



# Ceres Solutions AgVantage Green Notes



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## Winter Wheat Update

Fall growing conditions for wheat even later planted wheat were ideal. Wheat looked excellent going into winter dormancy. How long can wheat survive water logged soils? What about topdressing?

**How long can wheat withstand waterlogged soils?** Comments from Dr. Herb Ohm—Wheat that is either dormant or growing very slowly can withstand flooding for longer time period than actively growing wheat. Actively growing wheat covered with water for a period of three days or more, after breaking dormancy will probably be lost. On the other hand, dormant wheat often survives very nicely for more than a week when covered with water during January and February. We would expect some damage if the water remains over the plants for more than a week.

Wheat that is not flooded is likely in soggy soils. Soggy soils may lead to winter heaving. Heaving occurs when saturated soil goes through freezing

and thawing cycles, and the alternate swelling and shrinking of the soil mass pushes young plants out of the ground. Late planted small wheat are much more susceptible to heaving than larger plants with more robust roots.

At this time nothing that can be done to help wheat survive either of these situations, short of removal of water. A simple check is to dig up a small plug of wheat in an area of concern. Allow plants to grow in a pot in area with plenty of warmth, humidity, and sunlight. If the plants begin to green up after ~10 days then the wheat is still alive. If not then that area may be dead.

What about top dressing wheat? When should I top dress wheat? Typically the most economical and important time to top dress wheat is in early to mid March after green up and right before jointing. This is the time when the plant begins to rapidly take up large amounts of nitrogen. Nitrogen applied at this

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## Updates to Nitrogen Management 2008

In last months newsletter, there was an article on Nitrogen Management from Jim Camberato, Bob Nielsen, Dan Emmert, and Brad Joern, Purdue University. An update as been published along with a table with the range of Economic Optimal Nitrogen Rate values (lbs/ A applied N) for corn following soybeans as influence by nitrogen cost and grain price. The update is as follows: (see more comments page 4)

Calculated Corn/ Soy Economic Optimal Nitrogen Rates for different N:G ratios

N cost / lb N	\$2 / bu grain	\$2.5 / bu grain	\$3/ bu grain	\$3.5 / bu grain	\$4 / bu grain	\$4.5 / bu grain	\$5 / bu grain
\$0.40	139	146	150	153	156	158	159
\$0.45	135	142	147	151	154	156	158
\$0.50	131	139	145	149	152	154	156
\$0.55	126	136	142	146	150	152	154
\$0.60	122	132	139	144	147	150	153
\$0.65	118	129	136	141	145	148	151
\$0.70	114	126	133	139	143	147	149

# Entomologist—Don't Let Volunteer Corn Report for Duty

From "Ag Answers" Jan 3, 2008—Bt could stand for "big trouble" in the years ahead if farmers aren't careful in their use of biotech corn, said Christian Krupke, Purdue University entomologist.

"Corn varieties containing *Bacillus thuringiensis*, or Bt, genes to control corn rootworms and corn borers, and genetically modified to withstand Roundup herbicide, could become more susceptible to rootworms unless growers keep soybean fields free of volunteer corn and continue planting refuge acres", said Christian Krupke.

"We need to stay a step ahead of rootworm resistance development," Krupke said. "If there's one thing we know about insects, it's that they figure out a way to adapt to whatever we throw at them."

Rootworms are a major threat to corn crops, costing farmers about \$1 billion a year in yield losses and control expenses. About 30 percent of Indiana's estimated 6.45 million corn acres were planted to multi-trait biotech varieties this year, including the Bt/Roundup "triple stacks."

"What we found was that in areas where triple stack corn was planted in 2006 and soybeans in 2007, we had a great deal of volunteer corn in some of those fields," Krupke said. "Most of that volunteer corn showed up as being Roundup Ready and as having the Bt gene for rootworm."

"The problem is that the Bt in volunteer corn, for whatever reason, isn't expressed at the same level as Bt purchased corn. So you get a lot of rootworm larvae eating that volunteer corn, and they are able to survive on it. That's a concern because now you're getting insects exposed to sub-lethal doses of Bt. They will survive, mate and lay eggs and possibly develop stronger offspring. That is exactly what we don't want."

Volunteer corn is considered a weed and is usually controlled with herbicides. Controlling volunteer RR/ BT corn becomes more difficult when in RR soybeans. In recent years about 90 percent of Indiana soybean acres have been planted to Roundup Ready varieties.

"Most soybean growers have relied on Roundup as their No. 1 - and sometimes only - weed control for a long, long time," Krupke said.

Farmers have several herbicide options for controlling volunteer corn, said Bill Johnson, Purdue Extension weed scientist.

"To control volunteer Roundup Ready corn in soybeans, farmers should use Assure II, Select Max, Fusion or Raptor tank mixed with glyphosate," Johnson said.

Another factor that could hasten rootworm resistance to Bt corn is improper or insufficient planting of refuge corn. Planting refuges alongside Bt corn crops is required by law.

"A refuge is anything that is not Bt corn," Krupke said. "So when you plant Bt corn for rootworm or corn borer, for every 80 acres you plant of the Bt you have to plant 20 acres of the refuge."

"The thought behind the refuge is that you have some insects in that refuge that are never exposed in their lifetime to Bt. They never have an opportunity to develop resistance to it. The only way insects develop resistance is by exposure. The more you expose them, the greater the pressure is for them to be resistant. So you want to generate some insects that are never exposed to Bt so that they will mate with the ones that are exposed to Bt to dilute the chances of those offspring being resistant."

Killing all rootworms by planting 100 percent of acres in Bt corn is neither the objective, nor is it possible, Krupke said.

"If you expose the entire rootworm population at the same time to Bt, the insects will either have to become resistant or go extinct," he said. "We have made zero species of insects extinct, so you can figure out which way it is going to go."

Even in cornfields where refuge acres were planted, Krupke and fellow Purdue entomologists have found troubling signs.

"We've looked at the relative sizes of rootworm beetles coming out of the transgenic and refuge corn and found some large females coming out of the transgenic blocks," Krupke said. "That is important because large females tend to lay more eggs and are preferred by the male beetles because they lay more eggs."

Farmers need to remain vigilant when they plant Bt corn to ensure the technology is around for a long time, Krupke said.

"If we don't do the things that we need to do, then we're eventually going to have products that are not effective against rootworm," he said. "The two primary things would be to continue planting the refuge and, in areas where you are rotating corn with soybeans, clean up any volunteer corn that you have in the field. You need to do the latter because volunteer corn is a host, and that's where rootworms can develop. There will be a lot of eggs in those first-year soybean fields that were in corn the year before."

## PARP Opportunities

**Jan 24th—Ceres Solutions—New Ross Location**—9:30 a.m. **Optimizing Corn and Soybean Yields in 2008**—The discussion will involve weed management in Roundup Ready corn and soybeans, proper placement of fungicide seed treatments, soybean diseases and proper use of fungicides in row crops.

**Feb 6th—Ceres Solutions—Rockville at the Clarks Reception Hall**—9:00 a.m. **Optimizing Corn and Soybean Yields in 2008**—The discussion will involve weed management in Roundup Ready corn and soybeans, proper placement of fungicide seed treatments, soybean diseases and proper use of fungicides in row crops.

**Feb 7th—Ceres Solutions—Wingate branch**—9:00 a.m. **Optimizing Corn and Soybean Yields in 2008**—The discussion will involve weed management in Roundup Ready corn and soy-

beans, proper placement of fungicide seed treatments, soybean diseases and proper use of fungicides in row crops.

**Feb 19th—Southwest Indiana Crops Clinic**—Jasper, IN Organized by Purdue Extension. More info to come

**Feb 22**—4117 S 240 W, Morroco IN—9-11:00 a.m. Pest Control using Transgenic Crops, Planting Refuge Acres, Clean Sweep Pesticide Disposal.

Please bring your Private Applicator License card with you. Be prepared to pay \$10 as part of your PARP training.

# Headline, Quilt, Quadris 2007 Results on Corn and Soybeans

Did you apply Headline or Quilt on any of your acres last year? Did you see results? Reports from the field include extremely positive to not much noticeable yield differences to substantially improved stalk quality and standability (especially after the Oct 17-18th winds. One farmer commented he planned to increase his applied acreage next year due to improved standability alone.

Jared Chastain with BASF reported and overall yield advantage with Headline of 14 bu/A in corn in 51 side by sides. He also reported a yield advantage of 7 bu/A for soybeans in 73 side by sides. Jared

Sarah Gehant with Syngenta reported very much the same info. For Quilt in Indiana 71 side by sides yield in corn with Quilt was on average 17 bu/A better than untreated. With soybeans the average in Indiana and Kentucky for the last six years is 7.1 bu/A.

Remember proper placement is highly recommended. Consider applications to corn hybrids with more disease sus-

ceptibility, corn on corn, no-till corn, etc. See your Ceres Solutions Professional to help choose fields.

**Ceres Solutions—Plant Health for Profitable Yields Program II**—Due to the Headline yield advantage success in corn and soybeans the past 3 years, Ceres Solutions has a program available to help insure your acres get sprayed timely in 2008. You can **Plan your Headline acres Now through Feb 15 ,2008**—Pay Ceres Solutions \$ 2.00 per acre (applied towards the \$ 9.00 per acre of aerial application) on all the acres you would like to be sprayed. The \$2 per acre is non-returnable, and is for Headline only at the December price to be paid by Feb 29th. We expect the application price this summer to be over \$9 per acre. With your commitment of the \$2 per acre you will receive Headline at the December price (to be paid by Feb 29th), a locked -in application price of \$9 per acre and a great likelihood of increased yields. See your local Ceres Solutions location for more details.

## No-Till Corner

**Organic Matter's Contribution to Improved Yields Explained**— From "No-till Farmer" magazine—All organic matter consists of multiple nutrients (nitrogen, phosphorus, and sulfur) and is about 50% carbon, notes Jodi DeJong-Hughes of the University of Minnesota Extension Service.

Organic matter promotes soil binding into aggregates that give soil its structure, which defends against soil compaction. Soil structure also increases water infiltration and decreases crusting, she adds.

"Due to the multiple holding sites, organic matter maintains nutrients longer in the soil so they don't leach through the soil profile," DeJong-Hughes says.

One percent of organic matter contains about 900 pounds of nitrogen per acre (however not all is available). It mineralizes a small percent each year, especially in the spring. About 10-40 lb/A per year is mineralized based on temperature, precipitation and per-

cent of organic matter.

"Have you ever wondered why a corn field yielded 50 bu/A over what you fertilized for that year? It was due to good climatic conditions that enhanced mineralization," she says. "Fields with low organic matter need higher levels of nitrogen fertilizer and may be prone to sulfur deficiencies. "

Organic matter acts as a sponge in the soil, soaking up rainfall, helping it infiltrate into the soil, and maintaining the moisture longer, DeJong-Hughes says.

"This is more apparent in a dry summer. Watch the corn curl up, on the low-organic-matter hilltops before it curls in the low-lying areas," she adds. "This is due to the organic matter-rich topsoil eroding over time to the lower areas, leaving the less productive subsoil on the hillsides to support plant growth.

## Just Stuff

AMVAC Smart Box Spring Clinics—Toni Whiteside with AMVAC has the following training dates for using the SmartBox insecticide system:

**Feb 6th**—Chrisman, IL—Colonial Kitchen—7:30 a.m. Central time—Breakfast with meeting to follow.

**Feb 20th**—West Lafayette, IN—Ryan's Steak House —Hwy 52—10:30 a.m. with lunch to follow

**Feb 28th**—Monticello, IN—Best Western Hotel—8:00 a.m. Breakfast with meeting to follow

**March 5th**—Crawfordsville, IN—Holiday Inn—8:00 a.m. Breakfast with meeting to follow.

You will be receiving a invitation in the mail shortly. If you have any questions please call Toni Whiteside 812-343-1231.

**Soybean Rust Update**—Currently soybean rust is being scouted and identified in the southern US. The following is the national commentary.

[United States Soybean Rust Commentary](#) (updated: 01/16/08)

On January 14th, soybean rust was reported in Jefferson and Leon counties in Florida and in Altamira municipality in the state of Tamaulipas, Mexico. On January 11th, soybean rust was reported in Mobile County in Alabama. On January 7th, soybean rust was reported in Bolivar County in Mississippi. On January 5th, soybean rust was reported in Liberty and Polk Counties in Texas.

To see a map go to [www.sbrusa.net](http://www.sbrusa.net)

# Grain Update

## USDA Summary—July 12, 2007

Estimates in Million Bushels

<b>Corn</b>	<b>Jan USDA—07/08</b>	<b>Dec USDA-07/08</b>
Carry-in	1304	1304
Production	13,074	13,168
Total Supply	14,393	14,487
Feed and Residual	5950	5,650
Ethanol	3,200	3,200
Exports	2,450	2,450
Total Use	12,955-	12,690
Carry-out	1,438	1,797
<b>Soybeans</b>		
Carry-in	574	573
Production	2,585	2,594
Total Supply	3,165	3,173
Crush	1,830	1,830
Exports	995	995
Seed	86	86
Residual	79	77
Total Use	2,990	2,988
Carry-out	175	185
<b>Wheat</b>		
Carry-in	456	456
Production	2,067	2,067
Total Supply	2,613	2,613
Food	945	945
Seed	86	86
Feed & Resid	115	125
Exports	1,146	1,175
Total Use	2,321	2,333
Carry-out	292	280

# Nitrogen 2008 cont.

We (Purdue) know from field trials that a reasonable agronomic optimal nitrogen rate for corn following soybeans is 173 lb/ A of applied N or a lower economic optimal nitrogen rate that is based on current N cost and grain price (see table below). If field history or current year's weather suggests that N loss has been or will be significant, than consider increasing the N rate by 20-30 lb/ A. If field history or current year's weather suggests N loss has been or will be minor, than consider decreasing the N rate by 20-30 lb/A.

The bottom line on N use in corn is that we're dealing with a biological system that interacts with everything under the sun, including the sun. We cannot accurately predict the weather. We cannot accurately predict soil N supply throughout the year. Yet, we cannot afford (financially or environmentally) to simply apply "more than enough". We can minimize the risk of fertilizer N loss by understanding the processes and matching N source with placement

# Wheat cont.

time will have the least risk of loss and will be the most efficient N compared to earlier applications. However, we don't always have optimal application conditions in early March especially in our wetter soils. The early March timing fits our sandier soil types best.

An alternative application timing would be at green-up which is typically early to late February from south to north respectively. This application can be a very beneficial especially if the field has a poor stand or tillering, however nitrogen applied at this timing is more subject to loss if we have a wet spring.

In other words if field conditions (well drained soils) allow jointing is the best time to apply nitrogen. If field conditions are often questionable (poorly drained to somewhat poorly drained soils), consider an application closer to green up or a little before. Considering optimizing yield it is better to apply the nitrogen prior to need in wet soils rather than waiting for optimal conditions and applying too late.

What product to you plan to apply? Urea? 28%? Remember the nitrogen in urea is not immediately available to the wheat. Whereas half of the N in 28% is immediately available. Allowing time for the N in urea to become available should factor into your timing too.

Should I consider a fungicide application at green-up or early in the spring growing season? If you have diseases present particularly powdery mildew at economic thresholds, yes you should apply a fungicide at green-up or with the weed control. Application rates are 3 oz/A with Headline and 7 oz/A with Quilt.

For high management wheat you may want to consider a plant health treatment at this stage also. The rates for plant health are 3 oz/A for Headline and 7 oz/A for Quilt.

This early plant health application will not hold disease for the rest of the season. The flag leaf head still needs to be protected. If you plan to apply a fungicide only once during the season, the application at flag leaf emergence to heading is the most important.