

# From the Ground Up



Soil Solutions, LLC · 303 Lamp Kastner Drive · Holstein, IA 51025

**March 2007**

## **New Record Yield in Soybeans**

Kip Cullers from Purdy, Missouri recorded a new record soybean yield of 139 bushels per acre shattering the previous record of 118 bushels per acre set by Michigan producer, Ray Rawson. This yield by Cullers was certified by Missouri Soybean Association representatives who were present at harvest.

Cullers drilled his soybeans with a seeding rate of 300,000 seeds per acre and he had a harvest population of 245,000 plants per acre. The variety was a late group IV maturity. He believes that planting large soybean seed produces large soybean seeds at harvest. In other words, he feels the larger seed will genetically have a larger seed size potential. Seed size is important in raising high yields.

Another management practice that Kip employed is that he keeps soybeans cool during hot days by applying two to three tenths of water on beans each day, which is different than most irrigated soybean research would suggest. He feels you have to cool the soybean plants or else they will abort blooms and pods. He irrigates almost every day in July, August and September. This also creates an environment that is conducive to plant diseases therefore he feels fungicides become critical.

Kip also produced 347.28 bushels of corn per acre in the National Corn Growers Contest in the No-till/strip till irrigated category.

## **Getting Better N Efficiency With PRO CAL 40**

With nitrogen prices again on the rise all producers are interested in management practices that will give them the most bushels per pound of nitrogen applied. Since we know that a bushel of corn grain contains about 0.75 to 1 pound of nitrogen depending upon the protein level we know that our crop will need a certain amount of nitrogen. Where it comes from (ie. organic nitrogen reserves, carryover nitrates or applied nitrogen) and how we can limit loss or tie up is the main concerns.

By timing our nitrogen applications closer to the time the corn plant needs most of its nitrogen (rapid growth stage) we know that there is a better chance that less will be lost or tied up. We also know that the less the applied nitrogen is in contact with crop residue the less will be immobilized by the microbes in breaking down that residue. Properly timed foliar applications can also give a yield boost. Placement and timing are critical components in nitrogen efficiency.

Research at Purdue has revealed that clay soils with higher magnesium levels will fix more ammonium nitrogen between the clay layers rendering it less available than the same soil type with higher calcium levels. This is another reason why higher magnesium soils will require more nitrogen to produce equivalent yields to lower magnesium soils.

Calcium sulfate has shown to improve nitrogen efficiency. Most of the credit has been given to better drainage however, as this research shows, less fixation is probably also a factor. Additionally, better drained soils will allow for more mineralization of organic nitrogen and less nitrogen lost to denitrification. We also notice that where PRO CAL 40 has been applied the soils are less “sticky” and the soil will seal better behind the ammonia knife. To the right is a picture showing streaking by an ammonia applicator on the left and no streaking on the right side where PRO CAL 40 was applied. The corn also showed less N deficiency symptoms where the PRO CAL 40 was applied.



### **There is More Happening Than It May Appear**

With snow covered fields and sub freezing temperatures many may not think that much is occurring in their fields, but this is far from the truth. Agricultural research has shown that as soil freezes, it acts as a sponge, drawing water up from unfrozen areas. This is especially true when soils are rather dry. Extremely wet soil will have water move both up and down. This may help explain why we have been amazed in some dry years at the moistness of the soil. Nitrates and other mobile nutrients will move with this soil water.

Minnesota research has also shown that tillage practices also affect soil freezing and thawing. Plowed soil had frost more than two feet deeper than no tilled ground (standing corn stalks). This was due to the insulation of the snow that accumulated in the stalks. This deeper frost in plowed soil may also tend to draw more moisture and nutrients from deeper depths.

### **Alfalfa Responds To PRO CAL 40**

We continue to get favorable comments from clients that have used PRO CAL 40 on their alfalfa. One customer noted that this was the first time he has been able to raise dairy quality alfalfa. One of the dairies we work with has noted increased milk production from using alfalfa that was treated with PRO CAL 40. Another client has

seen much better production in his older alfalfa stands where he has used PRO CAL 40 versus those that have not been treated. He feels his alfalfa stands will last longer also. If you want to realize these benefits on your alfalfa also give us a call. If we cannot get it applied before spring green up, we can do it between cuttings. Also remember to apply before you seed your new alfalfa.

### **When Should You Lime your soils?**

Liming soils is now a proven practice, but often producers wonder at what pH is it critical to lime their soils. My experience has shown that if your pH is above 6.0, wheat, corn and soybean yields will not be significantly impacted by a lime application. Laboratories often recommend lime at pH above 6.0, however, to let you know how much lime will be required to bring that soil back to the target pH (which is often times 6.8). If you own the land you may want to lime the soils above 6.0 especially if the soil is heavy just so that it won't require as high of rate as it will when the pH drops into the 5.9 and below range. If you are using variable rate applications, it is a good practice to apply lime to these soils between 6.0 and 6.8 since you are paying for an application on those acres anyway. Lime increases calcium levels which will increase plant uptake of all nutrients. Liming can be done in no till soils, however, movement of the lime will take time only moving ½ to 1 inch per year depending upon how heavy the soil is.

Buffer Index or buffer pH on a soil test merely tells you how much lime will be required to raise the pH from where it is now to the target pH (probably 6.8). The heavier soils require more lime to raise the pH and that is why a buffer index is needed.

Gypsum products like PRO CAL 40, provide readily available calcium but does not provide a neutralizing component like carbonate in lime. Therefore, gypsum, although a good calcium source, will not raise the pH.

### **World Ag Expo**

The owners of Soil Solutions, LLC recently attended the World Ag Expo in Tulare, California. It was very informational and fascinating to see various types of equipment and the agriculture in the San Joaquin Valley. They raise alfalfa, corn, wheat, barley, vegetable crops, oranges, lemons, peaches, plums, grapes, apples and many nut crops. Also there are many dairies, some poultry and swine. We learned that there is over 1 million tons of gypsum used in this valley each year. The average price at the mine was \$50 per ton. Mines are more than 100 miles from most of the farms. Rates that were applied were generally 1 to 2 tons/acre.



**Congratulations**

A Soil Solutions, LLC customer, Blane Anthony from Talmage, Nebraska was honored to receive 1<sup>st</sup> place in the 2006 National Corn Growers Association yield contest with a winning yield of 250.78 bushels per acre in the A Ridge Till/Non-Irrigated category.

Congratulations Blane!!

Another customer, Cory Snethen from Falls City, Nebraska also received 2<sup>nd</sup> place in Nebraska in the 2006 National Corn Growers Association contest with a yield of 269.39 bushels per acre in the A Non-irrigated category. Congratulations Cory!

These yields are especially outstanding given how dry Southeast Nebraska was in 2006.