



Montag Manufacturing, Inc.

2737 Van Dorn Rd
Milford, NE 68405

3816 461st Ave
Emmetsburg, IA 50536

Phone: (712)-852-4572

Email: info@montagmfg.com

Website: www.montagmfg.com

THE AGRONOMY CORNER

CALCIUM

Today we will turn our attention to the so called “minor” elements of crop nutrition and discuss the major, minor element of calcium.

Calcium is an essential nutrient that tends to be ignored. Especially when compared to the major role it plays in plant growth. Most often fertility programs are based on the big three of crop nutrition and calcium, and the other “minor” elements, receive little attention. Many specialty crop growers recognize the role played by calcium and ensure that it is in adequate supply in the soil.

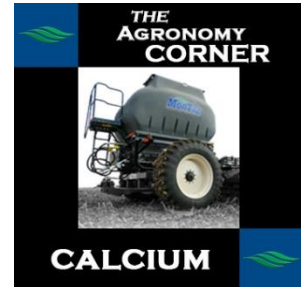
Calcium in the soil, will replace the acid hydrogen ions on soil particles and increase the pH of the soil. The microorganisms that decompose residues into organic matter releasing nutrients and improving soil texture and water holding capacity must have calcium. It also enables nitrogen-fixing bacteria that form nodules on the roots of legumes to capture atmospheric nitrogen and convert it into a form that plants can use

Calcium improves the absorption of other nutrients by roots and their translocation within the plant. It also aids movement of photosynthesis products from the leaves to the reproduction parts of the plant, thereby aiding fruit (seed) set. As with other elements like potassium, it activates a large number of growth regulating enzymes within the plant and is needed for cell wall formation and cell growth. Consequently, it also improves the resistance of the plant to attack by disease.

Three other roles are worth mentioning: along with magnesium and potassium, calcium helps to neutralize organic acids, which form during cell metabolism in plants; it aids in the conversion of nitrogen into proteins needed by the plant; and it reduces a plant’s respiration thereby helping to reduce water usage.

As mentioned earlier, Calcium aids in nutrient translocation. However, calcium itself, does not readily translocate within the plant. Therefore deficiency symptoms will first appear on new growth.

Although calcium deficiencies are most likely to occur in acid, sandy soils from which calcium has been leached by rain or irrigation water, it should be remembered that it is not the acid soil,



per se, that causes the problem. Such acid soils may restrict crop growth because of concentrations of aluminum and/or manganese — not a calcium shortage.

However, a calcium deficiency is not likely for most crops when the soil is properly limed to adjust soil pH to optimum levels for crop production. Soil testing and applying lime as needed should prevent these problems.

It should be kept in mind that calcium, potassium and magnesium interact with each other and a proper balance of each is required. An overabundance of one can lead to a shortage or reduction in uptake of another. Calcium can also be supplied for specific plant functions such as the application to peanuts at pod set to improve seed development.

Choosing the best source of calcium for your soil depends on what your specific soil needs. We refer you to a local agronomist or extension service to assist in this choice. Remember that a good liming program is the most efficient supplier of calcium to your crops. Some sources of calcium and what they are used for are shown below as well as in the references cited.

High-quality calcitic limestone. Effective when soil pH adjustments are needed.

Dolomitic limestone. May be used if magnesium is also low,

Or calcitic limestone may be applied along with a magnesium source such as potassium-magnesium-sulfate

Gypsum (calcium sulfate) provides calcium when soil pH is adequate.

Take aways.

Pay attention to the amount of calcium in your soils as it is required for proper plant growth and fruiting (seed production).

Balancing calcium with other nutrients like magnesium and potassium is very important to ensure that these elements stay balanced and do not cause issues with each other.

The source of calcium used for liming can easily throw off the balance needed. Pay attention to the content of the calcium you are using. Check with your local agronomy advisor or extension service.

Remember that an acid testing soil may have sufficient calcium and adding the wrong lime may cause imbalances and interfere with uptake, especially with potassium.

Unlike potassium, deficiencies of calcium are seen on new growth first. Examine new leaves for signs of deficiency.

Like other soil minerals that aid in disease resistance, anything that can react with calcium, and thereby reduce its availability to the plant, harms the growing plants. Think over application of other nutrients as well as chemicals that can tie-up minerals.

Links to the sources for this discussion:

<http://eldoradochemical.com/fertiliz1.htm>

<http://www.cropnutrition.com/efu-secondary-nutrients>