Welcome to the First Issue of the Bulletin for 2011

The lengthening daylight hours coupled with the increasingly warm temperatures point to the unmistakable fact that the 2011 growing season is fast approaching. And that also means it’s time to begin another season of providing readers of the Bulletin with the most current information on crop production and protection. On behalf of all of the University of Illinois Extension specialists and educators who contribute information and articles to the Bulletin, I thank you for your continued support of our efforts. Once again we will strive to ensure that we provide you the most objective, science-based information possible. We hope you will rely on the Bulletin as a primary source for the information you will need to make crop production decisions in 2011.

If you have followed the Bulletin in years past, we welcome you back for yet another year. If you’re new to the newsletter, you may wish to visit our website and sign up for email notifications letting you know when a new issue or updated information is published. It’s simple to do and, perhaps best of all, it’s absolutely free.

Issue 2 will be published on April 6, and our weekly publication schedule will begin on April 20 and continue through August 10. We’ll publish two issues in August and two in September, then one issue each during October, November, and December for a total of 25.

Most aspects and features of the Bulletin for 2011 will remain similar to past years. One feature that won’t return is the Regional Reports. For many seasons, these reports were written by field-based extension educators from around Illinois who went to great lengths to share their observations and insights. With the recent reorganization of University of Illinois Extension, many of these educators unfortunately are no longer with Extension. I would like to extend my appreciation to all those extension educators who have contributed their time and effort to the Bulletin over the years.

This season marks the 18th year I’ve been privileged to contribute articles to the Bulletin, and the first year that I will serve as its editor. I move into this role with the impending departure of Dr. Vince Davis, editor of the Bulletin for the past two years, who soon will begin a new position as an extension weed scientist at the University of Wisconsin. Dr. Davis became editor following the retirement of long-time editor and extension entomologist Dr. Kevin Steffey, and he has done an outstanding job of providing critical leadership and high-impact articles on soybean production. While forlorn over his upcoming departure, we wish Dr. Davis much success and prosperity as he begins his new academic pursuits.

We wish everyone a safe and prosperous 2011 growing season and invite you to keep us apprised of developments and issues in your areas.—Aaron Hager
Changing Times and New Opportunities

I want to let readers of the Bulletin know that this is my last article for the newsletter and to thank all of you for your support during the last two years. Starting with this first 2011 issue, Dr. Aaron Hager will take over as editor of the Bulletin. I assumed the role from Dr. Kevin Steffey in 2009, and I knew it was an important job. I made a few small changes that were well received, and I appreciated the support and helpful comments regarding those changes. I know Dr. Hager will do an exceptional job of leading the Bulletin into the future.

I have enjoyed meeting many of you through summer and winter meetings throughout the state over the last two years. I wish you well as I wrap up my final days here at the University of Illinois. I start a new opportunity as an extension weed scientist at the University of Wisconsin on April 1. Thank you, again, for your support, and I wish you all a very safe and prosperous year. Best regards.—Vince M. Davis

Insects

Refuge Confusion and Compliance Remain Key Concerns for 2011

The use of transgenic corn remained very high across Illinois and the United States during the 2010 growing season (Figure 1), reaching 82% and 86% of all planted corn acres, respectively. Since 2000, the use of transgenic corn has increased at a very steady rate and has become the dominant production input, fundamentally reshaping how producers manage insects and weeds. Although seed prices, along with other input costs, have risen steadily in the last decade and remain a concern, the current favorable commodity prices will continue to fuel the reliance on transgenic crops for the foreseeable future. Unless widespread resistance to Bt corn by an insect pest develops, demand should remain high for transgenic hybrids that increasingly offer broad-spectrum protection against lepidopteran pests and corn rootworms.

The use of so-called “stacked” transgenic corn hybrids has increased significantly since 2006 for Illinois and the United States, reaching 52% and 47%, respectively, of planted corn acres in 2010 (Figure 2). However, for Illinois the percentage of corn acres planted to stacked hybrids decreased by 7% from 2009 to 2010. Reasons for the decline are probably related to several factors, including low pest pressure the past few seasons and concerns over rising seed costs. I suspect the Illinois decline will eventually be reversed and that the use of pyramided Bt products will dominate in the marketplace. To be clear, note that there is a difference between the terms “stacked” and “pyramided.” According to the United States EPA, pyramided Bt hybrids are “products containing two or more toxins efficacious against the same pest.” The toxins (Cry proteins) should

---

**Figure 1.** USDA Economic Research Service estimates of genetically engineered corn plantings for Illinois and the United States, 2000 to 2010.

**Figure 2.** USDA Economic Research Service estimates of stacked gene varieties for Illinois and the United States, 2000 to 2010.
have “distinct, non-cross reacting modes of action.” Stacked Bt hybrids are “products combining toxins efficacious against different pests.”

At the 2011 Corn and Soybean Classics, held in January, I queried participants about their use of Bt hybrids. To assure anonymity, responses were provided using the handheld clickers developed by Turning Technologies. The meetings were held in Bloomington, Champaign, Malta, Moline, Mt. Vernon, Quincy, and Springfield. When asked if they planted a Bt hybrid in 2010, on average well over 90% of respondents said yes (Figure 3).

On average, across the seven locations, nearly 94% of respondents said they planned to use a Bt hybrid in 2011 as well (Figure 4). This impressive level of use is occurring despite very low pest pressure the past few seasons. The low number of European corn borers across the Midwest has been well documented; however, during the last two years, western corn rootworm densities have been exceedingly low as well. The dearth of western corn rootworms is most likely due to saturated soil conditions during larval hatch (late May, early June) in 2009 and 2010 across many areas of Illinois. However, the decline in numbers is also linked to increasing use of Bt hybrids and widespread applications of pyrethroid insecticides tank-mixed with fungicides to corn and soybean acres in recent growing seasons. The three factors have resulted in a population suppression of western corn rootworms and have left many entomologists wondering if densities of this once perennial pest will rebound in the near future.

Due to the diversity of Bt hybrids and differing refuge requirements, there is concern that refuge compliance will continue to erode as confusion and ambivalence increase. Slightly more than 20% of producers at the 2011 Classics indicated they did not establish a refuge according to the recommended guidelines (Figure 5). As refuge compliance decreases, we should anticipate increasing selection pressure on pest populations and their eventual adaptation to Bt hybrids. This would be a significant loss and helps to explain why the United States EPA is interested in moving forward with the use of seed mixtures as a refuge strategy for some Bt products—it ensures compliance.

In 2011, the dominant resistant management strategy will continue to be the 20% structured refuge approach for most Bt hybrids. On average, nearly 66% of producers indicated they will use this refuge deployment with their Bt hybrids (Figure 6). In Malta, located in northern Illinois, over 20% of growers indicated they will utilize a seed mixture as their refuge. As I noted previously, as more pyramided Bt hybrids enter the market, this will become the dominant refuge management practice. In essence, we will see a 95% to 5% agricultural landscape emerge, with Bt and non-Bt seed interspersed in cornfields.

I look forward to writing articles for the Bulletin throughout 2011. Each growing season is unique and typically has its own surprises; I suspect this one will provide some interesting twists and turns. From time to time, please send me your observations from the field so I can share these reports with our readers. I wish everyone a productive 2011.—Mike Gray

---

**Figure 3. Answers at the 2011 University of Illinois Corn and Soybean Classics to the question “Did you plant a Bt hybrid in 2010?”**

**Figure 4. Answers at the 2011 University of Illinois Corn and Soybean Classics to the question “Do you intend to use a Bt hybrid in 2011?”**
Weeds

Product Updates for Weed Management in 2011

With the dawning of a new season of newsletter articles, here is a brief overview of some changes in herbicide options available to Illinois weed control practitioners. Currently, the list includes no new herbicide active ingredients. This article is not intended to provide a complete summary of all label changes, and all who use herbicides are encouraged to carefully consult their product labels.

**Authority XL 70DG** (sulfentrazone + chlorimuron) is the newest addition to the Authority family of products. These active ingredients were previously paired as Authority Broadleaf/Canopy XL, but the active ingredient ratio in Authority XL differs from the earlier premixes. Authority XL may be applied following fall harvest through pre-emergence for burndown and residual control of broadleaf weed species in soybean. Use rates vary according to soil texture, organic matter content, and length of desired residual weed control. Recommended rates range from 5 to 9.6 ounces per acre, or reduced rates of 3 to 5 ounces per acre when used in conjunction with a planned postemergence application of glyphosate or glufosinate. Do not apply Authority XL if soybean have begun to emerge or if soil pH is greater than 7.6.

**Callisto Xtra 3.7SC** (mesotrione + atrazine) is a premix product for postemergence control of certain broadleaf weed species in corn and as a tank-mix partner with glyphosate for use in glyphosate-resistant hybrids. The application rate ranges from 20 to 24 fluid ounces per acre; the 24-fluid-ounce rate will provide the equivalent of 3 fluid ounces of Callisto and 1.2 pints of AAtrex. Applications must be made before corn exceeds 12 inches and must include either a COC or NIS in combination with an ammonium nitrogen fertilizer (such as UAN or AMS).

**Flexstar GT** (fomesafen + glyphosate) has become **Flexstar GT 3.5**.

**Peak 57WDG** (prosulfuron) can be applied postemergence in field corn or corn grown for silage. Peak, at rates ranging from 0.5 to 1 ounce per acre, can be applied to corn between 4 and 30 inches tall for control of certain broadleaf weed species sensitive to ALS-inhibiting herbicides. To ensure good spray coverage and to reduce the potential for corn injury, applications to corn between 20 and 30 inches or that exhibits more than 6 leaf collars should be directed with drop nozzles.

**Prequel 45WDG** (rimsulfuron + isoxaflutole) contains the active ingredients of Resolve and Balance Pro. Prequel may be applied from up to 30 days before corn planting (include either MSO or COC for control of existing vegetation) until prior to corn emergence (do not apply after corn begins to emerge). If existing vegetation exceeds 3 inches,
a tank-mix partner (such as glyphosate, paraquat, or 2,4-D) is suggested. Applications of Prequel at 1.66 ounces per acre provide the equivalent of 1 ounce Resolve 25DF plus 0.66 ounce Balance 75WDG. Prequel is positioned as a set-up treatment preceding a postemergence herbicide application. The label includes several precautionary statements related to conditions conducive for corn injury and use restrictions based on soil types and depth to ground water.

**Realm Q 38.75WDG** (rimsulfuron + mesotrione) can be applied at 4 ounces per acre to corn up to 20 inches tall for control of small grass (less than 2 inches) and broadleaf species. The 4-ounce application rate, which provides the equivalent of 1.2 ounces of Resolve 25DF and 2.5 ounces of Callisto 4SC, can also provide some residual control. Applications of Realm Q should be made in a minimum of 15 gallons per acre and must include a COC or NIS and an ammonium nitrogen fertilizer. Tank-mix partners can help broaden the spectrum of weeds controlled.

**TripleFLEX 4.16SE** is a premixture of three active ingredients (flumetsulam + acetochlor + clopyralid) in the same ratio as SureStart. TripleFLEX, at rates ranging from 1.5 to 3 pints per acre, may be applied before corn planting/emergence, or postemergence until corn reaches 11 inches tall.

**Verdict** is the new name for last year’s Integrity. While the formulation has not changed, the maximum application rate in corn has been increased from 16 to 18 fluid ounces per acre. Additionally, Verdict at 5 fluid ounces per acre may be applied as a preemergence burndown in reduced or no-till soybean.

**Warrant** (acetochlor) is an encapsulated formulation of acetochlor (3 lb ai/gallon) labeled for postemergence applications in soybean and corn. Warrant must be applied postemergence to the crop, but preemergence to grass and small-seeded broadleaf weeds as acetochlor will not control emerged weeds.

Applications, at rates ranging from 1.25 to 2 quarts (depending on soil texture and organic matter content) should be made after soybean are completely emerged but before they reach the R2 growth stage. In corn, apply 1.5 to 3 quarts per acre before corn exceeds 30 inches. In glyphosate-resistant crops, glyphosate may be tank-mixed with Warrant if emerged weeds are present at the time of application.—Aaron Hager

### Weeds 2011: What to Expect

Making (accurate) predictions about the types of challenges weeds might present during the 2011 growing season is a tenuous task. However, here at the outset of the season we will cautiously offer a few remarks about what weed management practitioners might encounter.

As mentioned in the “Product Updates” article in this issue, no new herbicide active ingredients are currently available in 2011. (There is a new active ingredient, pyroxasulfone, awaiting a label from the US EPA, but it might not arrive in time for use during the 2011 growing season.) Another way of stating this is that no new sites of herbicide action will be commercialized this season. We expect this situation to continue into the foreseeable future, which is likely to increase the challenges caused by herbicide-resistant weed biotypes and populations.

Last fall’s corn harvest was much more timely and efficient than what many farmers experienced in 2009. One consequence of the challenging harvest of 2009 was the abundance of volunteer corn in 2010. Densities of volunteer corn were quite impressive, and careful attention was needed when selecting the appropriate control option. Volunteer corn will likely be a weed management consideration again in 2011, but volunteer corn densities are likely to be much lower than was experienced in 2010.

Our sense is that more acres of the 2011 soybean crop are scheduled to be treated with a soil-residual herbicide than were treated in 2010. Many challenges are posed by total postemergence weed control systems, including the unpredictability of being able to make timely postemergence herbicide applications before weed interference reduces crop yield potential. The high market prices for soybean, coupled with the increasing occurrence of herbicide-resistant weeds, suggest that soil-residual herbicides are likely to become staples of more integrated weed management systems. Keep in mind, however, that simply applying the herbicide to the soil doesn’t guarantee optimal performance. In a future issue of the Bulletin we’ll cover several factors that can influence the performance of soil-residual herbicides.

Herbicide-resistant weeds are poised to become an even larger weed management challenge in 2011. Results of recent surveys indicate that glyphosate- and PPO-resistant waterhemp populations are present in many Illinois counties and that glyphosate-resistant horseweed/marestail is very common across most of the southern third of the state. A waterhemp population from McLean County resistant to HPPD inhibitors was documented in 2010, increasing to five the number of herbicide site-of-action families to which Illinois waterhemp has evolved resistance. We expect that waterhemp biotypes resistant to multiple herbicide families will become even more common. There are also concerns with populations of giant ragweed and Palmer amaranth in southern Illinois that have not been controlled by glyphosate.

These are by no means the entire waterfront of challenges weeds could impose during 2011, but they do represent issues expected to be widespread across much of the state. We’ll do our best to keep you updated as more is learned about how best to manage these (and other) weed-related challenges in 2011.—Aaron Hager
Crop Development

Sulfur for Corn: Feast or Famine

As many of you probably know, in 2009 we started a study to evaluate corn response to sulfur in Illinois. From this research we have found so far that most fields are not responsive to sulfur, but those that are are typically very responsive. Following is an update of results and a request for volunteers.

On-farm results. Averaged across all fields (10 sites), we observed an increase of 4 bu/acre in yield with sulfur, but we could not determine statistically that the increase was due to the sulfur application. Only two sites (20% of tested sites) showed a statistically significant increase in yield with sulfur application. The two sites were in Menard County in an Onarga sandy loam and in Iroquois County in a Milford silt loam. The field in Menard County produced a 51-bu/acre increase in yield (167 bu/acre without sulfur and 218 bu/acre with 30 lb sulfur/acre). The field in Iroquois County produced a 20-bu/acre increase over the unfertilized check. Sulfur application in another site in Woodford County produced 222 bu/acre yield, which was 8 bu/acre greater than the check, but the difference was not statistically significant.

Small-plot results. As with the on-farm trials, 12 site-years of data from small-plot research showed overall no statistically significant yield increase (a 7-bu/acre yield increase compared to the check with an application of 24 lb sulfur/acre). However, the sites that were responsive to sulfur showed substantial yield increases. In Champaign County on a Wyant silt loam, an application of 24 lb sulfur/acre produced 208 bu/acre and a 26-bu/acre increase relative to the unfertilized treatment. In Lee County on a Wyant fine sandy loam, the same rate produced a 209-bu/acre yield, which was 25 bu/acre greater than the unfertilized plot.

What do these data tell and not tell us? To date, the amount of data we have is insufficient for any broad conclusions. So the fact that we saw a large increase in yield in an Onarga sandy loam does not necessarily indicate that people with that soil should apply sulfur. Similarly, the yield increase we observed in Champaign County should not be taken as an indication that fields in that county would benefit from a sulfur application. What these data do clearly indicate is that there are fields with a lot of potential for response to sulfur, while others are very unlikely to respond.

Our current results, although limited, contrast with work done in the late 1970s in Illinois. Out of 82 sites, only five (6%) showed a significant response to sulfur. The average response for those sites was 11 bu/acre, and the average increase with sulfur application for the remaining 77 nonresponsive sites was only 0.5 bu/acre. The frequency of sulfur deficiency and the magnitude of yield response to sulfur application seemed to have increased since the late 1970s. Several factors may be contributing to this change. Strict air pollution standards have cleaned the air of gaseous sulfur compounds, resulting in less sulfur atmospheric deposition. In general, many agronomic inputs, such as fertilizers, insecticides and fungicides, are “cleaner,” having less incidental sulfur in them. Also, fewer livestock operations across the state have led to less application of manure, further reducing the amount of sulfur being applied with this fertilizer source. At the same time that less incidental sulfur is being applied or deposited, there is more removal of sulfur by increasing crop yields.

Still, at this point, the only way to determine whether a particular field could be responsive to sulfur is by conducting a test trial. As in the previous two years, I am looking for volunteers throughout Illinois to participate in on-farm research to measure corn response to sulfur fertilization. Your participation would provide useful information on your particular field as well as improving our ability to predict more broadly where sulfur applications are most needed.

If you are interested in participating (even if you are not sure whether your particular field or equipment would fit the conditions described), or if you have questions about how to find sulfur fertilizer or have the fertilizer applied, please contact me: fernande@illinois.edu; 217-333-4426; Department of Crop Sciences, N-315 Turner Hall MC-046, 1102 S. Goodwin Ave., Urbana, IL 61801.

Soil conditions. We would like to characterize sulfur response across the state, so we will consider all soil types. However, we are especially interested in light-colored soils (less than 2% organic matter, course texture, or both) and soils with an eroded phase. The only fields we will not consider are those that have received manure or sulfur applications in the last 5 years.

Equipment. Volunteers conducting these trials follow a simple design applying 0 and 30 lb S/acre as a broadcast application in a uniform portion of the field. A minimum of three replications or as many as eight are needed for each field. Figure 7 shows a layout of the treatments randomly assigned within each replication for an eight-replication study. It will be important to georeference or clearly mark each strip with different-colored flags or markers in the center. Strips can be anywhere from 8 to 16 rows wide by 300 to 1,000 feet long. What is important is that the size of the strip allows accurate application of rate and accurate measurement of yield, and if possible that the strips be wider than the harvest strip. However, if the combine is at least 12 to 16 rows wide, it is possible to harvest the strip without having border rows.

Sulfur sources. While there are sulfur sources we prefer, we can accommodate others that may be available to you. We prefer the use of ammonium sulfate (NH4)2SO4 (21-0-0-24); MicroEssentials sulfur (ME S) ME S15 (13-33-0-15); or elemental sulfur (0-0-0-90). If the sulfur source contains other accompanying nutrients, the corresponding rates
of those nutrients need to be applied to other treatment strips to avoid a differential response to nutrients other than sulfur. If you use ammonium sulfate you need to apply 26 lb N/acre to the other strips, and if you use ME S15 you need to apply 145 lb DAP (18-46-0)/acre. (For more details see “Applying the treatments” below.)

Time of application. Our preferred application time is preplant, since visual response to sulfur is typically observed early in the growing season. Also, if elemental sulfur is used, the earlier this source can be applied ahead of the crop, the more chance there is for that sulfur to become plant-available for this year’s crop.

Measurements for data collection. The only data volunteers will have to provide is the yield for each strip. This information can be collected by yield monitor or from a weigh wagon. Volunteers will not be required to take plant or soil samples, but would need to allow the researcher to visit the strips approximately two to three times during the growing season.

Applying the treatments. There are three sulfur sources to choose from:

- ammonium sulfate (21-0-0-24)
  - For strips with 30 lb sulfur/acre: Apply 125 lb ammonium sulfate /acre.
  - For the strip with 0 lb sulfur/acre: Apply 145 lb DAP (18-46-0)/acre. This application is made to balance the nitrogen that was applied along with the sulfur in the sulfur strip. Those 26 lb of nitrogen/acre can be applied as either 57 lb urea/acre, 94 lb UAN (28%)/acre (8.7 gallons/acre), or 82 lb UAN (32%)/acre (7.4 gallons/acre). Do not use anhydrous ammonia because it would be difficult to apply only 32 lb of product/acre.
- micro essentials MES-15 (13-33-0-15)
  - For strips with 30 lb sulfur/acre: Apply 200 lb MES-15/acre.
  - For the strip with 0 lb sulfur/acre: Apply 145 lb DAP (18-46-0)/acre. This application is made to balance the nitrogen and phosphorus that was applied along with the sulfur in the sulfur strip.
- elemental sulfur (0-0-0-90)
  - I would use elemental sulfur only as a last resort, because often all of it does not become available in the year of application.

For the strip with 30 lb sulfur/acre:
- Apply 33 lb elemental S/acre.

For the strip with 0 lb sulfur/acre:
- There is no need to apply any product because the sulfur source is not accompanied by any other nutrient.

Additional N, P, K, or other inputs. If the field needs additional nutrients or other inputs (insecticide, herbicide, etc.) to optimize production, make sure those inputs are applied at the same rate across the entire study site.—Fabián G. Fernández

---

<table>
<thead>
<tr>
<th>30</th>
<th>Replication 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Replication 2</td>
</tr>
<tr>
<td>0</td>
<td>Replication 3</td>
</tr>
<tr>
<td>30</td>
<td>Replication 4</td>
</tr>
<tr>
<td>0</td>
<td>Replication 5</td>
</tr>
<tr>
<td>30</td>
<td>Replication 6</td>
</tr>
<tr>
<td>0</td>
<td>Replication 7</td>
</tr>
<tr>
<td>30</td>
<td>Replication 8</td>
</tr>
</tbody>
</table>

Figure 7. Layout of the treatments randomly assigned within each replication for an eight-replication study.
Will Corn Following Corn Face “Issues” in 2011?

The 2010 season was one of the most disappointing in years for corn in many parts of Illinois, with the statewide average yield only 157 bushels per acre, just 4.2 bushels higher than the U.S. average and the third-worst yield in the past decade. Over the past 10 years, the Illinois corn yield has averaged 13.7 bushels per acre above the U.S. national average and has been below the national average only once (by 4.9 bushels in 2005) and above it by as much as 25.1 bushels (2008).

The major problem in 2010 was heavy rainfall in June that resulted in standing water and saturated soils, which in turn resulted in nitrogen loss and damage to root systems that could not be repaired. As a result, affected fields and parts of fields ended up with shortages of both nitrogen and water, problems made worse by high temperatures and early maturity, and in some cases by dry weather during the latter part of the grain-filling period.

Corn following corn was particularly hard-hit in 2010, and there were numerous reports of larger yield penalties than most have seen for a number of years for corn following corn compared to corn following soybean. We saw the same thing in our research trials, where we have been comparing continuous corn, corn rotated with soybean, and corn following either corn or soybean in a 3-year corn-corn-soybean rotation. This study was established in 2003, and so 2008 was the fifth or sixth year of continuous corn.

While we have found at some sites that the yield loss in corn following corn or continuous corn compared to corn following soybean has generally been less in recent years than the old 10% rule of thumb, we have certainly found little evidence that this yield penalty has gone away (Table 1). Across four northern Illinois sites, this penalty for continuous corn was about 11% in 2008–09 and 19% in 2010. We did find that second-year corn in the corn-corn-soybean rotation yielded only 5% less than soybean following corn in 2008–09 and 10% less in 2010, indicating that having soybeans recently in the rotation does help to lessen the negative effect of having corn as the previous crop. At the two southern Illinois locations, with considerably lower yields, the penalty for continuous compared to rotated corn was substantially less, measured either as bushels or as a percentage.

I provided in an article last fall (bulletin.ipm.illinois.edu/article.php?id=1426) some of the reasons that corn following corn did so poorly in some areas in 2010. In certain ways it was a “perfect storm” of problems, resulting from lots of well-preserved residue, cool temperatures for several weeks after planting, considerable soil compaction, very little opportunity for spring tillage, and marginal seedbed conditions, followed by the large amounts of rain in May and June.

Does the relatively poor performance of corn following corn in 2010 mean that we should worry that 2011 will show similar results? Most indications are that this shouldn’t be our expectation. Most importantly, field and soil conditions as we head into 2011 are much different than they were a year ago. None of the factors of a year ago—late fall harvest, poor tillage conditions, lots of fresh residue on the surface, and much nitrogen yet to apply—exist this spring. I do not believe I have ever in my 30 seasons in Illinois seen the state as “tilled up” going into the spring as it is this year. For certain, if tillage can solve our problems, we can consider them solved as we head into this season. One additional benefit is that it has not been wet for extended periods when soil temperatures were warm since nitrogen was applied, meaning that most of the nitrogen we applied last fall should still be present, with a good deal of it still in the ammonium form and so not subject to loss.

Though we can certainly feel good about preparations we’ve been able to make for this spring, we know from history that a good fall doesn’t always mean a good crop the following year. While the fact that soils are starting to dry out nicely in some areas of the state is a good sign as we head into April, we need to be careful not to undo the compaction relief provided by last fall’s tillage by driving on soils before they’re dry enough. We know that any driving we do on soils this spring will do some compaction; soils are typically at or near field capacity when we’re ready to plant in the spring, and it’s at field capacity that they are most subject to compaction. Waiting until soils are dry enough at depth (not just over the surface) will help minimize compaction effects, as will using controlled traffic, making fewer tillage passes, and lowering tire pressure.

Because we had some 3 million more corn acres than soybean acres in 2010, and we grow less than a million acres of crops other than corn and soybean, we know that some 20% of the corn acres in Illinois in 2011 will follow corn, providing corn acreage doesn’t drop from 2010. With high corn prices and a lot of nitrogen already applied, such a drop seems unlikely.

So should we change anything for corn following corn this year? No. Our research shows that both respond similarly to planting date and to plant population, so those should change only as

<table>
<thead>
<tr>
<th>Corn crop in rotation</th>
<th>4 sites in northern Illinois</th>
<th>2 sites in southern Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous corn</td>
<td>193</td>
<td>159</td>
</tr>
<tr>
<td>Corn-soybean</td>
<td>217</td>
<td>197</td>
</tr>
<tr>
<td>1st-year corn in corn-corn-soybean</td>
<td>214</td>
<td>191</td>
</tr>
<tr>
<td>2nd-year corn in corn-corn-soybean</td>
<td>204</td>
<td>177</td>
</tr>
</tbody>
</table>
soil conditions and productivity might indicate. We’ve never been able to identify hybrids that do consistently better in corn following corn, though corn following corn may tend to experience stress (primarily drought stress) a little more often, so that should be factored in. Diseases related to residues can also be more of a challenge. And corn following corn typically needs a little more nitrogen – see the N Rate Calculator for current numbers.

The important things—having good soil conditions where the seed is placed and good rooting conditions underneath the surface—are critically important for corn no matter what the previous crop. And the crop needs to be well supplied with nutrients and protected from pests. Once we cover these basics, the crop will respond mostly to weather factors—water and temperature—that we don’t control. That has always been true, and will be true again in 2011.—Emerson Nafziger

Contributing Authors

Fabián Fernández, fernande@illinois.edu, 217-333-4426
Mike Gray, megray@illinois.edu, 217-333-6652
Aaron Hager, hager@illinois.edu, 217-333-4424
Emerson Nafziger, cdnaf@illinois.edu, 217-333-4424