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## **Cool Nights and Yellow Corn!!!**

Every time it happens, you start asking questions; lots of questions, and you get no real answers. The seasons change and you have only distant memories of it. Next year maybe it doesn't even show up.

However, some day it raises it's ugly head, again. So what is it? Yellow Corn syndrome! With the cool nights we have been experiencing we often see more of this yellowness in the cornfields than normal. Cool weather tends to inhibit the growth of the corn plant. Oftentimes, the plant can't grow fast enough to throw off the effects of herbicides, and we see "herbicide injury" manifest itself under these conditions.

Other times, we see yellowness in our corn plants. This seems to manifest itself sometimes where the Organic matter in the soils is lowest, because those soils don't collect the heat as well as those with some organic matter. Of course, Muck soils that are loose, even with the organic matter, tend to loose heat rapidly.

Anything that inhibits the growth of the plant can cause nutrient shortages, and this certainly appears to be one. It happens in Northern Ohio, Northern Indiana, Michigan, and I'm sure in other areas as well on a regular basis, sometimes every year.

This yellowness is often mistaken for nitrogen deficiency. In addition, where they have recently applied nitrogen, the corn is darker, but still yellow in the whorl of the plant, and if you look closely, there are often still yellow streaks on the leaves. They just appear to go away until you look closely because the tissue in between the stripes is darker green.

So, if it isn't nitrogen what is it? First, white, or yellow streaks on the corn leaf are classic symptoms of Sulfur, Magnesium, or Zinc deficiencies. On sands where this is often manifested, all of these could be possibilities. Sulfur leaches as easily as nitrogen. Magnesium is often naturally lacking in a sandy soil, particularly if the pH is low. Zinc could be short particularly if the Phosphorous is high.

How do we find out what we are looking at? We can take soil samples. Understand though, that until the soil warms up you probably won't get a lot of availability of what is in the soil test. Oftentimes, if you pull a plant sample, it will show everything to be sufficient.

You know better, because you can see it! Usually, we have found that sulfur applications in the form of Ammonium Sulfate don't seem to affect the symptoms. Therefore, we rule Sulfur out. That leaves Magnesium and Zinc as possible solutions.

Magnesium is notorious for being slow to metabolize in cool spring conditions even when we have good soil test levels. Remember it is characteristic of yellow leaves, also. We know from the livestock industry just how much of a problem it can be.

In cool spring weather the Magnesium doesn't move into the spring grasses very readily. We either graze this grass, or feed it in some way to our cattle. They oftentimes get sick, and all too often die as a result. The effect is they develop low Magnesium levels in their blood, and if not corrected in time, they may die as a result.

We often refer to the condition as "Grass Tetaney". It comes from eating feed with low levels of Magnesium. As the soils warm we get better availability of Magnesium in the feed, and it isn't a problem the rest of the summer.

Therefore, it wouldn't be out of the question that the stripes could be a manifestation of Magnesium deficiency. If that is the case in corn, we often see the yellowness particularly on the rises of a sand hill.

The last usual possibility is Zinc. These are hard to nail down particularly if the tissue test says the plant has enough, and the soil tests say the element is plentiful.

A couple of years ago, I spent a bit of time trying to nail this down for a seed company. Some inbred lines were worse than others. You can see it everyday driving down the roads in the areas where seed is raised. I did it again today, still works! Nevertheless, the dark inbred still has the stripes, just masked.

It wasn't until we got warmer weather a couple of years ago, after trying Ammonium Sulfate that didn't seem to work, that we saw it show up in the tissue tests. Until the warmer weather the tissue tests were saying everything was adequate. As soon as the weather warmed and the plants started growing rapidly, we had a Zinc deficiency.

It never showed in the soil tests, but it was quite apparent once the corn started growing rapidly.

Yesterday, the 5<sup>th</sup> of June, I was walking cornfields SW of South Bend, Indiana. Classic symptoms, yellow stripes, particularly on the sandy

soils. Not knobs, just sandy soils in general. The individual had used 3 different seed-placed starters. What a beautiful way to get nutrients to the plant quickly, particularly if you weren't getting much growth out of the plant. Everything where the root system was located. What more could you ask for? Green Corn!

But he had yellow corn. When he was using 10-34-0 at higher gallons, he had yellow corn. When he was using 10-34-0 mixed with 28% nitrogen, and a slug of micronutrients he had yellow corn. So it is easy to go along with the cold weather induced shortages. It's just that weather induced or not, it often leaves the corn stunted, and reduces the yield.

We looked at several fields, and all 3 different treatments of fertilizer. All fields had the problem; just some didn't have it as badly as others. The one brand of fertilizer seemed to consistently be better than the others. I should state here that **"LFB Solutions"** was not on the farm. Therefore, I was able to be unbiased as far as which seemed to do a better job than the other.

The one brand had considerably more Zinc than the others, and it seemed to be doing a better job of handling the problem. The problem may have been weather induced, but fertility seemed to be able to help it. **"LFB Solutions 6-24-6 TMP"** has a good sized dose of Zinc contained in it along with several other micronutrients. Whether or not, it had enough Zinc, and other micronutrients to overcome this issue, we don't know. We weren't on the farm.

The grower will be running some test strips to test some of our theories, and will report accordingly.

When **"LFB Solutions"** was designing our product line, we assumed that more often than not, the plant would be short of everything in the early planting season. Until the soils warm up, the nutrients just are not available to the plant!

I have seen this aspect make a difference in yield between two different 6-24-6 formulations of 14-16 bushels/acre. Is that worth a dollar an acre difference in price? Maybe!