

Tri State Seed Co. LLC Newsletter February 2019

Chelated Micronutrients

There is a lot of talk in the industry right now about the importance of micro-nutrients. Some micros are easy to get into the plant, and others are not. The ones that enter the plant in a useable fashion are usually chelated, which is a sort of trick to get the plant to utilize the nutrient. The word chelate is derived from the Greek work for “claw”. In fertilizer technology, it refers to inorganic nutrients that are enclosed by an organic molecule. The example below shows how a nutrient such as iron combines with the chemical EDTA to form a chelate. (EDTA stands for an amino acid that enters the plant easily). The EDTA surrounds the inorganic iron and forms weak bonds with it, effectively giving the nutrient an organic coating.

Chelates are useful for micronutrients applied to alkaline soils. Iron, manganese, zinc, and copper react with the ions found at high pH to form insoluble substances. As a result, the nutrients are made unavailable to plants. The organic coating in the chelate prevents these reactions from occurring in the soil. The plant roots take up the chelated nutrient and the chelate releases the nutrient within the plant.

Chelated nutrients are also useful for foliar application. Plant leaves have a waxy coating that prevent them from drying. The wax repels water and inorganic substances making it difficult for inorganic nutrients to penetrate into the leaf. However, organic molecules can penetrate the wax.

The organic coating around the chelated nutrient allows it to penetrate through the wax into the leaf. Once in the leaf, the chelate releases the nutrient so it can be used by the plant. The bond between the organic chemical and the inorganic nutrient must be strong enough to protect the nutrient, but must be weak enough to release the nutrient once it gets into the plant. Also, the chelating agent must not be harmful to the plant.

Not all nutrients can be chelated. Iron, zinc, copper manganese, calcium and magnesium can be chelated, and other nutrients cannot. Several organic substances (chelating agents) are used to produce chelates. EDTA is the most common synthetic chelating agent and is used for both soil and foliar applied nutrients. Others are useful, but very expensive.

1. Information derived in part from 2005 Agro Plant Services International Inc. by Dr. Terrance Fullerton.

So... the reason for all the science is simple. Not all micros are readily available. A 60 bu. wheat crop uses between .28 and .32 lbs. of Zinc per acre. Chelated Zinc is readily available and is best used as a foliar application or applied to the seed piece. Zinc does not move well in the soil so proper placement is essential. Zinc sulfate

is readily available and is usually a cheaper source but used as a dry, it is usually broadcast and incorporated. It is ideal if you own your own ground so you can work cumulatively on the proper balance of nutrients over time. The ratio of Phosphorus to Zinc should be roughly 10:1. Too much Phos means Zinc needs to be higher.

Wheat requires Zinc in small but critical concentrations for several key functions. Research has shown some of those functions to be: seedling vigor, photosynthesis, plant and seed membrane functions, protein synthesis, sugar formation and phytohormone synthesis, (auxins). Wheat needs readily available Zn especially when plants are young and growing vigorously. Small wheat plants have small root systems and may have difficulty finding adequate reserves of soluble Zn to take up. Don't pooh pooh this discussion on micros! Nutrient balance is important. What would you look like if all your wife fed you was ribs? Umm Hmmm...



Winter Damage from Cold Temperatures

We are fielding a lot of questions regarding damage to winter wheat from the recent cold snap. Many factors are involved. Varietal selection is probably most critical. Many of the cultivars currently available are tested for winter survival by Dr. Kim Campbell, the ARS scientist at WSU. She tests varieties for both public and private entities and this information is available on line. Find the “smallgrains” website and it will be there. The reason we think everything will be okay this winter is the crop went to bed wet and in great shape. Snow cover will help but is not as critical as having wet feet. Where snow cover becomes more important is when the wind blows hard and it is also real cold. In this scenario the plant just can't hydrate fast enough to stay alive and can desiccate and die. If you are still wondering, dig up some plants after the ground thaws enough to dig. Bring the seedlings inside and warm them up slowly. First the garage, then the shop and then the house... let them acclimatize slowly to warmer climates, then cut the leaves back just above the crown and watch for new growth. If the crown is brown and mushy, you should probably call us because you are going to need some spring seed. If the regrowth is healthy and vigorous, the force is with you.

A New Grower Agreement Coming

Many of you have already registered in the AgCelerate system. This system is primarily a licensing and reporting mechanism designed to track product usage and register those using specific intellectual property. It has done a pretty good job of tracking not only royalty driven wheat varieties but also certain crop protection products, however as growers your main interaction has most likely been to use it to sign grower agreements for various companies. In an effort to make the signature process easier for growers, a new avenue to sign the required WSU grower's agreement is being rolled out for those of you planting WSU licensed varieties. You will not automatically be transferred into the new system. The new enrollment process forms are simple, taking about two minutes. My understanding is you can sign them using your cell phone. We will have more details soon. No worries, it's easy. Here is the note we received directly from Marci Miller at Washington Genetics via email this week:

WSU has a new grower agreement that each company will need to have their customers who purchase WSU licensed varieties sign starting January 2019. It is available online by visiting www.washgenetics.com and clicking on the button titled Grower Agreement Form. It can be done on computer or smart phone/device. This agreement will be effective for 5 years. Upon signature submission, the grower, company and WSU (via Washington Genetics) will each receive an electronic copy of the signed agreement. Again this is a new agreement and will replace the past agreements growers have signed. WSU has not changed or required new grower agreements for 5 years. We understand that signing this new agreement this may take a few extra moments of your time, and we have worked hard to make it as easy as possible for growers. As time and technology has changed so has the need for new language and ways to easily access documents.

So... as we approach the spring season, please allow a few extra minutes when you come in to pick up your seed, because we will have to verify you have complied with the registration process. Your patience is appreciated.

Fungicides this Spring

We want to make you aware of the arguments for and against the use of fungicides this spring. “So, I thought the only time I needed to use a fungicide was when I had rust?”... So went my conversation at breakfast with a grower this week. Actually, that is somewhat true. The problem is by the time you realize the rust is present, much of the damage is already done. In order to be truly protected, your application must be preemptive.

This fall was fairly dry, and the wheat got off to a good start in this area of the state. There doesn't appear to be very much rust overwintering. The most symptomatic varieties would be Xerpha and Curiosity according to Arron Carter. Dr. Chen's rust report usually comes out in February and we will know more then. But our purpose here is to tell you prevention is the only way to be sure you don't suffer losses. Tilt and other triazoles are curative only. You get 4 days of protection, that's it. The Strobularins are preventative. They will protect everything on the plant it touches, for about 45 days. Any new growth is again susceptible. For less than \$5.00 per acre you can use a Strob and a Triazole. The fungicides with more actives have more modes of action, and those are certainly good.

We prefer generics simply because of cost effectiveness. Why prevention? Because the rust fungus works like a cancer. After it penetrates the epidermis of the leaf, it travels under the leaf surface to infect other areas of the plant. Fungicides can't protect the plant from reinfection after the initial spores reproduce. You don't get a flu shot after you have the flu, right! Same theory applies here. Gallonage is important here!! Make sure you cover every leaf, new growth is not protected.

What happens after 45 days? Well, in years where we have a lot of spores floating around, you may very well have to spray again. Some varieties are blessed with better genetics that have HTAP, high temperature adult plant resistance, but not all varieties do. Those that do are to better able to fight off reinfection. The plants exhibiting the most positive reactions will actually kill the tissue around the new spore, and it will fall off before reinfection occurs. Dr. Chen, the ARS scientist at WSU tells us that HTAP is effective to varying degrees in specific varieties and will eventually degrade over time. When first released, a variety may have good resistance, and five years later be substantially less resistant. Rust proliferates when the environment is perfect for growing wheat. Sporadic rains, heavy canopy, wet soil under the canopy are reasons to be more aware. Scouting is a must. Last time I asked Dr. Chen, there are 127 identified races of stripe rust; it only takes susceptibility to one of them to cause concern. A good set of binoculars will help. But nothing beats walking your fields. If you can see hot spots of rust at 45 miles per hour from the road, I am hoping you included your aerial applicator on your Christmas card list, because you are going to need him fast.

We Have A New Website

Just a small note, our previous web host turned out to be a little more difficult to work with than we thought, so... try the new one out. Type in TriStateSeed.com and it should come right up. If it tries to load and has trouble, just put refresh and it will load. Let us have your feedback please. If there is something else you would like to see on it, let Craig know. No, we can't get the NFL pregame show!

Some Things to Watch for

This is Hessian Fly larva. We have these little guys in Franklin County now. Adams County should be even more concerned. I haven't looked very hard in Benton County yet. They are usually not found in large enough populations to cause significant damage in Franklin, but they are increasing in numbers. These are potentially the most destructive wheat insect in North America. Its larva and pupae inhabit and weaken the culm base in the spring, causing tillers to die or to develop slowly, form small heads, and or lodge randomly. They hatch from eggs laid in the fall wheat. They crawl beneath leaf sheaths and feed above a lower stem node, where they initially resemble a grain of rice. Within two weeks they develop a brown pupal skin and resemble flaxseeds.

This "flaxseed stage" can overwinter and may persist for a year or more. Seeding after the egg laying season is the obvious solution, although not always practical. Resistant cultivars are the easiest prevention; resistant spring wheat varieties are available, not so much on the winter side.



Photo Courtesy of Aaron Esser



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Spring on the Farm Safety

Kevin Starring is our safety compliance officer. He said recently “If you think OSHA is a small town in Wisconsin, you may have a problem.” In between making sure we all have an up-to-date first aid and CPR card, he is reminding us this spring of a few things to keep in mind as we start to go back to work.

Put the pulley and belt guards back on your machines after you finish working on one of them. I kinda like my fingers, I’m sure you are getting used to yours also.

Especially important this time of the year, wear the proper protective equipment while handling pesticides, fuel, DEF fluid, and fertilizer. Be especially protective of your eyes. Dermal toxicity is higher on some chems than others; it is good to know which ones they are.

Always de-energize when making repairs. Whether working on an engine, electrical systems or anything moving, make sure you are locked out and tagged out, as in “disconnected” power source.

Last, always use the proper tool for the job. Most of us have the right tool; we just have to remember where we put it. Housekeeping is my pet peeve. A clean work place is usually a safer work place. Each work place has different rules and standards, take a little time to go over some safety points with your staff and family on a routine basis, and then document them. WISHA and OSHA will smile when they see your efforts.

Valentine Day is approaching fast... you know the drill...

We are wishing you a safe spring!

You can reach any of us at the office, 1-509-234-2500

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