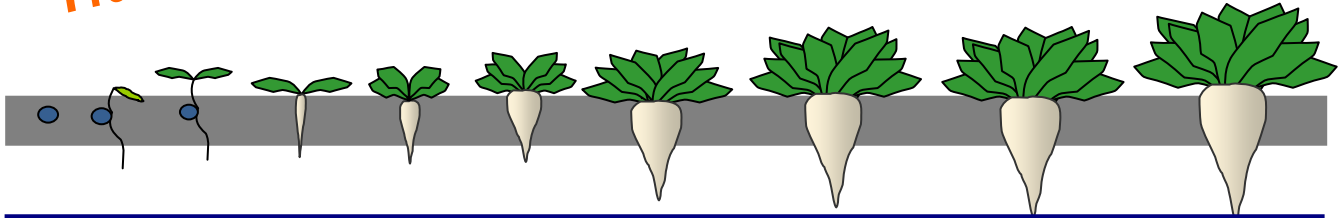


From the Field

Providing Practical, Timely, Useful Crop Production Information

Gregory M. Clark

Michigan Sugar Company, Agronomist



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Micronutrients (Mn and B)

The inherent complexity of sugarbeet production requires integrating many factors to ensure maximum crop yields with the least risk to the environment. Sixteen plant nutrients are essential for proper sugarbeet development. Each is equally important to the plant, yet each is required in vastly different amounts. These differences have led to the grouping of these essential elements into three categories; primary (macro) nutrients, secondary nutrients, and micronutrients.

In this article we will cover the micronutrients that are essential to sugarbeet production.

It is good insurance to apply manganese (Mn) in the starter fertilizer, especially on high pH soils. We have been seeing an increase in Mn deficiency in sugarbeets over the past years. Apply five pounds of Mn per acre in the starter fertilizer. Manganese sulfate would be the preferred choice.

Foliar applications of Mn are recommended when: (1) fertilizer is not applied in a band near the seed, (2) deficiency symptoms appear on the foliage, or (3) regular fungicide and insecticide sprays are applied. The recommended rate is one to two pounds of manganese per acre in 30 gallons of water, using the one-pound rate if plants are small and the two-pound rate if plants are medium to large. Spray grades of the manganese carriers are recommended to prevent nozzle plugging. Some fungicides contain manganese but generally not enough to correct a deficiency.



Mn Deficiency

Bay City Ag Office and General Ag Offices – 2600 S. Euclid Ave., Bay City, MI 48706

Phone: (989) 686-1549 Ext 267 - FAX: (989) 686-3204 – Cell: (989) 891-678512

Email: greg.clark@michigansugar.com



Mn can be mixed with fungicides. However, antagonism (reduced efficacy) may occur if mixed with Round-Up. Chelated manganese fertilizers can safely be mixed with both fungicides and Round-Up. However, chelated manganese can be less effective because fewer nutrients are supplied to the plant.

Manganese deficiency in sugarbeets often causes marked yellowing between the leaf veins; the veins themselves remain dark green. This pattern is similar to iron deficiency but occurs more generally over the plant. Manganese-deficient sugarbeets causes mottling between the veins. Chlorosis usually begins on the younger leaves. Severe deficiency causes gray and black specks along the veins.



Mn Deficiency

Research in Michigan does not indicate a need for application of boron (B). However, B deficiencies has been observed in some fields, if so, then apply 1.5-3 pounds of B (granular) per acre at planting time or before the 6-8-leaf stage. Sodium borate would be the choice for this micronutrient correction. The suggested rate for foliage application is 0.13 to 0.3 pounds per acre in 30 gallons of water. Usually a second treatment is necessary. If sugarbeets are greater than 6-8 leaf stage, then granular application with Urea works the best. If you have a high pH soil, then use the higher end of the recommendation rate.



B Deficiency



Be sure to mix completely when B is combined with other fertilizers. Segregation due to particle size differences is often a problem. Be careful when banding fertilizers containing B near the seed or plants. Too much B near the seed or plant may be toxic to young plants or germinating seeds.

B deficiency in crops causes a breakdown of the growing tip tissue or a shortening of the terminal growth. B deficiency usually appears in small spots and may spread until the entire plant is discolored. In sugarbeets, the first symptoms are white, netted chapping of upper blade surfaces or wilting of tops. Later, if the deficiency becomes severe, transverse (crosswise) cracking of petioles develops, the growing point dies and the heart of the root rots.

If sugarbeet growers have concerns about adequate nutrient sufficiency or confirming symptoms that are seen, a foliar analysis should be considered. For more information on foliar testing, please contact your Agriculturalist.