



ULTRA GRO

As farmers, when these early spring and summer tissue tests come in the first things we look at are the **N**itrogen, **P**hosphorus and (**K**) potassium numbers. Then we glance at the Calcium numbers and usually shoot to the minor nutrients knowing that we can correct them quickly with foliar nutrition. Rarely do we take a good look at our magnesium levels. Unless we see a glaring yellow or red number and our crop nutritionist seems concerned, Magnesium is rarely a hot topic. But should it be?

Here's the scientific jargon to impress our friends at cocktail parties: Magnesium is number 12 on the periodic table and at 24 has an atomic weight one higher than Sodium. Like Sodium and Potassium it is an alkaline metal and more specifically, like Calcium, it is an alkaline earth metal. It is abundant in the earth's crust but is usually tightly bound to clay particles. Magnesium is leachable as it is highly soluble in water and will move through diffusion from levels of high concentration to levels of low concentration. It has the same charge as Calcium with the same two electrons in the outer valence level but being a much smaller unit, has less surface area and a tighter grip on the water that surrounds it. Now that those friends without dirt and grease under their fingernails are impressed with your scientific knowledge, they still want to grab a handful of nuts off the appetizer table. And since it's your job to make them, what does it all mean?

Magnesium is the core element in chlorophyll. Life doesn't exist without it. Without magnesium and the chlorophyll molecule, light cannot be converted into energy. We have talked in the past about the importance of phosphorus in creating Adenosine Triphosphate. That's the million dollar word for the energy we burn. But in reality, ATP is attached to magnesium. Plants aren't green, light doesn't get converted to energy and life doesn't exist without magnesium. In fact, in researching this article, I learned something new and profound. In an article by Dr. Mark Sircus, Ac. OMD, if you replace the magnesium in a chlorophyll molecule with iron, you get hemoglobin, the oxygen transporter in our blood!

So what do we look for and how do we treat it? Magnesium deficiencies show up on older leaves first as it is mobile in a plant. Many times interveinal chlorosis is immediately thought to be an iron deficiency. It very well may be your Magnesium. Magnesium is highly water soluble and moves into the plant through the transpirational flow. Since it moves through diffusion we can get it to the roots through fertigation. Magnesium is also a small enough element to penetrate the transdermal cracks in leaf tissue so foliar applications are highly effective, especially with an organic acid like fulvic. Check your tissue tests and confirm that your Magnesium levels are at least 10% of your nitrogen levels. Both may show adequate on the test but if N is too high, you are out of balance. High manganese and aluminum will also block

magnesium availability in tissues and especially in dry acidic soils. High Calcium, Sodium and Potassium levels will compete with Magnesium absorption so again the key is balance. When it gets hot and those plants are pulling hard from the soil moisture, the other cations like sodium in higher concentrations in the soil solution will prevail.

The take away: Don't just rely on your eye. That deep green color that can exist with over applying Nitrogen and Iron may not be the fix for photosynthesis. Check your Magnesium levels. Make sure you or your crop advisor is pulling tissue samples and soil samples for you and confirm your nutrients are in balance. Use your consultants to devise the proper feeding schedule to avoid any tie up that could exist with competing nutrients. Those higher yields you achieve with better energy production will leave your farming buddies green with envy!