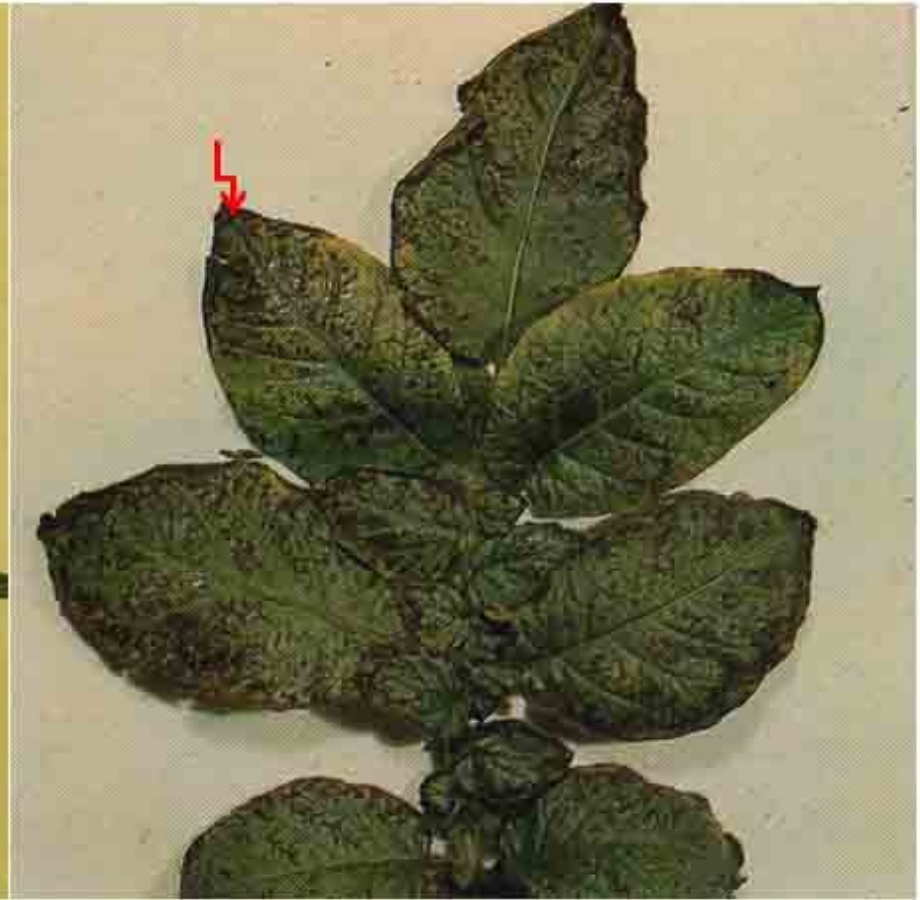


Potassium deficiency-Leaf scorch

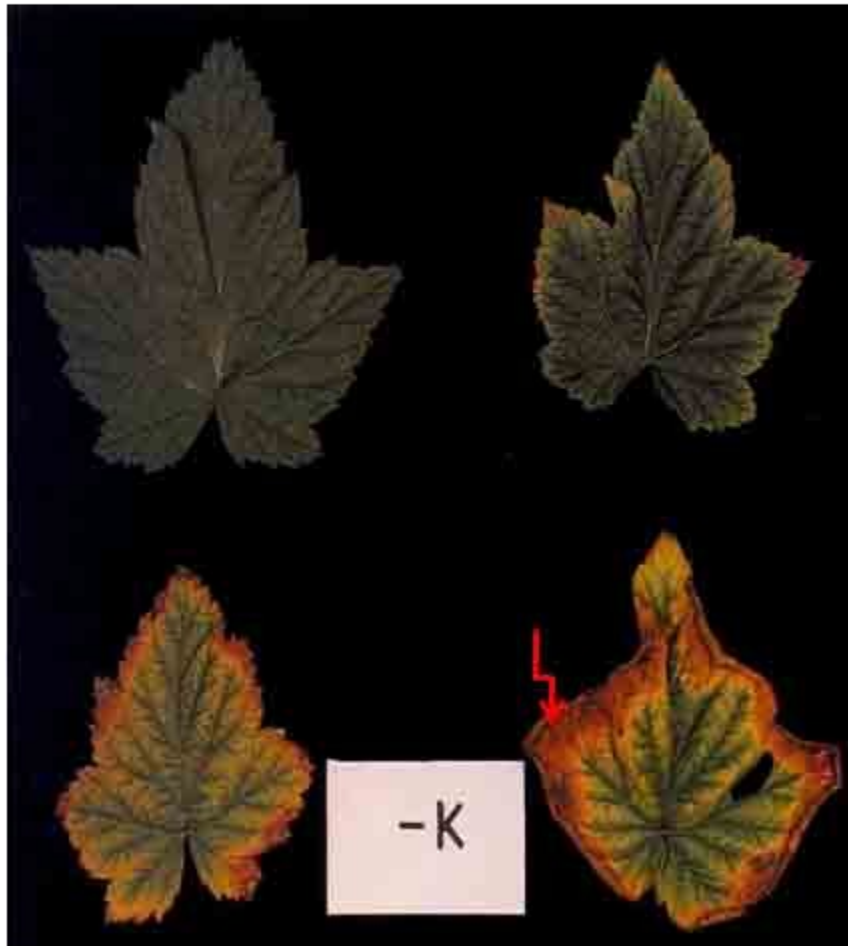
Broad bean



Potato



Potassium deficiency Strawberry



Calcium deficiency- 'Tip burn'

Strawberry



Potato



Calcium deficiency

'Tip Hook'
Safflower



'Blossom End Rot'
Tomato



Magnesium deficiency Strawberry



Magnesium deficiency

Cauliflower

Oats



Sulphur deficiency

Catharanthus roseus



French beans



Iron deficiency

Tomato



Safflower



Iron deficiency Maize



Manganese deficiency

'Grey Speck' Oats

'Speckle Yellow' Tomato



Manganese deficiency

French bean

'Marsh Spot' Peas



Copper deficiency

Capsicum- blue green luster, cupping of leaf



Zn deficiency- Maize

'White Bud'



'Bronzing'



Zinc deficiency

'Little leaf' Broad bean



'Khaira disease' Rice

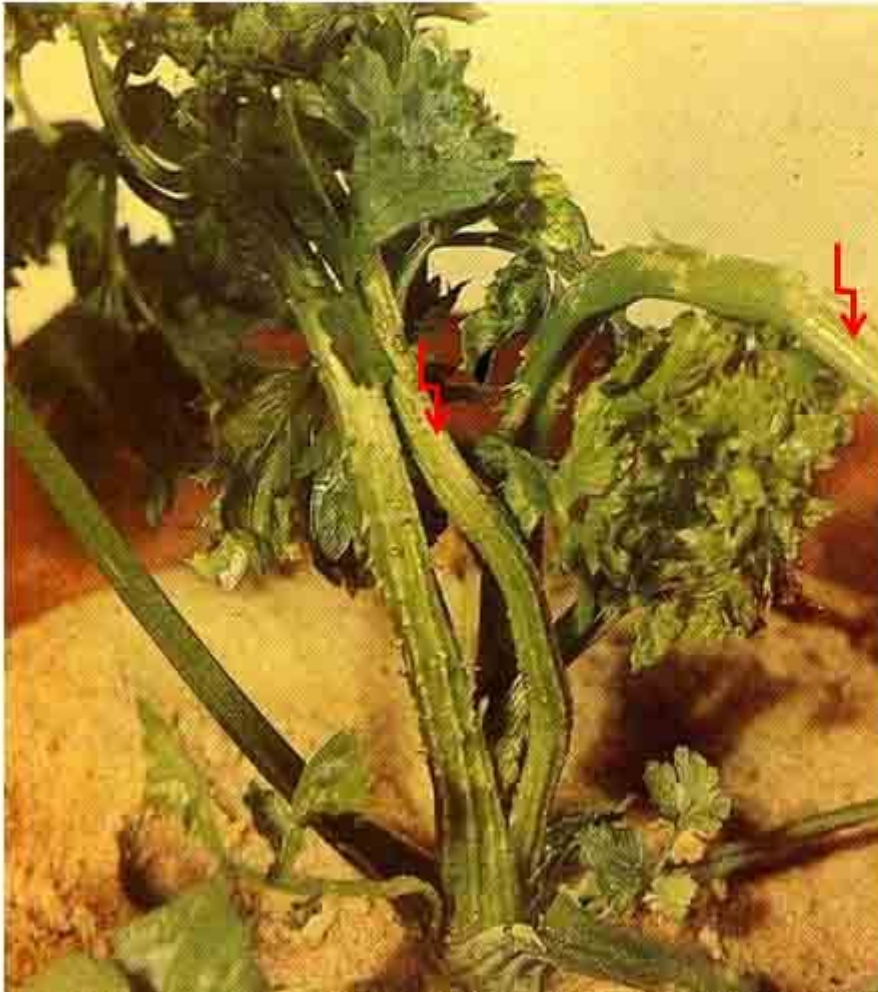


Molybdenum deficiency 'Whiptail' of Cauliflower



Boron deficiency

'Stem crack' in Celery



Maize



Boron deficiency

‘Top sickness’ Sunflower ‘Blossom-end Rot’ Tomato

