

Manganese

Manganese is one of nine essential micronutrients for plant growth. It is involved in several critical aspects of the plant development and the uptake is affected by pH and soil type.

MANGANESE IS INVOLVED IN THE FOLLOWING:

- 1). Chlorophyll production**
- 2). Lignin binding**
- 3). Disease prevention**
- 4). Pollen production**
- 5). Kernel Weight**
- 6) Nitrogen metabolism**
- 7). Synthesis of various enzymes**

Manganese is critical from the time the seed is planted.

1. Lower levels of manganese can result in uneven emergence of plants.
2. Manganese uptake, like several of the other minerals is affected by cold, wet, and dry conditions. If there is too much water, too cold or too dry, the roots will not grow and as a result will not take up the levels of manganese needed for maximum production.
3. If there are high levels of copper, zinc, iron or nickel in the soil, manganese uptake will be reduced and can cause a deficiency.
4. Soil types affect the levels of manganese present.
 - a. Most soil types are sufficient in manganese
 - b. High pH soils or soils recently limed cause manganese to be precipitated and cannot be absorbed by the plant root.
 - c. Low absorption in organic or muck soils with pH above 6.5
 - d. Manganese is present in the soil in three forms M+2, M+3 and M+4. M+2 is the most common form absorbed by the roots.
 - e. Best pH is 5.0-6.5

Application of glyco-phosphates can reduce manganese uptake.

Crops which have a high Manganese requirement are:

Soybeans
Wheat
Oats
Barley

Corn has a medium requirement for manganese.

Available Sources of Manganese

32% manganese sulfate powder

32% manganese sulfate prill

60% manganese oxide.

Manganese is highly immobile in the plant and symptoms of deficiency are first seen in young leaves with yellowing between the veins of the leaves. Manganese deficiency can occur at the same time or coexist with iron deficiency.

Soil testing is critical to determine if your soils are deficient in manganese. Manganese is measured using the Mehlich III method which measures the extractable manganese. It should be between 30-200 ppm.

The best way to determine if you have a manganese deficiency is to test both the soil and the plant tissue.

For **soybeans**, check recently matured trifoliolate leaves from 20-30 plants and they should be collected before and/or during blooming.

For **corn**, check leaves below and opposite from the ear during tasseling to silking.

Plant tissue which is less than 20ppm along with a low soil test would indicate a deficiency. **Optimal plant tissue should be 30-200ppm.**

Plant tissue which has levels greater than 300 ppm may indicate a toxicity problem.

Toxicity is tolerated by corn, but alfalfa, dry edible beans and small grains are more sensitive to manganese toxicity.

For all of your Manganese needs call Nutrient Agri Products of Papillion, Nebraska @ 402-502-4824 or check the website @www.nutrientap.com for other needed Micronutrients.