



Crop Solutions that Work

April 8, 2008

WHEAT – SOME THOUGHTS ABOUT POSSIBLE NITROGEN LOSS FROM FLOODED/ SATURATED SOILS



Most of the wheat production area of the southern part of Illinois received excessive rainfall in March. Some areas of the very southern counties received as much as 13 inches of rain in a two day period on March 18 and 19. For those producers who already had their nitrogen applied, there is a common question. ***If I applied nitrogen fertilizer to wheat prior to those heavy rains, did I lose my nitrogen?***

If conventional urea was applied and allowed to dissolve into the soil with about ½ inch of rain prior to the flooding rains, the applied nitrogen likely attached to the surface soil as ammonium. This would also be the case for the urea portion of UAN Solution. Since most soil temperatures as indicated at <http://www.sws.uiuc.edu/warm/> on the Illinois State Water Survey web site had not gotten to 55 degrees F, most of the applied nitrogen was probably still attached to the soil as ammonium-N before the heavy rains. As long as the soil in these fields did not erode and move significantly, most of the nitrogen should still be there for the wheat crop. However, nitrification may have converted a portion of the ammonium-N into nitrate-N. Nitrate-N would have been more vulnerable to movement downward into the soil by leaching, or movement laterally with surface water flow during the heavy rains.

If you think soil temperatures allowed the applied nitrogen to be nitrified to nitrate-N prior to the rains, a supplemental surface application of 50 or more pounds may be a wise management decision given current crop prices. However, if the wheat field was not under water for an extended period of time, if there was not a significant amount of soil erosion, and if the air temperatures remained somewhat cool over the past few weeks, most of the nitrogen is probably still there. The decision to apply supplemental nitrogen should be field specific. Work with your local FS Crop Specialist to estimate potential for N loss before supplemental applications are made.

If wheat was under water for a few days (or more) or the soil remained saturated for several days, there was likely injury to the young root system. Areas of wheat that have lost root mass development as a result of saturated soils may also show signs of nitrogen deficiency. In the soil, there may be adequate nitrogen for healthy wheat roots to access, but plants with injured or restricted roots will have difficulty with nutrient uptake. We expect wheat plants to green up with the return of normal root growth, but some yield reduction may still result from the earlier soil saturation.

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FOLIAR FUNGICIDE APPLICATIONS ON WHEAT

Current crop prices have peaked an interest in foliar fungicide applications for wheat. Some foliar fungicides are labeled for foliar applications as early as Feeke's 5 at reduced rates for early foliar disease control. While some research during severe foliar disease pressure growing seasons indicates that a significant yield response from fungicide applications at that timing can occur, most fungicide labeled products appear to provide the most potential for a yield response when applied at flag leaf emergence at about the Feeke's 9 growth stage of wheat. For control of scab at heading (Feeke's 10.4 – 10.51) there is only one fungicide, Proline, that is currently labeled. To review some recent research results on the effects of foliar fungicide applications at different growth stages on wheat, visit the Southern Illinois University Weed Research Annual Report 2007 web site at <http://siu-weeds.com/research/2007/> and click on "Wheat." To discuss available fungicide options for wheat, contact your local FS Crop Specialist. To monitor the potential for Fusarium head blight or head scab during early wheat heading, monitor your area of the state on the "Fusarium Head Blight Risk Management Tool" web site at <http://www.wheatcab.psu.edu/>

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REFUGE REQUIREMENTS FOR BT TRAIT CORN – IT IS THE LAW !

Refuge Basics – In Illinois, the basic on farm refuge must be at least 20 percent of the total Bt trait planted corn acres. For every 8 acres planted to Bt corn borer or rootworm corn hybrids, 2 acres of a non-trait-bearing corn hybrid needs to be planted in refuge acres on that farm.

Refuge Proximity – For Bt corn borer trait corn hybrids, the refuge can be separated by another field, but is to be within ½ mile, preferably within ¼ mile of the trait corn. Corn borer moths can easily fly this distance in search of a mate. For rootworm trait corn hybrids, the refuge corn must be in the field, or an adjacent field, separated by no more than a road or ditch. Rootworm beetles do not move far in search of mates. In the case of stacked trait corn, refuge proximity always defaults to the most restrictive guidelines, usually those intended for rootworm corn. Refuges that are in the same field as the trait corn can be planted as a block, border, or strips. If strips are created with the planter, they are to be of no less than 4 rows wide, 6 rows preferred.

Separate / Common Refuge – When stacked trait corn is planted, refuges may be planted that reflect corn borer refuge requirements, rootworm refuge requirements, or both. Both traits must be covered by refuge acres. **Separate Refuge** - A refuge planted for Bt corn borer trait corn can include rootworm corn. A refuge planted for rootworm corn can include Bt corn borer corn. **Common Refuge** - A common refuge cannot include either one, only hybrids that do not bear an insect resistant trait. The advantage of the separate refuge is that, in the event of a corn borer outbreak, the corn borer refuge can be treated with a non-Bt sprayable insecticide, without having to treat the trait corn in the same way.

Cultural Practices – In order to ensure that the corn refuge supplies enough adults for mating with potentially resistant survivors of the trait corn, cultural practices for the trait corn and refuge should be as nearly the same as possible. This includes hybrid maturity, crop rotation, planting date, etc. For rootworm corn, if a rootworm hybrid is planted following soybeans in rotation, the refuge can be planted on either corn-following-corn ground or corn-following-soybeans. This exception exists because of the assumption that corn-following-corn will produce more rootworm beetles than will corn-following- soybeans. The reverse is not permitted. If the rootworm corn acres are planted in a corn-corn rotation, the refuge acres must be planted to this rotation as well.

Pest Management – If a pest population hits threshold levels in refuge corn, the corn may be treated with a conventional insecticide. In general, the trait corn is to be treated at the same time (Especially true if rootworm beetles are present). This is to ensure that the pest level is equitably reduced in both blocks, thereby maintaining the ratio of non-resistant to potentially-resistant insects. If a threshold-level pest problem develops in the trait corn, this corn may be treated with a conventional insecticide without having to treat the refuge acres. A sprayable Bt insecticide is not to be used on refuge acres.

With use of corn hybrids carrying the rootworm resistance trait, the refuge acres may be treated with traditional granular or liquid soil insecticides, or with an insecticide seed treatment.

Things Not Permitted with a Refuge

Your neighbor's corn cannot serve as your refuge.
Your rootworm corn and Bt corn borer corn cannot share the same 20 percent refuge acres.
Refuge acres cannot be sprayed with a Bt insecticide.
You cannot mix refuge corn and trait corn for a field-wide blend.

If you have questions about the requirements for the Bt corn refuge on your farm, contact your local FS Crop Specialist for assistance.

THE VALUE OF DOING A GOOD JOB OF PLANTING CORN

Perhaps one of the best ways to appreciate the value of doing a good job of planting corn is to calculate the seed investment that you are making each hour that you plant. John Grandin, Seed Agronomist – Western Region, recently completed that exercise using a 12-30 inch row planter at 5 MPH dropping 32,000 seeds/acre with an average seed cost of \$150/80,000 kernel bag. Under this operation the seed investment would be almost \$1,100.00 per hour of planting operation. This only calculates the seed investment, but it should help emphasize the need to do a good job. The planting operation is the most important component in successful crop production. Mistakes made during planting are seldom correctable during the growing season.

PLANTING INTO THE SPRING-APPLIED ANHYDROUS AMMONIA KNIFE TRACKS

With planting delays in the southern end of the state due to wet soils, time will be short as planting preparation resumes. If anhydrous ammonia has not yet been applied, it will be hard to justify waiting five to seven days after application to plant corn when we get back into the field. The best approach would probably be to plant, then side-dress apply anhydrous between the rows anytime between planting and three to five inches tall corn. That would minimize damage to the corn and continue to maximize crop yield potential due to the earlier planting date. If you have to put on anhydrous before planting, wait at least five to seven days before planting to minimize the chance for crop injury.

PLANTING INTO WET SOIL

Planting into a soil when it is too wet may result in sidewall compaction within the seed furrow. Air is allowed into the planter slot, drying out the slick walls of the seed furrow. If the walls remain relatively dry, nodal roots may not develop normally (or at all), limiting nutrient and water uptake and plant standability. An open planter slit as a result of sidewall compaction may also allow light to reach the tip of the young seedling prematurely, initiating leaf unfurling prior to reaching the soil surface, possibly resulting in leafing-out under the soil surface and preemergence herbicide injury to occur. The open planter slot is also an invitation for bird damage to occur more easily. Once birds find the site for an easy meal, they bring back their friends for a party. Even the replanted crop has a hard time convincing them that they should not feed. When planting into wet soils the planter should be adjusted to place the seed at the recommended 1 ½ to 2 inch depth and close the slot without compaction. Time should be taken to do it right the first time, or replanting will take that time at a later date.

SOYBEAN STAND ESTABLISHMENT – DO IT ONCE, DO IT RIGHT

Soybean seed of many choice varieties is in short supply this spring. Regardless of what replant programs might exist out there, it will be prudent for growers to get good stand establishment the first time around. Comparable replant seed may be impossible to find or obtain. Here's a review of what that means:

- It doesn't matter when you planted soybeans last year or the year before. Plant in a well-prepared seedbed when the soil temperature at 4 inches deep by midday is above 55°F, and seasonally trending upward. Low germination soybean seed should probably not be planted until the soil temperature is above 60°F.
- Avoid rushing field work and creating soil compaction. Crop roots need to fully explore the soil to obtain water and nutrients. With rising nutrient costs, we can't afford to restrict the crop's access. The stress that compaction creates within the crop also sets it up for disease and other pest problems.
- If unfavorable spring weather forces you to have to decide to do only one of the above practices, definitely default to the optimum seedbed conditions, and plant seed that is treated with a quality fungicide or combination seed treatment. Poor soil and seedbed issues will haunt you all season.
- Handle your soybean seed like eggs and avoid extra handling. 2007 growing conditions resulted in a great deal of fragile seed coats and seed coat stress fractures in the soybean seed. Especially avoid moving seed in augers with steel flighting. Regardless of how the seed is moved, move it as little as possible before it goes into the planter.
- Consider use of quality seed treatments, as long as the extra handling of the seed does not add to the physical seed damage.
- Make sure the planter is set correctly.

ADD ONE MORE SPECIES TO THE RESISTANT WEEDS LIST FOR GLYPHOSATE

March 12, 2008, Monsanto announced that there was a population of johnsongrass in Arkansas found to be resistant to glyphosate. Since this weed is a particular problem in the very southern counties of Illinois, this is of particular importance. This makes eight weed species resistant to glyphosate in the U.S. Johnsongrass has now joined the group of resistant weeds that includes common waterhemp, Palmer amaranth, common and giant ragweed, Italian and rigid ryegrass, and marehail. There are currently a number of weed species being tested for resistance in the Midwest and across the United States. This just continues to emphasize the need to rotate mode of action herbicides to control specific weed pests. The return to the use of preemergence herbicide programs in corn and soybeans is a good way to start to reduce dependence and over-use of postemergence products like glyphosate. If you're interested in learning more about resistance to glyphosate or other herbicide families the website www.weedscience.org is a tool to see the most current updates to weed resistance in Illinois or throughout the world.



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UNIVERSITY CROP PRODUCTION/PEST MANAGEMENT NEWSLETTERS AVAILABLE ON THE INTERNET

University crop production and pest management newsletters are available free of charge on the Internet during the growing season. Just log onto the website and request e-mail notification when new issues are available. The web sites are as follows:

- University of Illinois "The Bulletin" is available at <http://www.ipm.uiuc.edu/bulletin/>
- Purdue University "Pest & Crop Newsletter" is available at <http://extension.entm.purdue.edu/pestcrop/index.html>
- University of Kentucky "Kentucky Pest News" is available at <http://www.uky.edu/Ag/kpn/kpnhome.htm>
- University of Missouri "Integrated Pest & Crop Management" is available at <http://ppp.missouri.edu/newsletters/ipcm/index.htm>

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