

## What it does

Magnesium (Mg) deficiency affects several enzyme activities in plants, including carbon dioxide (CO<sub>2</sub>) assimilation and protein synthesis, and the cellular pH and the cation-anion balance activation.

It may reduce grain quality.

## Why and where it occurs

Mg deficiency is relatively rare in Assam especially in irrigated rice systems.

Mg deficiency is not frequently observed in the field because adequate amounts are usually supplied in irrigation water. It is more common in rainfed lowland and upland rice where soil Mg has been depleted because of the continuous removal of Mg without recycling crop residues or replacing removed Mg with mineral fertilizer. Many rainfed rice soils are inherently deficient in Mg.

## How to identify

Check for the following symptoms:

- Orange-yellow interveinal chlorosis on older leaves
- Plants become pale-colored with interveinal chlorosis first appearing on older leaves and later on younger leaves as deficiency becomes more severe
- Green coloring appears as a "string of beads" in which green and yellow stripes run parallel to the leaf

In severe cases, chlorosis progresses to yellowing and finally necrosis in older leaves. Leaf number and leaf length are greater in Mg-deficient plants, and Mg-deficient leaves are wavy and droopy due to an expansion in the angle between the leaf sheath and leaf blade.

With moderate deficiency, plant height and tiller number are not affected greatly. Observe for the following:

- Reduced number of panicles and reduced 1,000-grain weight
- Iron (Fe) toxicity may be more pronounced where Mg is part of multiple nutrient deficiency stress involving Potassium (K), Phosphorus (P), and Calcium (Ca).

## How to manage

- Apply sufficient Mg fertilizer, farmyard manure, or other materials to balance removal in crop products and straw.
- Reduce percolation rates (leaching losses) on coarse-textured soils by subsoil compaction.
- Reduce losses from erosion and surface runoff by appropriate soil conservation measures in upland systems.
- Magnesium sulphate should be applied in the soil before last puddling. Foliar application of Mg fertilisers helps in rapid recovery of the plant from its deficiency

To confirm Mg deficiency, bring soil and plant sample to a laboratory for testing.

## Sources of Magnesium

The most commonly used Mg fertilisers are magnesium sulphate (9.5% Mg), Dolomite lime (13% Mg), K - Mag (10.5% Mg). The deficiency of Mg can be corrected by liquid fertilisers such as Magnesium chloride (Mg 22%).



Chlorosis appears on the flag leaf