

Magnesium deficiency in Rice

Importance

- Magnesium (Mg) improves grain quality, protein and starch content of rice
- It is a constituent of chlorophyll, facilitates carbon assimilation and protein synthesis
- Magnesium deficiency is induced by crop removal, reduced soil pH, high rates of ammonium and potassium application
- Magnesium deficiency is relatively rare in irrigated rice systems in the field because adequate amounts are usually supplied through irrigation water

Prevalence

- Is common in rainfed lowland and upland rice where it is depleted by crop removal and low use of magnesium containing fertilizers
- Prevalence in acid soil and low cation exchange capacity (CEC) soils
- Coarse-textured sandy soils in upland and lowland areas such as Busia, Teso, Homabay, Migori, Embu and Siaya counties

- Calcareous soils with inherent low magnesium in such areas as Kwale and Kilifi counties

Deficiency Symptoms

- Appear on old mature leaves as orange to yellow interveinal chlorosis (yellowing)
- Pale green interveinal chlorosis in young leaves under severe cases
- Green colouring starts to appear as strings of beads in which green and yellow stripes parallel to the leaf
- Leaf edges may show as thin tinge of red purple colouration

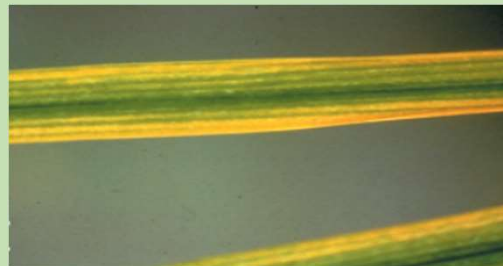


Fig 1. Orange-yellow interveinal chlorosis
Source: Dobermann and Fairhurst, (2000)



Fig 2. Orange-yellow interveinal chlorosis
Source: ariesagro.com/paddy

Management Strategies

- Test soils for magnesium deficiency
- Apply Magnesium mineral fertilizers before planting based on the soil test report
- Apply farm yard manure to balance magnesium removed by crop products and straw
- Reduce losses from erosion and surface runoff by appropriate soil and water conservation methods in upland systems
- Apply Magnesium containing fertilizer such as Magnesium sulphate, Dolomite, Magnesium carbonate.
- Magnesium deficiency symptoms can be corrected by foliar application of liquid fertilizers containing Magnesium such as $MgCl_2$

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