

The **WFS** Agronomic Analyst

Issue 1 Volume 3

AN EXPERT GUIDE TO SOUND AGRONOMIC PRACTICES

July, 2009

Reminder of the Importance of Early Aphid Scouting

By: Kerry Dittbenner, WFS Field Marketer, Lewisville



Yield-damaging aphid populations can occur in any field and cannot be detected from the road. There are a few factors that increase the likelihood of aphid problems, such as smaller fields with wooded borders, groves, or tree lines. Aphids are more prevalent in earlier planted fields, in sheltered fields or fields near buckthorn where they overwinter. Scouting for aphids starts mid June and generally runs until mid August. Once the aphids leave the buckthorn, the aphid buildup will depend on temperature, rainfall, variety, and natural enemies. Under ideal conditions aphid populations can double every 2-3 days.

When checking for aphids, you must check the whole plant as the distribution on the plant changes over the course of the summer. During vegetative and early reproductive stages, look for aphids on the upper



Check a few leaves per plant to get the average population



Well above threshold!

two leaves and the newest leaves on any branches. During or after a hot spell they may move to the center of the plant, or onto the pods as they are filling. Research with a rainfall simulator has shown a 45% reduction in aphid population 5 days after a 2 inch rainfall on V3-V4 soybeans. The direct effect of rain diminishes as the soybean plant size increases.

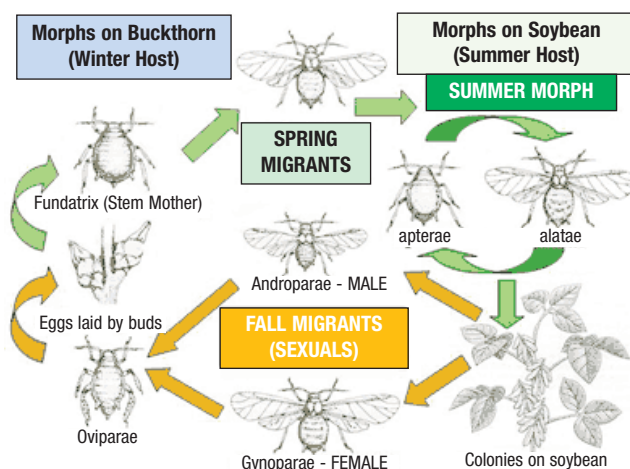
Scout the edges of the field first. Remember, a tree line in the middle of a field is also an edge. Another



Checking the underside of a soybean leaf

common observation is that heavier populations may occur in fields with coarser soils or areas with lower potassium levels. Moisture stress tends to favor early season aphid colonization and buildup as well. Later in the season don't forget to check the late planted beans, beans after peas, or replants. Aphids have an uncanny ability to find these younger beans, colonize them and spread across the rest of the field.

The threshold for soybean aphids is 250 aphids per plant. This threshold is assumed to be an aphid population that is below the level where unacceptable yield loss occurs, but high enough that a high probability of reaching yield-damaging levels exists. This threshold is based on field averages and not hotspots or field borders. Once a high percentage of the plants in the field have aphid colonies, rapid population increase on an aphid per plant basis can occur.



Assuming you will need to spray at some point, using the correct additives with the insecticide you choose, for the way it is to be applied, is very important. The addition of crop oil when applied with an airplane, for example, will insure that the chemical will not evaporate before it hits the target. The use of a nonionic surfactant will help in spreading the chemical across the leaf surface. **Interlock®** is a deposition

agent that controls the size of the droplets coming out of the sprayer. Droplets that are too small can evaporate and never hit the canopy. Droplets that are too big will not give you the coverage or the penetration to the lower canopy that you need.

In review, start scouting at the edges of protected fields or along groves and wooded areas in mid June. Check the whole plant. Watch for a building population of 250 aphids per plant on the majority of the plants. Then choose the right chemical with the right additives for the type of application to be made.

WFS together with CROPLAN GENETICS is pleased to announce the dates for our 2009 Answer Plot® Knowledge Events

As an area corn and soybean grower you will have the opportunity to see and hear about the latest in seed trait and crop protection technologies in a "hands on" learning environment, as they perform in the field at our Truman Answer Plot® location.

We will be covering questions and topics that were asked or requested on the questionnaire you filled out at our Answer Plot® Winter Meeting: increasing soybean yields, Sudden Death Syndrome in soybeans, aphid control & bean susceptibility, and Zinc yield data just to name a few.

Take advantage of this event and meet with agronomic experts who can help answer questions about seed, trait, and crop protection technologies as well as address your unique field challenges and discuss options for maximizing yields.

Our 2009 Answer Plot® Knowledge Events will be held on:

Monday, July 20th from 3-5 p.m. and Thursday, August 20th from 3-5 p.m.

*Dinner will be served after each plot tour

The Truman Answer Plot® site is located 2.5 miles north of Truman on Highway 15



This year, Answer Plot® Knowledge Event attendees will have an opportunity to win special promotional prizes, including a grand prize of 1000 gallons of FREE gas or diesel to be given away at each plot location (maximum amount at \$2.00 per gallon or \$2,000). Winners will be drawn at the end of the Sweepstakes Term which goes through September 31, 2009.

TOUCHING, SMELLING, HEARING AND SEEING IS BELIEVING.

At an Answer Plot® Knowledge Event, getting your hands dirty comes with the territory. So does gaining valuable insights that can help make your operation more profitable. To see firsthand the latest crop protection and seed technologies in soil and weather conditions similar to those on your farm, simply detach the magnet above, affix it to your fridge as a reminder, and call your local agronomist or visit AnswerPlot.com to learn more.

WFS
2009 Answer Plot® Knowledge Event:
Monday, July 20, 3 - 5 p.m.
Thursday August 20, 3 - 5 p.m.

ANSWER PLOT.

Corn Nematodes - Friend or Foe

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



There are unseen guests in your fields, but are these guests friends or foe? The answer is both. This “guest” in question is nematodes and they have been in soils since before the soil was used for agricultural purposes. Some species of nematode are beneficial to crop production because they decompose organic matter and cycle nutrients. However, there are species of nematodes which are serious pests to crops. These species are referred to as plant-parasitic nematodes. It is their specially adapted body structures, a hardened, pointed mouth spear called a stylet, that allow plant-parasitic nematodes to feed upon living plant cells. The plant-parasitic of interest in this article is corn nematodes, of which there are many species.

Most of the nematodes feed on corn and are commonly found wherever corn is grown. These roundworms are microscopic, approximately 3/10 to 3/64 inch long, and cannot be seen by the naked eye. A list of the most common genera of corn nematodes is listed below. The most common species that damage corn are the lesion and needle nematodes, which are both found in much of the Midwest, including Minnesota.

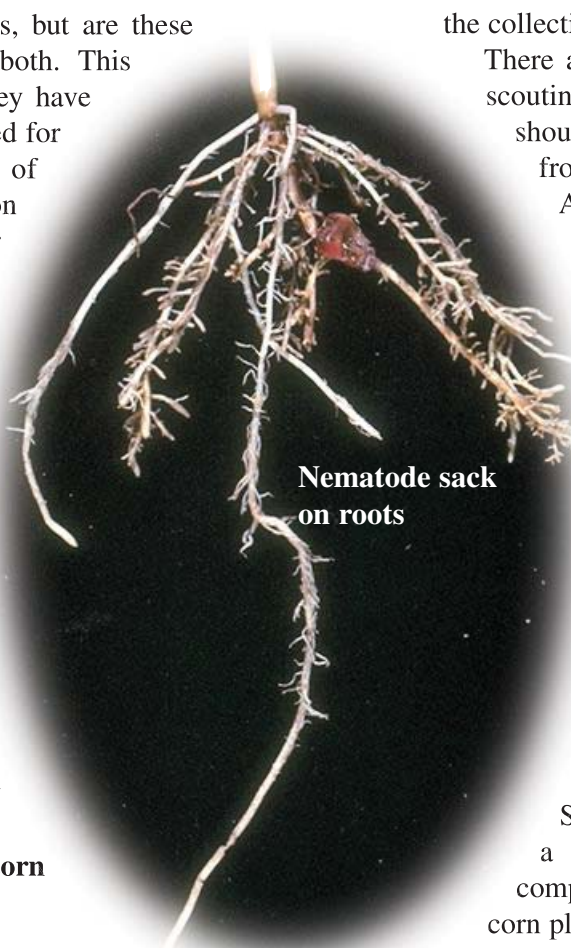
Plant-parasitic nematodes that commonly feed upon corn in the Midwest

Common Name	Scientific Name
Dagger nematode	<i>Xiphinema</i>
Lance nematode	<i>Hoplolaimus</i>
Lesion nematode	<i>Pratylenchus</i>
Needle nematode	<i>Longidorus</i>
Spiral nematode	<i>Helicotylenchus</i>
Sting nematode	<i>Belonolaimus</i>
Stunt nematode	<i>Tylenchorhynchus</i>

Corn nematodes are classified into one of three categories. The category by which a nematode is defined is based on how they feed on roots. Some nematode species spend most of their time in the soil, while others live mostly in the roots. The first type of corn nematode remains outside of the corn root as the nematode feeds. This type of nematode is referred to as ectoparasitic. A portion of the bodies of semi-endoparasitic nematodes enter the corn roots to feed, but a portion of the nematode remains outside of the root tissue. Lastly, endoparasitic nematodes enter the root of the corn plant completely to feed. Many of these types of nematodes survive in dead root tissue over the winter.

Nematodes can cause damage to the corn plant directly or indirectly. The nematodes feeding may directly harm the plant, or they may cause wounds through which fungi and bacteria can enter the plant and cause secondary rots. Nematodes can also transmit viruses through their feeding. Regardless of the mode of injury, damage caused by corn nematodes can be a significant factor in reducing corn yields.

Symptoms from nematode damage can be hard to generalize because they can vary with the species, number of nematodes present, as well as soil environment factors. Common above ground symptoms include thin stands, uneven plant height, stunted plants, uneven tasseling, leaf yellowing, and small ears and kernels. Other symptoms of roots feeding include swollen roots, lack of fine roots and root branching, and necrotic lesions. The unfortunate part of diagnosing corn nematode damage based on these symptoms is that these are not unique and cannot definitively confirm nematode damage. The only way to do this is through



the collection and analysis of soil and root samples.

There are many important considerations to keep in mind when scouting and sampling for corn nematodes. Several soil cores should be collected at least 8 inches and ideally 12 inches deep from the root zone of plants exhibiting a range of symptoms. Also keep in mind that some nematodes, called endoparasites, feed entirely from within the roots, so a sample of two or three corn root systems should be submitted for analysis as well. For most plant parasitic nematodes that feed on corn samples should be collected mid-season. This is when nematode numbers are likely to be at their greatest and the numbers can be compared to damage thresholds established for corn. The only exception would be if needle nematode damage is suspected, then samples should be collected in the spring or fall. Needle nematodes migrate down into the soil in the middle of summer and may not be recovered from mid-season samples. Place soil and root samples in a moisture-proof bag and submit for processing as soon as possible. Also keep the samples cool until they are sent in for processing. Overheating of the samples will kill the nematodes and the samples will be worthless. Ship the samples early in the week so they are not delayed in a post office over the weekend. Lastly, submitting a companion soil and root sample collected from nearby healthy corn plants often provides a helpful comparison.

If it is determined that the corn crop is being damaged by corn nematodes, one of two management strategies can be implemented. They are the use of nonhost crops or the use of nematicides. Neither of these management strategies can be used to minimize damage or rescue the current corn crop. These strategies can be used to reduce future damage of corn crops. Nonhost crops such as alfalfa or soybeans will reduce corn nematode population densities. One or two years of growing nonhost crops may be sufficient to lower numbers of corn nematodes below the damage thresholds of corn.

Only a few nematicides are currently labeled for use in controlling plant-parasitic nematodes in corn. Keep in mind that damaging populations of these parasitic nematodes often occur in discrete patches or “hot spots”. Therefore, field-wide application of these pesticides may not be economical. Research has also shown that the benefits of nematicide use usually do not carry over to future cropping seasons. Using nematicides as a management strategy consequently is a short-term management option. A new option for addressing nematode populations is using seed corn treated with a nematicide called AVICTA®. This seed treatment is available through Syngenta. ■

Evident Nematode Damage



What are those long flags marking in the Answer Plot®?

By: Bob Schoper, WinField Solutions Regional Agronomist



We know that yield increases with plant population, especially on hybrids with low to moderate ear flex. So why not push populations to higher levels?

The most limiting factor at high plant populations frequently is water. So it becomes a balancing act between plant population and soil water availability. In this years Answer Plot® demonstrations we will be monitoring the decline in available water utilizing soil moisture sensors to detect moisture depletion in the soil profile under seeding rates of 36,000 and 42,000 seeds/A.

The sensors will record moisture levels on a daily basis and log the results. Periodically, the results will be downloaded and summarized. ■



GOOD NEWS FOR SOYBEANS



BAD NEWS FOR WEEDS.

A GREAT CHANCE FOR YOU.

Attend one of the WFS Answer Plot® Knowledge Events to enter the Linkup and Ride Sweepstakes. You could win a Polaris® Sportsman 500HO!



Intensive Soil Sampling – Putting your money where the yield is!

By: Chris Beyer, WFS Field Marketer, New Richland



Does grid sampling pay? This is one of the most talked about topics by producers these days. Most producers are wondering if their fields really vary that much to make a difference. Once a farmer has a yield monitor and is mapping the fields they can see how much the yield will actually vary going across the field. So why not put the fertilizer where the crops will actually be using it.

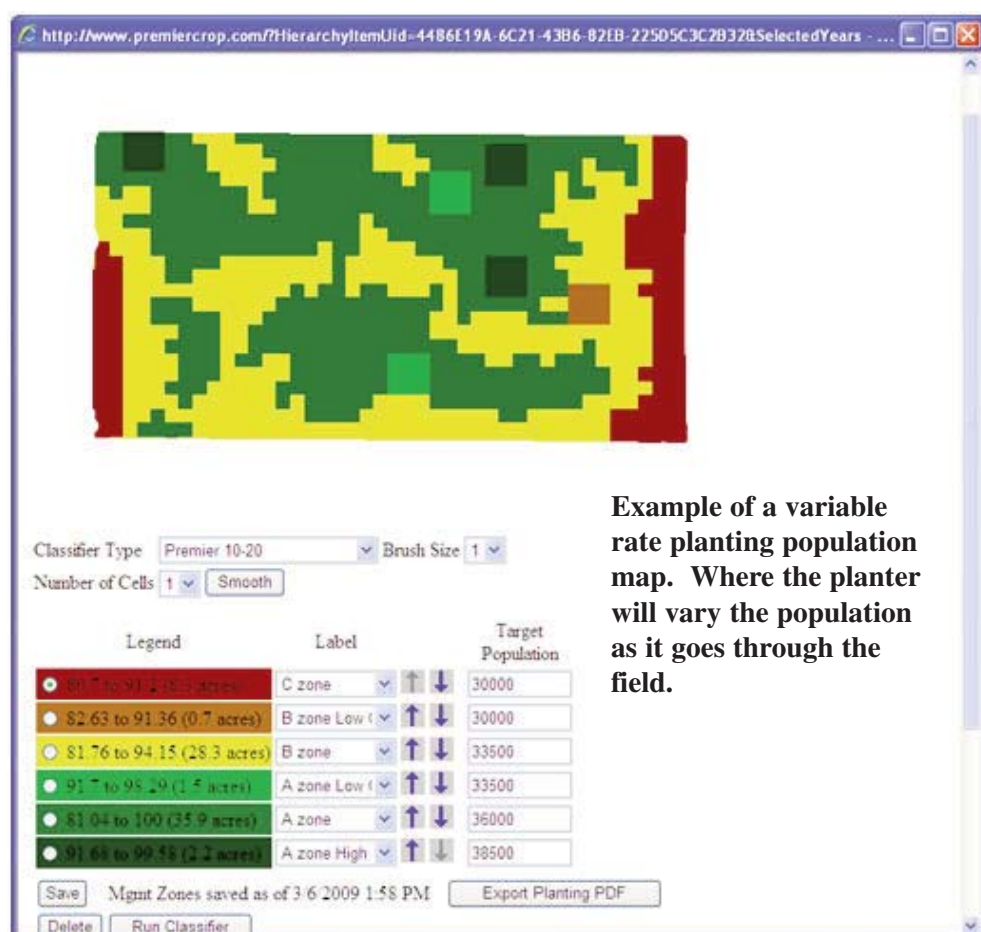
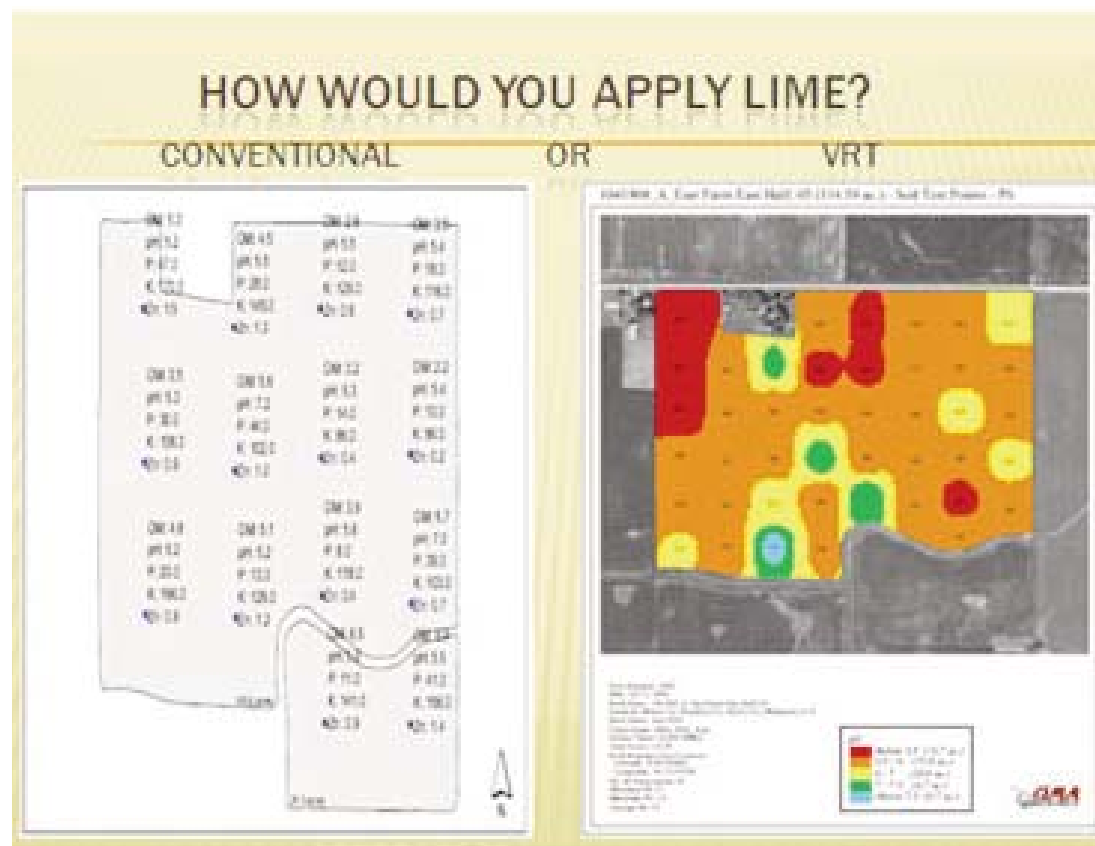
As a leader in the industry, WFS has tens of thousands of acres that have been enrolled into some sort of intensive sampling. Some of the fields will be sampled as 4.4 and 2.5 acre grids while the majority of them are actually sampled using a technique called smart sampling. Smart sampling is where the grids are placed on the field, but the samples are not taken at the exact point where the grids meet. Sometimes the sample will be moved to best represent the ground surrounding that point. This will help in making better recommendations when it comes time to apply the fertilizers.

At WFS we have also taken this a step farther and will spread these fields according to the yields that have come off of these fields combined with the actual sample results, to come up with the most agronomic recommendations. There could be spots in the field that are low in fertility and may show that they need fertilizer, but if they don't produce yield what would be the point of fertilizing that area- there's no return on your investment.

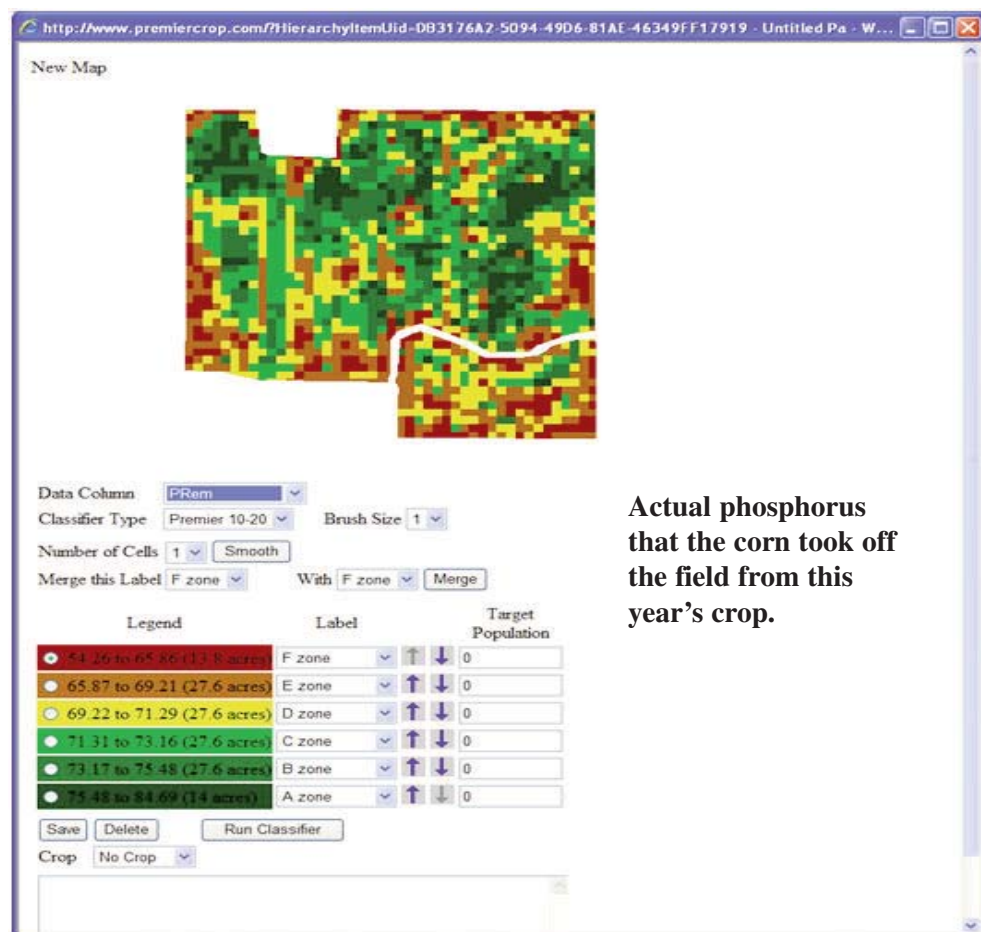
WFS is not limited to variable rate N,P,K,S, and zinc. We have the ability to do a variable rate lime application as well. This is where grid sampling will give you the edge over your neighbor who only uses the 20 or 10 acre conventional sampling method. Most of the time a producer will go out and apply lime on the hills or areas where he thinks the lime will help. With the grid sampling data the machine will turn on and off as it goes across the field applying different rates as well. The map shows how much variance there can be in a field and this will give you a better return.

As you build years of yield history you can also start doing VRT planting as well. The map on the side shows one field where the planting will increase in the high yield environments and decrease in the areas that will not produce the 200 bushels of corn. This might not save you any seed, but it will put the seed where it will make you the most money. Through the Answer Plot® system we have been able to identify the Response to Populations (RTP's) of CROPLAN GENET-ICS hybrids to help predict the response to variable rate planting.

So as you can see when a producer uses soil samples along with the yield map he can customize his fertilizer program to fit his budget and get the biggest bang for his buck. Now you can say that you may be spending \$6 or \$8 for sampling, but you are not spending hundreds of dollars where you will not be getting an economic return. ■



Example of a variable rate planting population map. Where the planter will vary the population as it goes through the field.



Actual phosphorus that the corn took off the field from this year's crop.



The Year of the Bean

By Eric Bartels, WinField Solutions/CROPLAN GENETICS Regional Product Manager



The 2009 Answer Plot® season is upon us and this year promises to be very exciting and interesting. If you're looking to enhance soybean yields, this year's Answer Plot® tour will be for you! Corn has been the crop to receive much of the attention the last few years with many new technologies being released; Bt, RR, LL, CRW, etc. and in many different versions and stacks. Soybean's last transgenic trait came out in 1996 when Roundup Ready came into the picture. The reason that 2009 will be exciting is because we will have the opportunity to demonstrate three new technologies in soybeans! These new traits will impact the soybean industry in many different ways and you will want to learn about how they can be integrated into your operation!

The first new technology we will be seeing is Roundup Ready 2 Yield™ Soybeans! This trait will offer the opportunity to increase yields by 7-11%! This is the first trait that has been released strictly for increasing the producer's yields of a crop and increasing his bottom line profits. There are limited commercial acres planted this year, so this will be the first opportunity for many to see this new trait in action! We will discuss positioning and recommendations to make the very most of this technology in your fields.

The next technology that we are excited to release is Liberty® tolerant soybeans. This system will utilize a new formulation of glufosinate called Ignite®. We will have demonstration plots showcasing how the Ignite system should be utilized and also a couple of plots showing how not to use this exciting CPP system. Liberty may have a fit in your operation if you are struggling to kill some weeds that didn't seem to be prevalent in the past. These "system" plots will allow you to see how your "local expert" can add value to this program.

The last, and definitely not the least important, are the aphid resistant soybeans. A few select locations

did have unsprayed plots in 2008, but this is the year to see how this technology can help you manage your soybean acres. Soybean aphids have been a problem in a number of years since 2000. The aphid resistance is not a biotech innovation, but should be protected and valued in the same way! The RAG1 gene was discovered to give excellent performance in controlling this virulent pest. The recommendations are not to utilize the RAG1 protection as a stand alone trait, but rather as another tool in an Integrated Pest Management program. Research from South Dakota State University in 2008 found that 16 bushels per acre were lost in 10 days of delayed treatment. That's 1.6 bushels per day!!! Aphid resistance will be a technology that can take some of the anxiety of waiting for an airplane away!

Each of these technologies can offer tremendous value to your operation, but they need to be utilized with expertise and be positioned correctly. A producer will not realize the full value when purchasing from a "product peddler" that doesn't have the insight or education to utilize these technologies properly! I have heard producers asking soybean questions such as:

What is the proper population for my fields?

Why is sudden death getting to be more of an issue?

Why do soybeans struggle more with a combination of Iron-deficiency chlorosis (SCN) and soybean cyst nematode (IDC)?

Are some soybean varieties more prone to having aphid problems?

If you have ever had questions such as these, the Answer Plot® knowledge event is for you. Your local experts will showcase their knowledge. Seed treatments of fungicides and insecticides, Precision Paks, proper weed control recommendations, post applied fungicides, micronutrients and insecticides with the right adjuvants and spray additives are just a few of the tools in a fully equipped soybean expert's arsenal. Come to the Answer Plot® knowledge event to see a sampling of the value to your operation's bottom line! ■

Heat Stress

By: DeAnn Miller, WFS Environmental Health & Safety Director

When the body is unable to cool itself by sweating, several heat-induced illnesses such as heat stress or heat exhaustion, or the more severe heat stroke, can occur. It can even result in death.

Factors Leading to Heat Stress

- High temperature and humidity
- Direct sun or heat
- Limited air movement
- Physical exertion
- Poor physical condition and some medicines
- Inadequate tolerance for hot workplaces

Symptoms of Heat Exhaustion

- Headaches, dizziness, lightheadedness or fainting
- Weakness and moist skin
- Mood changes such as irritability or confusion
- Upset stomach or vomiting

Symptoms of Heat Stroke

- Red, hot, and dry skin with no sweating. High body temperature (around 105° F)
- Mental confusion or losing consciousness
- Seizures or convulsions
- Strong and rapid pulse
- Dilated pupils

Preventing Heat Stress

- Know the signs and symptoms of heat-related illnesses; Use the buddy system- Watch yourself and your coworker for signs of heat stress
- Block out direct sun or other heat sources
- Use cooling fans/air-conditioning; and rest regularly
- Drink when thirsty; about 1 cup every 15 minutes
- Wear lightweight, light colored, loose-fitting clothes
- Avoid alcohol, caffeinated drinks, or heavy meals

What to Do for Heat-Related Illness

- Call 911 (or local emergency number) at once
- While waiting for help to arrive:
 1. Move the worker to a cool, shaded area
 2. Loosen or remove heavy clothing
 3. Provide cool drinking water
 4. Fan and mist the person with water



In addition to other research, the Answer Plot® is also featuring a "Stress Tent" this year. This tent measures the response of different genetics in an environment without moisture and compares the results to the same genetics with normal moisture.



Central Dispatch

By Bryan Ertman & Todd Polkow, Central Dispatch Coordinators



Three years ago WFS implemented what we call Central Dispatch. The concept consisted of taking all the application equipment, the custom applicators, and the tender truck drivers, and centralizing them at two locations - Truman and Wells. After going through several seasons, we believe the process has made WFS a more efficient company and we are able to better serve our customers with greater utilization of help and equipment throughout the year.

Where does the process begin?

The Central Dispatch process doesn't just begin with the first sign of spring; it starts during the off-season when a WFS Field Marketer and producer sit down together and create a crop plan for the upcoming planting season. That plan includes fertilizer recommendations, chemical recommendations and seed

placement for each specific field. From there, an order is put together that includes a map of each field's county, township and section, as well as any special comments or instructions for the applicator. When that field is ready to be spread or sprayed, the order is sent to Central Dispatch by the Field Marketer. Central Dispatch then maps and schedules the order and the dispatcher determines which location to pull the products from, who will apply the product, and what type of application equipment and tenders are needed. The goal is to spread that field within 24 hours of receiving the order. Sometimes on busy spring days Central Dispatch may receive a week's worth of orders in a 2-day span, but having this concept in place we are able to help keep our producers planting by moving our equipment and people to areas where the work is.

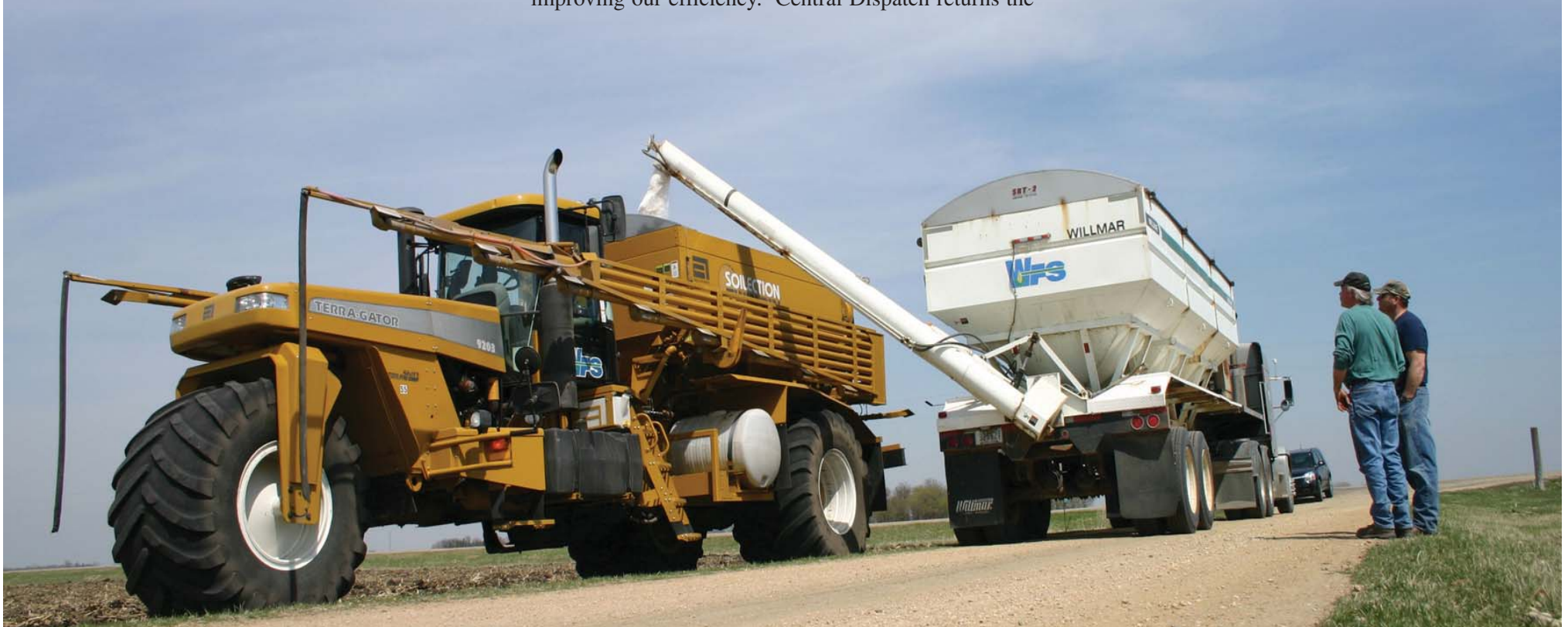
Efficiency is gained in more than just the agronomy division

When agronomy is busy during spring and fall, Central Dispatch utilizes fertilizer plants, equipment and employees to their full potential. Employees from other departments who have the proper licenses and endorsements are able help out Central Dispatch by running application equipment, driving tender trucks, and just helping out in general. This is a huge plus in improving our efficiency. Central Dispatch returns the

favor during agronomy's slow time by providing assistance in all departments including grain, feed, energy, and seed. We also do maintenance around locations such as cleaning and painting. During the winter months we go through all of our equipment end-to-end washing, fixing, and painting, so the fleet is looking good and everything is ready to go for spring. This detailed planning and preparation helps us minimize breakdowns and down-time in the spring.

Technology and maintenance work hand-in-hand.

WFS has a wide range of application equipment, including some older machines and some brand new. Our newer equipment includes dry soilection machines, VRT liquid machines, and 120 foot sprayers. All of which include a great deal of technology – auto steer, auto boom leveling, several injection systems, etc. These technologies carry a healthy price tag so the more acres and hours we can get through a machine, the less it costs WFS to operate the machine. With our older equipment, we really focus on maintenance. This helps cut down on down-time and allows the older equipment to continue to be efficient with application. Well maintained equipment and modern technologies can help our applicators run more acres through a machine and apply products more accurately; allowing WFS to serve our producers effectively. ■



Clip and Win Answer Plot Quiz

Bring this quiz along to the plot on July 20th to become eligible for our grand prize drawing!

1. The threshold for soybean aphids is _____ aphids/plant.
2. The _____ gene was discovered to give excellent performance in controlling aphids in soybeans.
3. What are the two most common species of corn nematodes in MN?
4. WFS has the ability to do a variable rate _____ application as well as N, P, K, S and zinc.
5. One of the objectives of an Integrated Pest Management metho is:



R7™ Placement Strategy

R7™

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.

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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Working for Farmers' Success

Why should I have my fields scouted?

By Darla Barrett, Senior Field Marketer



The purpose of field scouting is to obtain an objective summary of the pest situation. Some of the information obtained will be useful in making immediate pest control decisions. Other observations will help in knowing what to expect at a comparable time next year.

The use of proper scouting procedures and knowledge of economic thresholds can ensure that growers use pesticides properly and realize maximum returns from their investments.

Our WFS crop scouts are trained to identify pest problems; weeds, insects, disease. Using the information gathered to assist your Field Marketer in determining what action, if any, should be taken. The best IPM (Integrated Pest Management) method will be determined. The IPM objective is (1) to consider all appropriate methods of lowering pest levels

(rather than relying solely on chemicals), (2) to use pesticides only according to need, and (3) to help produce crops more profitably.

WFS offers a variety of scouting choices...

Season-long package guaranteeing at least 5 trips across your acres. The average field is scouted at least every 10 days—making the number of trips across the acres up to 10 times for the cost of 5 trips...

Emergence Seedling disease, planting issues

Early Season Stand, plant health, weeds, pests, disease at 10-14 DAP

Prior Post Same as above plus weed size and density at 14-21 DAP

After Post Herbicide performance, plant health, pests at 7-14 DAT

Late Season Yield potential, diseases, late pests (aphids)

Individual trips can be ordered anytime throughout the year for any reason. Pay only for the trips you request.

Scouting may also be included in several service packages that WFS offers: Soil/Grid sampling, Database, and Nutrient Management Plans, are some examples of our service packages.

WFS scouting is not a “quick glance”; it is not a 55 MPH drive by; it is not 20 feet into the field to make a pest diagnosis. We take the time necessary to drive your acres; from the part closest to the road to the back 40; from the easy accessible to the low ground in the back corner of the wet hole. We are out there in the dewy mornings, scorching afternoons, and windy evenings—just like your pests. ■

INTRODUCING THE WFS SUMMER AGRONOMY INTERNS:



Jason Keck

Education: Pursuing a Bachelor of Science in Crop and Soil Science at the University of Wisconsin, River Falls

Background:

- Grew up on a farm by Owatonna and participated in all aspects of farming with his family.
- Very involved in FFA throughout his high school years.
- President of his FFA Club and participated in the Leadership Conference in Washington DC.
- Involved in the Minnesota Pork Association—2nd runner up as a Pork Ambassador for the state, worked for the association at the state fair and other educational presentations.

Duties at WFS:

Jason will be our Sales & Marketing intern. His duties will be crop scouting half of the time and talking to growers, promoting products to improve the grower's current operations, the other half of the time.



Weston DeBerg

Education: Studying Agronomy at South Dakota State University in Brookings, SD

Background:

- Lifelong resident of Ellsworth, MN
- Loves to work with horses and is currently involved at the Equestrian Center of South Dakota State University. Working with their horses on a daily basis.

Duties at WFS:

Weston will be our Crop Scouting Intern. He will be our eyes and ears out in the grower's fields, by scouting each acre 5 to 10 times throughout the growing season. He will be reporting what he finds to the grower and the Field Marketer so the Field Marketer and the grower can determine what steps need to be taken to make the crop the best it can be.