The WFS Agronomic Analyst

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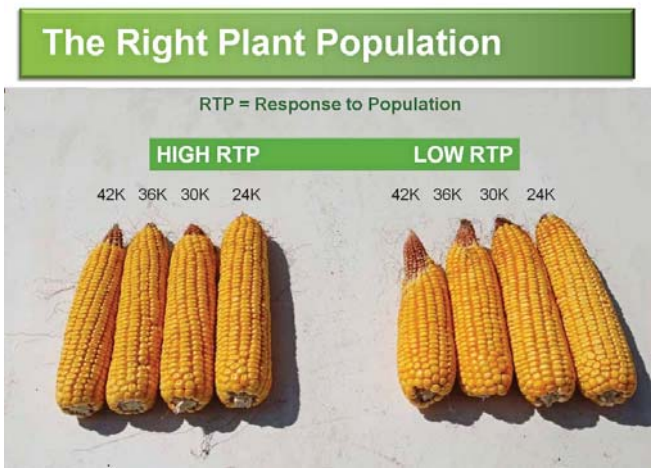
What does R7 mean to you?

By Shane Freese, WFS Seed Sales Manager

For many years now WFS and CROPLAN GENETICS® have been preaching the importance of seed placement and how the implementation of the genetic story can enhance hybrid/variety performance, maximize your bushels produced on the farm, and increase your overall bottom line. For example,



data out of the Answer Plot® system tells us that in soybeans proper placement could give you as much as a 7 to 15 bushel response. Based on the success of this genetic selection and placement practice CROPLAN GENETICS® has taken hybrid/variety management to another level by identifying important additional factors that have a significant impact on yield, thus the development of R7™ Placement Strategy.

With R7™ not only were additional factors that greatly impact yield identified, but the factors were tested and backed up with hard accurate data. One of the strengths of the Answer Plot® system is that it contains thousands of comparisons that are replicated and conducted in a local environment that is relevant to your farming operation. You, as a farmer, have the opportunity to see, touch, and feel the research first hand. The information that has come out of the Answer Plot® system is not just research and data, but actual results that you can use on your farm to enhance the performance of your crop and positively affect your bottom line day-in and day-out.

For example, RTP (Response to Population) has been developed to maximize your population and hybrid performance. Did you know that your seedcorn investment can be as much as $3/1000 seeds? What does this mean to you if you are variable rate planting? Currently, Answer Plot® data would tell us the range is anywhere from 7 bushels to over 20 bushels. Maximization of your population can not only impact your bottom line at planting, but also impact the performance of your hybrids resulting in increased bushels at harvest.

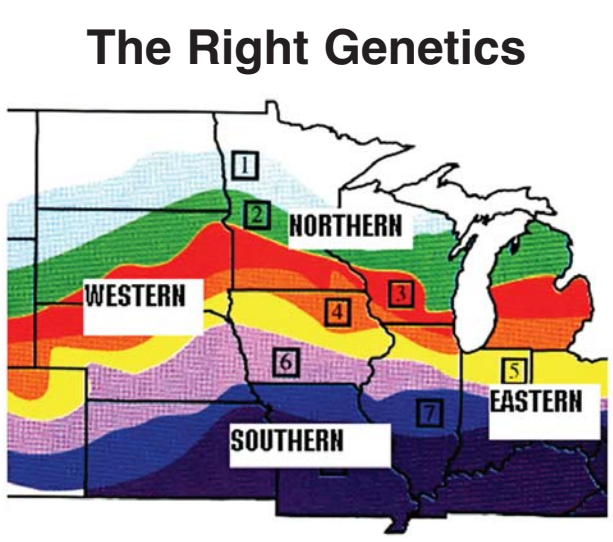
After many trials we have been able to identify the probability of a hybrid's potential response to a foliar application of fungicide. This information has proven to be valuable when managing your disease population and yield response by hybrid.

Another thing to come out of the Answer Plot® system is the practice of using Zinc coated seed. It has been found that even in higher testing Zinc environments, Zinc coated seed has shown significant yield response. The ending result is that all CROPLAN GENETICS® seedcorn now comes standard with Zinc coated seed at no cost to the grower.

Products such as Ascend® growth regulator in-furrow treatment is being studied in the Answer Plot® system. When also combined with Zinc coated seed and starter, this has been the most responsive combination to-date in forming larger root masses, which promotes more efficient nutrient and water uptake and faster ear development for overall enhanced yield potential.

Another new project for this year is the RTN (Response to Nitrogen) research project. Wouldn't it be nice to know what hybrids respond the most to certain rates of Nitrogen?

So ask yourself what does R7™ mean to you?



R7™ Placement Strategy

ANSWER PLOT™ Your knowledge site for local crop production expertise.

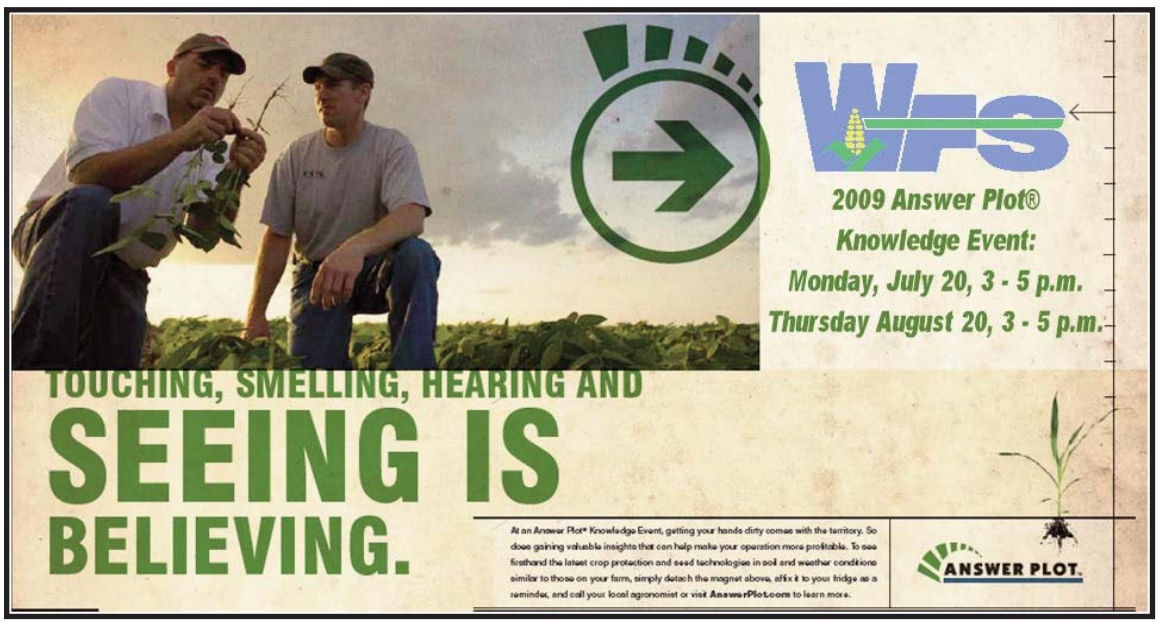
AgriSOLUTIONS™ CROPLAN GENETICS

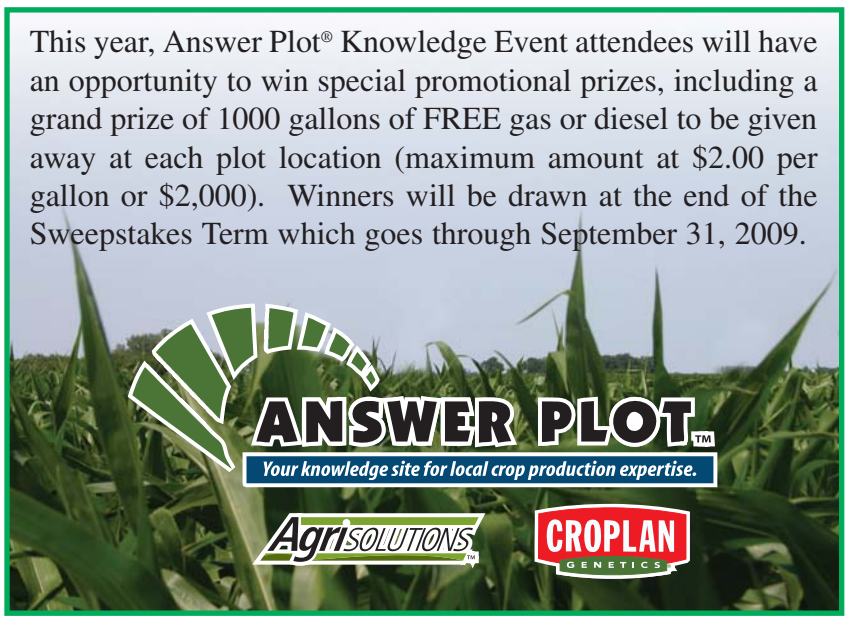
R7™

- The Right Genetics for
- The Right Soil Type at
- The Right Plant Population in
- The Right Cropping System with
- The Right Traits fed
- The Right Plant Nutrition defended with
- The Right Crop Protection

Please contact your WFS Field Marketer with any questions.

Is it the Right Genetics, with the Right Traits, in the Right Soil, at the Right Population, with the Right Crop Protection, with the Right Nutrient Management? Everything that has been discussed in this article has or is currently being tested at your local Answer Plot® allowing you the opportunity to not only see, touch, feel, and learn about it, but most importantly, reap the benefits of implementing one of the R7™ strategies that best suits your farming operation. So again, you must ask yourself, what does R7™ mean to me? Is it 2.5 bushels or 10 bushels, or is it a combination of the R7™ that equates to 20 bushels? The Answer Plot®, along with your WFS Field Marketer is here to help you sort that out! ■





Answer Plot® Knowledge Event well attended

Approximately seventy producers were in attendance at the first WFS Answer Plot® Knowledge Event of the season held on July 20th. Area corn and soybean growers had the opportunity to see and hear about the latest in seed traits and crop protection technologies, as well as many other topics that included:

• Soil moisture – holding capacity of our soils, the current moisture level, and the amount moisture needed to finish the season.
• Moisture probes – how the Answer Plot is utilizing monitors to measure the moisture depletion in the soil profile under seeding rates of 36,000 and 42,000 per acre.
• Moisture stress tent – how different genetics are responding to an environment without moisture compared to the same genetics with normal moisture.
• Disease – what's out there and the need and benefit of fungicide.
• Micro deficiencies – how to identify and treat.
• AMS (Aphid Management System) – new Aphid tolerant soybean.

Experts also addressed subject areas that were brought up by producers at the Winter Answer Plot® meeting. These topics included: increasing soybean yields, Sudden Death Syndrome in soybeans, aphid control and bean susceptibility, and Zinc yield data.

Those attending were given an opportunity to win special promotional prizes including a deluxe fishing package. Dan Timm of Bricelyn was the lucky winner. Producers also had their names entered in a drawing to win a 4-wheeler from Bayer Crop Science and 1000 gallons of fuel from WinField Solutions. Those drawings will take place later on in the season.

You're invited

At an Answer Plot® session, getting your hands dirty comes with the territory. So does gaining valuable insights about making your growers' operations more profitable. We invite you to join WFS at a second Answer Plot Knowledge Event being held on Thursday, August 20, from 3 – 5 p.m. outside of Truman. Take advantage of a "one of a kind" agronomic training session that provides field information to properly position crop input products. If you'd like to attend, please contact your WFS field marketer for more information. ■

Dan Timm of Bricelyn, winner of the deluxe fishing package.

Croplan Genetics - A New Approach to Nitrogen

By Andrew Wolff, WinField Solutions Intern

As a student at the University of Wisconsin – River Falls, I have already had multiple experiences in crop production in the upper Midwest. I was raised on a thousand- acre family farm in Faribault County. I have a two-year degree in Agribusiness Service and Management with an emphasis in Agronomy from South Central College in North Mankato and I am now pursuing a bachelor's degree in Crops and Soil Science at the University of Wisconsin – River Falls. During this period completed two internships, one with WFS as crop scout and one with Crystal Valley Coop in sales and marketing. I am currently doing a third internship with WinField Solutions involving nitrogen response in corn.

With the high cost of nitrogen over the last few years, there has been serious talk about nitrogen management. Many new ideas and concepts have surfaced on of how to use it, but the cost is still a major concern for producers.

Croplan Genetics is taking a new look at how we use nitrogen on every acre. Specifically looking at what hybrids and which genetics are more efficient with its uptake of available nitrogen. In doing so, we are conducting a new study called Response to Nitrogen (RTN). This study is conducted in our Answer Plots nationwide. These plots include twenty different hybrids that display a variety of genetic families of our product lineup and competitors. They are planted at two different populations and have three different nitrogen rates applied. In the evaluation of these trials we are conducting a variety of tasks in data collecting. Allied Environmental Group (AEG) is conducting airborne infrared imaging that can show the stress level of the corn plants throughout the field. These images show which individual hybrids are under a certain level of stress and overall plant health that could amount to major impacts on yield. There are four RTN interns spread across the nation that perform scouting and SPAD meter readings in these plots. A SPAD meter is a handheld device that reads the amount of chlorophyll that is in the leaf tissue. Chlorophyll production is directly linked to nitrogen uptake in the corn plant. Nitrogen uptake and efficiency plays a major role in determining final yields in your corn fields.

CROPLAN GENETICS is incorporating this new RTN trial in our Answer Plots so that you can be more informed. I will talk more in depth about this study and give additional insight on our trials located in Minnesota, Iowa, and South Dakota, at the upcoming Answer Plot® Knowledge Event. Here you will receive hands on experience from our WinField Solution staff. Please contact your WFS Field Marketer for more information or visit us online at answerplot.com. ■

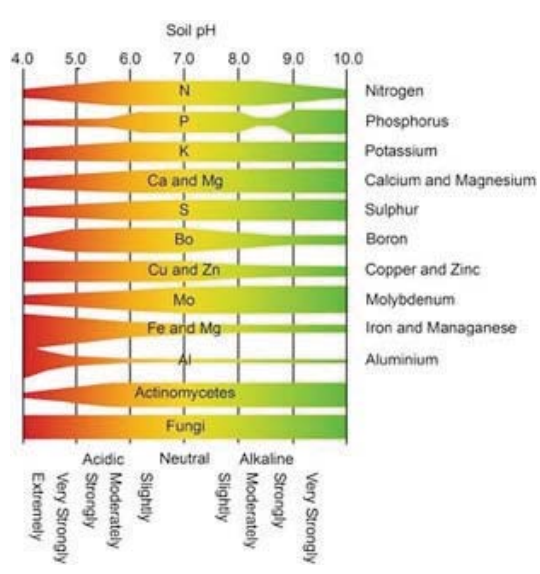
Micronutrients can lead to Macro Results

By: Kate Stenzel, WFS Field Marketer, Amboy/Winnebago

You can call them minor elements, trace elements, trace minerals or micronutrients. While these names may make them sound insignificant, it is far from the truth. Micronutrients are just as essential for plant growth as the primary nutrients (N, P, and K) or secondary nutrients (Ca, Mg, S). Micronutrients are just required in smaller amounts and may be less frequent. The seven micronutrients required by crops are zinc, iron, boron, copper, manganese, molybdenum, and chloride. As crops are being pushed to yield higher, more farmers are focusing on ways to get a few more bushels. One of these ways is to consider implementing a micronutrient plan into your fertilizer management.

Micronutrient deficiencies usually occur because sufficient amounts are not soluble and available to the crop, not because there are insufficient amounts in the soil. Both soil and environmental factors affect the availability of micronutrients to plants. Primary factors that affect availability are soil pH, organic matter content, soil texture, soil water content, nutrient interactions and temperature.

Soil pH is the most important factor influencing micronutrient availability. In general, the availability of micronutrients decreases as the pH increases, or becomes more basic. This is true for all except molybdenum whose availability increases as the pH increases; see illustration below.



In general micronutrients are considered to be chemical activators in plants, meaning they activate specific and necessary functions in the plant. Each micronutrient facilitates separate and specific functions related to that micronutrient. Below is a list of micronutrients and their corresponding function in plants.

Many application options are available if you desire to apply micronutrients to your crop. Seed coatings, in furrow applications, as well as foliar applications are all different options to meet your plant's needs for micronutrients. There is a wide variety of Micronutrient/Supplement-Deficiency treatments for many different crops. WFS is a proud supplier of the AgriSolutions™ MAX-IN® products for Alfalfa, Beans and Corn, Zinc treated seed corn by CROPLAN GENETICS®, TraFix® Zn XL to add to starters and CoRoN® for mid-season nitrogen supplements.

Micronutrients are a vital part of your crop production plan. If you are interested in learning ways that you can incorporate micronutrients into your fertilizer plan, speak with your WFS Field Marketer to see how we can help you use micronutrients to meet your yield goals. ■

ZINC	Activates enzyme responsible for growth hormone production Enhances chlorophyll production Enhances respiration Transforms carbohydrates	Regulates growth Hastens maturity Aids carbohydrates formation Stimulates seed production Influences protein formation Promotes water absorption
BORON	Essential in cell wall formation Essential for translocation of sugars and starches Regulates starch production Aids in terminal bud formation Essential in formation of pollen grains and tubes	Essential for seed production Enhances protein formation Enhances quality Aids in nodule formation Enhances disease resistance
MANGANESE	Regulates supply of growth hormones Acts as a catalyst Activates enzymes Aids in photosynthesis Aids in respiration	Accelerates germination Hastens maturity Regulates uptake of C, Mg, P
COPPER	Aids in chlorophyll synthesis Acts as a catalyst Activates enzymes Aids in photosynthesis Aids in respiration	Enhances nitrogen utilization Stimulates protein formation Functions in root metabolism
IRON	Essential for respiration Aids in chlorophyll synthesis	Essential for healthy, vigorous growth
MOLYBDENUM	Enzyme catalyst for reducing nitrates to ammonia Converts inorganic P to organic form	Enhances nodule formation and nitrogen fixation Enhances protein formation
CHLORIDE	Enzyme catalyst	Involved in plant turgor and drought tolerance Regulation of opening and closing of stomata

Weigh Checks and Test Strips – What is Their True Value?

By: Jamie Jones, WFS Field Marketer, Blue Earth/Bricelyn

Should I have sprayed for aphids sooner? What did I gain by spraying fungicide on my corn? Which population provided the best yield in this field? Is my yield monitor accurate? Is this variety the best fit my field? These are only a few of the questions growers have as they attentively watch their crops roll through the pickers and heads.

With these questions in mind, harvest is among one of the most important times to utilize your WFS Field Marketer. Using a weigh wagon, we are able to give you answers to the questions above or any other inquiry you may have. Of course, yield per acre is the main concern, but uncovering the reason(s) why, for a particular yield is crucial. As agronomists, we enjoy uncovering the agronomic wonders out in the field. To give both grower and agronomist a clearer picture, it's extremely important to leave a test strip somewhere in the field. This allows us to compare variables, especially when it comes to product application and timing. Remember, it is also a good idea to calibrate in-between crops, so plan for a minimum of two calibrations throughout harvest.

Those of you that have a yield monitor already know the importance of calibrating your monitor. Calling your Field Marketer is a simple way to ensure accurate yield readings and moisture percentages so there aren't any surprises at the end of the year. As soon as you are ready to begin harvest don't hesitate, call us immediately to ensure that we can help you get your yield monitor equipped and ready to go in a timely manner.

Soon the bean and corn fields will transition from green to golden yellow and fall will be upon us. While you prepare your combine for harvest, your Field Marketer is gearing up their weigh wagon in anticipation. We're more than happy to service you and at no charge, this is just another benefit of being a member of your cooperative, WFS. ■

Soil and Soil Properties

By: Cory Ward, WFS Field Marketer, Wells

Soils hold some of the most important and interesting ingredients for any crop production system. Soil anchors your plants, provides water and nutrients, and houses the living organisms that help release these nutrients. Looking further into our own farms and fields it is rather remarkable when thinking of the length in time our acreages took in preparing themselves to look and act the way we see them today. There are so many different facets of soils that it is important to realize those which we impact and those that we must accept and if anything, alter our own expectations.

As producers and advisors we have the ability to make better soil management decisions by working to understand the soil's physical properties and the interactions that take place within it. Soil texture is a great place to begin our understanding. The soils texture is simply the composition of sand, silt, and clay percentages within our soils. Texture ratings can be asked for with any soil sample you have taken or determined by Cation Exchange Capacity (CEC). While I often hear reference to areas in fields from sandy to heavy, it is important to state that we really have no effective means to change a soils texture. It has been said that no matter what you do it is impossible to escape your parent material. The basic material of soil is simply small fragments or particles of solid rock. Hand-in-hand with this fragmentation of rock we also owe thanks to chemical corrosion or decomposition for supplying the soil with nutrients in water soluble forms that are available to our crops. Texture and organic matter are the two primary systems that control water holding capacity. While much the local area works to remove water from the soil profile it is important to emphasize organic matter and humus not only in their role of water retention, but as also helping create a softer more tilthy soil that is less prone to cracking. Over all, they are creating better soil structure, seed bed and hopefully yield.

A soils structure is defined as the arrangement that soil particles are bound together forming clods or aggregates. Structure modification can be achieved through management practices which include tillage, drainage, aeration, irrigation, rotation, and so on. It is actually through the condition of the soil, the pore space, that we impact our crop. Ensuring adequate moisture, air and temperature are the factors that really affect the emergence and growth of your sensitive seedlings. At the time of planting you will have had an impact on all of these through your field management decisions. Plants grow best in areas of constant fertility, moisture and aeration. A well prepared seed bed provides for good aeration and directly promotes crop growth through warmer soil temperature and water conservation. In the end, you will also promote activities in the soil such as ammonification and nitrification.

Drainage, as one farmer has stated, is known to pay for itself. On top of removing excess water, drainage performs a deal of aeration. As the water drains and the air follows it down there are many beneficial chemical and biological events happening in the soil profile, including the elongation of roots. Corn for example in well aerated soils will send roots to an average of six feet, but if our water table is shallower, those roots will be limited in depth. Roots in their own right also contribute to the soils aeration and nutrient placement as upon their decomposition they deposit nutrients and provide pathways for water and air movement.

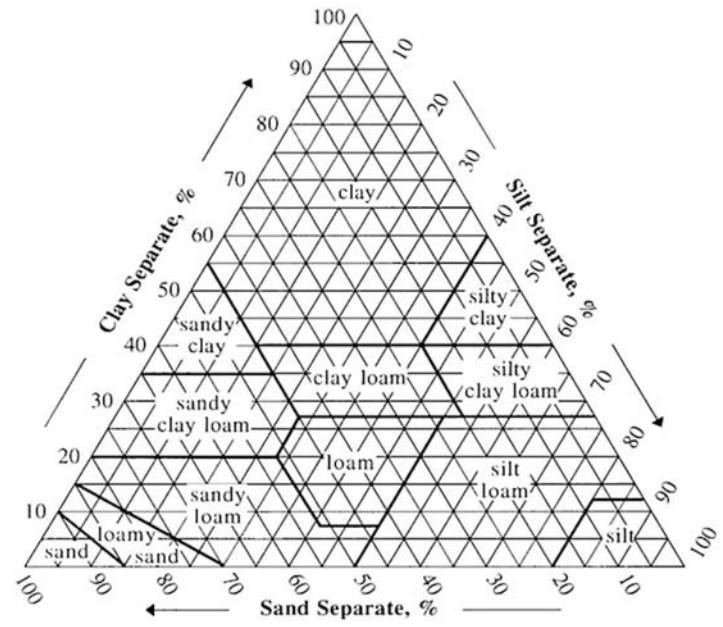
While examining root growth I would also like to mention planting population and the potential effects it has on root growth. Looking at a crop that is perhaps planted too thick we can probably agree that each individual plant may have a hard time reaching its maximum potential. Water being perhaps the first limitation could then be followed up by nutrients and eventually competition for light. Even under ideal planting conditions a heavy population will cause plants to put on excessive root growth at the expense of top growth. Plants that spend time and nutrients on excessive root growth are likely to have dwarfed top growth and be left behind due to sunlight restrictions. Often trouble spots in fields show up half a season away from planting and may pose a serious bout of head scratching. Remember that you pay for sins committed at planting all year! Take notice of wet conditions, high residue, planter settings, and if you need to, wait.

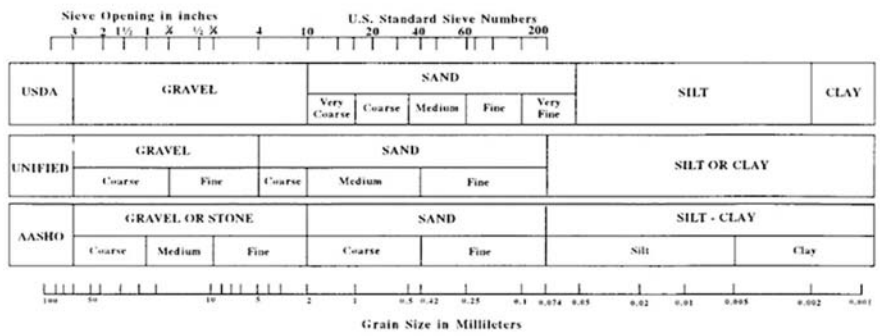
Fertilizer! We perhaps love to hate it some years, but what impacts do our decisions about quantity, timing and placement play in crop growth? In fields with concentrated nutrient content observations have shown shorter, more compacted, and even more branched root systems. A benefit of concentrated nutrient levels, such as that of a starter, is promoting early In shoot development and in turn this will render more food to the roots. However, creating a horizontal layer of nutrients, especially with shallow placed nitrogen, can cause detriment to a crop as it promotes surface root growth and not deep penetrating roots that will help ward off droughty conditions. Idealistically our soil profile would have even distributions of nutrients down throughout the root zone. Deep tillage and drying out our top soil moisture are two large potential costs associated in trying to provide an even distribution of nutrients and will sometimes limit the effectiveness of such a practice. A key in any fertilizer practice is to plan for and maintain adequate nutrient levels.

In the United States, twelve soil texture classifications are defined by the USDA:

- Clay
- Silt
- Sand
- Loam • Silty clay
- Sandy clay
- Clay loam
- Silt loam
- Sandy Loam
- Loamy sand
- Silty clay loam
- Sandy clay loam

Determining the soil textures is often aided with the use of a soil texture triangle.





Along with ensuring a crop has adequate nutrients it should be noted, the potential of Hydrogen (pH) is a major key in this process. In relevancy, pH is measured on a 1 to 14 scale with a pH of 7 having an equal balance of H+ and OH- ions. As mentioned earlier crops absorb nutrients from solution. The soil solution's pH directly influences the availability of nutrients due to ionic charges that hold or repel nutrients. Common examples include the decreased availability of phosphorus and potassium as soils become more acidic. In extreme cases of low pH or acidic soils, aluminum and manganese toxicity along with calcium, magnesium and molybdenum deficiencies may occur. Lime will reduce acidity or increase pH by converting some of the hydrogen ions to water and creating carbon dioxide, effectively removing H+ ions from the solution. On the other hand we also find issues with higher pH or alkaline soils such as iron, manganese or zinc deficiencies. There is also the chance for excess salts becoming an issue. In these cases it is important to realize areas in the field already subject to higher pH levels and keep lime away as to prevent further harm.

Throughout a year in the making of a crop there are many management decisions that make the difference between a crop and a great crop. Keeping in mind the length of time soils have taken to form it is crucial for producers to continuously keep their long term fertility plans in mind, as nothing happens overnight. As most of this information may seem rhetoric, it is always a good idea to remember the basics. On August 20th we will be following up with discussions on soils and root interactions at our Answer Plots. On behalf of WFS and myself I hope to see you there. ■

Clip and Win Answer Plot Quiz

Bring this quiz along on August 20th to qualify for our grand prize drawing!

Name: _____

1. A SPAD meter is a handheld device that reads the amount of _____ that is in the leaf tissue.
2. One example of an application option available if you desire to apply micronutrients to your crop is:_____
3. _____ and _____ are the two primary systems that control water holding capacity.
4. One important Harvest Safety tip is:_____
5. One of the objectives for R7 is:_____

Early Pay Incentive Offered.

Attending our Answer Plot® Knowledge Event on August 20th will qualify you for our Early Pay Incentive or our Finance Buy-Down Package option on seed. The Early Pay incentive or Finance Buy-down Package are additional incentives that you will receive on top of your early cash, volume discount and all other seed program offerings for simply attending an Answer Plot® Knowledge Event!

Mission Statement

WFS is to be a member-driven provider of quality goods and services, operating with honesty, integrity, and open communications, positioning for growth so that we can be a financially strong cooperative.

Questions or comments regarding The WFS Agronomic Analyst can be forwarded to:

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Harvest Safety Tips

By DeAnn Miller, Environmental Health & Safety Coordinator

Harvest is a busy and often hectic time for farmers because crops mature on their own time schedule. A compressed time schedule for harvest increases the potential for accidents and injuries. Below is your pre-harvest safety checklist.

Pre-harvest Maintenance:
Preparing equipment BEFORE harvest ensures it is in good shape for the heavy workload.
Inspect equipment for proper guarding and make sure all worn parts are repaired or replaced.
NEVER Clean, maintain, adjust, or clear jams on equipment that is operating or powered.
Anticipate what extra parts you may need, and keep them on hand during harvest for quick repairs. You are then less likely to "make do" with broken machinery.
Have all lighting and placards on your equipment as required by law. Because harvest work often occurs in the dark before dawn and after sunset, additional lighting may be required to allow for the safe movement of workers and machinery.

Training:
If you have hired help, make sure your help is trained BEFORE harvest in safely operating and maintaining your equipment. Workers should be instructed on the specific hazards associated with EACH piece of harvest machinery. *Caught and crush (entanglement) injuries are the highest harvest hazard and should always be emphasized.*
Remember these safety precautions:
Secure hair and clothing.
Use proper lockout/tagout procedures.
Stay clear of discharge spouts, fans, conveyors, and other moving equipment parts to avoid projectile injuries.
Never walk or stand between equipment because the operator often has a limited line of sight.
Don't jump on or off equipment while it is moving.
Quality family time is difficult during harvest. Make sure that if children are around farm machinery, they are safely protected and watched carefully. Never let them out of your sight.
Workers should get as much sleep as possible and avoid alcohol and stimulants that impair judgment and reaction times.

Personal Protective Equipment:
Make sure you have the required PPE on hand. PPE may include work boots, gloves, coveralls, hard hats, eye protection, and hearing protection.
Remember:
Always wear your PPE when handling anhydrous ammonia, and make sure you have plenty of water on the nurse tank and in your tractor should an unfortunate incident arise.
Never leave anhydrous tanks unattended.

Electric hazards:
Instruct hired help on existing field conditions such as overhead electrical lines, steep slopes, and other hazardous situations.
If your farm equipment has snagged an overhead power line, remain inside the equipment. If possible, try to drive the equipment away from the hazard. If you cannot drive it away, stay where you are and wait for rescue. Call or signal for someone to call 911 and your local electric company. Warn others to stay away.
If you must get off the equipment because of fire or other danger, remember that your body should NEVER contact the ground and the metal equipment at the same time. Jump clear, then hop with feet together or shuffle away. Voltage is highest near the equipment and decreases with distance. Hopping with feet together or shuffling prevents your body from becoming a conductor of electricity from a high to low voltage area.

Many accidents are caused by rushing to get the job done, particularly trying to make up lost time caused by spells of bad weather. You can prepare now to "make hay while the sun shines" and maintain worker safety and health at the same time. From all of us at WFS, HAVE A SAFE HARVEST SEASON. ■