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Potassium Sulfate or Potassium Chloride?

Concentrations of K in our soils are often too low to support healthy plant growth. Potassium is needed to complete many essential functions in plants, such as activating enzyme reactions, synthesizing proteins, forming starch and sugars and regulating water flow in cells and leaves.

Currently in most of our Illinois Counties, only potassium Chloride (KCL) is available for our agricultural use. Potassium Sulfate (K_2SO_4) is gaining in popularity and results of using it instead of (KCL) are favorable.

Most Illinois soils are short in sulfur. Potassium Sulfate contains 17-18% sulfur and no chlorine. The sulfur speeds up nutrient uptake which has resulted in higher yields. Sulfur is required for protein synthesis and enzyme function.

Today, most production of Potassium Sulfate (K_2SO_4) comes from our western states of New Mexico and the Great Salt Lake in Utah. Price per ton is a bit higher than Potassium Chloride (KCL) – 60%. But Potassium Sulfate contains no chlorine and adds a much needed source of sulfur makes the extra cost a most worthwhile addition to your fertilizer program. Check with your plant food supplier about ordering some for your potash needs.

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**To do a Simple task
Exceedingly well
Spells Success**

Newsletter
September 2014

Pro-Ag Update

Pro-Ag Consulting, LLC

**We are Celebrating
our 35th Year!**

this issue

Is Residue a Problem for You? Pg 2

Buffer pH—What is it? Pg 2

Boron Deficiency Pg 2

2014 Scholarship Winner Pg 3

Calcium in the Soil Pg 3

Potassium Sulfate or Potassium Chloride Pg 4

Pro-Ag has Visitors from Uruguay

This past summer, our Windsor office entertained visitors from Uruguay. Marcos Guigou and five assistants from his farm and company ADP - Agronegocios del Plata in Dolores Uruguay came to visit and see our lab in operation. We made an arrangement earlier this year with Marcos to do their soil samples. Their purpose was to see how we analyze their samples and how we prepare maps and soil recommendations for them.

Pro-Ag's Chris Behl has been working with one of the farms they own in Illinois and they liked the results from that farm. They wanted to try those same services on some of their farms in Uruguay. Marcos is happy to achieve increased yields mainly in corn and soybeans and understands that our analysis and recommendation system works very well. It manages to bridge the gap between potential and actual performance achieved in the averages of the farm

ADP is a very large Agricultural conglomerate that is involved in many aspects of food production. Two families (Guigou and Grobocopatel) founded ADP in 2003. They farm 180,000+ leased acres raising beans, corn, wheat, barley, rapeseed and sorghum. They also are very involved in seed genetics and precision agriculture, and even use drones to capture images of crops.

Before we could analyze their soil we had to get approval from the USDA to become an approved International Lab. Applications had to be made, sterilizing equipment had to be purchased, quarantine room and soil dryer had to be built. Then USDA inspectors had to approve our set up. Inspectors went real well and we are now an approved USDA lab.

All soil shipped to us must be triple wrapped. Soil must be in a sealed bag, the bag must be put into another sealed bag and then put into a box for shipping. The permit must be on the outside of the box and then the box must be sealed.

To date all has gone well. August and September is a down time for our lab but it is a perfect time for them to sample and send to us. They are in the Southern hemisphere at about the same latitude as Atlanta in America.



Is Residue a Problem for You?? By Mark Coots, Owner of TEVA Corp.

It seems that as I travel all over the U. S. and talk with farmers they are having more and more problems with their residue left in the field. What we need to do in farming is to turn these problems into solutions that will benefit us. Residue is one of those problems that we need to use to our advantage.

With the changing varieties of corn, we are seeing less decomposition to the residue than we did in the past. This causes all kinds of problems tractor tire punctures, too much residue to plant in the next year, ect. We can do things to help this decomposition come about quicker. Remembering that humus is a 12 to 1 carbon to nitrogen ratio, to decompose something we need to get it to that ratio. Corn is approximately a 40 to 1, soybeans 30 to 1, and wheat a 65-70 to 1. As you can see by the ratios, soybeans decompose quicker and you can see why it takes longer for wheat to decompose. Also, the decomposing crop residue has a lot to offer, it can help your OM, increase your humus level in the soil, which in turn increases your ability to hold more nutrients. They have nutrients in them that can be added back to the soil. For instance, in 150 bushel corn, the residue has approximately 100 lbs of N, 37 lbs of P, 145 lbs of K, and 26 lbs of CA. If we can decompose this residue quickly, we have a better chance of holding much of those nutrients. You really can't count on the N portion, because it is used up in the changing it into the 12 to 1 ratio.

So what does it take to get this decomposition going? You need moisture, biological life, and N if you want it to go quicker. There have been some studies done that show that there is no advantage in adding N to help the decomposition, but that has not been the experience that I have seen. It will decompose over time without adding N, but I have seen it speed the process up considerably. Biological life is one of the main keys, if you don't have good life in the soil, it will not help break things down like it should. So adding a biological product like MEGAZONE FALL, which has different kinds of bacteria to help in that break down is beneficial. Any time I use any biological, I use sugar to help feed the bacteria and help them reproduce.

So here is a treatment that we have had very good success with: 10-15 units of N, 12.8 oz of MEGAZONE FALL, and 16 oz of MMTS SUGAR. Spray that on the residue before chopping residue or working the field, that way more of it gets on the residue. You can ask any of the TEVA CORP dealers about these products.



Boron Deficiency

For the first time in the past 35 years, we are seeing wide spread deficiency symptoms of Boron shortage. Recent soil and tissue tests are confirming the shortage.

Boron is available for plant usage when the soil pH is below 7.2. When the pH is over 7.2, Boron is not readily available. We are seeing a lot of soil pH tests above 7.2 this year. Also in course soils, excessive rainfall leaches out the Boron. When these two factors are present, deficiency begins to appear.

What can we look for?

This time of year pulling back the shuck of the ears in some cases. Poor kernel development or a blank ear in some cases. Poor kernel development is caused by the pollen dying before fertilization takes place. Too late to correct the problem this year. For next year consider adding a nutrient mixture with Boron to your plant fertility program.

Buffer pH—What is it?

We have been requested by some clients to run the buffer pH test. Since this test is seldom used I will attempt to describe the test and it's result.

We take each soil sample that comes into our lab and perform a basic pH test. This test does not measure lime in the soil. It is a measurement of the Hydrogen & Aluminum Ions that reside in the soil structure. The higher the concentration of these ion's, the more acid the soil. To neutralize the effect of these ions, we add limestone to flush the ions out of the lattices of the soil.

When we are done with the pH test, we add a buffering solution to the sample to see how the pH level will change while adding this solution. We use this reading in making lime recommendations. There is also a correlation to the CEC of the soil sample. A low CEC has less spots for H & AL ions to reside, so less lime is needed to correct the soil pH. Likewise the higher the CEC, more lime will be needed to obtain the desired pH reading.

Calcium in the Soil

Calcium is present in adequate amounts in most soils. Calcium is essential for many plant functions. Some of these functions are:

- Proper cellwall development
- Proper cell division and elongation
- Nitrate uptake and metabolism
- Enzyme Activities
- Starch Metabolism

Facts affecting Ca availability

Calcium is found in many of the primary or secondary minerals in the soil. In this state it is relatively insoluble. Calcium is not considered a leachable nutrient. However, over hundreds of years, it will move deeper in the soil. Because of this, many soils have higher levels of Ca, and a higher pH in the subsoil.

- Soil pH: Acid soils have less Ca and high pH soils normally have more. As the soil pH increases above pH 7.2 or 7.3 due to additional soil Ca, the additional "free" Ca is not bsorbed into the soil. Much of the free Ca forms nearly insoluble compounds with other elements such as phosphorus (P) making P less available.
- Soil CEC: Lower CEC soils hold less Ca. High CEC soils hold more.
- Cation Competition: Abnormally high levels or high application rates of other cations i.e. Potash, when Ca levels are low to moderate in content, tends to reduce the intake of Ca.

Other Concerns

Phosphorus (P): As the soil pH is increased above pH 7.0 free Ca begins to accumulate in the soil. This Ca is free to interact with other soil nutrients. Soluble P is an anion, meaning it has a negative charge. Any free Ca will react with P to form insoluble Ca-P compounds that are not readily available to plants.

Iron (Fe++) and Aluminum (AL+++): as the soil pH decreases to below 5.0-5.2, more of these elements combine with Ca to form essentially insoluble compounds.

Balances & Ratios

This past few years, various individuals are talking the importance of Ca and Mg ratios. Some are saying the ratio should be as high as 20:1. Of course this is related to a product being sold. Others are saying the ideal ratio is between 5:1 and 8:1.

According to University research, there is no justification for the added expense of obtaining a definite Ca:Mg ratio and that plant yield or quality is not appreciably affected over a wide range of Ca:Mg ratios.

Summary: Be aware when applying Ca that a large amount applied could cause more harm than benefits.

2014 Scholarship Winner



Our 2014 Jim Koester Memorial Scholarship winner is an outstanding young lady, Brianna Voelker of Waterloo, Illinois. She graduated 11 in her class of 203. She enrolled at South East Missouri State University majoring in Agriculture Business Management with a minor in Horticulture. While attending high school, Brianna was a

very busy student with various activities and was on the honor roll all four years. She was inducted in the National Honor Society in 2012 and was also named Illinois State Scholar. FFA was one of her favorite activities, participating in every event and attending the National Convention in 2011. Her personal goals are to study Agri-business and Horticulture to gain enough knowledge to go into careers involving these areas. Brianna's Ag teacher, Tim McDermott, summed it up about Brianna by writing "when I work with Brianna there are no surprises, I can always expect to work with a very mature, focused and driven young lady."

Getting it Done Professionally

When you hire us for the services we provide, we try to do the job in a very professional manner. To do so, we must have well trained experienced professional people. We take great pride in retaining our employees year after year so when our season starts, we have trained people ready to go. The last few years we have had three people retire with over 65 years of experience. Today our employees have over 232 years of service working for Pro-Ag, doing services you hired us to do.

